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| Strough & Co. |
| CRM Proposal |
| Software Solution Overview |

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# INTRODUCTION

Strough & Co. is proposing this CRM solution for the American Video Game Company (AVGC) project. Details on the solution’s requirements, design, testing, and software development methodology can be found below.

# A.1. Purpose Statement

The purpose of this document is to propose a CRM solution for AVGC.

# A.2. Overview of the problem

AVGC is plagued with an outdated and disjointed system. The company’s employees are using various operational processes and tools. All factors that are putting the company at risk of a security breach. If AVGC continues functioning under these circumstances and does not fix these issues, a security breach is plausible which will bring about a whole slew of issues for the company and anyone associated with them. The company’s time, money, and security are all currently at risk.

# A.3. Goals and Objectives

Strough & Co.’s proposed solution will offer AVGC a new and easy-to-use application to help manage company operations. The proposed solution will institute new security features that will control the access of its functions based on user permissions (both internal and remote). The solution will also include a reporting system, as well as an order management system, that will manage company activities, sales, and other interactions with contacts.

# A.4. Prerequisites

Before the design, development, and implementation of the project proposed in this document can take place, Strough & Co. needs to collect data from AVGC. Strough & Co. needs a list of all AVGC inventory, associated businesses, employees, and other system users. This data will be entered into several databases. The company will also need to ensure that all operating systems and browsers are up to date.

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| Number | Prerequisite | Description | Completion Date |
| 1 | Collect data | Collect AVGC data to be transferred into the system. | 2 weeks |
| 2 | Update system | Ensure that all computers have the most up-to-date version of the necessary operating systems and browsers. | 1 week |
|  |  |  |  |
|  |  |  |  |

# A.5. Scope

Below is a list of five features (CRM requirements) that will be incorporated into the proposed project.

* Access control
* Maintain historical records
* OS and Browser support
* Order management
* Reporting

Our company will not be capable of replacing any of AVGC’s computer hardware at this time.

# A.6. Environment

Strough & Co. has made it clear that they will not be capable of replacing any of AVGC’s computer hardware and will be using the company’s current infrastructure. On top of the company’s current computer hardware, the proposed system will be locally hosted and supported by the following operating systems and browsers:

* Chrome/Chromium version 87 or higher
* Firefox 83 or higher
* Internet Explorer 11 (latest)
* Safari version 14 or higher
* iOS version 14 or higher
* iOS 14 Third-Party Browsers (Chrome and Firefox)
* Android 11.0 Chrome or Firefox
* Windows 10 (any version) for client workstations
* Microsoft Server 2016 (for hosting using AVGC’s existing SQL licensing)
* SQL Server 2016 (for database hosting using AVGC’s existing Windows Server licensing)

# REQUIREMENTS

Below is a list of five features (CRM requirements) that will be incorporated into the proposed project.

* Access control
* Maintain historical records
* OS and Browser support
* Order management
* Reporting

# Business Requirements

The business CRM requirement selected for the proposed project is the ability of the system to **maintain historical records** - the system will archive information without deletion. This will benefit the company’s future auditing practices. The feature will be implemented via an order history database - a user will create a purchase order which will be archived in the order history database.

# User Requirements

The user CRM requirement selected for the proposed project is the system’s capability to **operate within various operating systems and browsers**. The operating systems and browsers that the system will be expected to support are the following:

* Chrome/Chromium version 87 or higher
* Firefox 83 or higher
* Internet Explorer 11 (latest)
* Safari version 14 or higher
* iOS version 14 or higher
* iOS 14 Third-Party Browsers (Chrome and Firefox)
* Android 11.0 Chrome or Firefox
* Windows 10 (any version) for client workstations
* Microsoft Server 2016 (for hosting using AVGC’s existing SQL licensing)
* SQL Server 2016 (for database hosting using AVGC’s existing Windows Server licensing)

Functioning within various work environments will benefit the company by improving its user reach and ease of use.

# Functional Requirements

The functional CRM requirements selected for the proposed project are **reporting** and **order management**.

Reporting: The proposed system will have high-level reporting capabilities – both general and executive-level. General users will have the ability to create monthly summary reports. Executive-level users will have the same abilities as general users on top of analyzing user information, budgeting, and forecasting information. These features will benefit the company by offering multiple resources that aid decision-making.

Order Management: The proposed system will have order management capabilities. These capabilities will include the ability to create purchase orders, track purchase orders, and cancel purchase orders. These features benefit the company by digitalizing documents, automating sales processes, improving order accuracy, and increasing overall operational efficiency.

# Non-functional Requirements

The non-functional CRM requirement selected for the proposed project is system security via user **access control**. Users will be given a unique username and password that they will use to log in to the system. The user’s credentials will determine the user’s level of permissions within the application. This feature will benefit the company by ensuring that the application’s users will only be capable of doing what is completely necessary for their role. For example, a general-level user will not have the same capabilities that an executive-level user will have, and so on.

# SOFTWARE DEVELOPMENT METHODOLOGY

Below, the advantages and disadvantages of the waterfall and agile methodologies will be discussed. Following this analysis, the “best suited” method will be chosen for the American Video Game company project.

# Advantages of the Waterfall Method

The waterfall methodology has various advantages that could benefit a project. Several of these advantages and their associated benefits are listed below.

* **Knowing project requirements in advance** will benefit a project by providing a clear project vision and scope. Having the project requirements in advance also aids in determining potential project risks. Each benefit makes for a more accurate project schedule and cost estimation.
* Waterfall methodologies come with a **specific timescale**. Project schedules benefit a project by ensuring that all team members are on the same page. Keeping the team on the same page leads to fewer miscommunications, thus ensuring rarer project setbacks.
* **Fewer financial surprises** benefit a project through fewer resource commitments, meaning lower project costs.

# Disadvantages of the Waterfall Method

The waterfall methodology has various disadvantages that could hinder a project. Several disadvantages of this methodology and how they could negatively affect a project are listed below.

* The project **cannot handle change well**. If a change is necessary, the project could be hindered via an increase in resource accruement.
* Waterfall methodologies **exclude end-users and clients** after the requirements have been gathered until project completion. The exclusion of these stakeholders can lead to a less valuable project outcome in the eyes of the end-users and clients.
* **Testing is delayed** until after project development. Delaying testing can hinder projects via an increase in bugs (those that went unnoticed), which can lead to a significant project revision.

# Advantages of the Agile Method

The agile methodology has various advantages that could benefit a project. Several of these advantages and their associated benefits are listed below.

* The project **handles change well** - if a change is necessary, the project can adapt to the change. The benefit of the project handling change well is that the project’s outcome will be more valuable to its customers.
* The project will **continually produce results** (working software), not just at the end of the project. The benefit of constantly generating results for the customer is that the project will continually be tested, reviewed, and improved. This will lead to a higher quality product.
* The agile methodology keeps **customers in constant contact** with the project management team. The benefit of constant contact with customers is that there are lower chances of miscommunication. Lower chances of miscommunication will ensure that the customer’s needs are being met and will lead to higher customer satisfaction. In turn, a more valuable project outcome can be produced.

# Disadvantages of the Agile Method

The agile methodology has various disadvantages that could hinder a project. Several disadvantages of this methodology and how they could negatively affect a project are listed below.

* It is not uncommon for a project being produced with an agile methodology to **change regularly**, even days before completion. Although a project that can handle change well has its benefits, it can also be frustrating. Not having all project requirements at the beginning of a project can lead to disorganization. With an ever-changing scope and project schedule, it is easy for an agile project to veer off-track.
* An agile project is **unpredictable**. With an ever-changing scope and project schedule, it is no surprise that an agile project tends to run into unforeseen obstacles. Not having a set-in-stone list of project requirements makes it difficult for the project team to look to the future and plan for the worst.
* Due to an agile project’s unpredictability, they tend to **require more time and resources** than their competing methodologies.

# Best suited

I have determined that the waterfall methodology is the best development strategy for this project. With its predictability, this method will provide the team with a clear project scope, schedule, and cost estimation - all aspects that will aid the team in staying on track. Although the project will struggle more with changes than its competitor, the waterfall method will save time, money, and other resources that can be allocated to unforeseen changes when the time arises. In general, the waterfall method’s strengths will lead to faster and cheaper project completion.

# DESIGN

Below, you will find a storyboard (Figure 1) and GUI Mock-up (Figure 2) illustrating an example of the application’s functionality.

# Storyboard

Figure 1 is a storyboard illustrating one of the many functionalities the application will be capable of. The storyboard depicts two scenes in the application – an inventory management system and an **order management system** (CRM requirement). The user will be capable of jumping back and forth between these two pages with the click of a button. To access the order management system, the user must select the “Orders” button at the top of the “Inventory Management System” page. To access the inventory management system, the user must click the “Inventory” button at the top of the “Order Management System” page. These pages and their associated buttons are referenced below.

A screenshot of a computer

Description automatically generatedFigure : Storyboard

# GUI Mock-up

Figure 2 is a GUI Mock-up illustrating a key functionality of the application. Figure 2 showcases the application’s **access control** feature (CRM requirement). The access control requirement is implemented via a login screen. Registered users of the application will need to implement their credentials (a username and password) which will be checked for validity. The users will be granted their associated permissions if their credentials are valid. The login screen details are referenced below.

Graphical user interface

Description automatically generated with medium confidence

Figure 2: GUI Mock-up

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| GUI Control Mapping | | | |
| ID | Control | Property | Data Source |
| 1 | Textbox | On application launch, text = “” or null. | N/A |
| 1 | Textbox | The user enters text. | N/A |
| 2 | Textbox | On application launch, text = “” or null. | N/A |
| 2 | Textbox | The user enters text. | N/A |
| 3 | Label | On application launch, text = user’s current time zone. | Internal variable |
| 4 | Button | On click, validate 1 & 2. If valid, access is granted to the system. | Internal variable |
| 5 | Button | On click, clear text from 1 & 2. | Internal variable |

# TESTING

Three tests of varying types will be performed on the proposed system to ensure proper compatibility, security, and functionality of the system.

# Testing Type

The following tests are performed on the proposed system:

* E.1.1. A **compatibility test** is performed and tests the system’s compatibility with Chrome on Windows 10.
* E.1.2. A **security test** is performed and tests the security of the system’s login process.
* E.1.3. A **functionality test** is performed and tests the system’s “create purchase order” feature for proper functionality.

# Compatibility Test (OS and Browser Support)

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| Requirement to be tested:  System compatibility with Chrome. |
| Preconditions:  The desktop must be running Windows 10 and Chrome.  A user database must exist and a test user with an associated username and password must exist. |
| Steps:   1. Turn on the desktop. 2. Navigate to and open the application. 3. Enter the test username and password into their associated text boxes 4. Click the “login” button. 5. Explore the application and its features. |
| Expected results:  The user should be able to log in to the system and navigate the application. |
| Pass/Fail:  The compatibility test was **PASSED.** The system validated the test username and password and granted the user access to the system as expected. The user then navigated the application with no issues detected. |

# Security Test (Access Control)

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| Requirement to be tested:  The security of the login process. |
| Preconditions:  A functioning user database must exist.  A test user with an associated username and password must exist. |
| Steps:   1. Open the application. 2. Enter the test username and password into their associated text boxes. 3. Click the “login” button. |
| Expected results:  The system should accept the test username and password and give the user access to the system. The order management system page should appear. |
| Pass/Fail:  The security test was **PASSED**. The system validated the test username and password and granted the user access to the system as expected. |

# Functional Test (Create a Purchase Order)

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| Requirement to be tested:  “Create purchase order” functionality. |
| Preconditions:  A user database must exist and a test user with an associated username and password must exist.  An order database must exist.  An inventory database must exist and be prefilled with data. |
| Steps:   1. Open the application. 2. Enter the test username and password into their associated text boxes. 3. Click the “login” button. 4. Navigate to the “Order Management System” page. 5. Click the “Purchase Order” button. 6. Enter test data into all necessary fields. 7. Click the “Place Order” button. |
| Expected results:  The system should accept the test username and password and give the user access to the system. The order management system page should appear, followed by the purchase order page. After the test data is entered into all fields, the user should be returned to the order management system page, where they should find their test order in the order history table. |
| Pass/Fail:  The functionality test **FAILED**. The system validated the test username and password and granted the user access to the system as expected. The user then navigated to the order management system page, followed by the purchase order page. The user entered the test data into all fields and returned to the order management system page. However, the order did not populate in the order history table. |