This file contains examples of business projects descriptions from 2014 to 2018. The projects are:

Year	Company	Project title	Page
2018	ASB Bank	Project MyDay	2
2018	Douglas Pharmaceutical	Production Cycle Time and Scheduling	8
		Efficiency	
2018	Hansen Technologies	Holistic Data Visualisation	12
2018	United Steel	Growing market share under lumpy demand	17
2017	ASB Bank	Project Sonar	21
2017	BNZ	Project Impulse: Asset Quality Reporting Tool	27
2017	KPMG	ThreatInspect Intel	33
2016	ASB Bank	Project Short Circuit Track My Spending	38
2016	ASB Bank	Cash in Transactional banking model for SME	44
		customers	
2016	BNZ	Project Dragon	50
2016	Computer Fanatics	Business Activity Monitoring	55
2016	Hansen Technologies	PAY-TV WEB SELF-CARE	62
2015	ASB Bank	Project Level Up, Training Recommendation	68
		Application	
2015	Computer Fanatics	Vetlink ^{SQL} Stock	75
2015	KPMG	Data Analytic Engine Refinement	81
2014	ASB Bank	One Team Referral (OTR) Mobilisation	86
2014	Computer Fanatics	Mobile Application Development	92
2014	Hansen Technologies	Business Process Management System	100
2014	OneNet	Service Unification Engine	106

ASB

Project MyDay

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ABOUT ASB

ASB began in 1847 on Queen Street as the Auckland Savings Bank, New Zealand's first savings bank. Since then, through continuous innovation and a commitment to 'serve the community; to grow; and to help kiwis grow', ASB have provided a range of products in banking. Innovations such as the Virtual Branch on Facebook (2010) and the 'Clever Kash' cashless moneybox (2015), which received the CANSTAR Innovation Excellence Award in 2017, are examples of this.

ASB are passionate about being at the forefront of current technologies and use them in pursuit of their vision. With this passion comes an ever-changing environment where staff must navigate multiple systems and keep up-to-date with varying business requirements. Project MyDay is an opportunity to simplify this process and have all the important items in one place, leaving staff more time to dedicate to customers whilst still fulfilling business needs.

PROJECT AIM

At ASB, the environment is constantly changing and staff members are faced with new requirements, technology and people every day. This concept of things changing comes with its pros and cons. The positive is the way they do business is constantly evolving as technology advances and the economic landscape evolves. The downside is the need for people to traverse and navigate to a variety of programs and systems to stay on top of priorities. To keep up with such change, they need something to assist them in managing their daily tasks simply and efficiently. This is what Project MyDay caters to solve.

Time management can be a challenge even for the most talented and motivated people. For a Personal Banker at ASB, productivity levels can vary from day to day, with many tasks to complete and many places to check. The aim of this project is to develop a system that can assist Personal Bankers in planning and prioritising their tasks to maximise their own potential and contribution to business. Our system will collate tasks from different applications that employees currently use such as Outlook, ONYX (the enterprise Customer Relationship Management system), and the Customer Profile Tool (CPT), into a single web page. Our system will provide an overview of all tasks with their priority to be completed, which can help them simplify their day-to-day planning and be more organised with their responsibilities and commitments. With an already busy schedule, our system or planning framework will be used as a home or landing page for staff to check for new upcoming tasks and appointments, so they can form their schedule accordingly.

REVIEW OF THE CURRENT SYSTEM

After visiting a variety of branches in the Auckland region and conducting interviews with Personal Bankers, we have come to understand some of the limitations of the current system and the impact this has on the business. The overarching problems include:

- The variety of systems a staff member must navigate to plan and organise their day, which is an inefficient use of their time and as a manual process is therefore open to mistakes, including omission.
- A lack of prioritisation of tasks resulting in missed business opportunities and greater effort and commitment from staff to make the right decisions at the right time.
- No central place for task allocation depending on individual workloads; e.g. reallocating tasks to a less busy team member

In addition to the above, based on the objectives of the organisation and reason for developing Project MyDay, there are system specific limitations such as:

Outlook

Outlook is the appointment and email platform used at ASB. Although it enables users to share calendars, book appointments and send emails, it does not integrate well with existing systems. For example, there is no ability to click and drag tasks into a specific timeslot to ensure task completion. Additionally, there are differences in the content and layout of emails sent to customers, which could create potential issues with compliance or provide inconsistent customer outcomes.

Onyx

Onyx is the backbone CRM system at ASB, which performs a large quantity and variety of processes and functions every day from a number of departments. However, what this system has in processing ability, it lacks in usability. Staff use Onyx on a daily basis to collect customer information, it is the system of record for Customer interactions and is also used to schedule contact points. Its greatest strength as the "everything system" is also its greatest weakness as it can be difficult to navigate. This affects staff efficiency and therefore productivity.

Customer Profile Tool (CPT)

CPT provides an overview of each customer's financial summary, their personal information and highlights any conversation opportunities available. It is also where staff members retrieve their potential outbound calling opportunities.

The above applications are collectively used to provide Personal Bankers the information they need to come up with an agenda for their day. However, switching between different applications and remembering where to go for each task can be time consuming and inefficient. So, with Project MyDay, we intend to make an application that makes organising a PBs day simpler, more efficient and more enjoyable.

PROPOSED SYSTEM

Project MyDay is a smart task allocation and prioritization tool, with the initial design aimed at assisting Personal Bankers in organising and completing their daily tasks quickly and efficiently.

MyDay is a task repository where staff can find their tasks for each day, eliminating the need to visit multiple systems. It has inbuilt prioritization metrics to ensure the tasks most important to ASB are clearly visible so that they can be completed in a timely manner. This removes the guess work for employees trying to decide which tasks take priority and provides a more focussed and consistent approach to tasks across the business.

There is potential for MyDay to extend beyond Personal Bankers and become the planning tool used by all employees. Throughout ASB there are a number of departments, each with unique tasks they must complete and appointments they must attend. Due to the 'modular' approach of MyDay, tasks can be added from any area of the business and viewed by any staff member.

Further to this, MyDay will allow Managers to better monitor and track the productivity of their branch and individual staff members. By having a clear view on a variety of tasks and their status; such as upcoming, in progress, complete or overdue, Managers can assign and allocate tasks based on a staff members' individual capability, further maximising their teams' productivity.

Overall, MyDay plans to deliver a number of benefits to ASB by providing a one-stop-shop for task allocation; smart prioritization in line with customer & company needs and visibility of task progress.

Benefits to ASB

What will this bring to ASB?

Ultimately the purpose of this project is to bring business benefits to ASB. Whether that is directly by prioritising high value objectives or indirectly by reducing the time needed to plan and allow more for providing excellent customer service, Project MyDay will bring a range of positive outcomes as outlined below.

Benefit 1: Protect

By ensuring staff are aware of and reminded about their most important tasks, there is less chance of anything being missed or forgotten. This protects ASB by ensuring mandatory tasks are completed and regulatory requirements are met. It also protects personnel by supporting them to meet essential deadlines and assisting them in achieving required performance measures. Our system will also be built and tested for its security from certain cyber-crime. We will make sure all our code is written in a viable and secure format to avoid such attacks like SQL injection. This will ultimately protect employees and customers from having their personal information breached.

Benefit 2: Better outcomes

The initial deliverable for this project is the development of the Home Buyer Milestones module. This is an example of how MyDay can improve the home buying experience to ASB by ensuring that staff are available when their customers might need them. Milestones are key tasks that must be completed by certain dates when providing a service to customers. Through data analysis and company research, the best outcomes occur when certain follow-ups or 'milestones' are completed in a particular timeframe. This increases the chance of securing a client's business through providing unbeatable customer service.

Benefit 3: Save money

With specific tasks and goals for Personal Bankers, they can reach their maximum productivity using our system. If important tasks are not done on time, such as a follow-up appointment, ASB loses out on providing an unbeatable customer experience. Therefore, better task allocation and management can be performed by Branch Managers based on the staffing in the Branch that day. Our system will be like a "one stop shop" for all our users. It will facilitate information from other applications (i.e. Onyx) and display it all on one page thus leading to better use of existing purchased systems. Digitising a staff member's daily planner can also reduce printing costs as some like to print their agenda every morning.

Benefit 4: Save time and add convenience

Staff can keep track of their responsibilities in MyDay which saves them time from navigating through different ASB systems. Providing priority ratings will give staff a sense of direction on what to do next, so they can begin those tasks immediately and complete them quicker (saving them time determining the priority of a task, reducing mental exertion and creating more space for customer outcomes). In the foreseeable future, our system will also provide resources such as email templates, reducing the amount of time spent writing emails.

Benefit 5: User experience

This is an indirect benefit to ASB. Creating a simple, attractive and intuitive design will help secure adoption rates. Managers can easily allocate/reallocate tasks to staff and monitor their completion to ensure all jobs are completed. By gamifying the experience, employees will enjoy the feeling of completion at the end of the day; highly engaged staff encourages greater productivity and great customer outcomes.

DESCRIPTION OF MAJOR ACTIVITIES

Our team completes activities using an Agile Methodology over three phases: Discovery, Development and Delivery. This methodology requires us to segment our efforts into sprints with each sprint lasting two weeks. Our team holds daily scrum meetings to outline the following points:

- What tasks we performed yesterday
- What tasks we plan to accomplish today and
- If there were any impediments

Currently, we hold majority of these meetings by posting the aforementioned points to a group chat on Messenger. In addition to these, at the beginning of each sprint we hold a sprint-planning meeting with our Product Owner to discuss what tasks to accomplish in the next sprint. At the end of each sprint, our team has a sprint retrospective meeting. In this meeting, we primarily discuss the following points:

- What we did last week
- What impediments occurred

• What we did well and what we can improve

Each sprint finishes with a sprint review meeting with the Product Owner. See below for the specific activities performed in each phase.

Discovery Phase

We have 1.5 sprints in this phase, which include the following activities:

Problem Identification

The purpose of this activity is to understand what the problems are, why the problems exist and how to solve them.

Preliminary Investigation

This activity focuses heavily on our interactions with key stakeholders. For Project MyDay, key stakeholders are the Retail Solutions Team, Branch Managers and Personal Bankers. Firstly, our team need to determine the right people to interview; develop interview questions and conduct the interviews. Secondly, we need to document the interview processes, present the results and analyse the results to define user stories and the required functionalities for our system.

Requirements Gathering & Prioritisation

As mentioned in the previous activity, we create user stories to identify necessary requirements from the user's perspective, which indicate the functionalities we should have in our system. We document all user stories in our product backlog with three categories: MVP user stories, Core user stories and Extra user stories. Our Product Owner is in charge of the product backlog and prioritizes all the user stories based on story points. Story points are an agile metric our team develops by prioritizing requirements depending on their importance to the business.

Development Phase

In this phase of our project, we focus on system design, building and testing. There are six sprints in this phase, each of them follow the same process. A typical process starts with the sprintplanning meeting where we define which tasks we should work on from the product backlog. These must be decided with our Product Owner. During that sprint, we design the system to fulfil the product backlog items; build the required functionalities and test each functionality achieves the corresponding user story. At the end of the sprint, during the review meeting, we present our progress to the Product Owner and receive feedback.

Delivery Phase

There are two sprints planned for this phase. The focus for this phase is to modify the MVP and Core product backlog items, based on feedback from relevant stakeholders in preparation to deliver our final product. We may add some extra functionality depending on the circumstances at that time.



Production Cycle Time and Scheduling Efficiency

Sponsoring Organisation	Douglas Pharmaceuticals	2 Te Pai Place, Henderson http://www.douglas.co.nz
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COMPANY BACKGROUND

Douglas Pharmaceuticals is a rapidly growing pharmaceutical company with outstanding manufacturing standards, quality of products and excellent customer service. Unlike many other pharmaceutical companies, Douglas provides end-to-end service from product development to manufacturing and distribution. It is consistently ranked as one of the top companies in the New Zealand pharmacy surveys on pharmacist satisfaction. Douglas is well-known in New Zealand for its consumer products such as Avene and Sunsense; in addition, Douglas also has developed two world-leading medicines, the acne prescription treatment Isotretinoin and Clozapine, a clinical treatment for schizophrenia. From its state-of-the-art, GMP compliant manufacturing plants in New Zealand and Fiji, Douglas is also able to provide contract manufacturing to global pharmaceuticals producers.

Douglas Pharmaceuticals is a privately owned New Zealand company founded by Sir Graeme Douglas in 1967 with over 450 staff, including 50 in Fiji and 20 in the USA. From the 1990s, Douglas expanded from supplying domestically to exporting internationally which now accounts for 70% of their total revenue. They currently export to 50 countries with the largest sales proportion in Europe followed by the USA.

PROJECT AIM

Currently, Douglas Pharmaceuticals goals are:

- To maintain 25% growth in revenue every year.
- To reach \$500 million in revenue by 2025.

To maintain competitiveness and sustainably increase revenue, Douglas' production capacity must be able to cope with the growth target while continuing to supply products to customers without a significant increase in the percentage of shipping delays (DIFOT). Currently Douglas has limited production capacity and is struggling to maintain their historic DIFOT targets of 90% which are part of the international reputation they have built with their customers. As a result of the increase in orders that are accepted for manufacture, some customers started to express their concern and dissatisfaction with Douglas as more frequently orders are delivered not in full at the promised delivery date or whole orders are delayed.

REVIEW OF CURRENT SYSTEMS

The project focused on the Production process in the West Auckland plant. The Production process can be broken down into four main sub-processes: Procurement and Scheduling, Quality Control, Manufacturing, and Packing.

The Production process is triggered by a confirmed customer order being entered into the ERP system. The integrated MRP system generates the Bill of Materials and the ERP system produces a list of jobs for the manufacturing schedule which the planning department will schedule for ordering of raw materials and product manufacture in their plant. Any raw materials purchased are legally required to go through stringent quality control testing before they can be released to manufacturing.

All products are manufactured in batches. After all required raw materials are released, the manufacturing process for a specific product can be triggered. After a batch of a product is manufactured, it must again be sent to the Quality Control department for all legally required end product testing to be completed. In some cases, the Packing department already simultaneously packages the products ready for shipping in anticipation of the low risk that Quality Control finds a manufacturing error and rejects product release. This is referred to as "packing under risk". However, if a product has a known high risk of being rejected for release, the Packing department must wait for the batch of a product to be released before packing can start. The packed products are shipped to business customer in New Zealand and worldwide once all legally required test have been successfully completed.

Douglas records a 'manufacturing cycle time' which is measured from the moment the batch of a product has all its raw materials released, it is ready to be scheduled from manufacturing to start, up to the moment the product is packed and released by Quality Control, ready to be shipped to the customer.

TARGET BUSINESS BENEFITS

The targeted business benefits for Douglas are an increased optimisation of the scheduling to maximise the utilisation of existing manufacturing capacity while keeping DIFOT as close as feasible at the 90% target level.

DESCRIPTION OF MAJOR ACTIVITIES

Purchasing or building a new processing plant to increase capacity would cost Douglas significant capital and also requires several years to implement due to the stringent requirements in pharma manufacturing. Therefore, Douglas is looking at ways to increase their capacity in the interim by creating efficiency within their Production process at their current manufacturing plant in West Auckland.

The project purpose is to support Douglas to achieve their long-term goals by:

- Improving the scheduling efficiency,
- Improving manufacturing plant efficiency,
- To improve DIFOT for key customers.

Such a manufacturing situation requires a trade-off between manufacturing efficiency in the plant and DIFOT at the customer end.

An automatic scheduling application (ASA) has been designed to improve the limitations of the current manufacturing scheduling process. The application front-end is MS Excel, which Douglas employees are used to, and the back-end, performing the schedule optimization, is a specialized solver running on a high-performance computer in the cloud. The factors to be optimised are scheduling efficiency, within the constraints of given production cycle times and sometimes necessary one-off schedule variations, against DIFOT while also considering possible efficiencies for the job of the Scheduler. Case

studies on the topic suggest that an optimisation engine can produce a significantly higher capacity utilisation in a schedule compared to humans while achieving similar DIFOT.

For the job of the Scheduler ASA should aim to minimise labour time. This includes automating the standard decision of the scheduler during scheduling while leaving room for manual one-off adjustments to accommodate special cases. ASA should also automatically create the resulting schedule in Excel replicating the same look and feel the users of the schedule are familiar with. This creates another benefit in that it can reduce human error in the resulting published schedule. By creating the spreadsheet automatically ASA can prevent mistakes such as placing an order step in the wrong column/row, because currently the spreadsheet is manually populated by placing all order steps in the corresponding date (column) and work centre or machine (row).

Methodology

The project team apply the DMAIC Cycle framework to their project. The project team will analyse historic data from the ERP system and initially focus on analysing the capacity utilisation achieved across the production flow through manufacturing via the scheduling decisions for manufacturing. The historic DIFOT data is also available.



Holistic Data

Visualisation

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COMPANY BACKGROUND

HansenCX is a global IT company that develops, implements and supports proprietary customer care and billing solutions for service providers within the utility (energy, gas, water), Pay TV and telecommunication sector. They have over 500 utility clients in 50 countries, servicing over 100 million end customers. Their headquarters is in Melbourne, Australia and with offices in New Zealand, USA, Brazil, Argentina, China, Vietnam, Denmark, Finland and England. Hansen's New Zealand Development Centre develops a utility software solution called Peaceplus 10.2.

Within the utility sector, there are generators, distributors and retailers. These three categories can be state-owned enterprises under a regulated industry where the industry is monopolized and are also separated in deregulated industries where all three sectors are separated, and many companies are involved. Hansen provides billing solutions for both regulated and deregulated industries.

Hansen's New Zealand Development Centre is located at 67 Symonds Street, close to Auckland University.

THE PROBLEM

Peaceplus (version 10.2) is a complete CRM (customer relationship management), CIS (customer information system) and billing engine for energy and water providers worldwide. The product is currently installed at utility companies servicing more than 10 million end-customers. Peaceplus is a major enterprise application using a thin-client browser-based UI, operating on a Linux / Java / Oracle architecture.

The Peaceplus CIS stores a wealth of customer data used for all major utility operations, including: sales and acquisition, call centre operations, web self-service, market transactions, metering, fieldwork, billing, receivables, collections, and much more. The system has over 1,500 database tables, and a typical client will have millions or billions of rows of data for entities such as customers, sites, meters, products, invoices, consumption, etc.

While the current approach to finding and viewing data in the system is typical for enterprise level applications, Hansen believes there is an opportunity to deliver an evolutionary improvement to the customer experience by providing a holistic view of the complex relationships that exist between data.

THE SOLUTION

The purpose of the project is to create a holistic view of the entity relationships that will be fully integrated into the current Peaceplus system. This will be represented in something like a network diagram in an attempt to provide the user with a visual experience with which to navigate around the data with minimal effort while still retaining the value of being able to see the relationships between the entities that they are moving through.

Even though Hansen deals with three different markets (Pay-Tv, Utility, Telecommunication) our primary focus will be on the utility market, specifically energy (electricity and gas) retailers in Japan.

During our project we will only be handling data from this source. The main users of the product are call centre representatives and back office administrators who oversee rate management, collections and error handling. Out of all the entities represented in their database we will be initially focused on a small subset (10-12 objects), including key entities such as the customer, site, meter and rates.

PROJECT SCOPE

The end goal for our project is to provide the holistic view of entity relationships as mentioned above, this will include the visualisation of relationships between the selected main data entities.

Our primary goal is to create a visual representation of the complex relationships that exist between the data entities mentioned above. Alert tracking and some dashboarding features are also an aim but are not the primary objective.

Our project is split into 4 main phases:

- Research & Prototyping
- Development
- Polishing
- Handover

Our project is using an Agile Scrum Methodology throughout its lifecycle, most importantly we will be working closely with our major stakeholders to ensure that they are informed of our progress along the way. With the use of agile we will be making frequent revisions of our system to show progression, it will be tested frequently and any changes along the way will be able to be caught and acted upon early.

REVIEW OF THE CURRENT SYSTEM

As mentioned previously, Peaceplus (version 10.2) is a complete CRM (Customer Relationship Management), CIS (Customer Information System) and billing system for energy and water providers worldwide.



Peaceplus is based on an N-tier architecture shown below:

The clients access Peaceplus via a web browser using their devices in the presentation tier. The servers in the logic tier receive process and deliver requests of the data from the clients to the database. The data tier retrieves the data from the database and delivers it to the logic tier. Once the data is processed in the logic tier, it is sent to the presentation tier. The presentation tier translates the data received from the logic tier as information to be presented on web pages for the clients to view.

The limitations:

- No holistic visualization of the entity relationships on a single screen
- Current screens are perceived as "unexciting" and do not utilize recent UI technical advances (graphical re-sizing, screen drag, color-shading, zooms, etc)
- Difficult to identify temporal relationships between data (e.g. past/future links)
- Alerts are not easily accessible and might pass unnoticed by an inexperienced user

PROPOSED SYSTEM

The proposed system is to capture the complex data relationships between the entities that are mentioned above in a visual way in one view. This will be accessed through any of Peaceplus' relevant pages and is planned to be a pop out screen.

When a user accesses this system, they will be presented with a screen that shows them a visual representation of the relationships in something like a network diagram, showing the relevant links between the different entities associated with that customer, for instance, the user accesses our system of customer A, they are then shown a network of the relevant information for that customer, It could be that the customer has 3 sites, and those sites have 2 meters each, which are associated with a rate.

In this way, the user gets a nice overview of the customer, represented in a simple way, rather than having to trawl through multiple screens in order to see what is associated with the customer.

The system is also planned to have important alerts easily viewable based around the context of what the user is looking at, for example, an active meter doesn't have a rate associated with it, or, a customer has not paid a bill that was due.

BENEFITS TO HANSEN

The utility industry is a long-lasting traditional industry. Retailers, distributors and generators have been around for decades and they like the way they do business by sticking to one particular CIS/CRM system as it can be too costly to change. Therefore, the billing provider within this industry, like Hansen, are reluctant to change. At this point in time, there is no need to change as their customers seem satisfied.

Hansen however, has a different view on that. One of Hansen strategies is "continuous improvement for future success". This demonstrates that Hansen wants to provide the best service possible to their clients, whether now or in the future. They want to be ready of what is to come, be more proactive and future looking. By investing in existing software rather than creating new products and services they compromise their profit to ensure customer satisfaction.

By developing a holistic and modern interface we enable Hansen to create and capture value. As a result, Hansen

- Develops lasting relationships with their clients
- Provides value with no strings attached
- Creates a future proof design
- Gains a competitive advantage
- Enhances their reputation which attracts new clients
- Achieves their strategies

DESCRIPTION OF MAJOR ACTIVITIES

We identified four major phases: Research, Development, Polishing and Handover.

Those phases depart from the traditional project management methodology, due to our project using Agile Scrum methodology.

The research and prototyping phase focuses on information gathering information about the scope of the visualisation field and based on this, applicable technologies for ADV and UI/UX will be researched and then evaluated over a matrix to find which are best suited for our project and from this producing a shortlist in order to show to Hansen. Also included in this phase is prototyping, where we will be creating prototypes with the tools we have selected to show their functionality at a simple level and to show how they integrate into the Peace system.

The development phase is mainly based on the creation, design, testing and implementation of the project. This is the longest and most important phase in our project. It is critical to work closely with our sponsor Hansen to make sure they are satisfied. Also, this is a phase where we can think of and add additional features that are outside of our sponsor's request.

After the development phase has come to an end, the third phase, polishing, has been included as a request by Hansen to ensure that the delivered work is efficient, bug free, and up to their expectations.

Finally, we conclude with the handover phase in which we provide training and documentation for Hansen along with a demonstrative sales pitch to show our work in action and to provide insight on what we have achieved.

All phases are split in numerous two-week sprints. The sprint is reviewed and completed on every second Tuesday and the new sprint is kicked off on Wednesday. The review session is used to demonstrate to our sponsor what we have achieved for that sprint and to confirm their satisfaction. The first sprint starts after the first documentation and presentation on the 11. of April. The sprint content in every phase is about the key activities of each phase that are research, prototype, design, testing, implementation, bug testing and functionality.



Growing market share under lumpy demand

Sponsoring Organisation	United Steel, Auckland Branch	United Steel Auckland Distribution Centre and Head Office 68 Harris Road, East Tamaki
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COMPANY BACKGROUND

United Steel is part of United Industries, a group of companies providing a wide range of products of products and services to builders in various sectors of construction industry. Each company of the group holds a substantial share of their market segment and some companies of the group have branches in almost every region of New Zealand. As a result of such a broad market offering and penetration, hardly is there any builder in New Zealand unaware of the group products and services.

United Steel's products and services are divided into two parts: structural steel and reinforcing mesh.

PROJECT AIM

The challenge for United Steel is to grow their market share under lumpy demand.

The Problem

"Stock turns is all I care about" (Richard Anyon, United Steel CEO).

The sales pattern can be very simple: a large-size universal beam used in construction of commercial buildings for example shows no sales for several months in a row followed by a large volume sold in one month. For David Munro, who came to the steel business with decades of experience in the construction industry, the reason was clear. "When they build a warehouse they need not one or two pieces but at least ten. We call this lumpy demand."

However, it was not so clear if the company has been handling that lumpy demand the best way. In just a few years since the changes in the building safety regulations caused by the deadly 2011 Christchurch earthquake came in effect, United Steel managed to more than double their reinforcing mesh business, claiming now about 50% of the market with about 7,000 tons of annual sales. However, the market share of their structural steel business (universal beams, channels, columns, etc.) barely saw any growth. "Our sales reps say that builders appreciate one-stop shopping, meaning we should stock everything. Now, each of our 300+ structural steel products comes in about 10 different sizes and we need to keep in stock at least 10 units of each ... multiplying by 5 metric tons per piece (on average) ... by \$500 per metric ton ... this is about 10x more than we can fit into our warehouse and no one can afford freezing so much working capital. Hmm ... we do want to grow our market share and we will."

REVIEW OF CURRENT SYSTEMS

The structural steel side of United Steel's business supplies customers with products such as universal steel beams, columns and channels. It is different from its mesh counterpart in several ways. United Steel imports them from overseas, either buying from mills directly or from large steel traders (depending on price, availability, formal or informal long-term commitments, and mill/trader reputation). Buying from a mill is generally cheaper than from a trader but involves longer lead times (3-6 months vs. 4-6 weeks).

Replenishment orders are based on several factors such as the rolling schedules of the mills, the inventory position of each product and expected sales. Every week the procurement manager and the sales team hold a joint meeting to review the stock availability and anticipated sales of certain product categories.

Customers and construction technology

Typical uses for structural steel range from buildings to infrastructure, such as bridges and towers in the construction industry. United Steel services a wide range of customers within the infrastructure, agricultural, manufacturing, engineering and construction industries.

The demand for structural steel is project-driven. Frames of a multi-storey building generally require steel of larger sections than frames for single-storey buildings. In both cases, frames feature a relatively small variety of the elements used in relatively large numbers.

Steel mesh has various applications such as making fences but by far the most important one is to reinforce concrete when making building foundations, roads, walls. Unlike structural steel that is primarily used in industrial building and large civil objects, steel mesh is used for making concrete foundations of construction objects of any type, including single-storey residential houses built without using any structural steel.

Competitors

Some of the major competitors in the New Zealand structural steel market are Vulcan Steel, Steel & Tube Distribution and Fletcher EasySteel. As a relatively new and small player (market share about 10% of 80,000-100,000 tons New Zealand total annual consumption), United Steel faces several challenges. One is that the suppliers of United Steel are located in Japan, Korea, and China whereas, for historical reasons, some of the larger competitors have their quotas on Australian mills located nearby. Another is that the competition is rather intense. Construction steel is a standardized product and in order to gain (or not lose) customers companies have to either compete on price or by providing "extras". One of those extras became availability of product in stock to the extent that not only steel merchants keep enormous amounts of stock but also routinely buy products they do not have in stock from other merchants and sell to their customers without profit for the sake of proving their customers a convenience of instantaneous "one-stop shopping". Interestingly, as David Munro noted, builders know exactly from their blueprints what types of steel they will need months and often years in advance so the whole industry could operate "Just-In-Time", without having to hold any inventory. Yet the builders' expectations are that steel merchants should have everything in stock.

Quality, regulators and compliance

Christchurch 2011 earthquake proved the nation's fifth deadliest disaster. 185 people died. 133 of them died in commercial buildings collapsed due to structural deficiencies. This tragedy resulted in a major change in the construction industry. Regulators require buildings and materials used in construction to be more seismic resilient.

TARGET BUSINESS BENEFITS

The targeted business benefits for United Steel are an optimisation of the company's inventory management operations with an emphasis on products that are experiencing lumpy demand. More specifically, United Steel's procurement process may be improved by better forecasting order

quantities and setting more appropriate reorder points for each of these products with lumpy demand. This should increase inventory turnover and lover stock-outs, which in turn will free up capital and increase profitability.

DESCRIPTION OF MAJOR ACTIVITIES

The overall objective is to help United Steel maximise their profits. The two main drivers of profitability are inventory management and stock turns. This will serve as the central focus of the project.

Inventory management refers to the process of how the steel products move from the suppliers into the warehouse and eventually out to customers. If the stock turn is too low, it may indicate that the business is ordering too much and then if forced to waste resources storing it for too long. If the stock turn is too high, it may indicate that the business may not be able to fill all its client's potential orders and is losing out on revenue. Therefore, any business aims to increase stock turns while also minimising the chances of products being out of stock.

A Power BI dashboard visualisation of the sales and inventory history and also a product inventory replenishment simulation will be created using R to aid United Steel's procurement process. The dashboard is a visualisation tool used to illustrate a product's inventory changes and its historical sales trend. The graphs give a holistic view and highlights products with issues in inventory. The simulation is a statistical analysis tool using an EXCEL front end that can assist United Steel's product replenishment decisions. Using historical data, the simulation can evaluative alternative inventory replenishment strategies that can help United Steel to decrease its inventory levels while maintaining high product availability.

Methodology

The project team apply the DMAIC Cycle framework to their project. They analyse past sales and purchasing data which is available from the company's database. It should also be investigated how it may be possible to account for fixed costs when calculating the Return on Investment (ROI) for each product. The data will be statistically analysed using R Studio and visualisations will be produced to communicate the results to the company in a user-friendly format.



Project Sonar

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COMPANY BACKGROUND

ASB first opened its doors on the 7th of June 1847 on Queen Street as New Zealand's first savings bank. From that day ASB has pledged to serve the community and help kiwis grow.

In their pursuit of this pledge, ASB has been a leading innovator for banking in New Zealand such as being the first bank to introduce an online banking solution (FastNet Classic, 1997) and the first majorbank to implement an online phone-based high-interest savings account (FastSaver, 2004).

However, these are but two of the many accomplishments and inventions that ASB has produced since its creation, in order to bring an ever changing and adapting banking solution that is tailored to give customers the best banking experience possible as an 'Unbeatable Team, Unbeatable Customer Experience'.

It's this dedication and commitment that has lead ASB to winning many awards in its long history. The most recent of which being named 'The New Zealand Bank of the Year' by The Banker Magazine, UK for the fourth year running.

Our project is designed to align with these achievements and innovations that ASB has produced in order to keep their pledge fulfilled and expectations realised.

PROJECT AIM

The Problem

ASB Retail Banking has a legacy workforce management system called StaffRite. StaffRite was created in-house and implemented 10 years ago. This system is used by their Branches to organise their staff, gather reports and based on transaction analysis; forecast how many staff will be needed in the future. This system is 10 years old, and whilst it was world class at the time, it has become less user friendly, and without a solid training base is not providing the same business benefits today as it once did.

The main problems with the system are its outdated user interface, reporting that does not meet the modern business needs, and forecasting which is no longer relevant to today's Banking environment. The outdated user interface means that staff spends unnecessary time dealing with unintuitive functions and layout than actually performing the task at hand.

The main interface is traditional and no longer aesthetically pleasing. Due to the evolving business usage it now it lacks intuitive structure, and contains tiresome functionalities. This results in manual work for the frontline and decreases productivity and trust in the system. The ability for the Branch Managers and HO (head office) to construct and view reports from the data is an essential functionality of the system. However, for such a crucial functionality, it is not easily accessible. Some of the data that is collected by StaffRite is no longer relevant to ASB's current business activities, resulting in redundancies in data and reporting. Therefore, inevitably these issues result in poor utilisation of ASB's workforce, hardware and software resources, and time.

The Solution

The main objective for Project Sonar is to deliver a solution that brings ASB Retail Banking the business benefits that StaffRite is no longer able to do. StaffRite was built 10 years ago and it was ahead of its time. ASB's business needs have evolved since then. The issues of inaccuracy, irrelevance, and underutilisation of resources will be addressed. We realise that our scope is dynamic, by which we mean that; through the elicitation process with the workforce that uses StaffRite on a daily basis along with HO and HR, we will analyse their requirements and precisely define the solution scope for the

project. As of now we know that our scope includes the roster management system and a report. The definite aspects for the projects irrespective of the scale of the scope are a modern interface, eliminating inaccuracies, relevant functionalities, and making the system robust.

A modern user interface for front line staff will be implemented. This will make staff more efficient at their jobs, increasing productivity and allowing them to spend more time facing and communicating with customers.

Based on the information we gather though our elicitation process, we will make sure that the system's functionalities are cohesive with the requirements of the workforce, HO and HR. But also of which bring ASB the most business benefit.

We will also make the system more robust, in terms of eliminating the possibilities of human error. The solution will have contingencies in place that will prevent users from doing anything that could cause ASB technical or business problems in the future. This will not only make the new system more reliable but also assist in creating a healthier workforce.

For the scope of this project we are aware that training for the users is also an aspect we need to keep in mind. For any system that is being either changed completely, or updated, the users need to be trained. Not only does this make them more responsive to the change but also enables them to fully utilise the functionality of the system to the optimum potential. Therefore, keeping our documentation thorough through the process of this project will be essential.

We will not be implementing the training for the system as there are teams in ASB that do this for any new project that is rolled out. However, out in-depth documentation will help the training team at ASB to create modules in the most informative manner possible.

PROJECT SCOPE

StaffRite has three primary functions; Roster management, reporting and data, and forecasting.

After research and sponsor discussions, it turns out StaffRite's current forecasting system is redundant, and thus we will instead of just removing it from scope, we have decided to remove it from the system.

Reporting is also out of scope, bar one report that we will include. The reason for this is that based on the analysis that we did of the StaffRite reports that are generated, that one of them was viewed significantly more than the others. This was reinforced from our stakeholder interviews where we received the same feedback.

Current Scope

- Redesigned roster interface.
- One Report.

Out of scope

- All other reports.
- Training (this will be handled by the ASB module team)
- Forecasting

CURRENT SYSTEM

Structure

StaffRite operates around the rosters for staff and the forecasting system. The master roster is the template that is used to generate rosters for every branch. Only the managers and people with delegated permissions are allowed to edit and overwrite the generated roster for a fixed time period.

StaffRite was created 10 years ago and due to the rapid changes in the nature of banking it has become outdated. The three main functions of StaffRite are the roster management, reporting and data, and forecasting. The system uses current and historic data gathered by the roster management to create reports and data for the branch managers, HR and HO use.

The roster management system is used by the front line staff and the branch managers on a daily basis. The branch managers use the system to view and monitor the workforce. Head Office use the data derived from StaffRite to make informed business decisions.

PROPOSED SYSTEM

The proposed system is a web application using .NET technologies. We will be using ASP.Net MVC to create the application. This application is going to have a sleek and modern interface whilst still providing a functional and comprehensive user experience. Furthermore, the reports are going to be updated to suit the requirements of HR and front line managers. Part of introducing this system will involve a change management process as there are many end users that will be interacting with this new system.

Benefits to ASB

ASB has several main benefits to the proposed system. These include more accurate and relevant data, less user errors, and a cohesive business process associated with the system. These will be addressed below.

More accurate data is a key benefit to ASB. The nature of banking and transactions has changed since the development of StaffRite; therefore the data that was once prioritised is now less needed and other data is seen as more important. Given this the proposed system will be focused around capturing the new relevant data for banking, and removing or adjusting old data to adapt it to the new business environment.

The proposed system will also be designed in a way that reduces the chance of user errors. With a functional and revamped design the new system will have a more user friendly experience. For ASB this is beneficial as a candid design will enable managers to use the system with ease. Furthermore, currently user errors can result in inaccurate data being generated or even wages being incorrectly calculated, therefore our system will deliver the benefit of reducing the chance of these potentially costly events from occurring by providing a more intuitive interface.

The final benefit to be discussed is a more cohesive and straightforward business process associated with the system. The new system represents a fresh start for ASB's workforce management practices. Given this there is a great opportunity to align the system with the relevant and contemporary business process that ASB is using. This means that overall the system can be used instinctively which will result in greater efficiency and effectiveness of its usage.

Benefits to ASB's clients

The proposed system is going to benefit clients that are dealing with ASB's frontline employees.

One of the key benefits is having the right people, in the right place, at the right time. For example; during high peak times, having more staff assigned to tellers will enable more transactions to occur, with less time spent for clients waiting in line.

A further benefit to developing this system for clients is that managers will be able to better spend their time working on helping employees build relationships with their clients, rather than spending time working around and using the old system.

• Benefit 1: Free up staff time

Problem: Repetitive, redundant actions such as assigning the same cash number to an employee each week, causes too much valuable time being spent on the system rather than on interacting with people, resulting in it being used to tick boxes rather than make the managers lives easier.

Business Benefit: Simplify the process, saving time and reducing errors. The aggregate reduction of time spent performing redundant, repetitive actions could equal hours of staff time spent on more productive tasks and / or more time with customers.

• Benefit 2: One roster, not many

Problem: In most cases, the roster system is not being used for its correct purpose; some managers have even created their own roster spreadsheets in Microsoft Excel because they find it easier and faster to use.

Business Benefit: Save time and capture more data. A faster and easier to use roster within StaffRite would see staff migrating into StaffRite to manage data within the one roster, instead of creating a useful roster in excel and only bringing over the necessary data. This would save time for managers as there would be no duplicated effort, and along with this, StaffRite would capture more data because all data is being input to StaffRite, not Excel.

Benefit 3: A More Relevant View

Problem: Some functions are not used at all, but take up a large amount of screen space. Some functions are also used by some staff, and not at all by others.

Business benefit: Staff are able to customize their view so they have more personalized interaction with the system. Furthermore, the issues with the system relate strongly to data entry which contributes to reports and forecasting, this data is outdated and therefore generate outdated reports. Necessary information needs to be collected from the managers so that useful and informative reports can be generated.

• Benefit 4: Full Utilization of Functionality

Problem: Currently there is a large degree of disparity between the long term users of StaffRite and the newer users. The older users understand most of the functionality that StaffRite offers as they were taught directly from its creators. The newer users have had to figure it out themselves leading to a lack of knowledge of StaffRite's functions.

Business Benefit: Better usage and fewer errors. Introducing a new system with a modern and intuitive design will enable all users to gain a better understanding of how it works. Furthermore

our team will be interacting with ASB's change management team to ensure that this issue doesn't arise again.

• Benefit 5: More System Information

Problem: There are only two people at ASB who fully understand StaffRite's data flows and code base. Due to this there is a reliance on these two key persons.

Business Benefit: Reduced risk and increased information access. Through this project our team will be able to identify current data flows, find connections to other systems, and update the front-end code to reduce errors from occurring. By documenting this process not only will we be reducing the reliance on the two key persons, we will also enable others to understand the system and the decisions behind aspects of its construction.

DESCRIPTION OF MAJOR ACTIVITIES

This project is dynamic in scope and must be built in the vision of the stakeholders that will be using it on a day-to-day basis. Considering this, an agile approach is going to be taken in regards to the development of the system. This means having broad phases for a high level plan and then using the individual sprints to apply an adaptive and iterative development strategy. At this time sprints are planned to be two weeks with sprint retrospectives to record our productivity, which will assist in dealing with our management of scope in the project.

Sprint 1 – 4

Sprints 1-5 are dedicated to elicitation of requirements and design of the solution. The main goal for these sprints is to define the issues of StaffRite and present these through the Pain Points Report. These will be used as findings to propose the solution space.

Sprints 5 – 13

Sprints 5-13 will be focused on iterative design and development of the system solution. The main goal is to deliver front-end code blocks around the design of the new system, so that it can be built on at a later date. This is the main development section of the project.

Sprint 14

The last sprint will be the project handover sprint. The main goal here is to deliver the comprehensive documentation to ASB as well as validating the solution we have presented to the branch managers' issues. In this sprint our critical success factors will be confirmed by Trevor.



Impulse

Asset Quality Reporting Tool

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COMPANY BACKGROUND

The Bank of New Zealand (BNZ) is one of New Zealand's big four banks with over 5,000 employees across 165 stores, as of May 2017. BNZ has been operating since October 1861 when they opened their first office in Auckland. Today, BNZ is operated as a subsidiary of the National Australia Bank (NAB), retaining local governance by having New Zealanders occupying its Board of Directors. BNZ offers a variety of financial services with the mission of helping New Zealanders be good with money to enable a high achieving New Zealand.

The Business Intelligence (BI) team at BNZ is responsible for the delivery of enterprise wide reporting solutions. The team supports the bank with a strategically aligned pipeline of BI projects and initiatives; with a key focus on knowledge, integrity and responsiveness.

PROJECT AIM

The Problem

The current Asset Quality (AQ) reports were built using Silverlight approximately 10 years ago. Today, Silverlight is now a deprecated technology. Knowing this, the Business Intelligence team at BNZ is seeking an opportunity to overhaul the reports using modern and up-to-date technology.

The current AQ reporting tool contains eight individual exception reports, and each report has a series of complicated business rules embedded in the stored procedures and MDX queries which it sends to the OLAP Cubes. Whenever there is a policy change, for example, changes to the customer rating system, the business rules are manually edited on top of the existing rules. Also, the current reports have very limited data visualisation.

Furthermore, the current AQ tool does not integrate well with a banker's typical workflow with respect to time. The current user interface (UI) is cumbersome to use and the current typical workflow involves accessing several of the individual reports within the AQ tool. Accessing other systems such as *BIS*, viewing several individual exception reports, and a cumbersome UI adds up to wasted time.

The Solution

New AQ reports will be built using modern technologies, in particular, Tableau. The new reports will be redesigned, and a whole new Banker View will be developed to streamline a banker's workflow.

Tableau will be used to create the new reports. The data will be pulled from the restructured data layer into Tableau's data set. Tableau is also a powerful data visualisation tool.

The underlying data model will be reworked to accommodate new business rules.

PROJECT SCOPE

The end goal of this project is to rejuvenate the current Asset Quality reports.

The project has been divided into three smaller deliverables:

1. Build the front-end: create new reports using Tableau and integrate it into Newton.

- 2. Rework the underlying data model.
- 3. Connect the two above parts.

During the discovery phase, the complexity of reworking the underlying data model was under-estimated. Therefore, BNZ has hired a consultant to work on the data model. For the student team, the project scope has been narrowed down to:

- 1. Define the user requirements.
- 2. Deliver the front-end using Tableau.
- 3. Supporting the consultant by creating views and stored procedures to capture new business rules.

The project is managed under Agile methodology. Any changes in the scope caused by roadblocks will be managed and updated regularly.

REVIEW OF THE CURRENT SYSTEM

To help understand the current system, it can be broken down into three layers: presentation, data, and source.

Within the presentation layer is the reporting tool itself. This reporting tool is built using Microsoft Silverlight and is hosted in BNZ's internal servers. Users access the system via a web browser.

Below the presentation layer is the data layer. The OLAP cube and BNZ's BI data warehouse resides here. The presentation layer communicates to this layer via MDX queries and stored procedures.

Beneath the data layer is the source layer. BNZ's data warehouse is populated with data from this layer. This layer is comprised of several other remote databases.

There are several limitations of the current system:

- 1. The current user interface is outdated.
- 2. There is no banker-view of the reports. Every Time users have to manually filter the report to get the information they want.
- 3. There are no export and copy and paste functions for the current system.
- 4. Business rules are scattered across the presentation and data layers. This makes it difficult to reconcile data output by AQ and other sources as it becomes unclear how the data has been transformed through AQ.

Proposed System

The proposed solution is to create new reports with Tableau, with a reworked underlying data model. These new reports will be accessed internally in BNZ using a browser through Newton (a bespoke web portal).

When a user clicks on *Asset Quality* in Newton, a user will be able to see the total tasks that need to be done via the *Banker View* from the main page. They can then view specific reports

to finish their tasks, for example, contacting customers who have maturing term loans, or contacting customers with significant change on their rating. Tableau reports will be stored in BNZ's own Tableau server, and these reports will be integrated using Tableau's API.

Business rules will be pushed down into the data layer using views and stored procedures. Tableau will then access the data layer through these views and stored procedures to create the new reports.

Benefits to BNZ

Reduce errors and unnecessary workload

The data accuracy will benefit the end-users especially the high-level users from the Risk team. The risk analysts have one other reporting source, and they will always compare these results with that from AQ. If there are any inconsistencies, then analysts have to take extra time to work out the reason. Since the back-end database will be restructured and the business rules will be consolidated, the users will be able to get the accurate data, and therefore avoid time spending on figuring out why the data is inconsistent.

Broader Analytics with meaningful insights

The proposed system gives staff a broader insight on the assets quality data, with meaningful data visualization generated by Tableau. Since the trending graphs and charts are shown together with the required data, the front-line users are able to quickly understand the meaning behind the data and in turn can action as appropriately. E.g. Trending view on customers CRS ratings, this will allow us to predict future changes and if a customer should be monitored.

Enhance User Experience

The modernized user interface with adjustments on what information to include in the report will help users easily get the information they want. Based on the user requirements gathered, users are most likely to use certain fields, and some fields and functions are never used by the users. By developing a front-end based on customers' requirements, users are able to quickly gather the information they want, and therefore the productivity is increased.

Reduce future development team load

The BI team is responsible for delivering the internal reporting tools. The future development teams can adapt and reuse the methods that the student team has successfully applied for this project, such as developing with Tableau, minimizing the impact of business rules etc. This reduces the development times on a future system development team.

Description of Major Activities



The development methodology used in this project is Agile. The project has three main development iterations. The main goal of the first iteration is to set up the foundation for the later stages of development, this includes understanding the current system, exploring the toolset and understanding the users' requirements. The second stage is to define the feasible solution of how the new system should be designed, based on the user requirements. The final stage is to deliver the solution, which includes testing and preparing required documentation.

Iteration 1: Investigation and Analysis

In Iteration 1, three main tasks will be running simultaneously. The analysis of the current system is extremely important as our findings will have a very strong influence on how we proceed with the rest of the project. The evaluation of Tableau helps the team to understand its potential such as its ability to generate meaningful and insightful data visualisations. Conducting the customer experiments allows the team to have a better understanding of what users really want from the proposed solution.

Iteration 2: Define the solution

Iteration 2 will focus on further discovering customers' requirements. The team has understood that the customers want the report to have bank view, as well as having the ability to export the exceptional reports. The team has designed the low-fidelity prototype based on the requirements, and it is approved by the sponsors. The team will have regular meetings with the system architects to define the final solution as we progress.

Iteration 3: Delivery of the final system

In the final iteration, the team will be developing the front end of the reporting tool while concurrently with our technical advisors who will be developing the back-end of the database which we will be using to draw our data from.

Testing

Due to the nature of Agile methodology, testing will be done whenever new features are added and at the end of every iteration. Frequent testing will ensure for early detection of bugs and errors. This in turn will reduce the overall complexity and costs of the project in the long term. Resultantly this will generate a more stable and well implemented final system.

Documentation handover

At the end of the project, a set of documents will be prepared and handed over to BNZ. These documents will be the historical reference, which provides detailed information about the project. The documents include technical documentation and the user guide.



ThreatInspect Intel

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COMPANY BACKGROUND

KPMG is one of the big four professional services firms and provides services in tax, auditing and advisory. KPMG is a worldwide company that operates in 155 countries and employs over 174,000 people in its member firms. KPMG was founded in 1987, in which the firm's name was derived after the merger of KMG and Peat Marwick. These firms were also founded through multiple mergers in the past. Individual KPMG member firms are affiliated with KPMG International, a Swiss entity. KPMG the New Zealand member firm of KPMG International, is the only big four partnership in New Zealand that is wholly New Zealand owned.

PROJECT AIM

The problem

Cyber attacks are considered to be a top business risk. Large companies are enhancing their defences with expensive high tier solutions. Because of this, Attackers are now targeting small and medium sized enterprises as they may not be able to protect themselves.

KPMG currently offers *ThreatInspect Intel*, which is part of KPMG's Accelerated Security suite, designed to help small to medium business protect themselves by providing early detection of cyber threats.

However, *ThreatInspect Intel* currently has limitation. The system currently utilises a manual process of entering client information. The current system also lacks architecture and consists of an unstructured query process which limits data flow, data sources and extensibility of the system.

The Solution

The fundamental objective of this project is to build *ThreatInspect Intel* out into a single automated solution. This fully automated solution will have the capability of being extensible, which will allow the integration of more threat intelligence sources.

PROJECT SCOPE

The scope of this project consists of building the system into a single automated solution that will be able to integrate more threat intelligence sources and have a well-designed architecture which will allow data sources that are added in the future to work together efficiently.

The manual process of adding client's keywords into the database server will be replaced by an automated process through the use of a data analysis server. The software will be developed using Agile methodology.

There will be constant iterations supported by regular reviews between the student team and KPMG's representatives throughout the project.

The deliverables for this project will be: detailed requirements, an operational system in line with that proposed system demonstrating key functions, a user manual, technical manual and suggestion guide for future development will be delivered at the end of the project.

Additionally, there is a potential to extend the existing scope during the course of the project if it is feasible for the student team to complete the system implementation and arrange more resources.

Possible project scope additions:

These features may be added on what the system should do if the project is completed ahead of schedule.

• User Interface

A simple and user-friendly interface that the security analyst can use to search for keywords with their corresponding data list will be helpful in the system. This feature will be built to allow web-apps form easy access to the database. The security analyst is able to obtain and view data when necessary. This feature will be added on when all of our fundamental requirements are built.

REVIEW OF CURRENT SYSTEMS

The current system uses a data analysis server which uses Python to pull data from paste sites such as Pastebin. Using Pastebin as an example, every 15 minutes, the system will pull the last 50 public pastes from Pastebin.

These pastes will be filtered with the relative keywords entered by the security analyst, e.g. email address, domain name. If there is a match, an email will be sent to the security analyst containing. They will then determine if that information is considered to be a threat to clients, and will contact clients if this is the case.

PROPOSED SYSTEM

The proposed system will be supported by three servers: database server, data analysis server and mailing server.

The data analysis server will be connected to multiple data sources through their APIs. The data analysis server will then clean and filter the data into a string type and upload the data into the database. The database will be used to store the significant details of clients, their preferred security concerns and any data retrieved from data sources. The database server will compare and filter the data before it sends the data to the mailing server. The mailing server will be responsible for alerting the security analyst if the latest data retrieved relates to the security concern of the clients.

TARGET BUSINESS BENEFITS

The proposed system of *ThreatInspect Intel* has many benefits that could positively impact KPMG and their security analysts, these benefits include:

Automated Solution

The security analyst at KPMG will no longer have to manually hard code to add or update clients' information i.e. domain, IP address and email address is no longer needed. This will increase efficiency and minimise any human errors.

• Integrated system Architecture

A thoroughly designed system architecture will be provided, this will ensure that servers will work together efficiently when more data sources are integrated. Furthermore, a welldesigned architecture will minimise the time taken to understand the system before any future maintenance and further development. This is because everyone can easily understand how the system will work by looking at the software architecture

• Extensibility

The proposed system provides the capacity to integrate even more data sources in the future by building a database to store data retrieved from variable data sources.

DESCRIPTION OF MAJOR ACTIVITIES



Detailed description of major activities

Research into data sources

As integrating data sources into the system will increase the accuracy of the results provided to KPMG's clients, we will be exploring more data sources as we carry out the development process. We will also need to obtain the APIs of these data sources and integrate them into the system and so this phase of the project will be an ongoing process.

Building Database

Building a database is key for allowing the system to be extensible. An ERD Diagram will be designed to provide an architecture of the database. The database will be built from this ERD and changes will be made to the ERD if necessary. After the database is built, a data comparison activity must be stored in the database so that the data will be filtered to only data that relate with the client's keyword. This is to ensure the data is filtered before it is queried by the mailing server.

Build Data Analysis Server

The data analysis server is needed to interact with the database through pulling and uploading data. After obtaining a sound knowledge in Python, APIs and other essential tools, the data analysis server will be built.

Build Mailing Server

The mailing server will begin development after both database and data analysis servers are successfully built. Once the mailing server has been built, the servers will be integrated together.
Debugging and Extra Features

After the system is successfully built, the project team will run tests on the whole system to make sure the servers are working perfectly fine together. Servers must be able to interact with each other correctly.

If there is any remaining time, the project team will create a user interface for the system.

Handover

Once the system has been completed and any extra features are implemented, we plan on handing over the system to KPMG along with the relevant user and testing manuals.



Project Short Circuit

Track My Spending

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COMPANY BACKGROUND

In 1847, ASB opened as the Auckland Savings Bank with the pledge: 'to serve the community; to grow and to help Kiwis grow'. And that is very much what ASB is about today. ASB is a leading provider of integrated financial services in New Zealand including retail, business and rural banking, funds management and insurance. ASB lends, protects and invests money for 1.4 million customers and have more than 5000 people working across New Zealand who strive to provide customers with outstanding services and innovative financial solutions. ASB is a member of the Commonwealth Bank of Australia (CBA) Group.

ASB have achieved numerous innovation achievements. ASB became the first bank in New Zealand to offer internet banking via their FastNet Classic website in 1997. ASB's most recent innovation is 'Clever Kash,' a cashless money box designed to help kids experience the magic of saving in a cashless society. ASB put emphasis on serving their community by helping their customers "manage their finances better and reduce the effort they put into banking, so they can focus on achieving successes in their lives." Project Short Circuit is the latest initiative to aid in this vision for ASB.

PROJECT AIM

The Problem

ASB's online banking service; FastNet Classic (FNC) offers a range of features to help customers manage their finances. Of these features, Track My Spending (TMS) is an expense tracking tool which enables ASB customers to gain insight as to where and how they spend their money.

The current TMS feature provides customers the ability to select accounts they wish to track their expenses for, then assign any un-coded transactions to more meaningful categories such as 'Clothing' or 'Food'. Once all relevant transactions are coded, they are presented with visuals of their expenses in the form of a pie chart and bar graph.

While TMS provides significant value to customers who wish to be smart with their finances, it has some limitations. It currently requires customers to manually set-up the service by selecting every account they deem to be transaction accounts. From there, they must manually categorise their transactions. At present, there are too many steps involved with using TMS and thus can be seen to be tedious to some users who may not wish to exert the time or effort required to follow these steps. The data presented to users may also be inaccurate, with internal transfers between accounts being regarded as income or expenses. The processed data is then presented to the user in a relatively unintuitive format that is limited in its ability to provide meaningful information. The last limitation of the TMS feature is its inability to include information from non-ASB accounts. It is an ASB solution, that currently only allows data from ASB accounts therefore customers with accounts across multiple banks, or those that transact with other financial services providers, would not be able to get a truly complete view of their finances in TMS.

The Solution

The high-level objective of Project Short Circuit is to ensure TMS is more efficient for users and requires minimum effort on their behalf. This saves users time and energy, leading to an increased propensity for customers to use and recommend this feature. As a team, we want our solution to both automate the initial account(s) selection for customers and the categorisation of transactions. This speeds up the process of getting TMS going, and saves customer time and effort as they do not have to manually set up and maintain the system.

The automation of TMS would therefore allow customers to have a spending analysis visible to them in a dashboard straight away, rather than having to opt-in and set up the system.

PROJECT SCOPE

The project scope encompasses automating TMS allowing for unified and comprehensive spending data to be available to customers at their fingertips. It is imperative that we meet the identified needs of the stakeholders; therefore project scope may change as the project progresses. In order to carry this out, we will be required to complete an analysis of the existing TMS system to understand what customers require in terms of Personal Financial Management (PFM) and to identify business rules required for the proposed solution. These requirements will aid in the design of the technical algorithms.

Once we have covered our project scope and have reached what we and our stakeholder determine to be requirements for the Minimum Viable Product (MVP), we can explore options of additional features. Our ambitious goal would be to have a more intuitive dashboard for TMS. This includes data visualisation as described above. We must be careful to control the project scope so that we are delivering quality not quantity at the final handover.

REVIEW OF CURRENT SYSTEM

The Current TMS Interface

Currently, the TMS feature itself is located within ASB's FastNet Classic service under the 'My Money' tab. The system is relatively easy to use, however the UI has not been refreshed since the original build, and looks and feels outdated compared to other spending trackers such as those found on Sorted.co.nz. The feature is designed to work as a web application so currently, TMS only works on web browsers and cannot be accessed via ASB's mobile application.

Categorisation Method

TMS requires the customer to categorise each transaction. The rules for categorisation can be applied to both past and future transactions, however they are currently only for that one user.

Current TMS Hardware Platform and Software Environment

TMS can only be accessed via a web browser on a desktop or tablet, making the hardware platform somewhat basic. It cannot be accessed via the ASB mobile app, ASB Mobile. In terms of the actual infrastructure, there is a farm of 20 servers which service FastNet Classic, which are updated as customers make transactions.

In regards to the software environment, TMS has a separate code base from FastNet Classic, however it is presented as part of the online banking experience by having user sessions seamlessly passed to it as customers navigate across. The TMS application has a .NET MVC architecture whereby the system is partitioned into separate logical components; the model, the view and the controller. In the backend of the system there are several relational databases, managed by Microsoft SQL Server. The main data store holds the Online Transaction History (OTH) information. This is where TMS retrieves transactional information from customer bank accounts.

PROPOSED SYSTEM

The proposed solution will be an enhancement to the current TMS system. Ultimately, the user should be able to enter the Track My Spending feature and not be required to spend significant time before getting a simple, relevant and unified view of their transactional data. To achieve this, our proposed solution will include the automation of the initial account(s) selection for customers as well as the automation of categorising transactions, using existing and crowd sourced data. These are explained in more detail below.

Automatic Selection of Accounts

As opposed to manually selecting which accounts customers want tracked, the proposed solution should be able to determine which accounts are regarded as spending accounts (accounts in which external transactions are being made). It must also be able to determine what is regarded as a transaction (money coming in and out). If transactions are between a user's account and another account they own (internal transfers), these should be excluded to avoid inaccuracy. Issues with internal transfers will require engagement with TMS users and ASB stakeholders to develop business rules that allow for auto setup.

Auto-categorisation

Once TMS can automatically select spending accounts, our proposed solution should aim to autocategorise transactions. This can be done through mapping a customer's transactional data to similar transactions that other ASB customers have made and have already categorised. We will also construct a way in which customers can make changes to an auto-categorised transaction that may be inappropriate for that user. Possible enhancement of the visualisation of income and expenses may take place. Our aim is to make the data visualisation more intuitive, user friendly and engaging to the customer while providing them with more insightful information.

Proposed TMS Hardware Platform and Software Environment

Currently, TMS is a web application and all user activity is completed over the internet. ASB customers will continue to access the application via a computer or any other device with a web browser. In terms of TMS' infrastructure, additional middleware and hardware may be required and integrated to the current TMS system. This will aide in managing the additional overhead of the process of auto-categorisation per user.

As for the software environment, the proposed solution will utilize .NET with an MVC architecture. The front-end of the system will most likely be delivered using C#, HTML, CSS and JavaScript, with the possibility of leveraging JavaScript libraries for intuitive data visualisation. The back-end of the system will be managed by Microsoft SQL Server, as the database management system (DBMS).

TARGET BUSINESS BENEFITS

The proposed solution will provide strategic business benefits to ASB. If our project is successful, there will be an increased propensity for customers to use the tool and recommend it to others. This should lead to a high customer satisfaction for ASB's online service offering.

If higher customer satisfaction is accomplished, ASB could be in a position where customers become even more loyal to the organisation seeing TMS as a vital element to their day-to-day life, reaping the benefits of learning how to properly budget and manage their spending. It is possible customers could be more likely to carry out further business with ASB.

Through accurate and meaningful categorisation of transactional data, ASB will receive insights on their users' spending habits. With this, they will be able to create customer profiles. This could further aid in ASB's marketing efforts, allowing for cross selling opportunities in order to better cater to their customer's needs.

DESCRIPTION OF MAJOR ACTIVITIES

Development Methodology

Our team expects to be using an agile methodology to carry out the activities involved in the project. This involves several iterations throughout our project duration as we work towards completing requirements in our product backlog. We are taking this approach due to the nature of our project being highly adaptive, requiring adjustments. We will also be able to stay on track and deliver results as we can time box our effort around information gathering and then organise the design and implementation tasks into several iterations.

Major activities

At this stage, we feel that more insight needs to be gathered about the project in order to clearly define the major activities required. However, we have determined some expected activities which are outlined next:

• Problem Definition and Analysis

Detailed analysis of the current TMS system will be required. Meeting with the stakeholders within ASB to get insights on the purpose, design and possible solutions suggested for TMS.

• Requirements Gathering

Collecting external and internal requirements through engaging with stakeholders as well as customers of ASB. We will conduct market research by collecting information through engaging with real TMS users, for example, through conducting surveys at ASB branches or making phone calls to customers. In addition to this, we will analyse current feedback returned by past and present users of the current TMS system.

• Competitor Analysis

Analysis of competitors' activities will allow us to compare TMS with what is already out there in the market and see where improvements can be made. Trialling our competitors' expense tracking systems will take place to discover what competitive edge we could potentially gain from our proposed solution.

• Stakeholder Input

Constant engagement via regular meetings with our stakeholders will take place in order to manage their expectations throughout the project.

• Solution Ideation

Applying 'human centred design' thinking and working with our project sponsor to conceptualise the ideas of our proposed solution. We will then gather artefacts such as user stories and create items for a product backlog.

• Execution

Execution will be done in an agile fashion. We will work in sprints, where items will be checked off of our product backlog during. The iterations we complete during our sprints will include development planning, solution ideation, development execution, testing and validation.

• Validation

Validation will be done to determine whether the system complies with the requirements of the various stakeholders based on the artefacts created in the solution ideation phase.



Cash in Transactional banking model for SME customers

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COMPANY BACKGROUND

Making its first appearance to the world on the 5th of June 1847 in Auckland, ASB was originally known as the Auckland Savings Bank. It has since been acquired by the Commonwealth Bank of Australia and has expanded into one of the dominant banking entities in New Zealand. As of 2015, ASB has over 1.2 million customers nationwide and over 5000 aggregated employees.

Being widely known as a forward-thinking and technologically innovative bank, they have won numerous awards for their online financial services, including the Canstar Innovation Excellence Award for ASB's new contactless payment solution PayTag in 2015 and was named 'The New Zealand Bank of the Year' in 2015 by The Banker Magazine (UK).

PROJECT AIM

The problem

Through their customer feedback system, Voice of Customers (VOC), ASB have identified low customer satisfaction scores from the SME customer.

ASB is currently operating under a 'One Size Fits All' banking model in the majority of its branches nationwide. Therefore, current cash handling processes require large investments of effort from time conscious SMEs, causing low customer satisfaction and disproportionate consumption of ASB resources for low value activities.

In effort to displace these cash transactions from over the counter (OTC) transactions, ASB has developed the FastService Suite as an alternative option. This suite entails: ASB Instant Deposit (incorporated into ATMs), ASB FastChange and ASB FastCount. These are implemented in a selected number of branches across New Zealand thus far.

However, the problem lies here with the SME customers' transactions being more complex, often involving a combination of cash, cheque, and account enquiry. This limits them from using the FastService Suite as there is no comprehensive tool to serve all of their needs. They would opt to perform all of the transactions OTC, and with the amalgamated banking structure of sharing the bankers, the additional demand for counter staff can cause a bottleneck and consequently the backlog of customers forms a queue, increasing customer wait times.

The Solution

The solution to ASB's current operational problem will be to use either process redesign or improvement so their processes relating to cash transactions are robust, sustainable, consistent and of high quality. The ultimate outcome of improving the process will increase the efficiency of SME customers' banking experience with ASB.

Due to the unique nature of the team consisting of knowledge from both Operations Management and Information Systems, we are able to leverage these diverse skillsets into the solution by augmenting process improvement with IS elements.

PROJECT SCOPE

The scope of this project will be to test the hypothesis of whether a purpose built and appropriately designed transactional banking model specific to the SME customer segment will better meet the needs of this customer segment and improve customer satisfaction. ASB has identified cash handling as the major factor in the banking experience of SMEs. As a subsequent result, this project will bring impact to customer satisfaction levels, bank staff workload, and onsite-delivery costs.

The following objectives will need to be done to prove this hypothesis:

- Understanding of prior artefacts used to generate data
- Analyse the appropriate data set
- Adopting the data into potentially viable process solutions
- Redesigning key processes into a purpose-built environment that is tailored towards SME customer segments.

As requested by our sponsor, the DMAIC process will be followed throughout the course of this project.

Possible Additions to the scope

Cheque processes

Although this was not included in the original scope, discussions with ASB have shown that cheque use was a grey area for SME customers when they handle business transactions.

The inclusion of Cheque processes into the scope could be beneficial in the sense that it can bring out a more comprehensive solution. Currently, cheques are very costly to process, and by bringing cheques into the process redesign solution, we could potentially lower operational costs.

REVIEW OF CURRENT SYSTEMS

ASB Bank does not currently have a transactional banking process tailored for different market segments, the SME customer segments we are interested in for this project are currently using usual bank tools and services. As mentioned above, there are currently 3 tools that are available to assist businesses to achieve a faster and more efficient banking experience, they are described in depth below.

ASB Instant Deposit

A solution that solves the issue of needing to enter a branch during branch hours to deposit cash. Banknotes and coins can be deposited into selected ATMs at the customer's leisure. This is a time saving tool that is geared towards lowering customer effort and load on branch staff.

ASB FastChange

This tool allows customers access to any change denomination they require outside of regular branch hours through change machines.

ASB FastCount

This is a tool that still relies ultimately on an OTC customer interaction. The benefit here is a machine that weighs the mixture of coins placed on the scale and gives a receipt of the sum. This receipt can be used once at the counter to accelerate the process.

PROPOSED OUTPUTS

It is expected there will be a number of outputs of the project to ensure it the improvements are comprehensive enough to ensure the issue remains resolved. The first target output is a process improvement plan, this will be developed in the improvement phase of DMAIC once we understand the issue, its size and influence on the process and system as a whole. This will involve concept generation, matching these to the requirements of the strategy, system, organisation and customers, use process modelling and Design of Experiment to consider effects on outputs. From here we will select a concept then complete the cycle with testing and revision.

We expect to produce several documents, including an updated SOP and a training plan during our control phase of the project. These will be strongly influenced by the results of the improvements implemented during the improve phase of DMAIC but as we aim to improve the process in a way that simplifies the process for SMEs and ASB staff, ideally the SOP will be amended to require staff resource. In regards to training plans, as we have the opportunity to implement a solution that creates a synergy between information systems and operations and supply chain management, it is probable branch staff will require training to ensure they are competent and able to use the tool effectively.

Thirdly we intend to produce a set of metrics that enables ASB to monitor and control the process beyond the project time frame. Currently ASB uses VOC as their main method for monitoring customer satisfaction, which is valuable in terms of providing qualitative and quantitative data however as there is a response bias and delay in receiving the data, creating a supplementary metric is likely to be provide significant value. Ideally we want to create a metric that will measure real time events and present it in useable formats so the quality of the process can be adjusted efficiently should it begin to deviate from the target.

TARGET BUSINESS BENEFITS

Our proposed outputs will be able to not only bring financial business benefits through reduced operational costs, but also bring a positive impact on staff workflow by improving the way they handle customer transaction, especially over the counter. Proposing these redesigns will also give benefits in terms of a decrease in customer effort - the effort that they take to make bank transactions for their small or medium sized business. Ultimately, these will likely to result in an improvement in customer feedback, and satisfaction levels, which we believe would be immensely beneficial to ASB especially in the area of the SME business banking segment.

At earlier stages of the overall process redesign, the solutions may only to applicable towards SME customers in particular. This will mainly be due to the costs associated with the redesign process. However, if the proposed solution deems to be efficient, effective, and an improvement is seen

through customer feedback and satisfaction levels, the solution could potentially be applied to the Retail Banking segment as well which will impact customers who bank with ASB on a personal level.

DESCRIPTION OF MAJOR ACTIVITIES

Define

During this initial stage it is critical to think broadly about the issue at hand, determine what the issue is and the root cause of it. Once the problem has been identified a project charter will be completed, this collates the problem and goal statements, clarifies the scope, stakeholders and measures of success. Following this a communication plan and high level project timeline will be created that includes necessary upskilling to ensure the timeframe of the project is used efficiently. Lastly to complete this phase, current processes will be mapped and viewed alongside key VOC insights, so the team is equipped and mobilised with sufficient understanding of the problem to be solved.

Measure

This phase determines the extent of the problem, involved in this will be identifying the information required, accessing, analysing and interpreting it so the assessments of the current process, its stability, capability and its performance can be made. This will enable the team to identify operational risks and finalise meaningful measures that are supported by robust and meaningful data.

Analyse

This is a data analysis phase that determines why the problem is occurring. To achieve this the team will identify wastes and sources of variation to verify and quantify the root causes of the problem. Following quantifying the problem, the potential realisable financial benefit can be estimated to provide understanding of the value of resolving the problem. By the end of this phase the team will comprehensively understand the impact of the root causes.

Improve

This phase is when concept generation occurs and cost-benefit analysis occurs to select of the most valuable ideas given the constraints of the project. The framework encourages creativity and freedom in proposing solutions even if they are not ultimately implemented. Once ideas have been selected the risks are assessed, change management is prepared and the solution goes through the trial and revision cycle before implementing the solution that addresses root causes of the problem.

Control

The purpose of this final stage is to confirm the success and ensure the problem remains resolved. Benefits are quantified and a tracking method of the benefits is established alongside a control plan to ensure changes are sustained beyond project handover and there is a planned response should the problem resurface. Plans for continuous improvement are also implemented to actively prevent future issues arising.

University of Auckland Milestones

•	Delive	rable One	16 April
	0	Project Schedule	
	0	Project Brief	
	0	Presentation One	
•	Delive	rable Two	14 May
	0	Detailed Action Plan	
	0	Presentation Two	
•	Mid-Y	ear Report	30 June
•	Delive	rable Three	6 August
	0	Interim Report	
	0	Presentation Three	
•	Deliverable Four		24 September
	0	Final Documentation	
	0	Presentation Four	
•	Projec	t Exhibition	6 October
•	Projec	t Handover	12 October



Project Dragon

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BNZ is one of New Zealand's largest banks and has been continuously operating in the country since it was founded in 1861 by Thomas Russell. It has over 5000 employees, over 170 stores, and 33 BNZ Partners Centres for their business banking customers. BNZ's objective is to help New Zealander's be good with money to enable a high achieving New Zealand. BNZ also extends their focus on Corporate Social Responsibilities which include sponsorships of charities such as Plunket and \$avy, as well as having 5 Green Star Headquarters, and being NZ's largest Fair Trade Accredited Workplace in NZ.

PROJECT AIM

The Problem

The BNZ Data Quality reports are used by a large amount of people within the organisation hierarchy including senior enterprise leaders and retail store managers. This means these reports must be tailored to the different users with varying degrees of detail so the information is useful. A complication of the current reports is that we cannot fully track the creators and fixers of defects. This means that it becomes more difficult to provide better staff training, and provide rewards to those that are driving good behaviours.

The Solution

The solution to BNZ's problem is to build on their existing Data Quality capabilities but introduce greater precision using a new data source. This will allow for more precise data defect tracking, greater accountability for defects and fixes, and produce new Data Quality metrics that will give new insights into their Data Quality. The system will generate new reports that will be tailored to specific users so they will be useful for making decisions when engaging with stakeholders across the business.

The student team aims to create reports that can reduce the number of defects created by looking at the source of the defect and putting measures in place to rectify and track these defects.

PROJECT SCOPE

In scope

- Exploration of additional business value. Business value: new systems audit logs have not been analysed before so opportunity for new findings to arise during this stage is likely
- Data Quality reporting system that reports on data defects in customer details where defects are associated to specific "creator" or "fixer"
- ETL process to warehouse data and integrate with existing Data Quality (DQ) capabilities
- Generate reports using Tableau that identify creators and fixers of defects
- Banking information system audit logs from BNZ internal system will be used

Out of scope

- Cleansing of the system logs of Banker activity
- Change large majority of BIS audit logs
- Change existing Data Quality (DQ) processes

- Reporting for any other interested party other than customer detail defects
- Real time reports generated
- Individualised training recommendations for frontline staff

Assumptions

- Large majority of BIS audit logs will be free of errors so only minor error handling may be required
- Only defects in customer data will be detected
- Data sources will be provided from BNZ Banking Information System database

REVIEW OF CURRENT SYSTEMS





The current data quality reporting system has been very successful at BNZ. However, we want to further develop it to a higher level of data quality reporting. The current system depends on nightly snapshots of data.

Currently, the system does not provide detailed information such as who had created the defect in the data and how long the defect has been opened for. This makes it difficult for data analysts to have greater accountability of defects. The above diagram is the description of the current system of BNZ.

PROPOSED SYSTEM



The improved system of BNZ to manage its data quality will be by creating a new path or route by establishing new reports based on a new data source, which will provide new insights for users.

When frontline staff members enter the customer data, the data is stored in the Banking Information System (BIS) core database. Regardless of the presence of the defects, BIS will export changes to its data in logs. Then all the data will be transmitted into the Business Intelligence Warehouse (BIW) Operational Data Store (ODS) database. At this stage, the data can be explored. The data will then be screened by DQ rules to be sent out to the BIW database and stored in the BIW. From BIW, we will build the reports using Tableau. We have chosen to use Tableau because it presents data in a very clear and readable manner.

TARGET BUSINESS BENEFITS

If successful, the system will be able to determine the true creators and fixers of all defects. This allows for more targeted training which will benefit the customers, staff members, and management at BNZ.

The proposed system will also allow us to recognise those team members that are fixing defects so they will be recognised and rewarded. This will drive positive behaviours of individuals which will allow them to work more effectively and efficiently.

Another benefit that the system will provide to the Data Quality and Governance team, as well as Enterprise Leaders is being able to identify exactly how long different defects exist. They will then be able to use this information to target specific business units to find out why specific defects are lasting for excessively long periods of time.

Overall, the company will benefit from a reduction of defects which in turn saves money and time, a reduction in customer complaints, an increase in data accuracy, and an increase in data quality and integrity. This will better allow BNZ to help New Zealanders be good with money, enabling a high achieving New Zealand.

DESCRIPTION OF MAJOR ACTIVITIES

Development Methodology

We will be using a combination of SDLC and Agile methodologies during this project. The overall framework follows SDLC, however, within this framework, there will be some use of Agile methodologies. For example, within our Development Phase, we will conduct iterations when testing to ensure that what we have developed meet the needs of the relevant stakeholders and is functional.

Major Activities

Stakeholder Analysis

This is an on-going process where we identify the needs of the users of the system so that we can develop the system to solve their needs. We will be having discussions with Store Managers, the Partners team at BNZ, and the Kaizen team.

Investigation of the data source

The team will spend some time investigating the data that is stored in the Audit Logs. This is an important activity as the data we will be using has not been used before for reporting, so it is important to understand the data we are dealing with.

Integrate the data with existing Data Quality Rules

In order to determine the creators and fixers of defects, we must integrate the data with the data quality rules. These rules will flag results that do not match the criteria.

Testing

The report will be tested by the end users of the system, as well as by the project team. Testing is important to ensure that the system has functionalities that meet the needs of the company and users. Testing will be completed using an iterative process. We will be creating prototypes and testing those prototypes before moving on.

Deployment and Product Training

Once the system has been developed and tested, it will be deployed. User training will be supplied in the form of documentation. Another form of documentation is the handover documentation. This is required for the team that takes over this project once the student team leave BNZ.



Business Activity Monitoring

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COMPANY BACKGROUND

Computer Fanatics Limited (CFL), founded in 1989, is a wholly New Zealand owned company that strives to provide customer software and hardware solutions to small and medium sized businesses. CFL provides these cutting edge solutions in the Asia Pacific Region, namely New Zealand, Australia and Singapore. In the past 25 years of operation, CFL has introduced numerous solutions that have been used in several industries. A couple of these key solutions include VETLINKSQL for the Veterinary industry, and HAIRLINKSQL for the hair salon, beauty clinic and day spa Industries.

PROJECT AIM

The Problem

VETLINKSQL has the ability to utilise information collected from clinics to generate business performance reports. Despite that, these reports are limited in its capacity to analyse information. For instance, data visualisation is basic, which hinders the potential insight a business can gain from reports.

Furthermore, the information collected is not consolidated into a single source, resulting in additional effort needed to generate reports in the evaluation process.

Lastly, the current set of key performance indicators (KPIs) has the opportunity to be more comprehensive. This would help facilitate a deeper evaluation of a business's operations, ensuring that it is aligned with current objectives. Thus, we aim to resolve these key issues with the new business activity monitoring system.

The Solution

Our business activity monitoring system will enhance and expand on the minimal features of VETLINKSQL. We aim to provide a standalone application that enables the end-user to monitor and benchmark their business activities. This solution will provide an exceptional user experience through an aesthetic user interface and data visualisation. Additionally, the solution will offer more meaningful tools for performance evaluation, such as KPI comparisons between clinics within a business, increasing the level of business intelligence offered to end-users. Lastly the solution will be readily accessible across all platforms and provide up to date data for business evaluation. As a result, the business activity monitoring system aims to address core issues of VETLINKSQL, whilst implementing additional value adding functions.

PROJECT SCOPE

The scope of the project is to build an application that is able to provide insights into the activities of the end-user's business. This would involve being able to present information such as KPI data to the end-user that would be useful in measuring and benchmarking the business activities. In particular, this would be generated in the form of visual reports. Thus, the scope includes representing the data in an aesthetic fashion. This application will also provide a deeper level of understanding of the

business. For instance, allowing the end-user to conduct 'what-if' analysis on their business. The project created also requires cloud development and responsive design in order to satisfy the accessibility requirement.

Our team's main focus will be to construct the core features of the system:

- Dashboard
- Display KPIs
- Export reports function
- Data visualisation
- Navigation controls

We will focus on implementing 12 core KPIs which will reflect financial, customer and employee perspectives of a business. Additional KPIs will be included if there is available time.

Possible project scope additions:

There are 3 possible additional KPI/features that can significantly increase the value of our solution. These additional features would be constructed once we have fulfilled the core features of the system.

- Missed charges:
 - O This would serve as an internal control mechanism to validate the completeness of transactions. For example, when a surgery is provided to the end-users, a 'hospitalisation record' should also be billed to customers. If it is missing from records, then the application will need to notify the clinic.
- Industry comparisons:
 - O End-users are interested in benchmarking their performance in comparison with other competitors in the industry. This industry comparison tool would allow the end-user to reflect relatively on information, such as number of new clients seen in a given time period, against an industry average provided by the system.
- "What-if" projections
 - With this feature, end--users will have a greater understanding of the impact that changes to financial metrics would have on their businesses. For example, end-users may be interested to see how a change in one variable (sales price of product X) would affect another variable (net profit).

REVIEW OF CURRENT SYSTEMS

CFL currently has no legacy system that the proposed solution would be integrated alongside. The main purpose of the new business activity monitoring system would be to address VETLINKSQL's limitations, which lack key features that CFL and end-users require for a comprehensive business performance evaluation.

PROPOSED SYSTEM

The solution is an application that is able to provide insightful reports that would allow end-users to quickly assess the key metrics of their business. Alongside deeper insights, the user would find the application visually appealing and user-friendly.

There are a few key parts in creating this solution:

- End-user data
 - Explore the data in which the end-user deems useful
 - Create useful KPIs for the end-user
- Generating graphs and reports for the end-user
 - Enable the end-user to export their reports efficiently
 - Track business trends over a chosen period of time
 - Present the data in the most effective manner (i.e. certain graphs)
- Intra-branch comparison
 - Enable the end-user to measure and benchmark their performance between branches
- User Interface
 - Present an aesthetic, interactive data visualisation
 - Create a user-friendly interface with minimal steps needed utilise the functions of the application.

Current Problems	How can BAM address these problems	End-users' benefits	CFL's benefits
Limited analysis reports	Will generate a wide range of reports with KPIs that are important to the business objectives	 Gain deeper insights to business performance 	- Improved user retention
Basic graphs	Will generate a variety of aesthetic, interactive graphs	- Aesthetic graphs	- Increased user friendliness
Several independent reports	Consolidate all data in one place	 Data is more accessible Efficiency of the performance evaluation process 	 Reduced complexity of the system Less training required for new users

TARGET BUSINESS BENEFITS

Individual business reporting only	Allows comparison between clinics of the same business and against the industry average	 Benchmarking the position of their company within an industry average and the performance of clinics in the same business 	 Opportunity for competitive advantage
Lack of "What- if" scenarios	Create a mechanism for end-users to visualise changes to financial components	 Examine effects of changes to the key business metrics 	 Opportunity for competitive advantage
Lack of portability	Cloud-based, responsive design	 Highly Portable Highly Accessible 	 Increased efficiency in managing clients

DESCRIPTION OF MAJOR ACTIVITIES

Timeline of major activities



Detailed description of major activities

Research into KPIs and related industries:

As a team we would first need to conduct preliminary research into CFL's clients in the veterinary industry. This is necessary to achieve an understanding of the respective industries' business values. Through this research we will then create core KPIs that would be important inputs for our database

structure. We will initially need to research a broad range of KPIs from within the veterinary industry and also other industries with applicable KPIs. This would enable us to provide a huge pool of potential KPIs to filter and prioritise into core KPIs that would create the most value for our clients. Lastly, we would then use these filtered KPIs to dictate the database structure.

Deciding the reporting platform:

One of the top priority requirements for the business activity monitoring application is an aesthetic visual representation of the UI. Such elements would include; eye-catching charts, simplistic colour schemes and an interactive user interface. Thus, we must first do research into reporting platforms that fulfil that criteria. A benefits analysis will be performed on the resulting reporting platforms in order to finalise the platform which best suits our needs.

Designing ERD and Constructing the Database:

Designing the ERD of the business activity monitoring application would be essential for providing an architecture to develop our database. This task would be iteratively conducted throughout the initial stages of project lifecycle to ensure the project is within the scope. The ERD will be updated periodically, adapting to changes to user requirements. This would be more susceptible to changes within the initial stages of the project. The database would be then constructed using the ERD as a strict guideline.

Designing and Constructing the User Interface:

With sufficient knowledge of the platforms required, the UI will be constructed. After the framework and user controls are set up, components such as reporting graphs would be implemented. Lastly, the overall user interface particularly its aesthetics should be refined. These steps shall be performed under the guidance of senior developers from CFL to ensure the output complies with the requirements.

Testing:

We aim to conduct a variety of tests to ensure that the system would be fully functional with minimal bugs. In order to simulate a realistic launch environment, functional testing will be performed with dummy data provided by our client. Lastly a user acceptance test would be conducted with end-users in order for us to make any necessary adjustments before launch.

Product launch:

Once product testing has been conducted, the implementation phase of our business activity monitoring application would be initiated. The launch of the system would be provided for the 21 Barrys Point Vet Clinic. An announcement to all key stakeholders of the system and will reiterate the benefits, and the differences between the previous and new system. Instructions for technical support will also be provided. We aim to run a training session to educate users to be efficient with the system. This would range from live demonstrations of the system to simple training manuals. Through the training process, we would collect feedback and make any necessary adjustments.

Project review and handover:

Towards the end of the project, we plan to review the project and handover any necessary and requested documentation to CFL. The project review would compare the system's final business

benefits against the proposed solution, while also assessing the success of the project. Lastly, a detailed user manual would be finalised and given to CFL for future technical support.

TECHNOLOGIES

PAY-TV WEB SELF-CARE

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COMPANY BACKGROUND

Hansen Technologies is a trusted billing and customer care solution provider. It was founded in 1971 and has grown into a worldwide. In 2008 and 2009, it consecutively ranked in the top 3 Customer Information System vendors for investor-owned utilities by Utilipoint International.

Hansen Technologies currently employs more than 550 people and internationally operating in Australia, United States, New Zealand, China, Denmark, Spain, Ireland, Germany, Argentina, South Africa, India and the United Kingdom.

Hansen develops, implements, and supports proprietary software and delivers application and services for the Energy, Pay TV and Telecommunications industries. Hansen's business purpose is to help our customers to streamline and optimize business billing and operation process, allowing them realize potential and thrive to their to grow in their market. With Hansen CIS installation in over 45 countries, Hansen focus on ongoing R&D to discover ways that can help our clients to improve workflows, reduce operational cost and satisfy their customers.

Hansen are recently focusing on upgrading technology stack, delivering modern user interface, designing faster and easier operational process, adding automation and self-service for its customer care and billing solution.

PROJECT AIM

The main objective of the project is to provide a more comprehensive customer care solution for Hansen's Pay TV customers through building a stand-alone Web Self-care module. The proposed system will extend the functionality set of ICC, and add new and exciting modules to the system, to better meet end-user and business requirements.

Web Self-care will offer 24 hour-a-day support. It can benefit clients' end-customers by allowing them to have constant online access from anywhere and anytime. Requests and queries can be logged simply without experiencing a long wait for responses from the support representative. The solution will help Hansen's client to achieve current customer retention and attract potential new customers.

Moreover, Web Self-care helps Hansen's clients to lower their investigation and operational cost by cutting their spending on building and maintaining their own self-care portals. It allows them to be more profitable and able to focus on their core businesses.

Finally, the project will discover new modern web technologies by doing investigation and evaluation, find the technology that best meet system and user requirements. It is an opportunity to show clients ICC is a vibrant product with ongoing research and development.

PROJECT SCOPE

Hansen's Intelligent Customer Care (ICC) provides a comprehensive care and billing solution for Pay TV operators but Web Self-care module is not provided with the product. Hansen has recognized the recurring cost for its clients to develop and maintain their own Web Self-care portals resulting in a need of extending the functionalities of ICC to better fit clients' needs.

The scope of this project will be to build a stand-alone Web Self-care application that can be integrated with ICC clients' website. The project should demonstrate that the solution can be accessed via a standard desktop browser (at a resolution of 1920 x 1080) and at least one type of mobile device (Apple IPhone 6 Plus), This will involve analysis of existing systems, building prioritized user stories, design and development of an application with a user interface and two databases to demonstrate the integration between our Web Self-care application, client website and ICC.

Another significant part of this project is the technical investigation and evaluation of modern software which provide innovative insights into this project. The investigation phase will generate a proof of the recommend technology stack by using a presentation and documentations.

The following tasks will need to be achieved in order to complete the project:

- Technical investigation and evaluation of modern software
- Deliver proof of recommend technical stack
- Working stand-alone Web Self-care module
- Web APIs
- Database construction
- Supported documentations
- Sales demonstration and script to Hansen

The project will be delivered by adopting an agile methodology and it will be implemented by SCRUM and KANBAN. SCRUM allows us to spilt the entire project into different phases with each phase consisting of smaller stints can be put into a 1-2 weeks sprints. KANBAN allows us to be able to focus on tasks in progress and identify future tasks. The combination of the two approaches drives the project to its maximum efficiency in terms of time, quality and productivity.

REVIEW OF CURRENT SYSTEMS

Hansen's Intelligent Customer Care (ICC) provides Pay TV operators multi-company functionality with a single installation. It gives operators a platform to strengthen business performance and to enhance customer service level.

ICC manages many aspects of Pay TV business operations, from service requests to billing collections. It has included core modules such as Finance, Marketing, Warehouse, Settlement, Administrative, Management, Infrastructure and Report. Apart from the core modules, it has the ability to integrate with different external components such as Bank, Printing House etc. to fulfil different clients' requirements and needs.

The main weakness of ICC is that the solution does not include a web self-service currently. Therefore, Pay TV operators have to build and maintain their own web self-care portal. As our clients, Pay TV operators are not web development companies. It is a complicated task for them to build the self-care portal. They either have to hire more IT staffs or commission a specialized IT company to build and maintain it. In either way, Pay TV operators will suffer enormous cost and making their business less profitable. This can result in loss of competitive advantages for Hansen if other customer information system provider can provide a system that accompanied with a Web Self-care. Therefore, implementing the Web Self-care module can provide a more complete solution for them, which will allow Hansen to improve existing client's situation and enhance future client's experience by helping them to reduce system building and maintaining cost.

PROPOSED SYSTEM

The proposed system for Hansen Technologies is the Pay TV Web Self-care system. This system will be a stand-alone application and a subset facility planting in Hansen ICC client websites, allowing Pay TV customer to interact with Hansen ICC. The system will allow customers to register a new account or login to existing account, view/update their customer details, check their account balance/invoice history, view product lists, make a payment, view registered devices and view/change their packages. Apart from these core function that normally perform in Web Self-Care system, we may do additional based on the discovery process of value-added functions with our client.



System Architecture of the purposed system

The purposed system will have several features, including Web Service, a local database, a simulated ICC database, process and logic, validation rule and flexible user interface. A sample client website will be built to show how the Web Self-Care system link with client website and performing self-care service. The purposed system will be built with a local database for storing the customer details, which avoiding connect to Hansen ICC frequently and affect the user experience of the Web Self-care. The purpose system will include validation rules to ensure the quality of data from customers. Web services will be implemented to enable the system to integrate with the Hansen ICC. Besides, a flexible User Interface will be built for the purposed system in order to fulfil requirements of different ICC clients.

TARGET BUSINESS BENEFITS

Benefits of the Web Self-Care system created by this project can be divided into three aspects:

• For Pay TV end customers

The most outstanding benefit is the system reduces end customer waiting time by providing comprehensive self-service, as they can access the Web Self-care anywhere and anytime, to process functions including buy new products, make payment, change their details, view billing history etc. It also enables collaboration between the customer and the ICC client. Moreover, allowing customer to make changes to their own account (such as address change, or name change) can reduces the risk of error by asking the Pay TV service representative to do it. It also provides the customer with the latest information on the company's service offerings, such as new TV channels and special media events.

• For ICC clients

The Web Self-care module will act as an interaction channel between them and their customers, allow them to solve customer enquiries in an easier and faster way. Satisfying customer help them to achieve customer retention of existing customers and attract new customers. Moreover, it helps them to reduce the cost of hiring more IT staffs to build and maintain their own self-care system or commission a specialized IT company to build one which they need to pay the license fees and ongoing maintenance fees.

• For Hansen

The project aligns with Hansen's objective to stay close to the new modern technologies. Technical investigation, which is a main part of the project, will be a valuable deliverable for them to keep align with new technologies in the modern world. Also, the proposed system is helpful for attracting new clients and benefitting future clients because it's highly configurable, easy to change and flexible. Also, it provides an alternative for existing clients if they don't want to keep their own self-care system due to expensive license and maintenance cost.

DESCRIPTION OF MAJOR ACTIVITIES

Technical investigation and recommendation

A one-month technical investigation is carried out by the project team for the purpose of discovering new web-based technologies. More than thirty technologies are evaluated and the team has come up with one final recommendation with two other alternatives. The evaluation of modern software stacks allows the team to discover the most suitable technology for this project.

Determine user stories

User stories are used to determine who the uses of the system will be and the steps of how do they use the system. The project team is responsible to come up with a list of user stories for Hansen to review and changes will be made based on the suggestions. There are 11 core functions in Web Self-care module and each of them has multiple stories. User stories are then being used to determine the priority in development.

Design and construction of database and user interface

Design has been divided into two major parts in this project, which are UI design and database design. Functional and non-functional requirements are considered in order to design an interactive UI and a stimulated ICC database that can be interacted with the current ICC database.

Testing

Web Self-care needs to be interoperable enough and be tested in different environments. Majority of the testing of the system will be ongoing during the development stages following our agile approach so that the final system will have mostly testing against requirements to be done. Final functional and non-functional testing will be performed to ensure it meets stakeholder's requirement.

Sales demonstration

Once the final product is developed, tested and approved by Hansen, our team will deliver a sales demonstration to Hansen illustrating the features of Web Self-care and providing an evaluation of our project outlining the limitations and any learning that we have obtained during the project can be applied to the future development of the system. Final documentation including user manual, a technical manual and sales demonstration script will be provided during the handover of the project.



Project Level Up

Training Recommendation Application

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COMPANY BACKGROUND

ASB Bank first opened its doors on the 5th of June 1847 in Auckland, pledging to 'serve the community; to grow; and to help kiwis grow'. This has stood true over the last 160 years – ASB continues to innovate and change the way people bank. ASB was the first New Zealand bank to link all their branches to a centralised computer via an online real-time computer system, giving their branch staff up-to-date information about customer accounts. They were also the first bank to introduce New Zealand to internet banking, FastNet Classic, providing yet another tool to their unbeatable service. Established innovation pioneers, ASB has proven time and time again that they are no ordinary 'bank' and suggests why more than 1.3 million personal, business and rural customers nationwide bank with ASB.

ASB's vision – 'Unbeatable team. Unbeatable service' – has rewarded them handsomely. ASB has won numerous awards to recognise their renowned service and breakthrough technology. This includes Canstar's inaugural 'Best Online Banking Award' in 2012 and 2013 and 'The New Zealand Bank of the Year' by The Banker Magazine, UK, two years running now. Our project will also equip ASB with another breakthrough aligned with their vision.

PROJECT AIM

The Problem

ASB's branches are at the frontline of customer contact, meaning they share the most interaction with customers on a daily basis. The ability to meet customer needs for each branch employee is usually made more effective by their interpersonal skills and product/services knowledge, which ASB tracks with performance reports.

When a performance report is used to identify a development area, the task is up to branch managers to coach the branch frontline counter staff, the Customer Service Officers (CSO). Alongside managerial coaching, ASB have a wealth of ready-to-use training tools available online, which inadvertently creates a problem.

It has been identified that CSO awareness of training resources most relevant to them is still unclear. While frontline staff are encouraged to take control of their own learning and training with the tools available, the weight is still on the manager's shoulders to recommend appropriately. The link between performance and appropriate training is decided on a manager to manager basis, with no IS system to relate standard performance indicators with appropriate training.

There is also the problem of missed opportunities. Performance reports highlight to managers which CSOs have not properly met customer needs, likely due to lack of knowledge. While managerial coaching is the general solution, it is at times difficult to tend to each CSO's specific training requirements. Self-training would be handy in this case, but unawareness of the most beneficial training further fuels this problem.

THE SOLUTION

The aim of project Level Up is to implement a solution that will link the discrepancy between CSO ability to meet customer needs with appropriate training. The system will automate training

recommendation to frontline staff (based on performance reports). This will solve the problem in a number of ways:

- Provide information on resources to help meet customer needs
- Ensure CSOs become more comfortable with difficult to understand products/services

Gamification methods will be implemented to reward CSOs upon reaching development milestones and 'levelling up' to keep their performance engaged. This limits manager dependency to discuss training options face-to-face and automatically manages team performance.

The more up-skilled and knowledgeable the frontline staff, the more likely this will better ASBs ability to meet customer needs.

PROJECT SCOPE

The scope for project Level Up will target ASB's branch network. This will involve investigation of how branches currently operate their training recommendation processes and how employees react to this. Our scope does not include forming the training itself, only the recommendation of training resources based on performance reports.

To solve ASB's problem, the application will have the following functions:

- Identifying a staff member
- Checking their existing performance reports
- Identifying areas of improvement
- Recommending the appropriate training

CURRENT SYSTEM

Managers use performance reports and observations to make judgements on whether training is required for CSOs. Therefore training recommendation is all done manually. Training can be done through one-on-one coaching sessions, signing up to workshops/clinics, online modules found on ASB's intranet and more.

PROPOSED SYSTEM

Data-driven development is currently one of the core strategies ASB implements. The system has an opportunity to use raw performance data which will automate training recommendation to CSOs. Recommending and informing training tools to staff will empower self-management of their own performance.

To break it down, the following objectives should be met by the system:

- Automate the process of training recommendations.
- Engage Customer Service Officers in career progression.

The main benefits to ASB are:

- Lightening workload and time for managers.
- Higher awareness of useful online training resources.
- Customer Service Officers are more capable with meeting customer needs.

Project Level Up will ease the reliance for manager sit downs with employees to discuss training options as they have anytime, anywhere access to recommended tools (but managers can still have sit downs with employees as a general check-up).

As the system will identify and assign training resources based on existing performance, staff will become more informed and aware of ASB's training tools most relevant to them. Also, through high involvement of self-managing their own training processes, staff are expected to be more motivated when it comes to up-skilling, which will likely translate to better meeting customer needs. As further encouragement, gamification will be used to add interactivity and interest. This will likely involve a leader board and trophies, however further discussions with ASB stakeholders on how to reward staff are yet to be decided.

Hardware and Software Platforms

CSOs will use likely use ASB's branch PCs and iPads to interact with the application. This hardware allows for maximum screen space and interactivity when using training tools. Mobile phones are still undecided at this stage.

ASB is mainly a Microsoft-run organisation, where staff use Windows 7 virtual desktop infrastructures (VDIs). The web app will likely be delivered using ASP.NET MVC4 for the front end, with a SQL Server 2012 instance for the database end. The client side user interface will leverage Javascript libraries such as jQuery, KendoUI, and bootstrap.

MVC Architecture

The proposed architecture is shown in figure 1 below. As the project will be delivered as a web application with high user interactivity, Model View Controller (MVC) frameworks seem most suitable. Using the three components – MVC – will isolate the web app into three different coding environments, allowing a specific set of locations to look at code. This makes code maintenance and debugging much simpler than trawling through one massive environment.

As it is a web application, views will be rendered as an HTML page using several web languages (HTML5, Javascript, CSS). Models will likely be implemented using one of ASB's Microsoft SQL server instances.



Figure 1: Proposed System Architecture

DESCRIPTION OF MAJOR ACTIVITIES

Development Methodology

Project Level Up is an ASB experiment; therefore flexibility and responsiveness to change is important. The traditional waterfall methodology is not in line with this approach, therefore Agile Scrum has been chosen.

Agile Scrum is already in place at ASB for many projects, which allows the team to leverage existing knowledge in the Bank. The project will involve 14 sprints, each sprint lasting approximately two weeks. By using an agile approach, risk can also be reduced around changing requirements. It is possible that feedback from ASB's frontline staff may cause the scope to change throughout the process, which is why agile methodology is key
Sprint 0 - 2 will be used for discovery for Project level up. These will be spent developing the scope, and forming the high level requirements for later development. Sprint 3 - 12 have been earmarked for core development, however the discovery sprints need to be completed to uncover the requirements before these can be planned in detail. The focus for Sprint 13 has been planned to be the project handover, completing any unfinished documentation, and wrapping up any loose ends.

The project will be divided into the following 14 sprints:

Discovery	Execution	Handover

Sprint 0 | Sprint 1 | Sprint 2 | Sprint 3 | Sprint 4 | Sprint 5 | Sprint 6 | Sprint 7 | Sprint 8 | Sprint 9 | Sprint 10 | Sprint 11 | Sprint 12 | Sprint 13

Sprint 0:

- Target: understand why the system should be built and how it will benefit ASB
- Activities: gather information from ASB stakeholders to define at a high level the requirements for project Level Up
- End-product: an understanding of the business opportunity's complexity i.e. the project brief **Sprint 1**:
 - Target: apply 'user-centred design' thinking and gather information from our direct customer ASB's frontline branch staff
 - Activities: Our team will spend most of the time on the frontline with our customers and stakeholders, analysing their needs and wants for Project Level Up.
 - End-product: Good overview of what the system needs to achieve and better understand it from the end-user's point of view

Sprint 2:

- Target: provide guidelines for the detailed design and implementation (the backlog)
- End-product: workflow documentation/use case of the project and the user interface guideline. The products at the end of this sprint will be used for planning sprints 3 to 12

Sprint 3 – 8:

- Target: To build a working system that meets the basic needs of our stakeholders and customers
- Activities: iterative development, implementation, testing and deployment
- End-product: the minimum viable product

Sprint 9 -12:

- Target: To add extended features to the minimum viable product
- Activities: build additional functionalities, build reporting for tracking experiment success measures
- End-product: the completed system based on the requirements from the discovery sprints **Sprint 13**:
 - Target: handover final product to sponsor
 - Activities: prepare stakeholders for using the system
 - End-product: user and technical manuals, preliminary results from the experiment

Auckland University Deliverables

- Deliverable One 17 April
 - O Project Schedule
 - O Project Brief
 - O Presentation One
- Deliverable Two 30 May
 - O Detailed Action Plan
 - O Presentation Two
- Mid-Year Report 30 June
- Deliverable Three 8 August
 - O Interim Report
 - O Presentation Three

• Deliverable Four 26 September

- O Final Documentation
- O Presentation Four
- Project Exhibition 8 October
- Project Handover 16 October



Vetlink^{SQL} Stock

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COMPANY BACKGROUND

Computer Fanatics Limited (CFL) is wholly New Zealand owned and operated company, established in 1989. It specializes in providing custom software and hardware solutions to small and medium size businesses in the Asia Pacific Region, particularly New Zealand, Australia and Singapore. CFL's current IT portfolio includes key solutions such as Vetlink^{SQL} software for the veterinary industry, Hairlink^{SQL} software for hair and beauty industry and Animal Health Plan for the veterinary professional and the farmer.

PROJECT AIM

The Problem

Bad inventory management is a crucial problem in any industry, resulting in a loss of profit that could ultimately destroy a company. To illustrate the magnitude of this issue, we can look at North American retail. In 2011, inventory shrinkage resulting from obsolescence and theft was estimated at 1.58% - a \$45 billion loss.

On top of this, many companies struggle in finding the balance between holding too much or too little stock. This results in tying up excessive funds in inventory or forcing customers to take their demand elsewhere.

In order to maintain a healthy bottom line, it is therefore critical to have a well-managed system that keeps track of inventory. This is especially the case for NZ vet clinics who rely on retail much more than their foreign counterparts.

The Solution

The aim of this project is to build and deploy a mobile application that runs on both iOS and Android. Marketed as Vetlink SQL Stock, this application should serve as a user friendly means of managing stock and mitigate the above problems. Similar to other mobile applications in the Vetlink SQL series, it is to supplement Vetlink SQL, a computer programme that contains the vet clinic's database.

Vetlink SQL Stock will replace Stocklink SQL, the current system distributed on pre-packaged PDAs running Windows Mobile Classic.

PROJECT SCOPE

The scope for this project is to transfer the current system to a new operating platform, optimise existing features and implement new functionalities that ultimately enhance stock management.

Essential specifications requested by CFL include:

1. Compatibility with iOS and Android platforms

Create a multi-platform application using Embarcadero's Delphi XE8 in order to deploy on iOS and Android.

2. Barcode scanning feature

Through the use of both the in-built smart device camera and an external bluetooth barcode scanner, users will be able to scan products to assist in stock take, stock order and stock transfers.

3. Stock take functionality

Optimise the existing feature to provide an easy to use interface to help users to complete stock takes.

4. Stock order functionality

Optimise the existing feature to provide users with appropriate information to make an informed decision in regards to the products and quantities to order.

5. Modify existing orders

Give users the option to verify and modify existing orders before they are sent back to Vetlink SQL for completion.

6. Stock Transfer

Enable multi-store vet clinics to record the movement of stock.

CURRENT SYSTEM

Stocklink SQL is an application that enables vet clinics to manage their stock. It syncs to the Vetlink SQL database, allowing users to record stock takes, update stock numbers and place orders for more stock.

Hardware Platform

Stocklink SQL operates on a Personal Digital Assistant (PDA). This is a mobile device that functions as a personal information manager, typically with a touchscreen user interface. They were discontinued in 2010 due to the widespread adoption of smatphones.

Software Environment

Stocklink SQL runs on Microsoft Windows Mobile Classic. This is similar to the desktop versions of Windows, and was aimed at business and enterprise consumers. By 2007, it was the most popular smartphone software in the US, but was discontinued in 2010. The Windows Phone was introduced instead, in response to the competition created by Android and iOS. The last release of version 6.5.3 was in February of 2010.

To demonstrate how the system works, the process for the stock order feature is shown in Figure 1: Current Stock Take Process.



Figure 1: Current Stock Take

While functional, this system is too expensive for smaller clients and too costly for CFL to provide support for. There is a high cost associated with the PDA and each device needs to be personally configured and tested by a technician at CFL before being shipped. Furthermore, it operates on a software and hardware platform that is outdated.

PROPOSED SYSTEM

Vetlink SQL Stock future-proofs the functionality of CFL's current software package, optimises performance and adds a new range of capabilities that enhances stock management for the user. It will be written using Embarcaderos' Delphi XE8, allowing for the creation of native Windows, Android and iOS applications from one codebase.

Hardware Platform

Vetlink SQL Stock operates on smartphones and tablets. Smartphones and tablets typically combine the features of popular mobile devices, have a touchscreen user interface and can run third-party applications.

The use of smartphones and tablets is increasing, especially for business purposes. A survey conducted in March 2013 by Constant Contact shows that 66% of small business owners surveyed use a smartphone or tablet in their business operations.

Software Environment

Vetlink SQL Stock runs on Android and iOS. Android and iOS are mobile operating systems designed primarily for touchscreen devices such as smartphones and tablet computers. Together Android and iOS has roughly 97% of the market share for mobile operating systems.

Features

Vetlink SQL Stock optimises capabilities of the current system such as:

- Recording stock take information
- Manually submitting stock orders and setting up automatic stock orders

It will also have additional capabilities such as:

- Purchase suggestions
- Modifying existing stock orders
- Recording stock transfers between vet clinics
- Viewing statistical data such as sales trends to improve purchasing decisions
- Viewing home screen widgets to bring to attention items of importance

To demonstrate how the proposed system will work, the process for the stock order feature is shown in Figure 2: Proposed Stock Take Process.



Figure 2: Proposed Stock Take Process

Business Benefits

Vetlink SQL Stock provides users with complete package through a simplified user interface and enhanced feature set that runs on an affordable, widely used operating system. As a result of this development, CFL will experience a range of benefits.

Increased Market Share and Customer Retention

Vetlink SQL Stock is accessible to smaller vet clinics due to an affordable subscription plan that does not require a hefty investment. Larger vet clinics can opt for an external barcode scanner for increased performance at an extra cost. This flexibility, along with the capacity to run on widely used software platforms means Vetlink SQL Stock is available for a larger range of clients in the market.

Decreased spending on technical support

Vetlink SQL Stock will be reliable and have an easy to understand user interface. This will decrease the amount of technical support CFL has to provide to their customers. It can also be downloaded directly from the App Store and Google Play, removing the need to manually load and configure it before it ships to the customer.

Reduced investment cost

Users are able to use their own device to run Vetlink SQL stock, meaning CFL will no longer be forced to tie up funds in expensive PDAs or experience inventory shortage problems.

DESCRIPTION OF MAJOR ACTIVITIES

We have chosen an agile methodology to develop this project, in particular scrum.

This is an iterative process so we have split each function of the application, such as showing sales trends into a sprint goal. For each sprint goal we will be completing:

- 1) Research and analysis
- 2) Development
- 3) Testing
- 4) Documentation

Initial Research and Analysis

Before we begin working on our sprint goals, we will first be conducting initial product research and analysis. This means analysing and understanding what specifications our sponsor has, what they

want and what our end user wants. It includes understanding the current system and how our application will integrate with the corresponding computer database, Vetlink SQL. It also includes researching other stock management applications on the market.

Furthermore, the team is required to learn the development environment Embarcadero RAD Studio XE8, which uses the Delphi programming language.

Research and Analysis

At the beginning of each sprint goal, we will be analysing specifications and researching the ideas we want to implement. For example, in the stock ordering function we have to examine 1D and 2D Bluetooth barcode scanners in order to find a compatible scanner we can utilise.

Development

Firstly, the modelling of use cases and screen mockups will allow prototypes to be developed. While doing this, forms for login, stock take, ordering and options will be built so that once integrated into the prototype, functionality can be tested and demonstrated.

At the same time, the Entity Relation diagram will be prepared so back-end integration can be built simultaneously, if need be. We anticipate the database integration part of the project to be highly time consuming, due to all the interfacing systems that need to be made compatible.

Testing

Once the development has been completed, a rigorous testing schedule must be made and followed – this is because reliability is a key component of any commercial software, especially one that is used to manage inventory for our clients. For this phase the unit, system and integration testing schedules must be prepared, as well as an Android and iOS testing device.

Documentation

At the end of our project, we will deliver:

- User manual that includes instructions and associated screenshots for each function
- Testing manual to document our various types of testing, their result and associated screenshots
- Technical manual to explain how functions are constructed, and how to build on them in the future.
- -

These will be added to with each sprint goal.



Data Analytic Engine Refinement

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COMPANY BACKGROUND

KPMG is one of the largest professional services companies in the world operating in 155 countries. Sustaining and enhancing the quality of the company's professional services is KPMG's primary objective. As well as having such large scale of operation in the globe, it is as influential in New Zealand's professional services industry. KPMG offers its clients ranging from privately owned businesses, business corporations to governments, public sector agencies and not-for-profit organizations with high level quality services based on professional capabilities, industry insight and local knowledge. It operates as a network of member firms offering audit, tax and advisory services, including IT.

KPMG' NZ's IT Advisory (ITA) professionals primary goal is to manage technology related risks to meet strategic and financial goals of a client company focusing on the business impact of technology and to provide independent advice based on the specific needs of each client. One of the main emphasis is developing innovative solutions to suit various business needs. Our team is working with Ram Narasimhan, Senior Advisory Manager and Tokio Hamasuna, Senior Technical Advisor whose primary roles are to coordinate and guide us through in this project.

PROJECT AIM

The Problem

There are a variety of the toolsets, solution frameworks and templates have been developed in the company that need to be brought all together to provide a more efficient and effective core analytics engine for the purpose of improving standards for data acquisition, processing and reporting processes.

The Solution

The aim of this project is to improve KPMG's Data Analytics Engine by automating the majority of the steps required in receiving the results that are used for reporting. This will be done by using Alteryx for advanced analytics, Microsoft SQL Server database for storage and Tableau /QlikView for advanced reporting/what-if analysis.

PROJECT SCOPE

Scope

The scope of this project will consist of automating KPMG's Data Analytics Engine that will allow for consistent processing of client data. This will involve converting stored procedures and views currently stored in the company's Microsoft SQL Server database into Alteryx jobs. This enables the automation of processing which will lead to consistent processing of client data. Currently there is no automation of these processes that allows for consistent processing. Further on, the creation of dashboards to display the results produced by the processing the client's data. This will allow for visualization of results and provides useful information in minutes rather than days of reading excel spreadsheet reports. The following objectives will need to be done to achieve this goal:

• Understand the current state and the limitations it contains

- Create logic to extract data into Alteryx
- Create logic to process data in Alteryx
- Store results into Microsoft SQL Server database
- Create dashboard in either Tableau or QlikView for visualization

Methodology

As advised by the sponsor, KPMG, the team follows a traditional SDLC method. By adopting this method, the team will undertake the project in a well-planned, well-structured manner and lay down the cornerstone for success.

The diagram below illustrates the methodology the team will follow.



Requirement Analysis: At this phase, the team aims to find out as thorough as possible on what KPMG requires in both the data aspect and the functionality aspect for the proposed solution.

System Design: At this phase, the team will produce design and architecture documents that illustrate how the team has designed the proposed solution to meet KPMG's requirements.

Implementation: At this phase, the team will implement the proposed solution which will satisfy KPMG.

Testing: At this phase, the team aims to ensure the solution is free of error and bugs. Ultimately, the solution should be able to operate at a highly satisfactory level of KPMG.

Deployment: In this phase, the solution will begin its operation and generate value for KPMG.

CURRENT PROCESS

The current process at KPMG requires a significant input of time and effort in order to get results for reporting. Staff spends approximately eighty percent of their time attaining complete data used for processing. They store this data in Microsoft SQL Server and then run stored procedures/views on to collect results required for reporting. These results are converted into excel spreadsheet reports which are sent back to the clients.



Diagram 1 illustrates the architecture of the proposed solution for KPMG.

Diagram 1 System Architecture for the Proposed System

Data gathering

Data gathering deals with the initial request for auditing by clients, sending data request templates to clients, getting source files from clients and converting these source files to SQL Server database source files. This part requires dealing with clients and checking for incomplete data and therefore cannot be automated. Manual processes are beyond the scope of this project, therefore this aspect will remain untouched.

Data cleansing

Data cleansing deals with the ETL process in Alteryx. ETL stands for 'extraction, transformation and loading,' which is the process of retrieving data from operational systems and pre-processing it for further analysis. The purpose of using Alteryx application to perform this process is to deliver the complete range of data preparation tasks with a drag and drop workflow without the need of programming. A successful implementation of this stage will enable users to manually map the source file into Alteryx to receive a standardized set of data ready for processing.

Data Processing

Data Processing is the follow-on phase from the data cleansing stage in Alteryx. This point requires the conversion of test cases from stored procedures/views to Alteryx jobs. This will enable consistent processing of data and faster results for reporting. The project entails converting seven different test suites for the seven entities that this project deals with. The entities include: Manual Journals, Accounts Payable/Accounts Receivable, Payroll, Claims, Fixed Assets, GST and Revenues. The

successful implementation of this stage will produce an automated workflow of receiving results for reporting for each of the seven test suites. The results will be stored in the already existing Microsoft SQL Server database in KPMG.

Data Visualisation

Data visualization deals with converting the resulting data from the data processing stage into a dashboard. This requires using data visualization software such as Tableau to create a dashboard enabling end users to get important information in a matter of minutes as opposed to days. Tableau helps people see and understand their data. It is easy to learn, easy to use and ten to hundred times faster than existing solutions. Such qualities ensure Tableau as the first choice of data visualization software to use for this project. There will also be a need to produce automated Excel spreadsheet reports for client's that are reluctant to change, or those who require that style of reporting in addition to dashboard reporting.

Business Benefits

The benefit provided to KPMG by having an automated system is that the data will be processed in a consistent manner. The time required in getting complete data used for processing will be reduced. The time required for giving their client's the information will be shortened significantly, therefore improving the client's overall satisfaction. This will strengthen relationships with clients as they do not have to wait for a long time to get the information they need from KPMG.

DESCRIPTION OF MAJOR ACTIVITIES

The major activities that need to be completed in order to achieve the success of this project are:

- Understand the current state and the limitations it contains
- Research the software to be used in order to know how that software fits in the project
- Understand the test cases for the different types of sources
- Create standardized template that will be used for Alteryx processing
- Create logic to extract data into Alteryx
- Create logic to process data in Alteryx
- Store results into Microsoft SQL Server database
- Create dashboard in either Tableau or QlikView for visualization
- Testing when required ensuring correctness in logic



One Team Referral (OTR) Mobilisation

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COMPANY BACKGROUND

ASB Bank was founded in Auckland in 1847, and has since been acquired by Commonwealth Bank of Australia. Over the last 160 years ASB has grown to be one of New Zealand's most prominent banks with 130 branches and over 1.3 million customers nationwide. Through ASB's unbeatable team of over 5000 employees, it is known for being forward-thinking, technologically innovative and a leader in it's field. ASB has won numerous awards for its online financial services, including Canstar's inaugural 'Best Online Banking Award' in 2012 and again in 2013.. ASB's breakthroughs in banking technology include introducing New Zealand's first internet banking website in 1997 and in 2006, allowing customers to send and receive money through text message— another first for New Zealand. These breakthroughs are directly in line with the Banks vision of "Unbeatable team. Unbeatable service". This vision is the foundation of Project Sidekick.

PROJECT AIM

The Problem

ASB has an unbeatable team that is focused on providing unbeatable service to all customers across New Zealand. Part of the key to that service is connecting the team with the information and tools they need, on the platforms and devices they need, where and when they need it. One of the best ways of sharing knowledge of ASB products and providing customers with the best possible service is for staff to refer customers to trained ASB specialists. These referrals constitute a significant part of ASB new business, and many staff are now using the OTR (One Team Referral) system – especially since the introduction of the Friends and Family package in 2012. This is only done with the permission of the potential customer, but allows for staff to act as 'one team' in referring business to other parts of the organisation and promotes cross-sell within product lines as well.

The problem is that the OTR system is still only accessible from inside the ASB network and only when on a desktop or virtual machine. There is a need to be able to refer customers wherever they are met – often when the only device a staff member may have on hand is an ASB-issued or personally-owned smartphone or tablet device. ASB does not currently have an application available for staff to use on these devices when making OneTeam referrals. While the current OTR system can be accessed through turning the device into a virtual machine, it was not designed to be used on tablet and smartphone devices and thus it is tiresome and difficult to use on these platforms and requires access to the ASB network.

THE SOLUTION

The proposed solution for this project is to design and build an application for ASB which will mobilise the current OTR system. The solution will extend the work of the 2013 OTTER project and allow ASB employees to access the OTR system from smartphone and tablet devices. Through the proposed application employees will have the ability to log into the OTR system from anywhere in the world and make a referral (provided they have a working internet connection). The application will then behave much like the current OTR system and automatically transfer the referral to the relevant department and specialist.

PROJECT SCOPE

The immediate scope of our project is to mobilize the One Team Referral System (OTR). We will be required to investigate which mobile software platform will best suit ASB and the OTR system. Part of this investigation will be the decision on how a referral is authorized, this is of particular importance as ASB includes employees with both personal and ASB issued devices. Our scope does not extend to managing the referral once it has been made.

We must be mindful that Project Sidekick includes a large stakeholder map and thus need to ensure we are careful not to extend the project scope beyond our capabilities. In order to stop scope creep the solution will be developed using an agile methodology, with sprints lasting two weeks. We will be working closely with ASB, holding weekly meetings with immediate stakeholders and monthly meetings with larger stakeholders.

CURRENT SYSTEM

Although an old OTR (One Team Referral) system is currently in place, ASB has confirmed that as of May 2014 an updated OTR system will be rolled out. This system is the brain child of the 2013 Project OTTER. The current system facilitates ASB employees in making One Team Referrals. Once connected to the ASB network employees can connect to the OTR system, enter the details for the referral they are making and submit the referral. Within the referral details, employees can enter the specific department the referral should be submitted to if it is known. This facilitates the manual process of choosing the correct department, saving time for support staff.

PROPOSED SYSTEM

The proposed Project Sidekick system will essentially allow ASB employees to make a referral from any location worldwide provided they have a valid internet connection. The application will then behave much like the current OTR system, automatically transferring the referral to the relevant department and specialists. The system empowers employees with the flexibility and mobility to create referrals from anywhere, unbounded by the long tedious task of logging in through their VPN to access the internal ASB network, including following a series of steps which require excessive time and effort. To counter this, the system will allow the user to easily enter the details of the new customer to be referred straight into an application on their smartphone or tablet.

Hardware and Software Platforms

As ASB employees use a range of smart phones and tablets – both ASB issued and personal, the aim is to allow for multiplatform use, creating flexibility and usability thereby removing constraints which limit the number of staff how currently use the system.

The software environment will support the series of multiple hardware and its relevant operating systems. There is a range of different software we are considering to facilitate this multiplatform need, most environments we have considered use HTML5, CSS and Java Script language to support the platforms. We are conducting in-depth research in this division to find the most viable solution. The software platforms centre on a universal approach, allowing us to develop one system which can be used across all ASB devices.

Our team has been made aware of specific information such as potential software environments, that we are likely to use for Project Sidekick. Due to the nature of ASB and their protocol surrounding confidentiality; we are unable to disclose any further information as it is internally strategic to the company.

DESCRIPTION OF MAJOR ACTIVITIES

Development Methodology

For project sidekick, we have decided to use an agile methodology. This will involve 5 2 week sprints, with each sprint involving a key part of develop. We have decided to take this approach due to the nature of our project and its focus on mobile development. Taking this approach will be beneficial to ASB as it will allow for adjustments to occur and be implemented without requiring a complete rebuild, this helps create a product that the clients will use and love.

Alongside using an agile methodology we have decided to use ASBs Solution Delivery Life Cycle (SDLC). This SDLC consists of 5 phases, Propose, Assess, Design, Execute, and Closure. **Propose**



The goal of the Propose phase is to understand why the system should be built and how it will benefit ASB. This phase will also define at the highest level the requirements for mobilising the OTR system. At the end of this stage, it should be possible to provide an understanding of the complexity of the opportunity. This understanding is built up by completing three documents, the Technology Concept Paper, Assess Estimate and the Architectural Significance Indicator.

The estimate produced at the end of this stage is for the cost of the assess stage. As the solution progresses through the Assess and Design stages the estimate for the upcoming phase becomes more accurate. The CIB, Change Initiation Board is the gateway to proceed from the Propose to the Assess phase however as the propose phase had been completed before our arrival at ASB we will not be required to present to the CIB.

Assess

Our team is currently in this phase of the ASB SDLC. The goal of the activities in the Assess stage are to refine the business problem associated with the not having a mobilised OTR system and the

technical aspects of the solution space down to the point that there is one well defined solution. This is an incremental process where initial options are built upon and then refined down relative to the business goals and high level requirements.

The activities that occur in this stage will vary but may include the Technology Concept Design, High level use case definition and high level solution design. The Architecture Review Board (ARB) is the gateway to progress from the Assess to Design stage.

The estimate produced at the end of this stage is for the cost of the design stage and a high level total cost of mobilising the OTR system.

Design

The goal of the Design stage is to produce a design that maximises the probability of the correct solution being developed within the necessary tolerance for the new mobilised OTR system.

The activities in the design stage will vary by project but may include detailed network design and a functional specification development. As our team is taking on an agile approach, the activities in the project may also include the production of prototypes.

The Design Review Board (DRB) is the gateway to progress from the Design to the Execute stage and it is the DRB that will approve and release the estimate. The estimate produced at the end of this stage is for the total cost of the new system subject to the tolerance established with the sponsor in the Assess stage.

Execute

During this phase of our project, the solution is actually built, tested, and finally deployed. During the course of this stage any governance items that have been identified and flagged by the Architecture Review Board and/or Design Review Board must be addressed. At the completion of this stage and prior to release to the closure stage the governance items will be checked off by the Change Approval Board.

Closure

The closure stage includes a transition of responsibility for the realisation of any benefits from project Sidekick to the Business Owner.

Finally as part of the Closure stage structured activities are undertaken to evaluate the process by which the mobilised OTR system was developed and delivered. The goal of these activities is to ensure that the process is as effective as possible.

Auckland University Deliverables

•	Deliverable One	16 th April
0	Project Schedule	
0	Project Brief	
0	Presentation One	
•	Deliverable Two	17 th May
0	Detailed Action Plan	
0	Presentation Two	
•	Mid-Year Report	1 st July
•	Deliverable Three	16 th July
0	Interim Report	

- o Presentation Three
- Deliverable Four 8th September
- o Final Documentation
- o Presentation Four
- Project Exhibition 26th September
- Project Handover 3rd October



COMPUTER FANATICS

Mobile Application Development

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COMPANY BACKGROUND

Computer Fanatics Limited (CFL) specializes in providing custom software and hardware solutions to small and medium size businesses in the Asia Pacific Region (specifically New Zealand, Australia and Singapore). CFL is a wholly New Zealand owned and operated company and has been established since 1989 (over 24 years). Some of the key solutions in the current IT portfolio include VetlinkSQL software for Veterinary industry, HairlinkSQL software for the Hair Salons, Beauty Clinics and Day Spas industry.

CFL creates customised software and hardware solutions to business, which gives them the ability to record client relevant information directly onto the system application. This application can be sync'd and stores all the information inputted onto a cloud based database hosted on called P2P Limited.

The following are the CFL products:



VETLINK^{SQL} is a modern Veterinary Practice Management Software designed using the very latest tools, providing one of the most powerful and flexible packages available on the market today. It has been carefully designed with a feature set that caters for businesses.



HAIRLINK^{SQL} is a comprehensive software solution for the management of Hair Salons, Beauty Clinics, Nail Bars, and Day Spas. It has been carefully designed with a feature set that caters for businesses with only a few staff at a single location to large multi-branch operations that may want to run all their branches on-line.



P2P Limited has been formed specifically to examine long standing problems in the Veterinary Industry and then complete the puzzle to solving business process issues encountered by Veterinary Practices



Animal Health Plan "web app" is a state of the art software delivered through a "Software as a Service" (SaaS) model via the Internet. It is designed for the Veterinary Professional and the Farmer to be able to work collaboratively to achieve "best practice" in animal and farm management.

PROJECT AIM

The Problem

Computer Fanatics current system is called VETLINKSQL, which is a Clinical Practice Management Software that runs at Veterinary Practices. This system each night synchronizes relevant data of customers gathered from the Veterinary Practices onto a cloud server called P2P limited. Then from this cloud database the data is accessible on a web-based platform by individual end user client to view their Pet's records including, but not limited to, Vaccinations Due, Account Balances, Invoices, Financial Statements, Loyalty Points, and so on.

The problem of the current system that is that the system does resize itself to fit onto a handheld device, however it is not user friendly, not all functionalities of the web-page can be used on the mobile device and the design aesthetic is not very appealing to the user.

The user does not receive access to all the features of the system unless the user is always connected to a computer with a web-browser via a desktop PC and because the system is cloud-based it needs to always be connected to the Internet. This could be a limitation and also a problem of current systems due to its inconvenience to the end user always having to always be connected to a desktop and a web-platform.

Due to technological advances the market is making a heavy shift toward creating customer accessibility on a mobile device. The current system does not create convenience for users to retrieve their information on a handheld device, because there needs to be a physical presence of the customer in the clinic for any appointments, prescriptions and reports that need to be created. CFL has acknowledged this change and demand for mobile accessibility in the market, and the Computer Fanatics Infosys Team have created a solution to help them achieve this vision.

THE SOLUTION

Our proposed solution for this project is to roll out a customised mobile application to specific veterinary clinics. This mobile application will be used by the customers of the veterinary clinic to retrieve and display the customers and their pet's Veterinary information onto their handheld device. This application will change the relationship from customers receiving their information web-based to directly on their mobile device. This will create direct connection from the veterinary office to a specific customer.

This will allow customers to make appointments much more efficiently. This means that the customer does not have the need to come-in to the branch to gather reports, to book an appointment or get a prescription as it call all be done on the mobile device. The mobile application will also have other exciting features that will enhance the value of the customer, such as ordering prescriptions, video tutorials for helpful tips, GPS location integrated with Google and many more. These features will create the need for customers to purchase the application and be loyal to its specific veterinary clinic.

PROJECT SCOPE

The scope of our project is to build a mobile application for Computer Fanatics Limited. This involves retrieving and displaying the information from their existing cloud based platform which is P2P limited. The data that is stored in this platform is synchronized from VetlinkSQL each night, which is a clinical practice management software used by veterinary clinics.

This Mobile application is developed, customised for individual veterinary clinic. This is then rolled out to the customers in a mobile application, who then can access this application to view relevant data on their pets' clinical records. From a high level perspective, the entire project is split into three stages:

- 1. The first stage requires the team to have a research on the project requirements, the relevant database used and the required resources.
- 2. Then we would analyse the mobile software used (Delphi XE5) to build, design and develop the mobile prototype application.
- 3. After several testings and evaluations of the mobile application system, we handover the completed project to Computer Fanatics Limited to sell to their clients and roll this application out onto the Android and iOS market.

The software development methodology that is going to be applied for this proposed solution is iterative and incremental development methodology. This methodology aids software developers and designers to take advantage of the previous versions as well as follow a systematic cycle which can be repeated in order to make smaller increments at a time. This allows a chance to test after each milestone and improve the design or the model after each review.

Our solution will be to build the customized mobile application for a veterinary clinic and some of the features we will be implementing:

- Appointment booking directly from the mobile application
- Viewing of clinical records (online and some off-line
- GPS location routed with Google maps
- Send reminders for vaccinations and appointments
- etc.

CURRENT SYSTEM

Computer Fanatics current system is called VETLINKSQL, which is a Clinical Practice Management Software that runs at Veterinary Practices. This system each night synchronizes relevant data of customers gathered from the Veterinary Practices onto a cloud server called P2P limited. Then from this cloud database the data is accessible on a web-based platform by individual end user client to view their Pet's records including, but not limited to, Vaccinations Due, Account Balances, Invoices, Financial Statements, Loyalty Points, and so on. This data is stored onto P2P Limited that provides online cloud based storage system. This cloud data is also then used for automating marketing for the business. The overall system of CFL is that it uses a windows platform to run the desktop application VetLinkSQL. This then synchronizes with P2P overnight via a client server.

This system is broken into equations, at one end of the equation sits the end user client who wants access to timely information and services delivered in the most modern medium such as SMS (TXT Messaging), email, and live data access via the Web. At the other end of the scale are the "Vendors" who want to facilitate seamless e-commerce services for the provision of goods and services. Then there are the "Suppliers" who want to delve deep into the clinic database and "mine" information to provide sophisticated marketing initiatives "to grow the business". P2P Limited is well on the way to facilitate all these requirements for all parties that form part of the "supply chain".

Hardware Environment

When VetLinkSQL is sold for the Veterinary Clinic, the hardware platform comprises of a client server which syncs the relevant data from the VetLinkSQL to the P2P cloud platform overnight. Another Hardware platform that is used is a Windows desktop platform to run their client application

Software Environment

The software environment that is used by Veterinary practices is the VetLinkSQL application that is run on the Windows Application. As well as, CFL is currently using visual Studio for C# background cloud connectivity with its P2P database.



PROPOSED SYSTEM

The benefits of this proposed system are that CFL will be able to customise and sell this mobile application to many different veterinary clinics. This application will be one of its kind in the market as no Veterinary clinic till date has a firm specific mobile application that will delivery and display data about its customers pets. This application is not only limited to that, but has the ability for the customer to book appointments, send requests for prescriptions and display other veterinary and customer specific information.

The benefits this application will provide an extent not only from the sales revenue of this application, but also the advertising revenue from this application which will be implemented as an advertising banner in the application. This innovative and unique step in Veterinary practice will provide for Computer Fanatics to be seen as a trailblazer in the veterinary mobile application market. As well as, this niche application will help build computer fanatics market share and reputation. The reason why Computer Fanatics has such a presence in the market is due to that fact that they have a cloud base data repository where relevant customers and vet clinics records are stored. This combined with Computer Fanatics Mobile application solution will be an apex reason for Computer Fanatics to hold its competitive advantage in the market.

In order for this application to provide benefits to the Veterinary clinic and its customers, the application is built to be customised in accordance to its specific veterinarian clinic. This allows the application to have the firm specific veterinary clinic logos, clinic description and the major value adding feature of this application is that it will retrieve, display and store firm specific customer data of each veterinary clinic. This will allow Computer Fanatics to sell this application to many different veterinary clinics.

This application will also provide convenience benefits to the customer and specific veterinary clinic as the customer will not have to constantly come into the clinic to request for reports and prescriptions hence freeing but administrative staff and vets to get on with their day to day activities.

However this application will also create a sense of proactivity and will create a much organised sense of communication between Vet Clinics and its customers. With the ability to book and create reminders for appointments, vaccines and other tips, this will let customers come into the veterinary practise only when needed and will make the process of the veterinary experience much more efficient, through the use of the mobile application already asking the important questions from the first step the customer's books an appointment.

Due to Computer Fanatics using embarcadero's software XE5 and Delphi for the building of this application this will allow easy compilation of the code onto the android and iOS platforms. This enables our team to work more efficiently. The proposed system has space for new ideas which can be implemented as the project progresses. This can allow the business to be innovative with their creation as well as keep the project moving as the market trend moves.

Hardware Environment

The hardware platform for the propose system will be the same as the current system which comprises of a windows server, where the data will be inputted. From this the data will be synced overnight onto the P2P Limited cloud. The hardware platform required is the windows server and since the rest of the process is cloud based there will be heavy software requirements.

Software Environment

The software environment that the proposed system will use is P2PLimited which cloud base platform that will directly connect and sync the data from the VetLinkSQL overnight once inputted by the vet, and this will be viewed by the customers of the vet clinic via the P2P cloud based software.

For the building of the mobile application CFL will be using Delphi XE5 from embarcadero. This new trailblazing software will allow for the developing and designing of the app whilst compiling and coding the app into CPU and GPU which can be implemented onto the Android and ISO platform. This software with the use of the cloud based P2P Limited will allow our information on the cloud to be displayed onto the application.

Proposed Functionalities

The functionalities of the proposed system will be on RAD studio. This will allow for a standard mobile application to be built, which can be compiled to CPU and GPU and retrieve transaction fast for the end user.

Computer Fanatics veterinary data is currently stored on the cloud through the use of the p2p limited platform. This data stored will be retrieved and displayed onto the app through the use of the new embarcadero software, Delphi XE5, which is used compile the code onto android and iOS platforms. Delphi XE5 is the new trailblazing software that compiled the code into two platforms i.e. android and IOS. This technology is identified as next thing is software and app development.

This system is a Front end Cloud Computing (Current system as accessed by web) and Front end of app to as downloaded from application markets.



DESCRIPTION OF MAJOR ACTIVITIES

Development Methodology

For this project, we have decided to follow an iterative and incremental development methodology for our software development process. This suggests developing a system through repeated cycles and in smaller increments at a time, so it allows software developers and designers to take advantage of previous versions and iteratively improve the evolving versions until the full system is implemented. This methodology was chosen because we can enhance designs and functions at each cycle, and iteratively make evolving versions to develop an outstanding product that the clients and the software's users are satisfied with.



Major Activities

There are four sets of activities that our team will be undertaking to complete a successful outcome for this project:

1) Research and Analysis

This activity involves researching a range of project requirements for the project solution development and gathering system design ideas to satisfy clients' needs and wants. Our team has to be comfortable in using Delphi XE5 software, C# and Pascal language to develop an application for mobile devices. For full insights of the project, analysing project requirements and resources is an essential process before planning for the project schedule.

2) Integration & compatibility

This activity involves our mobile application integrating its solutions with other products of Computer Fanatics Ltd. In this process, there would be data modifications and insertions from the P2P limited onto our mobile application, so it is required to be compatible with the company's database, and also be compatible with the company's other applications which may potentially import data from the same database.

3) Product Development

Our system requires creating a mobile application for clients to provide them a tool to enhance communications with Vets. A design for the application needs to be customer-oriented, easy to use and realistic. As well as, the application need features for the application to be synced with the customers' Google calendar and provide other innovative features that will add value to the customer experience of the application.

4) Documentation

The documentation needed for the final hand over the application will be a user manual which will in details explain the process of customising the application to fit individual Veterinary clinics, as well as other maintenance documentations.



Business Process Management System

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COMPANY BACKGROUND

Hansen Technologies is global company for developing, implementing and supporting proprietary customer care and billing solutions for service providers within the energy, telecom and pay television industry. It was established in 1971 in Melbourne, and has grown into a worldwide company with over 500 employees. Hansen provides its services in over 40 countries worldwide.

Hansen is the world's largest independent Customer Information System vendor that caters for major energy suppliers, telecom, Pay TV, water and cable in deregulated, competitive and transitioning markets worldwide. The wide range of comprehensive requirements of typical large utility providers, deregulated network providers and small energy retailers, are met with Hansen's Customer Information System (CIS). Hansen has an excellent history with delivering solutions through flexible engagement approaches which makes them the perfect choice to deal with the constantly changing requirements that the competitive market demands.

Hansen is recognised by the relevance of its technology and the extensive knowledge of the people who support it. Their innovative solutions are constantly evolving alongside their respective industries to accommodate market, technology and business driven changes.

Because Hansen has acquired several software companies in the past, they now have 5 unique solutions which include ICC, Utilsoft, Nirvanasoft, Peaceplus and HUB. Each unique product provides different solutions cater for the customer's specific needs.

PROJECT AIM

The Problem

Although many of Hansen's billing solutions have powerful built-in workflow capabilities, the Nirvanasoft system has not, as of yet, had an automated workflow integrated with the system that users can customise. Because of this, there are multiple limitations.

Firstly, if any users of the Nirvanasoft solution wanted to modify or change a process, they have to contact Hansen technologies in order to do so. This is very untimely and inefficient.

Secondly, by not having an automated workflow, it is therefore in many instances, left up to people to pass information on to the part of the process and make sure all the information is accurate. Having an automated workflow would improve the data integrity of the Nirvanasoft solution.

Lastly, not having an automated workflow module integrated with Nirvanasoft means the energy companies have to employ many people to complete their processes. This however, could be completed faster and easier with an automated workflow system, resulting in fewer costs for the energy companies.

THE SOLUTION

We will build an engine that will automate processes within the energy companies. For example, a customer's complaints process. It will be modifiable so that it can be adapted to their specific and changing needs, so that they don't need to contact Hansen Staff. Therefore the engine will include features such as status tracking, handling wait periods, retry loops, validations, in order to make the automated processes extremely beneficial. The interface will be straightforward and easy to use, so

people that aren't so technically skilled can still operate and navigate. The engine will be able to connect to the multiple tiers of the Nirvanasoft solution.

It will be built with open source technology, which we will be researching for the first 20% of the project in order to provide positives and negatives of each. All options will be evaluated and then the best open source technology (or combination of) will be chosen to build the automated workflow engine.

We will then provide three automated workflow processes in Customer complaints, Account Receivables and Sales to demonstrate the system is working properly.

PROJECT SCOPE

The scope of our project is to build a standalone workflow engine for Hansen and use some selected example (call centre complaint, bill collections) business processes' use cases, to demonstrate the engine. This will allow Hansen's clients to build a business process efficiently, and easily integrate with any other solutions. This project would only need to integrate Nirvansoft initially, with an open design enabling Hansen to later integrate with other products.

Working demonstration will need to include use of graphics, for example Eclipse, to build a new interactive process. Then, we need to execute the process with the software. Furthermore, we need to use some tools such as dashboards, reports, visual feedback of any sort to leverage and present capabilities in order to make the software more appealing and desirable to clients. Finally, we need clear, complete documentation regarding the design, usage, installation, and maintenance of the application.

CURRENT SYSTEM

Hansen's current Information System that we will be working on is the NirvanaSoft solution. This is a complex billing system that is targeted North American energy retailers with up to 200,000 customers each. It maintains customer information in the NirvanaSoft database, and calculates how much money is owed.

Nirvanasoft's market-leading billing functionality is powered by an object-relational rating engine that requires no proprietary language in order to create and bill rates and products. Its architecture is based on compiler-design based techniques as opposed to traditional application architecture and is based on a design principle of "configure, not code". Rates, products, and services are created by populating set-up screens, without the need for programming. This significantly decreases the time required for new product definition and entering new markets – key considerations for deregulated retailers.

Nirvanasoft's architecture is based on the Microsoft Windows platform, and uses the latest .NET technologies – a state of the art Service-Oriented Architecture (SOA) platform that delivers high performance and easily integrates with existing third-party or in-house systems, such as Meter Data Management systems, forecasting systems, web portals (providing data download and complex analysis to large-scale C&I customers), as well as legacy CIS systems (providing output of summary level invoices, including bill-ready line item calculations and billing determinants.)

The NirvanaSoft system is broken into 5 tiers. These are:

- Database Server (SQL Server)
- Reporting Server (SQL Server + Reporting Services)
- Transaction Server (BizTalk)
- Application Server (COM Components, .NET Assemblies)
- Web Server (IIS)

PROPOSED SYSTEM

Hardware

The hardware Hansen will provide us to develop the project is

- 3 Dell Precision T7400 Tower Workstations
- 2 Intel(R) Xeon(R) CPU X5260 @ 3.33GHz Dual Cores
- 8GB RAM
- 400GB SAS drives (RAID5)

Software Environment

Hansen's current development software environment consists of several Microsoft software which are Windows BizTalk Server 2010, Windows Visual Studio 2010, SQL server 2009 R2 Developer Edition and the Operation system, Windows 7.

Windows BizTalk server 2010 provides enterprise application integration, business process automation, business-to-business communication, message broker and business activity monitoring. And in a common scenario, BizTalk enables companies to integrate and manage automated business processes by exchanging business documents such as purchase orders and invoices between different applications within, or across organizational boundaries.

Windows Visual Studio 2010 is used to develop computer programs for Microsoft Windows superfamily of operating systems, as well as web sites, web applications and web services. SQL server R2 is the tool to create and manage the database.

Proposed Functionalities

- Verification of the current status: Check whether the command is valid in executing a task.
- Determine the authority of users: Check if the current user is permitted to execute the task.
- Executing condition script: After passing the previous two steps, workflow engine begins to evaluate condition script in which two processes are carried out, if the condition is true, workflow engine execute the task, and if execution successfully complete, it returns the success, if not, it reports the error to trigger and roll back the change.

TARGET BUSINESS BENEFITS

The benefits for the business that the new system can provide are:

1. The new system will be very efficient, because the automated workflow engine provides graphical interface to allow the users can modify the business process by themselves. There's no need to contact Hansen again. Then the new system will run very efficiently.

- 2. The information will be more accurate and Nirvansoft will have data integrity. Because of automated workflow engine, all the information and commands are executed by the engine, it can make sure it is more accurate than being manually executed.
- 3. The cost of operations will be reduced. More accurate data means lower error rate, lower number of employees required at the call centre, as a lot of business processes will be automated. Therefore the whole process can be carried out by the automated workflow engine quicker, more efficiently and more effectively.

DESCRIPTION OF MAJOR ACTIVITIES

Development Methodology

We will use agile methodology to implement this project. Agile development methodology provides opportunities to assess the direction of a project throughout the development lifecycle. This is achieved through regular cadences of work, known as sprints or iterations, at the end of which teams must present a potentially shippable product increment. This type of methodology puts an emphasis on communication, over documentation, and uses working software as the main measure of progress.

The type of Agile Methodology that Hansen uses is Scrum. The main characteristic of Scrum is that it adopts an empirical approach, where it accepts that requirements cannot be fully defined and new challenges will have to be met. To implement Scrum a project needs to have living backlogs, sprints and sprint reviews.

For our project, we will use time boxed development cycle. For each sprint, we will choose activities from a backlog of tasks. At the end of each sprint we will have a sprint review in which working software demos will be presented. The backlog consists of activities that need to be carried out to implement the project and will continue to evolve through the project, according to the nature of Scrum. An example of an activity that is part of this project's backlog is the process of deciding what open source technologies to use for the project.

Major Activities

The automated workflow management project is categorised into three stages:

- Stage 1 Research of Open Source Technologies
- Stage 2 Building of the Workflow Engine
- Stage 3 Demonstration of 3 workflows

Stage 1 (Research of Open Source Technologies) will involve researching which is the best option (or combination of) to build our workflow engine. We will spend the first 20% of our project doing such, in order to provide positives and negatives of each. All options will be evaluated against each other to make our decision.

Stage 2 (Building of the Workflow Engine) involves us building an engine that will automate processes within the energy companies. For example, a customer's complaints process. It will be modifiable so

that it can be adapted to their specific and changing needs, so that they don't need to contact Hansen Staff. Therefore the engine will include features such as status tracking, handling wait periods, retry loops, validations, in order to make the automated processes extremely beneficial. The interface will be straightforward and easy to use, so people that aren't so technically skilled can still operate and navigate. The engine will be able to connect to the multiple tiers of the Nirvanasoft solution.

Stage 3 (Demonstration of 3 Workflows) will involve building three workflows to for our automated workflow engine, in order to demonstrate that our system works as it should. The workflows will be for customer complaints, sales and accounts receivable. Each will be completed by a different student.



Service Unification Engine

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COMPANY BACKGROUND

OneNet is New Zealand's market leading cloud-computing provider. Dr. Michael Snowden and Paulette Snowden established OneNet in 2000 with the goal of addressing the emerging "on-demand" computing market (now known as cloud computing). In 2013, OneNet became the first to achieve Microsoft's Gold Hosting Partner status.

OneNet's cloud computing services are delivered to firms ranging from single person start-ups to 1,000 user organisations in both NZ and overseas. These services include hosted email, hosted applications, including both custom and vendor-supplied, as well as server hosting and online data backup solutions. Services are sold directly by a sales team, as well as through a broad network of business partners.

The OneNet IT environment is enterprise-class, with all computing infrastructure based on IBM servers, Cisco networking equipment and Microsoft operating systems together with a sprinkling of Open Source solutions. Whenever possible, OneNet focuses on automation and self-service for its cloud services.

PROJECT AIM

The Problem

OneNet provides clients a range of hosted services. Challenges arise with data retrieval because of complex and sometimes shared data sources. For Microsoft services, many relevant details are stored in Active Directory as it is used to authenticate users for these services. Further information about each service is stored in the services own environment, often based on Microsoft SQL Server. Non-Microsoft products have different data sources altogether.

This makes it difficult for staff to quickly access important information without strong technical knowledge. A further concern is the diverse formats of data, making it difficult to retrieve and analyse relevant information. Currently, OneNet staff must consult with the engineer(s) who are responsible for the service to obtain the desired information. Engineers often must do the process of data extraction and compilation manually.

For example, OneNet's account or sales staff may need specific service information about a client's usage. The engineers will provide requested information when they are able, however the returned data may be in different formats depending on the extraction tool and not match what is required. This reduces productivity, as staff who need the information are not able to obtain it themselves when it is needed and will need to spend valuable time formatting it after they receive it.

The Solution

The aim of this project is to design and implement a solution that enables interaction with data from all OneNet's services from a single place. This will involve the creation of a service unification engine – 'IOneNet'. IOneNet will operate as an interface between staff and the services. It will allow staff member to obtain relevant information from all data sources and convert the data to meaningful outputs that may be used in areas such as billing, reporting, analytics and process automation

This will require completion of the following set of objectives:

- Automate the process of user data fetching
 - o Involves generating relevant queries for each of the service provided
- Automate the conversion of specified data types
- Requires implementing a conversion method for each of the data types requested
- Automate the process of data presentation
 - Requires resenting the data in the required format, including reports and/or dashboards.

PROJECT SCOPE

The scope for the project will consist of building an application that will provide access to client data in a unified way. This will involve generating queries and transforming data types in order to automate the process of fetching data from all of the service databases. This will allow OneNet staff to have direct access to the data they require when they need it. Currently there is no existing system in place that provides this functionality. The following objectives will need to be done to achieve this goal:

- Understand the existing data structures
- Create a unified interface to all core services for data manipulation
- Utilise key KPIs to produce web-based reports

The project will be split into three different modules:

Module Number	Module	Estimated Month of Completion
1	Data Definition	May 2014
2	Implementation	September 2014
3	User Interface	September 2014

The project will be developed using an agile methodology, specifically, the scrum methodology. Each module will require the process of analysis, design, development and testing. Generally, at the end of each module confirmation from the project stakeholders will be needed before advancing to the next module.

There will be five iterations for both module two and three, one for each service. The completion of a module here will be considered on a per-service basis. A service will be implemented, tested and approved before moving on to module three. A user interface will then be created for that service before moving back to the implementation stage of the next service.

CURRENT SYSTEM

There is no current unified data access tool within OneNet. The process is frequently done with manual querying and formatting which limits the access to very few employees and is quite time consuming. Data access methods vary and include PowerShell, SQL and software development kits.
PROPOSED SYSTEM

The IOneNet solution will contain universal methods that will enable access to data from all services. It will do this by providing a service that can access all individual databases. It will be created in C#, a server-side language developed by Microsoft as part of the .NET Framework.

The unified interface will be built from scratch, as there are currently no available solutions suitable for the existing interrelated systems. This will allow full control of the functionality that will be offered and the ability to customize each query according to the requirements. This interface will then be able to be used along with other software packages in order to report on and analyse extracted information.

The core IOneNet logic will be created within a DLL so its functions can be shared with other custom OneNet applications. These may then manipulate data themselves, or further expose it to other applications.

Architecture



The diagram shows how the IOneNet interface will be encapsulated to provide data to custom software packages to provide outputs such as reports and Excel spreadsheets. Almost all of the databases are Microsoft SQL Server, although the structure and extraction method will vary for each. Data in Active Directory will also play an important role as it is used by most Microsoft services.

Business Benefits

The IOneNet solution will streamline the data fetching process, which will deliver fast and more efficient data when needed, leading to the following business benefits.

Simplified Access

IOneNet will enable a more simplified process to obtain data. By having the IOneNet system, it will eliminate the requirement of having to consult the engineer for the service data. All staff of OneNet will be able to directly retrieve the service data themselves in real time.

Analytics

Service data can be pulled out of multiple databases and different services can be compared easily for the first time. The data extracted by IOneNet can be transformed for analytics by providing it to an existing software package such as Tableau. This would enable staff of OneNet to analyse and visualise relevant data. The ability to easily perform analytics across services will assist OneNet management to make strategic decisions.

Process Automation

The automation of currently manual processes will be a major benefit for OneNet. Staff members will not have to manually extract data and the formatting can be pre-prepare to meet various requirements. Such automation can be used in a variety of ways, for example, improving key business processes, such as billing.

DESCRIPTION OF MAJOR ACTIVITIES

The project will be divided into 3 modules:

- 1. Data Definition
- 2. Implementation
- 3. Information Presentation

Modules 2 and 3 are split into 5 services:

- Hosted Exchange and Active Directory
- Hosted SharePoint
- Hosted CRM
- Hosted Desktop
- Virtual Servers

Data Definition

The first major activity is to understand the structure among multiple platforms. Understanding the different formats of data and how it will be outputted is vital.

Each service OneNet provides has different clients and each client has different users using these services. OneNet uses Microsoft Active Directory to control and monitor all the clients and their users for Microsoft services. A single client may have multiple services and each service may or may not have different users.

Due to this complex management system, there is likely data redundancy and duplication of data. It is crucial to understand the data structures that will need to be dealt in order to extract exactly what is needed in the formats required for future manipulation.

The aim for this module is to understand the different types of data and the similarities of data between services.

Implementation

The purpose of this stage is to extract the relevant data for each service.

The development will require the construction of methods, which will access the database, extract the data and manipulate it into the format required. During this phase, as the module is being designed and developed, technical and user documentation will be written.

The first module will be the most challenging phase, as a process will need to be established. The following iterations for subsequent services will be more straightforward as development of the process for a general service will already have been completed.

Information Presentation

This module requires the outputted data to be converted into meaningful form such as a report or a dashboard. This will be done for every service using data from module two as a foundation.

IOneNet will be connected to a front-end platform, which the end-user will ultimately use for their task, such as the creation of custom service reports. Drafts of the report format will be presented to OneNet for approval before development will begin. Tableau dashboards may be used to represent information, which will allow end-users to visualise data and analyse trends. There is also the potential for integration with an instant messaging system that would allow requests to be made without opening an additional program.

Shared

Testing

Testing is important to ensure that data structure and development of the iteration is correctly functioning. Testing will be rigorous to ensure that there are minimal errors. It is crucial that all functions of IOneNet work efficiently and free of error, as IOneNet will be extended by other systems.

Process Revision

It is important to report back to OneNet and obtain feedback after the completion of an iteration for a service. This will ensure that the team is on task and that the service is functioning as expected. If any areas need to be improved or concerns arise, this can be easily resolved before moving on to the next service.