**Technical Writing Project Cover Sheet**



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| **Capstone Proposal Project Name:** | **Bar Fly – Social Media in Bars** |
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| **Degree Program:** | **Bachelor of Science, Software Development** |
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**Table of Contents**

[Introduction 3](#_Toc409961027) - 5

[Review of Other Work 6 -](#_Toc409961028) 7

[Project Rationale](#_Toc409961029) 8 - 9

[Systems Analysis and Methodology](#_Toc409961030) 10 - 11

[Goals and Objectives](#_Toc409961031) 12 - 14

[Project Deliverables 1](#_Toc409961032)5 - 19

[Project Plan and Timelines 20](#_Toc409961033) -21

[References 22](#_Toc409961034)

# Introduction

Johnny’s bars and fine dining (Johnny’s) owns a chain of bars and restaurants. Johnny’s wants a mobile application (app) built that will create an in house version of social media in its bars. The mobile app will be called Bar Fly. The owners of Johnny’s have noticed that due to their recent rise in popularity some customers will not order drinks due to the size of the lines. Johnny’s would also like an order feature built into the application to increase lost revenue. Johnny’s has hired the mobile application firm of Silent Studios Media Group (Silent Studios) to design and develop an application that will meet their goals of increased drink orders and a social media presence. Silent Studios has also been hired for long term support of the application, including such activities as server monitoring, analytical data monitoring, and general support for the application. The long-term contract does not include application upgrades which will be on an individual contract basis. To keep server maintenance to a minimum Johnny’s has asked Silent Studios to house the server-side aspect of the application on a cloud-based server.

Silent Studios has decided to develop the application on the Android Studio IDE since the initial application will run on android devices. The application will be developed utilizing Java as the primary language this will aid in the communication with the server-side program also written Java. Silent Studios will also create a website for Johnny’s employees to log into and monitor the bar chat and take orders. The website will be written in HTML5 and will also utilize a database written in MySQL.

Johnny’s wants an application that will allow customers within 30 feet of their bars to be able to access the apps community features. These features include a group chat where customers can be involved in a group conversation allowing for even the shyest customer to get involved. Johnny’s also wants the ability for customers to create their own private groups for a more private conversation. Customers outside of the 30 foot constraint cannot add to the conversation but can set a favorite bar and view the conversation anytime. The application will also provide the customer the ability to order and pay for drinks. The customer will receive a notification once the order is fulfilled and can pick up at a designated area of the bar. Johnny’s also wants the ability to post drink specials, and special events on the website interface and have it display in the application. Johnny’s wants each customer to create an account through the application, so they can have a profile.

The project scope will include developing an application, creating a server-side program to communicate with the app, a bar management website will be written for bar employees to watch chat, take orders, and manage promotions. A database is to be designed and built consisting of several tables and fields. Testing and will take place prior to deployment and during development phase. The final deliverable will include a working app, a server-side program, a completed database, and a working website.

The project timeline will begin on the 30th of April and will go as follows: requirements gathering will last one week 5-30-18 to 6-4-18. Database design and development will last from 6-7-18 to 6-11-18. Employee website will be designed and tested for connection to database from 6-14-18 to 6-18-18. The server-side application will be written and deployed to server from 6-21-18 to 6-25-18. The application will be developed and tested from 6-28-18 to 7-8-18. All components will be tested, and any revision or iterations will take place from 7-11-18 to 7-15-18. The final deliverable will be deployed and in use on 7-22-18.

In summary, the objective of the project is to design, develop and deploy a working application that includes a working backend. The final deliverables will be a fully functional application that can communicate with a server-side program to allow chat functionality, the application will also query database and receive notifications from Johnny’s management website also delivered as part of the final project. Johnny’s will than decide based on future analytics and user feedback if Silent Studios is to be contracted for future upgrades.

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# Review of Other Work

Johnny’s Bars and Fine Dining decided to implement a more refined approach to the acquisition of younger customers. Johnny’s noticed that many younger customers tended not to order when there was a line longer than usual. Johnny’s found this to have a significant negative impact to revenue. A study conducted by Rioux, Bernd, & Leclerc, (1989) found that customers were more negatively impacted by a delay prior to service than in the middle of service (pp. 59-63). This means that when the customer is delayed prior to drink service they are less likely to return. While the study was conducted in a restaurant environment it can be conceived that the bar environment may hold the same result. Based off this study Johnny’s wants to lower the negative results by introducing an ordering feature in its new app to allow customers to skip the line and place an order.

The primary function of Johnny’s app is the social aspect of chatting with others that are currently in the vicinity. The app is more focused on the formation of secondary groups rather than primary groups. Academy, (2018) writes that secondary groups are more anonymous and impersonal they tend to be short term and based on shared interests; over time they may turn into primary groups (Academy, 2018). The secondary group consists of the bar participants where everyone can utilize the chat functionality in a large group. Customers can invite other customers to enter a primary group such as a smaller private group.

The app utilizes a platform as a service (PaaS) to lower server costs and maintenance the PaaS is provided through a cloud service provider. Bhardwaj, Jain, & Jain, (2010) writes in the International Journal of Engineering and Information Technology (IJEIT) that PaaS provides a common set of programming functions or databases to act as a foundation for the development of the app (pp. 61). This typically includes a database, middleware and development tools (pp. 62). The app will be written in java and uses the approach of an authoritative group. Bevilacqua, (2013) describes an authoritative group as containing a central entity that has all the clients connected to it. When information is sent it is not directly sent to the other clients rather it is sent to the central server where it is then distributed to the connected clients, Bevilacqua compares this approach to watching tv (Bevilacqua, 2013). This approach allows for less manipulation of the chat data and a more real time chat with less latency.

The Bar Fly app will be designed and developed for Johnny’s on the android mobile platform using Android Studio. Android Studio is the official integrated development environment for android consisting of many developer tools and code editor (Meet Android Studio, 2018). For full functionality there will be a cloud hosted server that will contain a database and a server-side application. The server-side program handles the creation of chat groups. The server will also host a website where bar managers can manage the group chat, and promotions can be pushed to the app as a notification. Johnny’s will use the app to increase revenue and repeat customers they also hope that word of mouth will bring in new customers.

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# Project Rationale

Johnny’s Bar and Fine Dining needs to increase revenue that they feel may be lost due to long lines. Johnny’s has decided that the best solution is to have an app developed. The app will consist of an ordering feature and allow for customers to participate in group chats. The app will also allow the managers to push promotional notifications to customers mobile phones.

The ordering feature will increase revenue by allowing customers to order on the app and simply go to the pickup area to get their order when the app says it is ready. Customers will be more likely to order because they do not have to stand in a line and can spend more time socializing with other customers. The order feature will also increase serve times as that it frees up the bartender to make other drinks. The bartender will be able to clearly see the order on a screen which helps prevent wrong orders from being made. Once the order is made it can be placed for pickup and the next order can be started the bartender does not lose time interacting with as many customers. When the customer receives a more streamlined experience at Johnny’s they will be more likely to return and will also tell other people about the great experience they received at Johnny’s establishment.

To create more traffic to Johnny’s the app will also display notifications. The manager will log into a website designed for Johnny’s through a web browser. The manager can use the website to monitor the group chat or push notifications of any promotions that are currently ongoing. Customers can see notifications even if they are not within the vicinity. Customers that can see ongoing promotions will be more likely to visit Johnny’s when they are in the area.

Johnny’s company goal is to stay always evolving with the new market. The app will also have a chat feature available to customers. The chat feature will bring a more technological crowd and create a customer that will be more likely to return to use this feature. The feature will let customers chat in one group chat consisting of everyone in the bar. If a customer would like to join in a more private conversation they will have the ability to create a private group. The implementation of private groups could mean anything from a one on one conversation or it could be a smaller group such as a work softball team that wants to celebrate their victory.

The app will take approximately two months to complete with a deliverable date of 6-22-18. The app will align with Johnny’s company goal of increased drink orders if the project is not implemented Johnny’s will not increase drink orders and continue to lose revenue due to long lines.

# Systems Analysis and Methodology

Analysis of the current environment shows that Johnny’s owns several bars and a few fine dining restaurants. Johnny’s and its competitors do not have a mobile application resembling the proposed app. The development of the app will be new untested ground others in the same industry utilize social media through third party platforms such as Facebook, Twitter, and others. Other companies do provide for online or in app ordering, but these are meant for food to go orders not stay in orders of alcohol.

The project has a fast paced timeline and a smaller team of developers because of this Agile Scrum management will be used. Scrum consists of multiple phases called sprints to complete tasks. Each sprint will finish a different portion of the project at the completion of a sprint a review of work will commence where improvements will be discussed for the next sprint.

A person that speaks on behalf of the company will be chosen and this person will be given the role of product owner. The product owner will decide the requirements of the app and what order the items will be placed from highest to lowest priority. The project will require these items in the following order: A cloud based server, a server side application for handling chat, a database, the app itself, and a website. These items will become the project backlog from which sprints will be created.

The first sprint will consist of the server side application. The server side application needs to be completed first because this will handle the chat feature of the app if not completed chat cannot be tested later in the project. The server side application will be placed on a cloud based server that is provided through a third party vendor.

The next sprint is the development of the database. The database is used to maintain data about the bars location and items that can be ordered at that location. The app will access the database to show what promotions and items are available at the current location. If the database is not created at this stage the order feature will not work and the app will not be able to know which location the customer is at.

The app sprint will be when the developers design and develop the app itself. This sprint will be broken down into two smaller sprints one for the design and one for development. The development sprint will not only create the basic functionality of the app but will also tie into the previous sprints by creating connections to the server side application and the database. The app will need to send and receive communications with the server side application. If the app sprint is not completed the project fails.

The next sprint will be the design and creation of the management website. The website will consist of a login for managers. The website will also be able to push notifications and monitor the group chat. The website will need to communicate with the database and have the ability to read chat communication within the server side application. If the website is not completed the project can still proceed but managers will not be able to promote specials or monitor the group chat which could pose a safety issue to customers.

The final sprint will be the testing of all systems if testing discovers any bugs or non-functionality another sprint will be created to resolve the issue. Once all sprints are completed the project will be delivered to the client.

# Goals and Objectives

The main goal of this project is to develop a mobile application for Johnny’s. The app needs secure two-way communication with a server provided by a third party. This requirement is to establish a chat interface and implement an ordering function within the app.

Goal 1: Develop a server side application that can handle secure two way communications.

* Objective 1: Understand server environment. This objective will assess the current server environment including what tools are available, what protocols are used in communication, the server operating system, and any administrator features available. The server will be provided by a third party, so hardware should not be a consideration.
* Objective 2: Develop the server side application. This objective will deal with the design and development of a secure application that will run on the server. The objective deals with the programming language used and how the connection will be secured.

Goal 2: Develop a database that will store the bars location, items for sale, and other information.

* Objective 1: This objective will decide what information will be stored. The assessment will be used to decide what tables will exist and what items will be in the tables.
* Objective 2: Decide on how the database will be accessed. This objective will decide what language to use for the database and how it will be accessed such through a browser, mobile interface, or some other way.
* Objective 3: Develop the database. This objective will build the database using the specified language and run it on the server provided by the third party.

Goal 3: Develop the mobile application that will implement a chat interface and an ordering feature.

* Objective 1: Examine the current integrated development environment. This objective will decide which integrated development environment the app will be developed with.
* Objective 2: Design the graphical interface. The look and flow will be designed in this objective. This also includes what will be an interactable feature and where it will go.
* Objective 3: Develop the ordering feature. This objective focuses on how to communicate with the database that resides on the server. The feature needs to know the bars location compared to the user’s location and what items are available for ordering at this location.
* Objective 4: Develop the chat feature. This objective will examine what will be the best way to communicate with the server such as using secure shell or not and what language will be used to accomplish this.

Goal 4: Develop a management website for bar managers to log into and monitor the group chat or push promotion notifications to the mobile app.

* Objective 1: Evaluate needed features. This objective will assess the needs of managers and what features are needed on the website for managers to manage chat and push notifications.
* Objective 2: Design the website. This objective will design how the website will look and interact with the user.
* Objective 3: Develop the website. This objective will tie together the design with the functionality of the website resulting in a finished website.

# Project Deliverables

Goal 1: Develop a secure server side application.

* Objective 1: Understand the server environment.

Deliverable 1: Define server requirements. This deliverable will contain a definition of what features are needed from the server. The server needs to provide the ability to run and administer a website, it should also have the ability to run a server application developed in Java.

Deliverable 2: The server environment will be assessed. The server will be through a third party hosting services. The deliverable for this objective will be the decision on which company to go through for server hosting.

* Objective 2: Develop the server side application.

Deliverable 1: The security requirements will be defined. This deliverable will contain the required protocols that will be used to maintain a secure connection to the server application. The server application will use secure shell protocol and Javas provided security APIs.

Deliverable 2: This deliverable will develop the server application in the Java programming language utilizing secure two way communication.

Milestone 1: The application is running on the cloud based server.

Goal 2: Develop a database that will store information for the app.

* Objective 1: Decide what information will be stored in the database.

Deliverable 1: Define the required information. This deliverable will define what information the database will be required to store it will also discover the fields for the database. The database will store the bars name, location, and the items that the bar sells.

Deliverable 2: Develop a schema. This deliverable will create a visualization of what the database should look like. This deliverable will define the tables and the fields of the database and will later be used to fully build the database.

* Objective 2: Decide on how the database will be accessed.

Deliverable 1: Decide what database language to use. The database will be built using MySQL.

Deliverable 2: Define how the database is accessed. The database will be accessed through a web browser and mobile interfaces. This deliverable will provide the requirements needed for the database to be accessed through multiple interfaces and what information can be accessed on each interface.

* Objective 3: Develop the database.

Deliverable 1: The database will be fully coded using MySQL creating a functional database.

Deliverable 2: The database will be placed on the cloud based server.

Milestone 2: The database is running on the server.

Goal 3: Develop the mobile application.

* Objective 1: Examine the current integrated development environment.

Deliverable 1: This deliverable will define the IDE that will be used to develop the app. The development will be done using the Android Studio IDE because the initial version will be on the Android operating system.

* Objective 2: Design the graphical interface.

Deliverable 1: This deliverable will create the design of the app. The look of each screen and colors and themes will be chosen, any pictures that are needed will also be found.

Deliverable 2: This deliverable will define the flow of the app. A storyboard will be created of how the app should function. All interactable features will also be defined.

* Objective 3: Develop the ordering feature.

Deliverable 1: This deliverable will code the part of the app that will discover the user’s location. The location needs to be known to known which bar the customer is currently at.

Deliverable 2: Connect to the database. This deliverable will code the connection to the database and what to do with the data that is received. The app will connect to the database and compare locations to find what items are available for sale at the current location. Once the information is gathered the app will display it on the ordering screen.

Deliverable 3: This deliverable will code the ordering part of the app. The user will pick an item displayed from the database. The item will be placed into a shopping cart. The customer will checkout and the items are sent to the bars point of sale system.

Milestone 3: The app can successfully connect to the database and order items.

* Objective 4: Develop the chat feature.

Deliverable 1: This deliverable will code the chat feature that will connect and communicate with the server.

Deliverable 2: This deliverable will code the part that deals with a group chat and switching to a private chat.

Milestone 4: The chat feature can hold a group and private chat successfully.

Goal 4: Develop a management website for bar managers.

* Objective 1: Evaluate needed features.

Deliverable 1: This deliverable will document what the bar managers need access to and the features that would be most useful. Managers will have to access the group chat to monitor unsafe situations. The manager will also need the ability to push promotions to the chat through a browser interface.

* Objective 2: Design the website.

Deliverable 1: This deliverable will create a story board that will show how the website will function. The colors, themes, and pictures will also be decided.

* Objective 3: Develop the website.

Deliverable 1: This deliverable will code the website in HTML 5 and utilize cascading style sheets.

Milestone 5: Managers can log into the website. They can see group chat and push notifications to the app.

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# Project Plan and Timeline

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| --- | --- | --- | --- |
| **Project Deliverable or Milestone** | **Duration** | **Planned Start Date** | **Planned End Date** |
| Define server requirements | 1 day | 6-4-18 | 6-5-18 |
| The server environment will be assessed | 1 day | 6-5-18 | 6-6-18 |
| The security requirements will be defined | 1 day | 6-6-18 | 6-7-18 |
| The server application will be developed | 2 days | 6-7-18 | 6-9-18 |
| Milestone 1: The application is running on the server. |  |  |  |
| Define the required information for the database | 1 day | 6-12-18 | 6-13-18 |
| Develop the database schema | 1 day | 6-13-18 | 6-14-18 |
| Decide what database language to use | 3 hours | 6-14-18 | 6-14-18 |
| Define how the database is accessed | 1 day | 6-14-18 | 6-15-18 |
| Code the database in MySQL | 2 days | 6-15-18 | 6-17-18 |
| Upload database to cloud server | 1 day | 6-17-18 | 6-17-18 |
| Milestone 2: The database is running on the server |  |  |  |
| Define the IDE for application development | 3 hours | 6-19-18 | 6-19-18 |
| Create the design of the app | 1 day | 6-19-18 | 6-20-18 |
| Define the flow of the app | 1 day | 6-20-18 | 6-21-18 |
| Code the part of the app that will discover the user’s location | 2 days | 6-21-18 | 6-23-18 |
| Code the connection to the database | 5 hours | 6-23-18 | 6-23-18 |
| Code the ordering part of the app | 3 hours | 6-24-18 | 6-24-18 |
| Milestone 3: The app can successfully connect to the database and order items |  |  |  |
| Code the chat feature that will connect and communicate with the server | 1 day | 6-27-18 | 6-28-18 |
| Code the part that deals with a group chat and switching to a private chat | 2 days | 6-28-18 | 6-30-18 |
| Milestone 4: The chat feature can hold a group and private chat successfully. |  |  |  |
| Document bar managers requirements for management site. | 1 day | 6-30-18 | 7-1-18 |
| Create a story board that will show how the website will function | 1 day | 7-1-18 | 7-2-18 |
| Code the website in HTML 5 and utilize cascading style sheets | 2 days | 7-5-18 | 7-7-18 |
| Milestone 5: Managers can log into the website and manage the chat and notifications. |  |  |  |
| Testing of systems and repeat sprints if needed | 10 days | 7-7-18 | 7-17-18 |
| Product release | 1 day | 7-22-18 | 7-22-18 |

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