

CSC 375 - Introduction to System Analysis

Final Report - Stampers!

Team 16

Report Date: December 4, 2019

Purpose of the report:

- Fulfill the course requirements of CSC 375
- Improve the business workflow for Stampers!
- Demonstration of the proposed solution

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Introduction

Throughout the course, we have worked closely with our client, Stampers!, which is a small local art supply store in Victoria. It's a small family business that most of the customers are regulars of the store. It is currently not active on social media and most customers are in their middle-age; therefore, our client has realized a need for business workflow improvement as the current workflow is heavily relying on human labour and there is a lack of human resources to perform manual tasks. Furthermore, our client wants to increase their competitiveness in the market share by promoting their merchandise and workshops online.

Team Background

Chelsea Chen

Team Leader + System Analyst | chelsea.L.chen@gmail.com

Third-year Health Information Science student. She worked as a Business System Analyst at Fraser Health this past summer. Enjoys learning topics related to usability study and project management. As the team leader, she will be responsible to actively interact with the client, organizing team meetings and making sure everyone is on track with their work. After graduating from UVic, Chelsea wants to continue the path of healthcare and become a consultant for healthcare companies.

Steve Chen

Media Editor + Software Developer | stevenchenofficial@gmail.com

Fourth-year Computer Science student. He focuses on the pursuit of perfect quality and the highest efficiency. Always happy to accept challenges and actively face all difficulties. He has worked as an intern at two different schools and received consistent praise. He will be in charge of managing the website and creating visuals for the team. As a software developer, he will be creating and designing a new system. Steve is unsure of his plans after graduating, however, he will continue to search for his passion in the future.

Edwin Cheng

Product Developer | edcsup1996@gmail.com

Fourth-year computer science student. He concentrates on analyzing data to turn it into efficiency and effectiveness. After experiencing a co-op work term, he is looking forward to new challenges. As a product developer, he will ensure the design of the system meets the needs of stakeholders. After graduating from UVic, Edwin wants to pursue to become a game designer and design a game that all ages will love.

Angela Jiang

System Analyst | angelajiang515@gmail.com

Third-year Health Information Science student at UVic. She worked at Alberta Health Services as a Project Coordinator this summer. She has learned about data analysis and gained knowledge of how technology integrates with healthcare. As a system analyst, she will identify system deficiency and find ways to improve it in order to meet the client's needs.

After her graduation from UVic, Angela wants to volunteer in a senior home and continue to the path of healthcare.

Sabrina Shum

UI Designer | 9988shumsabrina@gmail.com

Third-year UVIC student studying Health Information Science. She worked at Island Health Patient Care Quality Office over the summer as a Project Assistant. She is also a barista at Starbucks and loves making latte art to enrich customers' experience. As a User Interface (UI) Designer, she will develop an interface that is intuitive to all users to navigate.

Mignon Tsai

System Analyst | mignontsai@gmail.com

Third-year student Health Information Science at UVic. She is interested in a broad range of topics including project management, mental health, visualization design, and usability engineering. She has newly gained experience with Tableau from the classes she attended this past summer. As a system analyst, she will be identifying any system flaws and find ways to improve it.

Vincent Zheng

Software Developer | zyh19931225@gmail.com

Third-year computer student at Victoria University. Yuhao is from China, loves basketball and music, and is willing to work hard for the teamwork. As a software developer, he will not only create and design the system but will also conduct testing for the systems to identify any system flaws. When Vincent graduate after next year, he may look for work related to his major, or use the knowledge he has learned in school as a volunteer.

Executive Summary

This report focuses on Stampers!, a small local business in Victoria that is proud of delivering art supplies to the community. Throughout the semester, our team has been investigating on the best approach to design a system that addresses the needs of our clients, with the main objectives being: allow customers to track purchase history and rewards points; provide educational resources and promotional information; allow customers to pre-register and pre-pay for events online; and enable customers to contact Stampers directly through the website if they have any inquiries or concerns.

The current system that Stampers! Involves the storing of membership cards in a binder, which has gotten larger over time. This system proves to be inefficient because employees need extra time to look through the cards and find the customer's information at each checkout. The process of searching through the binder can take up to minutes, which will increase in the waiting time for customers and thus will decrease customer satisfaction. Furthermore, there are several problems with the use of paper-based membership cards, such as transcription errors, missing information and extra cost of the printing of these cards. Due to the lack of physical space in the store, there is no desktop computer in-store and Stampers handles all digital-related business tasks using an iPad. Furthermore, Stampers currently only use Facebook as its primary online promotional source, which poses several problems for the business.

In order to address our client's needs, we proposed a new system with two components: Square website and Square app. We chose to use Square since it's cost-effective and easy to use. There are no monthly fees associated with the use of Square's POS service, meaning there is a minimal commitment to the service. The implementation of Square will enable the storage of customer information, purchase history and tracking of rewards points. Rewards points will be automatically updated after each purchase for registered customers, and customers will have the option to receive a text or email for their receipt. Event registration will be done through the website since the website has a built-in eCommerce functionality. Promotional information and educational resources can be uploaded to the website and file format can be a word document or MOV file. Because of the benefits of using Square, we recommend our clients use this software.

Characterize the problem

Our clients have been facing several problems in their business. The first problem is the use of the physical membership card to store customers' information is time-consuming and inefficient. Since Stampers never discard or organize these cards, a stack of hundreds of membership card has formed in a thick ring binder. This method of information storage has made the checkout process ineffective. For example, upon each checkout, the employee must search through the entire ring binder to find out whether or not the customer has a membership card. In other words, the customer must wait for the employee to go through the binder during checkout, which can take up to three minutes depending on whether or not the binder is sorted alphabetically. Regardless, this waiting time can detriment customer satisfaction as the customer might become frustrated due to a long wait time. When a customer is frustrated at waiting, there are two possible actions that they might take: the customer might give up the points in order to save time or the customer might wait for the search but dissatisfied upon their experience, and might not shop in the same store anymore.

In addition to being inefficient, using paper to store the information are undoubtedly lagging behind in the digital age. The use of paper-based membership can ultimately lead to other problems. For example, since paper cards have space limitations, once a membership card is full, the information needs to be transferred onto a new copy. A few uncertainties might be introduced during this transfer process:

- Transcription errors
- Missing information due to damage
- Unnecessary time loss
- Extra cost for new membership cards

Through our conversation with Team 5 and a site-visit to Stampers, our team has gained a better understanding of Stampers' daily operational process. It is observed that the store has a limited space to install a desktop computer. Therefore, the Stampers uses an iPad to process all of their digital tasks, which limits the use of software application due to the compatibility issue with IOS. From Stamper's past experience, their old website had been hacked and therefore discontinued. To re-establish a new website, we will need to make sure the platform we implement is secure enough for Stampers to use.

Currently, Stampers only has one online promotional method, Facebook. Although Facebook is an effective social network, it does not fully address our client's needs and it is inappropriate for business communication. The problem with using Facebook in a business setting is that not all Stampers' customers have a facebook account. For instance, if Stampers posts a Black Friday sales event in-store on Facebook, only customers who subscribe to Stampers will receive a notification about this sales information. For customers who do not have a Facebook account, they will have no information source to find out about this information unless they phone, email or go into the store.

Furthermore, Facebook's feature of always prioritizing new feeds at the top of the page also poses a problem for our client. For instance, if Stampers posts some in-store events in the morning and the customer checks his Facebook at night, it is likely for the customer to miss the information that Stampers posted earlier. However, since what our client wants is a platform for

customers to retrieve store information such as the latest products, events, or holiday special discounts at any time. This Facebook feature can be a good fit for Stampers if the store owners can constantly update feeds about Stampers during the day. Yet since Stampers lacks the human resources to maintain frequent updates, this Facebook feature can be a drawback to Stampers. To resolve this problem, an independent website can be a solution that can promote our client's business anywhere anytime and also enhance its popularity among the community.

After comparing the expressions of model and scenario, we chose to use scenario to describe the problem. The reason for using this method is first to make our client's problem clear. When we use the scenario approach, we will look at the problem from the perspective of the stakeholders. Compared with other models or diagrams, the advantage of Scenario is that through fictional user stories, we can go to a certain degree of real experience, so that we have a deeper understanding of the problem. For example, in our scenario, one of our team members really went to the client's store, and then stood in place for several minutes by joining a member. At that time, he thought this time was completely unnecessary. After we recognize the severity of this problem, in the subsequent solutions, scenario can also help us avoid the wrong solution and determine whether this solution is suitable for our clients. For example, when choosing software that can record customer information, our first consideration is whether this system has a 'search bar' function because it can quickly find the name of the corresponding customer. Second, we will consider the security and convenience of the software. In addition, whether it is suitable for the elderly is also an aspect to be considered. Therefore, for our group's project, using Scenario to describe the problem is a better choice. It can help us recognize the severity of the problem, and it can help us avoid wrong choices and provide the correct solution.

New System Description

In order to solve the challenges and problems presented in the current system, we have proposed a solution that can transform the current manual process through the implementation of the mobile application, Square. The new system's process workflow The proposed solution consists of two components: the Square application and its built-in website.

Square is a point-of-sale application that is designed to provide a reliable and fast POS system for businesses. It allows business owners to take payments using their IOS or Android devices. Since our client only has an iPad in-store and does not have the capacity for a computer, this is part of the reason we chose to pursue with Square as our solution. The implementation of this system is relatively simple and cost-effective as it only requires the free downloadable software and a Square magstripe reader, which accepts all forms of card payment with the same standard rates (2.65% per card transaction). In addition, Square does not require any monthly fees, meaning there is no long-term commitment to the system. While Square provides a range of reasonably priced card-reader hardware, we recommend our client to purchase the piece of hardware called Square Stand for Contactless + Chip (see figure 2). The reason for purchasing this hardware is that this hardware is specifically designed to support the POS on an iPad. The Square Stand comes with a USB hardware hub, so if needed a receipt printer, cash drawer and barcode scanner can be added.

Part of our client's requests is to eliminate the use of physical membership cards as it is time-consuming to go through all the membership cards at each checkout process. The implementation of Square can meet this requirement effectively as Square has the capability to store customer information, purchase history and rewards points (as shown in the prototype section). During the checkout process, the employees can use the search bar to locate the customer's information if they've already existed in the system and directly process customer's purchases using Square. If the customer does not exist in the POS system but wants to be part of it, the employee can quickly register the customer into the system by asking the customer to fill-in some basic information such as gender, phone number and email. However, if the customer does not want to be registered into the POS system, the employee can also perform guest checkout as well, meaning no record of purchase history or rewards points will be kept. Otherwise, the reward points and transaction history will automatically update after each purchase for registered customers. Customers also have the ability to choose to receive either the digital (email or text) or print receipts depending on their preferences.

The other component of the solution consists of the use of Square's built-in website. The website will mainly serve as a place for customers to retrieve information about the upcoming workshops and receive information about the promotion of merchandise in-store and educational resources as these are part of our client's requests. In other words, this website will not serve as a selling platform, but an additional source for promoting store information. According to our original project charter (see Appendix B), we envisioned that the website should allow customers to view their rewards points online. However, we have deviated from the original plan since we discovered Square has the functionality to include rewards points information digitally or on print receipts. Since our client does not want the website to be a selling platform, the need for the customer to have their own account decreases. Instead, updating them with rewards points information after each purchase might be a simpler solution.

For the implementation of the website, we strongly suggest the subscription to the professional version of the website, which costs \$15 per month. This extra cost can remove all the advertisements within the website, which can present a cleaner look on the website. The Square website provides all the template layouts to its users, thus it is really simple to create a website. In addition, the website will not require excessive maintenance work other than to update any new store or merchandise information. Thus, this application is also user-friendly to those who have low technical literacy.

Currently, customers must go in-store to register and pay for any events or workshops hosted by Stampers. Since this practice of event registration is very restrictive for its customers, Stampers wants to be able to do event registration through the website. In the project charter, we envisioned to create events that customers can sign-up and prepay for on the website. This envisions is achieved as demonstrated in the prototype section. For the creation of an event, a brief description, the time, the location and the number of spots available must be stated. The website can also process all the payment of the events since it has a built-in eCommerce functionality, therefore it accepts most payment methods, such as Visa, MasterCard, and American Express. After customers prepay for the event, they will receive an email receipt, which serves as an admission ticket for the event. However, in the unfortunate case when customers need to cancel their registrations, the customer must notify Stampers via email or by phone. In that way, the employee can issue a refund on the website and customers can receive a full refund in the form of payment they pay for the event.

Not only can Stampers create events for customers to register online, but they can also upload promotional information and education resources to the website. Promotional information includes information about the new arrival merchandise and in-store sales events. Educational resources mainly consist of art tutorials and other support materials that can help customers to DIY using Stampers' products. Originally in the project charter, the client only asks to put educational resources to the website. However, after our conversation with our client to investigate the purpose of the website, which is an information platform for customers. Our team decided to add-in Stampers' promotional information to the website as we think it can help customers to keep up the store's sales events.

These promotional and educational resources can be uploaded to the website in the form of a video or a word document and the employee have the option to remove these resources anytime they want. To upload a video to the website, the file type of the video must be an MP4 or MOV. Should there be any concerns or problems in the process of uploading a video to the website, an error message will be generated and pop-up on the screen.

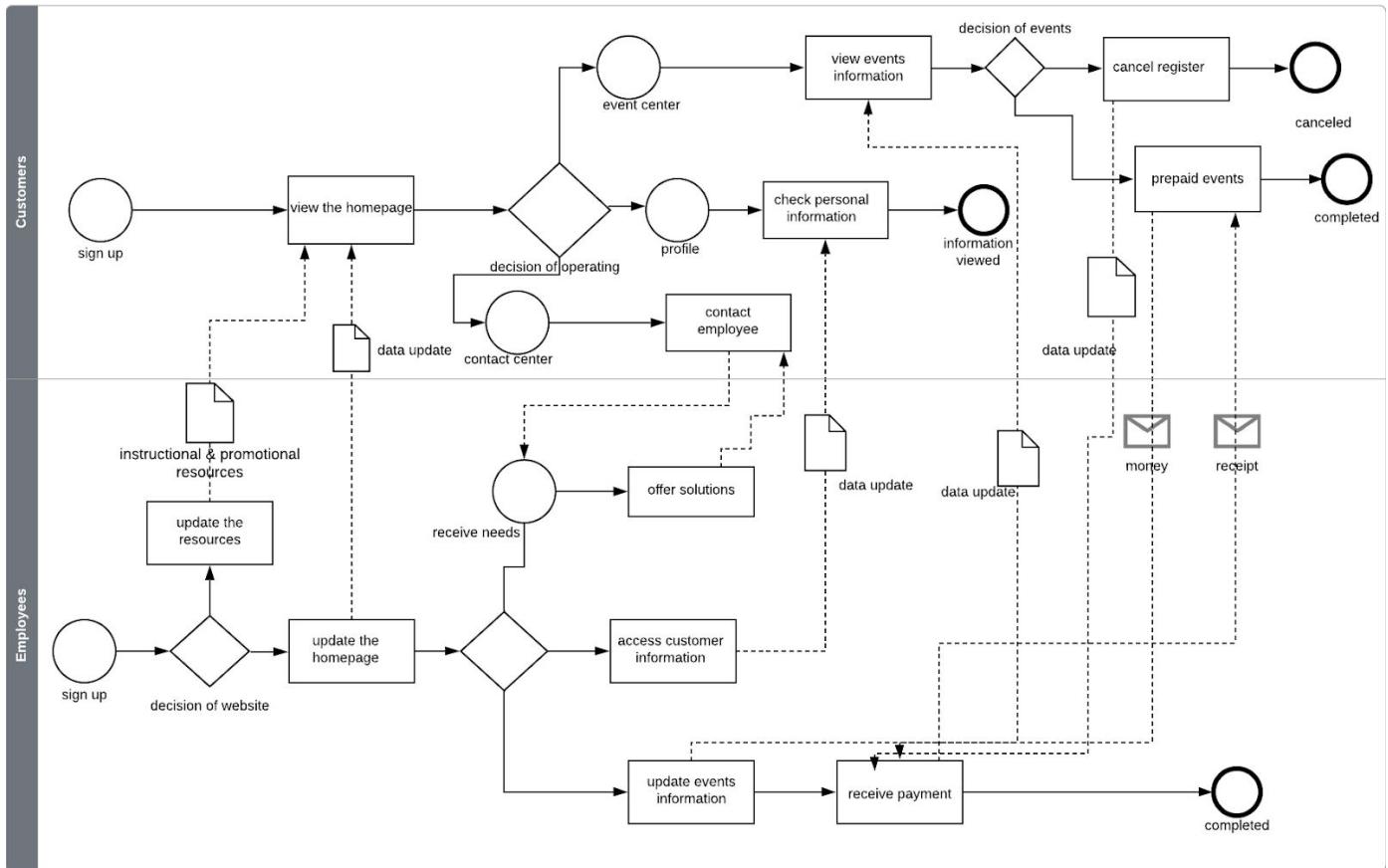


Figure 1. Process workflow of the new system.



Figure 2. Square Stand for contactless + chip

Cost and Benefit Analysis

Cost

In order to increase the likelihood for the new system to be implemented, we have conducted careful cost and benefit analysis for the system. The two major categories associated with the implementation of Square are a one-time cost and fixed cost.

The one-time cost consists of:

- Purchasing of Square Stand for Contactless + Chip (\$199)
- Transition costs (\$600)
- Training fee of (\$500)

The fixed cost consists of:

- Professional website without ads (\$15 per month)
- Square - Loyalty program feature (\$60 per month)
- Card transaction fee (2.65% + 10 cents per transaction)

As part of the one-time cost, the transition cost is mainly associated with the time that an employee needs to take to transfer all the customer information to the new system. In addition, the training fee refers to the amount of time that an employee takes to learn to use the new system. On the other hand, the fixed cost is essential for the daily operation of Square, such as the use of loyalty feature to keep track of customers' rewards points. Although the cost in the implementation year is estimated to be the highest, we have forecasted that starting on year two of implementation, the cost will remain relatively stable (see Table 1)

	Years				
	1	2	3	4	5
One-time cost	\$1,299	0	0	0	0
Recurring cost	\$2,490	\$2,490	\$2,490	\$2,490	\$2,490
Total	\$3,789	\$2,490	\$2,490	\$2,490	\$2,490

Table 1. Cost breakdown and forecast for the implementation year (Year 1) and post-implementation years (Year 2,3,4)

Benefit

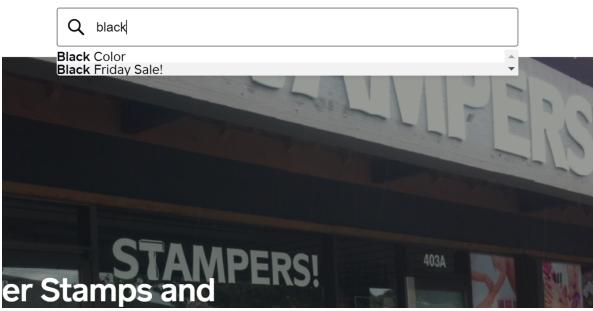
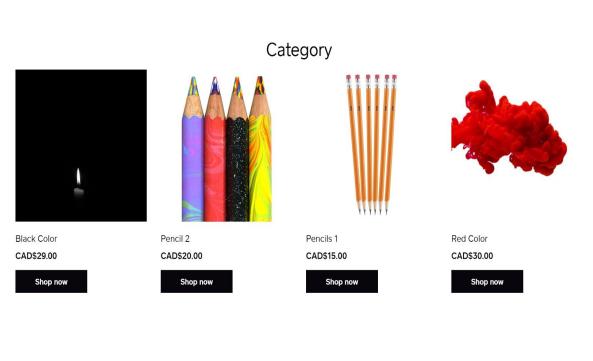
Although the implementation of the new system involves extra costs, there are many benefits that the new system can bring for Stampers. The two types of benefits associated with the proposed solution are intangible benefits and tangible benefits. Some of the intangible benefits include customer retention, the increase in competitiveness in the market share, and improved the efficiency of the business workflow. The new system can promote customer retention because customers will no longer become frustrated at waiting for the employee to find the membership cards from the binder at the checkout. Furthermore, Stampers will be able to better manage customers' rewards points and can send an email to customers to remind them that they have enough points to qualify for an in-store discount.

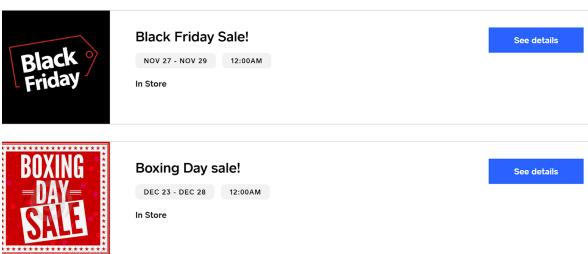
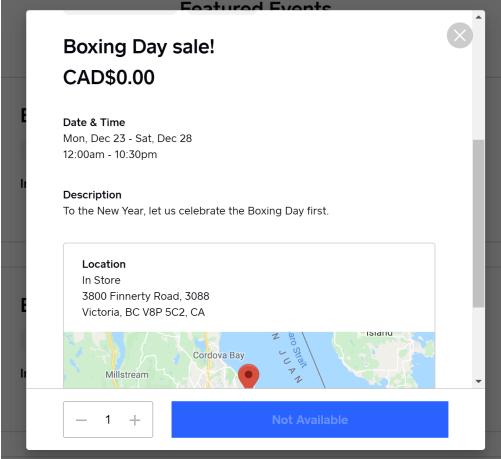
As for tangible benefits, our proposed system can ease employees' searching process and reduce in customers waiting time. The new Stampers website can attract more customers to the business because it increases marketing exposure and provides a platform for customers to browse and pre-register for events in anywhere and at anytime. On the other hand, Square application has a built-in encryption services, information will be backed up on a regular basis and encrypted to prevent data loss.

Prototypes

Since our proposed solution consists of two components: the website and the application, Square. This section provides a walkthrough of the prototypes' interfaces and basic functionality.

Stampers Website

Screenshots	Description
 	<p>This is the HomePage of the website. On the top right corner, it displays a search bar and a cart logo. Customers can use the search engine to look for upcoming events, such as the "black Friday sale" displayed in the lower image.</p>
	<p>On the same page, it contains a catalogue of Stamper's merchandise products. Clients can also upload new products to the website.</p>

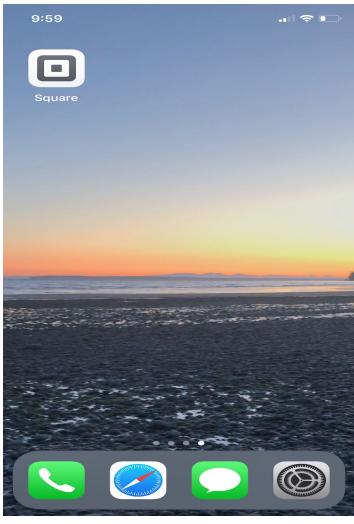
 <p>Pencil 2 CAD\$20.00 Quantity: 1 Not Available</p> <p>This store is not yet accepting payments. Available for in-store pickup</p>	<p>When customers select an item, it directs them to the description page to allow them to have a closer look at the item. According to client's requirement, the website is only for promotional purposes. Therefore, if a customer would like to purchase merchandise products, they will need to go in-store.</p>
 <p>Featured Events Our latest event details are below, have fun.</p> <p>Black Friday Sale! NOV 27 - NOV 29 12:00AM In Store See details</p> <p>Boxing Day sale! DEC 23 - DEC 28 12:00AM In Store See details</p>	<p>The goal of this website is to promote in-store workshops and events. As shown in the figure, there is a list of upcoming events and deals. If a customer would like to register for the event, they can select "see details"</p>
 <p>Boxing Day sale! CAD\$0.00</p> <p>Date & Time Mon, Dec 23 - Sat, Dec 28 12:00am - 10:30pm</p> <p>Description To the New Year, let us celebrate the Boxing Day first.</p> <p>Location In Store 3800 Finnerty Road, 3088 Victoria, BC V8P 5C2, CA</p> <p>Not Available</p>	<p>In the details page, it displays event descriptions such as admission fee, location, date and time, etc.</p>
 <p>Explore our Instagram</p> <p>See full feed</p>	<p>Customers are welcome to retrieve more details by following Stampers social media account.</p>

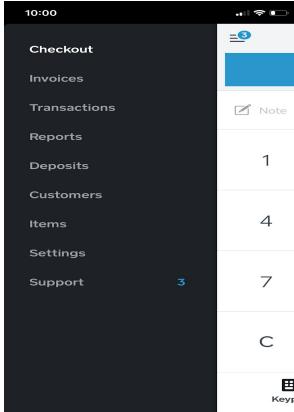
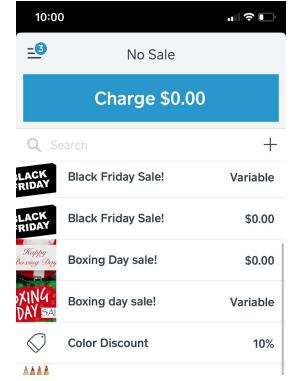
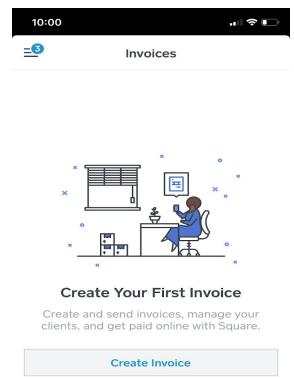
<p>Stay in the loop</p> <p>Get the latest when you sign up for our newsletter.</p> <div style="display: flex; justify-content: space-between;"> <input style="width: 60%; border: 1px solid #ccc; padding: 5px; margin-right: 10px; border-radius: 5px; height: 30px; margin-bottom: 5px;" type="text" value="Email"/> Sign Up </div>	<p>To get the latest and greatest deals on Stamper's merchandise and events, customers can sign up for the newsletter by providing their email.</p>
<p>Contact Us</p> <p>Reach out to us and let us know if there is anything we can do for you</p> <div style="display: flex; flex-direction: column; align-items: center;"> <input style="width: 30%; border: 1px solid #ccc; padding: 5px; margin-bottom: 10px; border-radius: 5px; height: 30px;" type="text" value="Full name"/> <input style="width: 30%; border: 1px solid #ccc; padding: 5px; margin-bottom: 10px; border-radius: 5px; height: 30px;" type="text" value="Email"/> <div style="border: 1px solid #ccc; width: 30%; height: 60px; margin-bottom: 10px; border-radius: 5px;"></div> Submit </div>	<p>Last but not least, if a customer has any questions or would like to provide feedback for Stampers, they can contact Stampers by providing their name, email and message they would like to deliver.</p>

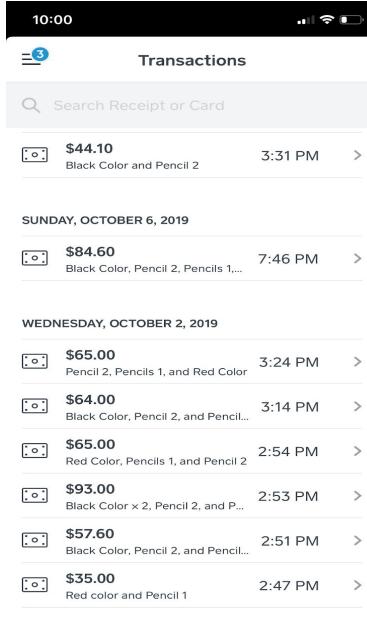
Table 2. Prototype screenshots and description - Stampers Website

Square App

The application we suggest our client to adopt is called Square. It can store

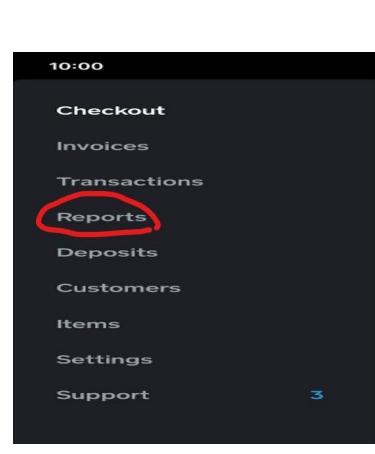
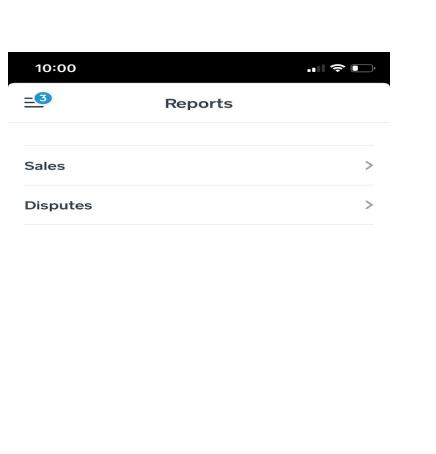
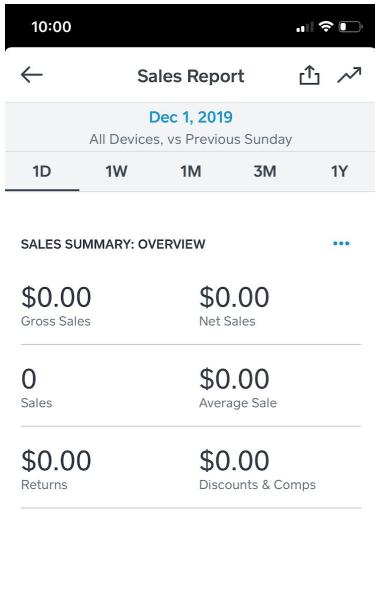
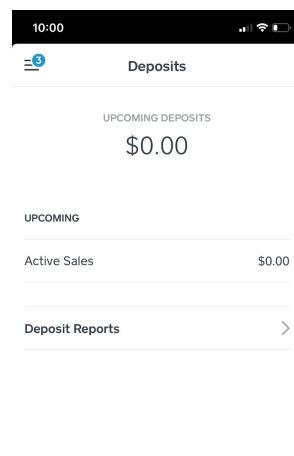
Screenshots	Description
	<p>This is the view of users looking from their home page with their iOS devices.</p>

	<p>This is the interface when the user opens the app and displays the navigation menu.</p>
	<p>The screenshot displays the check out function of the app where the user selects multiple items and add-in to their cart.</p>
	<p>The user can create or delete invoice on this page</p>



The screenshot shows a mobile application interface titled "Transactions". At the top, there is a search bar labeled "Search Receipt or Card". Below the search bar, a transaction is listed: \$44.10 for "Black Color and Pencil 2" at 3:31 PM. The date "SUNDAY, OCTOBER 6, 2019" is displayed above a list of transactions. This list includes: \$84.60 for "Black Color, Pencil 2, Pencils 1..." at 7:46 PM; \$65.00 for "Pencil 2, Pencils 1, and Red Color" at 3:24 PM; \$64.00 for "Black Color, Pencil 2, and Pencil..." at 3:14 PM; \$65.00 for "Red Color, Pencils 1, and Pencil 2" at 2:54 PM; \$93.00 for "Black Color x 2, Pencil 2, and P..." at 2:53 PM; \$57.60 for "Black Color, Pencil 2, and Pencil..." at 2:51 PM; and \$35.00 for "Red color and Pencil 1" at 2:47 PM.

This interface lists a customer's transaction history. It shows how much each transaction was and when the transaction was made.

 	<p>On the navigation menu, users can tap on “reports” on the navigation menu, it directs the user to the sales and dispute option. It then generates a sales report including information such as gross sales, net sales and average sales, etc. The information can be displayed in daily, monthly, or yearly.</p>
	
	<p>Users can go back to the navigation menu and retrieve deposit information.</p>

	<p>Staff can create and edit customers' profile using the app. It can include information such as contact information, reward points, purchase history, etc. This feature allows employees to search customer's information easily and efficiently using the search engine and the system also organizes the names in alphabetical order.</p>
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The screenshots illustrate the Items function in the application, allowing employees to manage various business components:

- Items Screen:** Shows a list of items including "Black Color" (\$29.00), "Black Friday Sale!" (Variable), "Black Friday Sale!" (\$0.00), "Boxing Day sale!" (\$0.00), "Boxing day sale!" (Variable), "Pencil 2" (\$20.00), "Pencils 1" (\$15.00), "Red Color" (\$30.00), and "Workshop" (\$10.00). There are also icons for "LACK RIDAY" and "XING DAY".
- Categories Screen:** Shows categories like "Color Choice" and "Pens". It includes a note: "Create lists of modifiers that can be applied to any item. Tap Create Modifier Set to begin. Learn more."
- Modifiers Screen:** Shows a note: "Create modifier sets that can be applied to any item. Tap Create Modifier Set to begin. Learn more."
- Discounts Screen:** Shows a discount entry for "Color Discount" at 10%.
- Units Screen:** Shows a note: "Create units that can be applied to any item. Tap Create Unit to begin. Learn more."

Text on the right side:

These are showing the details of Items function. Employees can add or delete the displaying items, organize information by categories, set discounts, and create units accordingly to the items.

	<p>Lastly, this shows the Support interface for the App. Users can refer to this page when they encounter difficulties while using the app.</p>
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Table 3. Prototype screenshots and descriptions - Square app

Recommendations

In response to our client's needs, we decided to implement the application, Square and the Stampers website. However, besides our proposed solutions, there are also some recommendations that can be helpful to improve Stampers' business workflow and customer satisfaction:

1. The application Square has a high adoption rate all over the world. There are a large number of online tutorial resources that users can use as a reference or guideline. In order to smoothen the transition to the new system, we strongly suggest our client allocating time to learn about Square through these available online resources.
2. Although unlikely, there is a possibility that Square might have a system error and in turn all customer information will be lost. Therefore, it is highly recommended that clients to also back-up their customer information to a cloud service on a regular basis to prevent potential data loss.
3. Considering not every customer knows about and familiar with the new website, we would like to suggest our client take a few additional steps to promote and expand their online business and popularity:
 - a. Informing customers in person at check out
 - b. Promote and deliver information regarding the website on product packaging
 - c. If our client has a business or personal social media account, copy and paste the website link onto the profile section for promotion purposes
 - d. Consider displaying QR codes on event posters for customers to scan
4. It would be a pleasant approach to greet and introduce customers to any of the new products and other preferential or upcoming activities. This step does not only enhance sales but can also enrich customer experience and satisfaction.

Acknowledgements

We would like to sincerely thank Stampers! for providing us with this great opportunity to learn and analyze their business. We would also like to thank Team 5 (Georgia B., Tyanna, Jalila, Georgia M., Rhythm and Eileen) for always being there to answer any questions we have regarding our client. In addition, they always provide solid feedback for our project solutions and making sure that we meet the requirements for our new system.

Appendix A - Project Status Report

Week of September 6, 2019 - September 13, 2019

TASKS COMPLETED	START DATE	END DATE
Introduction to team members and group chat creation	September 6, 2019	September 6, 2019
Team meeting to discuss the project approach and choose a client	September 10, 2019	September 11, 2019
Creation of a team website and introduction on the team website	September 11, 2019	September 11, 2019

TASKS TO DO FOR NEXT WEEK	START DATE	END DATE
Meet with the potential client	TBD	TBD

Week of September 14, 2019 - September 21, 2019

TASKS COMPLETED	START DATE	END DATE
Sent emails to first potential client to set up a meeting time	September 17, 2019	September 17, 2019
Contacted potential client through phone number and visiting him in person	September 17, 2019	September 19. 2019
Let Murray know about no responses and think of a new client	September 19, 2019	September 19, 2019
Found new client to work with	September 20, 2019	September 20, 2019
Sent email to the new client to set up a meeting time	September 20, 2019	September 20, 2019
Received response from a new client for meeting time	September 20, 2019	September 21, 2019

TASKS TO DO FOR NEXT WEEK	START DATE	END DATE
1st client meeting	September 23, 2019	September 23, 2019

Week of September 22, 2019 - September 29, 2019

TASKS COMPLETED	START DATE	END DATE
1st client meeting	September 23, 2019	September 23, 2019
Arranging notes from client meeting for RFP	September 23, 2019	September 23, 2019
Distribution of work for RFP	September 24, 2019	September 25, 2019
Editing of RFP for submission	September 26, 2019	September 27, 2019
Project pitch presentation	September 27, 2019	September 27, 2019

TASKS TO DO FOR NEXT WEEK	START DATE	END DATE
2nd client meeting	October 1, 2019	October 1, 2019

Week of September 30, 2019 - October 7, 2019

TASKS COMPLETED	START DATE	END DATE
2nd client meeting	October 1, 2019	October 1, 2019
Arranging of notes from client meeting for Project Charter	October 1, 2019	October 1, 2019
1st Meeting with analysts Team 14 and Team 5 as analysts	October 2, 2019	October 2, 2019
Distribution of work for Project Charter	October 2, 2019	October 3, 2019
Rough draft of Project Charter	October 5, 2019	October 7, 2019
Working of Project Charter Presentation	October 7, 2019	October 8, 2019

Week of October 11, 2019 - October 18, 2019

TASKS COMPLETED	START DATE	END DATE
Project charter presentation	October 11, 2019	October 11, 2019
Editing of Project Charter for submission	October 14, 2019	October 14, 2019
Distribution of work for Requirements Section	October 18, 2019	October 19, 2019
Conduct meeting to discuss final presentation and report	October 18, 2019	October 18, 2019

Week of October 28, 2019 - November 2, 2019

TASKS COMPLETED	START DATE	END DATE
Finalize project solution meeting	October 29, 2019	October 29, 2019

TASKS TO DO FOR NEXT WEEK	START DATE	END DATE
Start rough draft of the requirement section document	November 3, 2019	November 8, 2019
Get client's feedback and approval for the system requirement section of the document	November 6, 2019	November 9, 2019

Week of November 3, 2019 - November 10, 2019

TASKS COMPLETED	START DATE	END DATE
Completion of the requirement section rough draft	November 3, 2019	November 8, 2019
Get client's feedback and approval for the system requirement section of the document	November 6, 2019	November 9, 2019
Edit the requirement section	November 8, 2019	November 9, 2019

Week of November 18, 2019 - November 25, 2019

TASKS COMPLETED	START DATE	END DATE
Write PowerPoint slides for the final project presentation	November 19, 2019	November 21, 2019
Create the PowerPoint slides	November 19, 2019	November 21, 2019

TASKS TO DO FOR NEXT WEEK	START DATE	END DATE
Finalize PowerPoint slides	November 27, 2019	November 27, 2019
Team practice	November 27, 2019	November 27, 2019
Draft final project report	November 28, 2019	November 29, 2019

Week of November 26, 2019 - December 4, 2019

TASKS COMPLETED	START DATE	END DATE
Drafted final project report	November 28, 2019	November 29, 2019
Finalize report	November 29, 2019	December 4, 2019
Team presentation	December 3, 2019	December 3, 2019

Appendix B - Final copy of Project Charter

Project Charter
Team 16
Version 1.2

Document History

Version	When	Who	What
1.0	October 3, 2019	Chelsea Chen, Angela Jiang, Mignon Tsai, Vincent Zheng, Sijia Chen, Edwin Cheng, Sabrina Shum	Initial Drafting
1.1	October 13, 2019	Chelsea, Angela, Mignon, Vincent, Sijia, Edwin, Sabrina	Revising draft
1.2	October 14, 2019	Chelsea, Angela, Mignon, Vincent, Sijia, Edwin, Sabrina	Finalizing draft
2.0	November 29, 2019	Chelsea, Sabrina	Revised draft and finalized as a final copy of project charter

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Overview

Executive Summary

The project is about Stampers!, a local business in Victoria that sells art supplies. Their values include fostering meaningful relationships with customers, keeping them enthusiastic, and customer retention. They want to introduce a digital space for their customers where **they can prepay and pre-register for featuring events and be notified with eligible rewards.** ~~customers can create an online profile to access their information, as well as being able to stay in touch with the client and other members online.~~

The current system that is in place to keep track of customer records is on physical membership cards and kept in store. This proves inefficient for data storage as it lengthens the time needed to look up the customer's information. The client wants a digital system that allows them to store and back up all customer information on a regular basis.

This digital system is mainly intended for customers and system administrators (employees of Stampers). The system includes benefits such as customers **will receive emails regarding their rewards points after each purchase,** ~~being able to track their reward points on the website,~~ contact Stampers! directly from the website, and sign-up and prepay for events instead of going to the physical store.

The project—Stampers!-Customer Experience Transformation—has the following main objectives:

- Allow customers to view their **purchase history via email receipt** ~~personal profile information online~~
- Provide educational resources **and promotional information** to customers through **postings** ~~posts~~ of art tutorials and other support materials
- Manage online event registration (**sign-up and prepaid for events**)
- **A method for customers to contact Stampers directly through the website**

~~By allowing customers to view their personal profile information online, the clients can digitalize membership cards instead of keeping physical cards. The employee of Stampers will be able to view customers' rewards points and apply purchase discounts~~ By providing educational resources and art tutorials to customers, customers will be more informed and engaged in the client's service. By allowing customers to register and pre-pay for store events or workshops online, the client can determine the popularity of the events by keeping track of the number of registered people.

However, there are some risks associated with this project. These risks are that customers might experience the initial learning curve for the use of a digital system, the possibility of losing user files if the database of the app is damaged, and lack of physical capacity for a desktop computer which makes the maintenance of the website challenging.

Context

The Stampers! is a small local business that sells art supplies. It seeks to improve customer connections, engagements and retention through the implementation of a digital system since the current system for customer data storage are both inefficient and insufficient. Currently, the employee of Stampers uses a physical membership card to keep track of the customer's information and reward points. This single-copied membership card is kept in a ring folder in the

store. Whenever the customer makes a purchase, the employee of Stampers has to go through and search for the physical membership card for the specific customer, which is a time-consuming process. Thus, Stampers will like to create a digital system that can increase the productivity of business processes by allowing them to store and back-up all customer's related information on a regular basis.

Need

This project addresses the issues that Stampers are facing:

- Change the current system from manual to digital
 - The employee of Stampers must manually search for the customers' reward card, which is stored in the folder, in order to record their reward points.
 - There is only a single-copy of reward cards, which means that the customers are unable to view their reward points unless they call-in or manually keeping track of their points after every purchase.
 - The current business process does not permit the customer to browse, register and pre-pay store events or workshops online since all monetary interactions occur in-store.
 - There is a lack of a compiled site for Stampers to share video tutorials for their products

Scope

The project primarily focuses on developing a new system for better customer interaction. Thus, our two main focuses are to change the current system from a manual to a digital system in order to improve the customer's experience.

The scope of this project is to:

- ~~Allow customers to view their personal profile online~~
- Provides educational resources **and promotional information** to customers
- Management of the online event registration
- **Keep track of customer's information, purchase history and rewards points digitally**

The out-of-scope for this project including the:

- Management of the ordering process with the manufacturers
- Management of the inventory system
- Management of the outsourcing of external teachers

Stakeholders

The intended users of the new system are the customers and system administrators, who will be the employees of Stampers. The key people in the organization related to this project are the employees of Stampers. Their roles and responsibilities are to maintain the external-facing website by posting instructional and promotional videos, communicating with customers online and posting information regarding upcoming events and set a capacity limit for the event.

Objectives

- ~~The first objective of this project is to allow customers to view their own personal profile information, such as their reward points online through the creation of a website.~~
- **The first objective of this project is to keep track of customer's information, purchase history and rewards point through the implementation of the application, Square.**

- The second objective of this project is to provide customers with helpful resources such as video tutorials, and ~~online chats or forums~~ inquiries form for customers to fill out. ~~for Stampers to answer customer's inquiries through the use of the website.~~ Stampers will receive email notifications of these inquiries forms, which they can reach out to these customers and resolve their issues or concerns
- The third objective of this project is to create a website to allow customers to browse, register and pay for store events online.
- ~~The fourth objective of this project is to eliminate the search for physical membership cards through the implementation of an application, Square.~~

Glossary (Team 5 RFP Glossary, 2019)

Term	Definition
Customer	Regular shoppers and tourists (typical age range from 30-80 years old)
Customer Product	Paint supplies, stamps, and crafts
In-store Credit	<ul style="list-style-type: none"> \$20 credit is awarded to customers who spend a minimum of \$250 Customers can accumulate this credit to save up for future purchases
Member	A customer that has subscribed to the rewards program
Membership Card System	Customer card showing customer purchases and points allocated towards in-store credit
Personal Profile	<p>Includes the customer:</p> <ul style="list-style-type: none"> Name Phone number Email Balance of in-store credits Purchase history
Rewards	Points collectable from purchases and can be used towards in-store credit
System Administrators	The system will be administered by the owner of Stampers!
Workshop	Live demonstration of art and craft techniques

Project Approach

Team Organization and Roles

Clients

- Georgia Borissov - Business Analyst | gborissov97@gmail.com
- Tyanna Pridge - Business Analyst | takpridge@gmail.com
- Jalila Jalila - Consultant | jalilawork@gmail.com
- Georgia Ma - Consultant | georgeblub@gmail.com
- Rythm Nagpal - Merchandising specialist | ryths.angel@gmail.com
- Eileen Eng - Inventory Specialist | engeileen.ee@gmail.com

Analysts

- Chelsea Chen - Team Leader + System Analyst | chelsea.L.chen@gmail.com
- Steve Chen - Media Editor + Software Developer | stevenchenofficial@gmail.com
- Edwin Cheng - Product Developer | edcsup1996@gmail.com
- Angela Jiang - System Analyst | angelajiang515@gmail.com
- Sabrina Shum - UI Designer | 9988shumsabrina@gmail.com
- Mignon Tsai - System Analyst | mignontsai@gmail.com
- Vincent Zheng - Software Developer | zyh19931225@gmail.com

Work Item List

1. Whether customers can view their online profile by themselves
2. Whether customers can get educational resources
3. Whether customers can manage online event registration.

Delivery/ Release Plan

Number	Task Name	Description	Delivered Date
1	Request for Proposal	Received Request for Proposal from the client	Oct 1, 2019
2	First Client Meeting	Conduct requirement-gathering for the problem and perform the initial analysis	Oct 2, 2019
3	Project Charter Presentation	Present the charter to the class for critique and feedback	Oct 11, 2019
4	Project Charter Document	Formally recognizes the project and provides direction on the project's objectives	Oct 15, 2019

5	Second Client Meeting	Present prototype demonstration and acquire feedback from clients	Nov 5, 2019
6	Requirement Analysis	Finalizing the requirement section of the final report	Nov 6, 2019
7	Final Project Presentation	Analyze the feedback from clients and focus on designing and refining the solution	Dec 3, 2019
8	Final Project Presentation	Present the finalized solution to the class	Dec 4, 2019

Technical Strategy and Test Plan

There are several technical delivery constraints for this project:

- Limited technical literacy
 - The technical complexity must be kept to a minimum as the employees in Stampers and the majority of the customers have very little technical literacy. If the system is too complex to operate, it will discourage users from using the digital system.
- Limited physical capacity
 - The store does not have enough physical space for an additional large piece of equipment, such as a computer. Thus, the solution must be compatible with an iPad, as this is the primary device used in-store.
- A limited number of employees
 - Due to the lack of labour hours and the constant need to rotate the stocking of stamps, the employees of Stampers have very little time to maintain a system. Thus, the system to be developed must require minimal maintenance work.
- Online chat option is not available
 - Our client has provided the feedback that they will like to make real-time conversations with their customers should they have any questions about merchandise and event information. Ideally, online chat should be conducted in a computer and always need staff to monitor it. Due to the lack of employees and the physical space of having a computer in the store, this feature is currently unavailable.

The major deliverables of this project include:

- Client Meeting Notes
- Analyst website with all the associated project works
- Project pitch
- Project charter
- Requirements section in the final report

- Final report
- Final project presentation

Risks

Risk	Mitigation Strategy	Impact
If the database of application is damaged, the user information will be lost	Create backup files using excel, update and upload it to the cloud service regularly	High
The network environment will affect the efficiency of online transactions	Choose the right network service such as Shaw or Telus to ensure the router works properly	High
Clients will have trouble using the system if they have little technical literacy	Provide tutorials to demonstrate how to navigate in the website	Medium
The website has the potential to be hacked, which can lead to the leakage of client information	Hire specialized Internet professionals to write encrypted code to ensure security	Medium
Potential charges for using the application, Square: -The app may become a paid program. -Intermediary fee associating with using the app	Inform the client in-advance regarding the potential charges	Medium

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Glossary

Customer	Regular shoppers and tourists (typical age range from 30-80 years old)
Customer Product	Paint supplies, stamps, and crafts
In-store Credit	<ul style="list-style-type: none"> \$20 credit is awarded to customers who spend a minimum of \$250 Customers can accumulate this credit to save up for future purchases
Member	A customer that has subscribed to the rewards program
Membership Card System	Customer card showing customer purchases and points allocated towards in-store credit
POS system	It is a place where a retail transaction is completed
QR (Quick Response) Code	A type of matrix barcode for the user to scan to obtain information that is stored in the designated webpage

Rewards points	Points collectable from purchases and can be used towards in-store credit
System Administrators	The system will be administered by the owner of Stampers!
Workshop	Live demonstration of art and craft techniques

Questions and planning tools

From Slack

- Question from Team 5: "Hey! In your solution, you mention an online store? That might work for keeping track of workshop sign-ups, but we just want to clarify that we do not want to sell our stock online. This is because of the cost and time constraints of shipping, and the time and labour constraints with cataloguing all of our quickly rotating stock."
 - Answer from Team 16: "Yes we are aware that you do not want to sell your stock online. As we mentioned in the presentation, it is not required for you to use the online website to sell products, but it will be able to store information of customer transactions, keep track of store inventory, and show the company's contact information to customers on a professional-looking platform."
- Question from Team 16: "We are just looking into some of our costs we've included the implementation cost, training cost and any recurring costs just wondering if there are any costs that we might be overlooked?"
 - Answer from Team 5: "It looks like you covered most of the expenses. We do see a potential cost from using 3rd party services like PayPal though. The store owners are using a credit/debit card machine, so perhaps that card service expense can be discounted or disregarded. Also for the recurring costs (ex. maintenance), the Stampers owners may require a lot of tech support initially."
- Question from Team 16: "Hello, I am wondering if you have an existing POS system in store right now? what is the current check-out process?"
 - Answer from Team 5: "Right now at each purchase, they have physical membership cards kept on a ring beside the register, and prices for each product are stuck on with stickers (there are no barcodes because they were too much work for the small team to utilize)"

From System requirements pdf (1)

Question from Team 5: Customers also want to be able to do this through the website interface.

Answer from Team 16: Noted

Question from Team 5: How can that be worded into a requirement? "Each employee must be able to access each customer message"? What we are looking for here is that we want the employees to be able to receive messages from the customers through the website.

Answer from Team 16: Noted

Question from Team 5: Ambiguous; what does resolve and address mean exactly?

Answer from Team 16: Noted

Question from Team 5: For non-functional requirements, we want to see requirements for:

- availability: how often is the system going to be available? what is the downtime? is it 99.99% available?

- reliability: what is the probability of failure of operation?

- maintainability: how easy would it be for employees to maintain/repair/upkeep the system?

Answer from Team 16: Noted

Question from Team 5: Ambiguous; how exactly do customers perform this task?

Answer from Team 16: Noted

Question from Team 5: There should be non-functional requirements that should take away some of these risks. Look into safety and security requirements.

Answer from Team 16: Noted

Question from Team 5: Another limitation: how quickly employees can enter sales item/customer information into the app if the store is busy or a large purchase is made also does customer information sync between devices? or does every transaction require the same device to be present

Answer from Team 16: Noted

From System Requirements pdf (2)

Question from Team 5: How are customers to do this without a profile? There are no requirements on creating a personal profile as a customer...they should be able to check their reward points and sign-up for events. I believe you are also missing some requirements for the photo gallery website functionality listed in the RFP.

Answer from Team 16: Noted

Question from Team 5: then the system will need to have the additional requirement of accepting user credit card information

Answer from Team 16: Noted

Question from Team 5: Employees also want to know how many people attended each event to determine which were the most popular so that they may repeat popular events in the future.

Answer from Team 16: Noted

Question from Team 5: Another requirement is for the customer to be able to view their current reward points balance which is to be done through the website

Answer from Team 16: Noted

Explanation

In order to plan for the development of the new system, scheduling tools involved the use of group chat for scheduling meetings, assigning work to each member, and notifying the team of any difficulties that arose and updates after each meeting. For each report regarding the proposed system, a google document was shared among team members so everyone has access and able to contribute feedback and make improvements as a team. A process diagram

was created to explain the process of both customers and employees detailing the walkthrough of navigating the system. Communication with the clients on Slack was also a part of the process, as noted above in order to produce a system that met their needs and wants. Requirements documents were created and submitted to the client team for approval to continue working on our proposed solution.

Conclusions

Overall as a team, we think we have collaborated well with each other while working on the project. There was no team conflict that arose throughout the course. Team meetings were effective and productive and everyone was able to share their ideas during the meetings.

Reflecting on our project process, the initial phase was receiving our client's RFP and reviewing it to understand their desires for the system and pulling out the key information for our Project Charter. After reviewing the RFP document, our team has integrated the key information and created a Project charter. Following the project charter, we have put together all client's requirements and analyze potential risks and limitations into a requirements documents. Communication between our team and our clients was frequent on Slack and email to receive feedback on our initial requirement draft. Comments that we received from the client's team helped us gained a better understanding of the exact functions needs regarding the system and what is the best way to approach it. After finalizing the document, it is approved by the client's team. This process is essential to enable our team to move on to the next step. The last process is the final report, which is a summary of all documents (i.e. client's RFP, Project Charter, Requirements section). The final report also includes the prototype of our proposed solution and recommendations that our team provides to our client in order to enhance the user experience.

It was a pleasure working closely with the client and understanding their wishes for the creation of the system. The client gave us plenty of feedback regarding the initial draft of the Requirements section and continued to give us feedback on the final revision. The time they have contributed to us is greatly appreciated.

The final report matched closely to the RFP, including the details that are most important to the creation of the proposed system. However there were some features requested that could not be implemented due to time constraints and lack of resources, these include:

- Online chat in real-time
- Customers viewing their own personal profile

Since our team discovered some of the features requested cannot be done, we have made a few modifications to our Project Charter. Referring back to the revised Project Charter (see Appendix B), there are some points that are modified in red colour. We follow closely to our Project Charter when developing our solution except for things that are related to real-time online chat and customer viewing personal profile.

Throughout the project, there are some ups and downs working as a team:

Ups

- Getting to meet new people
- Having fun and get to learn as a team

- Help and support each other as a team when encountering difficulties

Downs

- Coordinating meetings that fit with everyone's schedule is difficult

This team experience helped us learn how to communicate effectively and how to work closely with each other.

Our project Status reports are stated in Appendix A in this report, as well as the team website. Project release plan and team meeting notes are regularly updated on the team website as reference. .