**Bright Idea Team Software**

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| --- |
| Prepared for American Video Game Company |
| CRM Proposal |
| C188 – Software Engineering Performance Assessment |

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| --- |
| Steven Bennett 003761827  11-21-2023  [Version 1.0] |

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# Introduction

Provide a brief introduction to the proposed system. This section should be no longer than one paragraph.

# A.1. Purpose

Provide a brief overview of the purpose of this document.

# A.2. Overview of the Problem

Provide a brief overview of the problem that the proposed solution will solve.

# A.3. Goals and Objectives

Provide the goals and objectives for the project and solution.

# A.4. Prerequisites

Outline any aspects that need to be in place prior to the design, development, and implementation of the project proposed in this document. Be sure to be clear and concise for all listed prerequisites. Also, clearly outline why each prerequisite is needed.

*Note: If no prerequisites are needed, include a paragraph justifying why there are no prerequisites.*

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| --- | --- | --- | --- |
| Number | Prerequisite | Description | Completion Date |
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# A.5. Scope

Provide a brief overview of what the proposed solution will cover and what the proposed solution will not cover. It is important to set clear boundaries for the project.

# A.6. Environment

Describe the IT and hardware environments that the solution will be deployed in.

# Requirements

Our proposal CRM system will meet the following 5 requirements listed in the CRM\_Requirements document provided by AVGC:

1. Scalability to meet current and future needs.
2. Contacts, businesses, and stakeholders will each have their own datatype.
3. Soft and hard delete capabilities.
4. Individual user activity recording.
5. Up to date OS and Browser Support.

# Business Requirements

With 2000 total users accessing the system with 500 accessing during peak times, current systems are being outgrown as growth continues. Current numbers show a 42% increase over the past two years. With such rapid growth, scalability is a priority when developing a CRM system. AVGC needs a system to not only accommodate their current number of users, but also accommodate future needs as well. BIT Software proposes to solve scalability concerns by expanding in-house hosting capabilities with latest generation hardware capable of accommodating 12000 total users and 3000 during peak times upon launch with expansion capabilities as business demands. Hosting in-house results in no service provider connectivity issues, SLAs, or mandatory upgrades that are common with cloud solutions. The proposed hardware will handle current and future volumes based on projected growth for more than 5 years before expansion options should be considered.

Recording and logging individual user activity provides incredibly functional tools that are valuable assets during auditing efforts. User activity such as logins, orders, sales, customer account creation and/or modification, will be logged and timestamped to a txt file which will only be accessible by privileged users.

# User Requirements

To increase portability and decrease the need for new or upgraded hardware and software, the BITS solution will offer OS support for Windows 10+ and Mac OS Big Sur+ as well as mobile support for iOS 11+ and Android 8.0+. Multiple browsers including mobile and tablet versions will also be supported including Safari, Microsoft Edge, Google Chrome, Mozilla Firefox, and Chromium.

# Functional Requirements

The BITS solution leverages the power of object-oriented programming to efficiently manage and organize AVGC provided data. By implementing OOP, we will create a robust and flexible system that will house AVGC data in three distinct data types: Stakeholders, Businesses, and Contacts. Each respective data type will be represented as objects with their own AVGC predefined attributes and methods. This ensures a structured and scalable approach to data management while enabling BITS to model each datatype after the real-world entities involved with AVGC. This approach allows for seamless data retrieval, manipulation, and reporting, improving overall efficiency and functionality of their software solution.

Also incorporated into the BITS solution are methods to perform “hard” and “soft” deletions based on user privilege settings. Unprivileged users will be able to perform soft deletions of the Stakeholders, Businesses, and Contacts datatypes. Performing a soft delete changes the status to Archived which filters that entry from being displayed or considered for transactions. A soft deleted entry remains in the database but is accessible only by a privileged user. Privileged access to the database provides hard delete and restore capabilities to each entry. Hard deleting an entry removes that entry from the database completely. The restore function changes the status of a soft deleted entry from Archived to Active, returning the entry to full functionality. Section D.1 depicts the differences in User and Privileged User interface and highlights exclusive privileged user access to privileged elements.

# Software Development Methodology

For development of this solution, the agile and waterfall software development methods were considered. Each method has its own advantages, but ultimately the waterfall method was selected as the best fit for this project. Advantage and disadvantages are discussed in further detail followed by selection justification in subsections C.1-C.4 (Hoory & Bottorff, 2022):

# Advantages of the Waterfall Method

Waterfall advantages:

1. Provides a concrete plan of the project from start to finish.
2. Project requirements are defined and agreed upon early on, which can save time.
3. Each phase of the project requires a deliverable to progress to the next phase, making the workflow more structured.

# Disadvantages of the Waterfall Method

Waterfall disadvantages:

1. Because each project phase needs to be completed before progressing to the next stage, the process can take longer.
2. Stakeholders may not see the product until the end and have little to no involvement after completion of the early stages. As a result, stakeholders are not able to offer feedback until verification. Any late changes or revisions would be a very costly and timely endeavor.
3. Waterfall methodology focuses on being proactive in risk identification and management but is less adaptable in dealing with risk occurrences outside of those predictions. Dealing with an unplanned event or mistake could result in a delay until completion and added expenses.

# Advantages of Agile

Agile advantages:

1. Agile adds flexibility and allows changes throughout development. Approved change requests can be incorporated into the following iteration(s).
2. Increased stakeholder involvement results in increased feedback incorporated into the process, which can lead to more refined deliverables.
3. Short term deadlines encourage productivity and efficiency.

# Disadvantages of Agile

Agile Disadvantages:

1. Agile lacks a linear view of progression. Deliverables are not required to progress to the next phase, often muddying the measure of progress.
2. Increased stakeholder involvement can result in increased change requests, which can prolong the project timeline and increase costs.
3. Agile team members work on multiple phases at a time, creating a potential for overlap or unnecessary effort spent on later stages if an early phase needs to be modified.

# Best Suited

The BITS solution incorporates the Waterfall method (Figure 1.1) for several reasons:

1. Clearly defined phases with quantifiable progress promote accountability. Progression to the next phase is only possible after completion of the current phase.
2. Well defined deliverables with a thoroughly documented end goal will help stakeholders focus on reaching the end goal while maximizing cohesive efforts efficiently.
3. Concrete deadlines are established and agreed upon early. This minimizes the chances of scope creep and provides a clear end date for project completion.

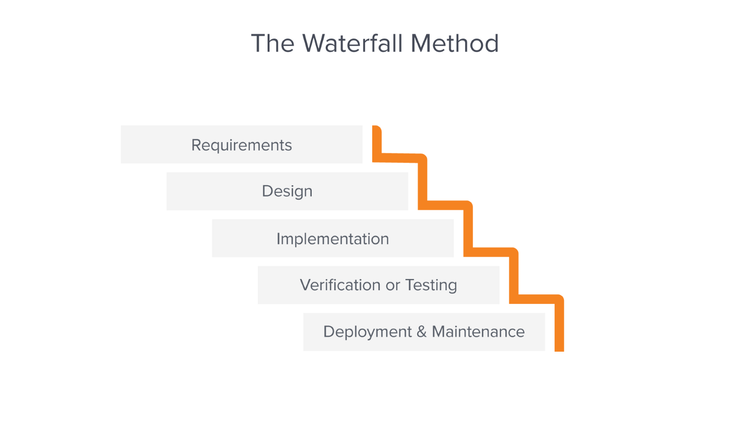


Figure 1.1: Waterfall methodology — a complete guide (Adobe Communications Team, 2022)

# Design

The user interface (GUI) of the BITS solution boasts a sleek and intuitive design that users of varying skill levels can navigate effortlessly. Post login, the screen and tab options that are displayed are dynamic based on the user’s assigned privileges. This tailored approach streamlines user experience by removing inaccessible and extraneous elements from view based on assigned user privilege and making privileged menu options accessible exclusively by users with corresponding privileges.

# Storyboard for Privileged Information

Login:

Login

Privileged User Dashboard

User Dashboard

Privileged User Dashboard Tabs:

Privileged User Dashboard

Sales Tracking

Privileged Reports & Archives

Contacts

Unprivileged User Dashboard Tabs:

User Dashboard

Sales Tracking

Individual User Daily/Weekly Reports   
(Unprivileged)

Contacts

Privileged Reports & Archives Options:

Privileged Reports & Archives

Privileged Detailed Reports

Privileged Archives (with hard delete and restore capabilities)

Privileged Summary Reports

# MOCKUPS of GUI Login Screens

Mockup login screen for mobile and tablet applications:

A screenshot of a login box

Description automatically generated

**4.**

**3.**

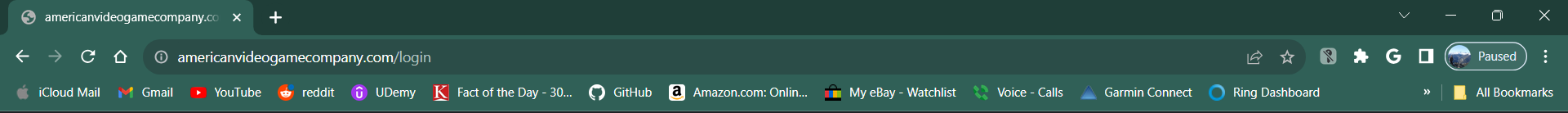
**2.**

**5.**

**1.**

|  |  |  |  |
| --- | --- | --- | --- |
| GUI Control Mapping | | | |
| ID | Control | Property | Data Source |
| 1 | Textbox | On application open text = “Enter the name associated with your AVGC account” | Internal Variable |
| 1 | Textbox | On click change text of textbox 1 to “” | NA |
| 2 | Textbox | On application open text = “Enter your AVGC password” | Internal Variable |
| 2 | Textbox | On click change text of textbox 2 to “” | NA |
| 3 | Checkbox | On click enable checkbox and reveal password | Internal function |
| 4 | Button | On click verify login credentials with values in database | Internal function |
| 5 | Button | On click open “Forgot password” dialog box | Internal function |

Mockup login screen for browsers (example shown in Google Chrome Version 119.0.6045.106)



A screenshot of a login box

Description automatically generated

**5.**

**4.**

**2.**

**3.**

**1.**

|  |  |  |  |
| --- | --- | --- | --- |
| GUI Control Mapping | | | |
| ID | Control | Property | Data Source |
| 1 | Textbox | On application open text = “Enter the name associated with your AVGC account” | Internal Variable |
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| 2 | Textbox | On application open text = “Enter your AVGC password” | Internal Variable |
| 2 | Textbox | On click change text of textbox 2 to “” | NA |
| 3 | Checkbox | On click enable checkbox and reveal password | Internal function |
| 4 | Button | On click verify login credentials with values in database | Internal function |
| 5 | Button | On click open “Forgot password” dialog box | Internal function |

# Testing

Provide a brief introduction to the proposed testing solution. The tests need to be from 3 completely different functionality aspects. Testing the same aspect with slightly different criteria is not acceptable.

\*\*Note: *Add and remove subsections as needed to cover all the testing needs.*

# Testing Type (change name to fit your needs)

Provide a brief introduction paragraph.

# Test Name 1

|  |
| --- |
| Requirement to be tested |
| Preconditions: Conditions that must be present before test case can successfully run |
| Steps: The steps the tester must execute to test the feature. |
| Expected results: Expected results and any side effects such as updating a database, writing to a file, etc. |
| Pass/Fail: Mark whether the test case passed or failed. The results can be compiled and used to determine if the application is ready for delivery/release. |

# Test Name 2

|  |
| --- |
| Requirement to be tested |
| Preconditions: Conditions that must be present before test case can successfully run |
| Steps: The steps the tester must execute to test the feature. |
| Expected results: Expected results and any side effects such as updating a database, writing to a file, etc. |
| Pass/Fail: Mark whether the test case passed or failed. The results can be compiled and used to determine if the application is ready for delivery/release. |

# Test Name 3

|  |
| --- |
| Requirement to be tested |
| Preconditions: Conditions that must be present before test case can successfully run |
| Steps: The steps the tester must execute to test the feature. |
| Expected results: Expected results and any side effects such as updating a database, writing to a file, etc. |
| Pass/Fail: Mark whether the test case passed or failed. The results can be compiled and used to determine if the application is ready for delivery/release. |

# Sources

Place the sources that you used here.

*Note: See the sources section in the requirements and rubric. If you did not use any outside sources, you may delete this section.*

Hoory, L., & Bottorff, C. (2022, August 10). Agile vs. Waterfall Methodology. Forbes. <https://www.forbes.com/advisor/business/agile-vs-waterfall-methodology/>

Adobe Communications Team. (2022, March 18). Waterfall methodology — a complete guide. Adobe. [https://business.adobe.com/blog/basics/waterfall#:~:text=The%20waterfall%20methodology%20%E2%80%94%20also%20known,before%20the%20next%20phase%20begins](https://business.adobe.com/blog/basics/waterfall%23:~:text=The%20waterfall%20methodology%20%E2%80%94%20also%20known,before%20the%20next%20phase%20begins)