Software Solution

American Video Game Company

Customer Relationship Management System

SOLUTION PROPOSAL

A complete CRM solution overview

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8-15-2020

[Version 1.0]

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A. INTRODUCTION

Our development team has had the chance to thoroughly analyze the business vision and business requirements of the American Video Game Company. The formal definition for Customer Relationship Management (CRM) is all about managing your relationships and interactions with both current and potential customers. Therefore, our proposed solution is a custom built "from the ground up" solution, which aims to streamline all functionality, stay in contact with clients, vendors and customers and increase profitability.

A.1. PURPOSE STATEMENT

Our proposal provides the recommended solution by our development team for meeting the current and future business vision and requirements of the American Video Game Company. It will provide a detailed walkthrough of everything our solution will accomplish. It will provide concise outline of its core functionality and visual diagrams of its GUI.

A.2. OVERVIEW OF THE PROBLEM

The American Video Game Company's rapidly growing company and outdated system is calling for a new secure system that consolidates business and contact information, manage and track sales and streamline critical processes. The solution needs to be highly scalable and secure with the ability to assign user roles and integrate third party company interaction.

A.3. GOALS AND OBJECTIVES

- Relocate existing processes into a single application
- Provide consolidation of all contact and business information
- Scalability of service in a cloud-based environment
- Implementation of Security and roles-based access
- Provide a robust and accessible support/ticket system
- Functional and intuitive sales tracking
- Visual data driven analytics system

A.4. PREREQUISITES

Prior to the design, development, and implementation of the project proposed in this document, the following prerequisites will be required:

Number	Prerequisite	Description	Completion Date
1	Database Backup	A complete backup of existing business data.	8.31.2020
2	Database Maintenance	Redundant data should be removed.	8.31.2020
3	VPN (Optional)	Virtual private network setup	9.1.2020

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A.5. SCOPE

INCLUDED:

Management/Tracking:
- Customers (Clients)
- Sales
- Quotes
- Reporting (History and Forecasts)
- Support
- Maintenance

NOT INCLUDED:
- Employee Management
- HR or payroll services
- Marketing / Ads

A.6. ENVIRONMENT

The solution will be developed using Node.js and React combination and deployed in the AWS (Amazon web services) cloud. It will be optimized for mainstream browsers Chrome, Safari and Edge. Node and React, however are compatible in all other browsers as well. The solution will be boot-strapped with a highly configurable GUI for maximum comfort.

B. REQUIREMENTS

Our solution identifies and addresses five distinct requirements in the American Video Game Company requirements document

1. Contact Management

Contacts will be divided into five categories.

- Customers (Clients)
- Users (Employees)
- Administrators
- Support
- Third-Party (Marketing, etc.)

Each entity will have a unique ID that will serve as the primary key in the database. Using an ID number as a PK allows for all contact information to be changed on the fly without the need of creating a new account. This will also prevent duplicates. Each entity will also have a business ID(s), where applicable.

- All contacts can be assigned to one or more businesses
- All Contacts can maintain one or multiple roles
- All contacts can be relocated move between businesses / roles.
- All information entered will be verified when creating or modifying contacts.
- All Contacts will be categorized by type. (Customer, User, Administrator, Support, Third-Party)
- Support groups will be able to assign support tickets to the appropriate business or contact.

Administrators – Complete access, sets permissions

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Customers – Basic access. Profile, products, purchases, preferences, support
Users – Customer access, plus business functionality such as orders, reports, forecasts
Support – Will have customer and user access, as well as access to the support system
3rd-Party – Limited access to internal data. Will have authority to send marketing materials and emails to customers (based on the customers marketing preferences)

2. Data Types

Per the business requirements, additional flags will be able to be set on every account created. These flags will be represented by a column in the relational database.

- Contact – All entities will receive this flag.
- Business – This is a "grouping" flag, and will be used to organize "contacts" into groups
  Retailers, distributors, trucking companies, affiliates
- Stakeholder – Any entity which has an interest or interaction with the American Video Game Company

AWS (the hosting provider for our solution) offers automated database scaling, which will easily be able to handle current and potential business and data growth.

In addition, automated and scheduled maintenance will flag potential redundant data for review and potential removal.

3. Reporting

Our solution will include functionality to generate analytics style reports based on all data in the system. The UI will contain options for executing both template (included reports) and custom reports and additional functionality for executing queries, filters. The report viewer will have options to export the reports in popular formats such as excel and pdf, as well as emailing and printing.

- Reports and filters will be able to be saved as templates for future use.
- Users will only have access to reports that is relevant for the user's permissions.
- Historical data reporting.
- Export in popular formats such as .xls .doc and .pdf
- Print Viewer to send directly to the printer.
- Email interface to instantly distribute report results to desired parties.

4. Order Management

Our software solution provides a robust and intuitive Order Management system for both Customers and Employees.

- Users will be able to log in and create their own orders
- Users will be able to view their order history (and re-order)
- Users will be able to request, receive and accept a quote, converting the quote into an actual order.
- Employees will be able to track and fulfill orders via the orders page

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- Employees will be able to promptly accept and create orders by phone
- Employees will be able to receive and respond to quotes
- (quotes accepted by the customer can automatically be converted into an actual order)

5. Contracting

Our software solution will provide a hub for contract creation, obtaining signatures for contracts, accepting terms and conditions and storage of all legally binding documents.

- The contracting hub will include the following functionality:
- Template contracts designed that can easily be reused and customized on an individual basis.
- Emailing / mailing of contracts so that contracts can be wet-signed and returned (if required).
- Document uploader so that entities may upload their signed contracts and be received in real time.
- Terms and conditions acceptance (signature not required)
- Notification system to notify all parties a contract has been created, expired or been terminated.

C. SOFTWARE DEVELOPMENT METHODOLOGY
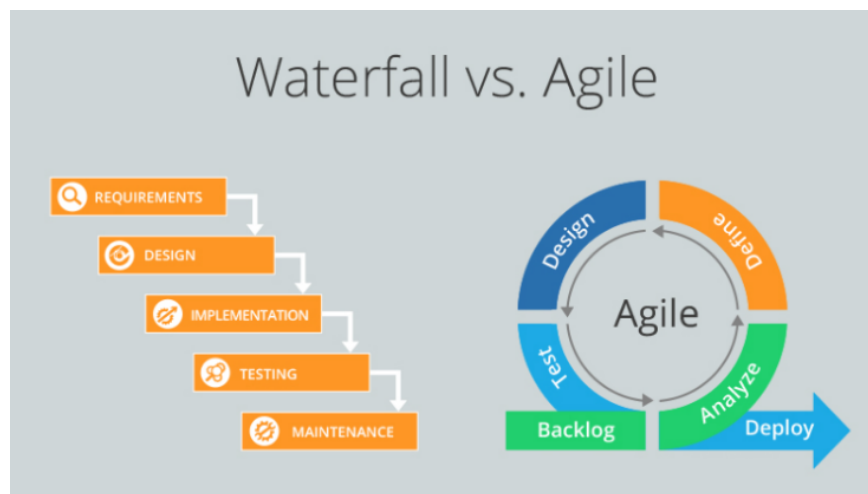
The visual differences between Waterfall and Agile
Source: ***(Ouriken, 2019)***

C.1. ADVANTAGES OF THE WATERFALL METHOD

- Development (timeline, scope, deliverables) are agreed upon in advance.
- Individual developers can focus on their respective tasks.
- The customer does not need to get their hands dirty.

C.2. DISADVANTAGES OF THE WATERFALL METHOD

- Testing (unforeseen bug fixes can potentially disrupt the project deliverables timeline
- Major changes are difficult to implement
- The customer is less involved

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C.3. ADVANTAGES OF AGILE METHOD

- Collaborative approach
- Adaptability. Changes are more easily implemented
- Customer/stakeholder involvement

C.4. DISADVANTAGES OF THE AGILE

- Higher cost, generally as there is potentially an extended timeline
- Extreme levels of communication
- The customer does not need to get their hands dirty.

C.5. BEST SUITED

Our development team believes the waterfall methodology is the best fit for software development methodology for this project. While Agile is more widely used, we feel the Waterfall is a better fit for this solution.

Both the agile and waterfall methodologies carry their own set of advantages and disadvantages. Overall, both can be beneficial to a software development team. Which one to choose is highly dependent on the project type and circumstances. *(Nash, 2020)*
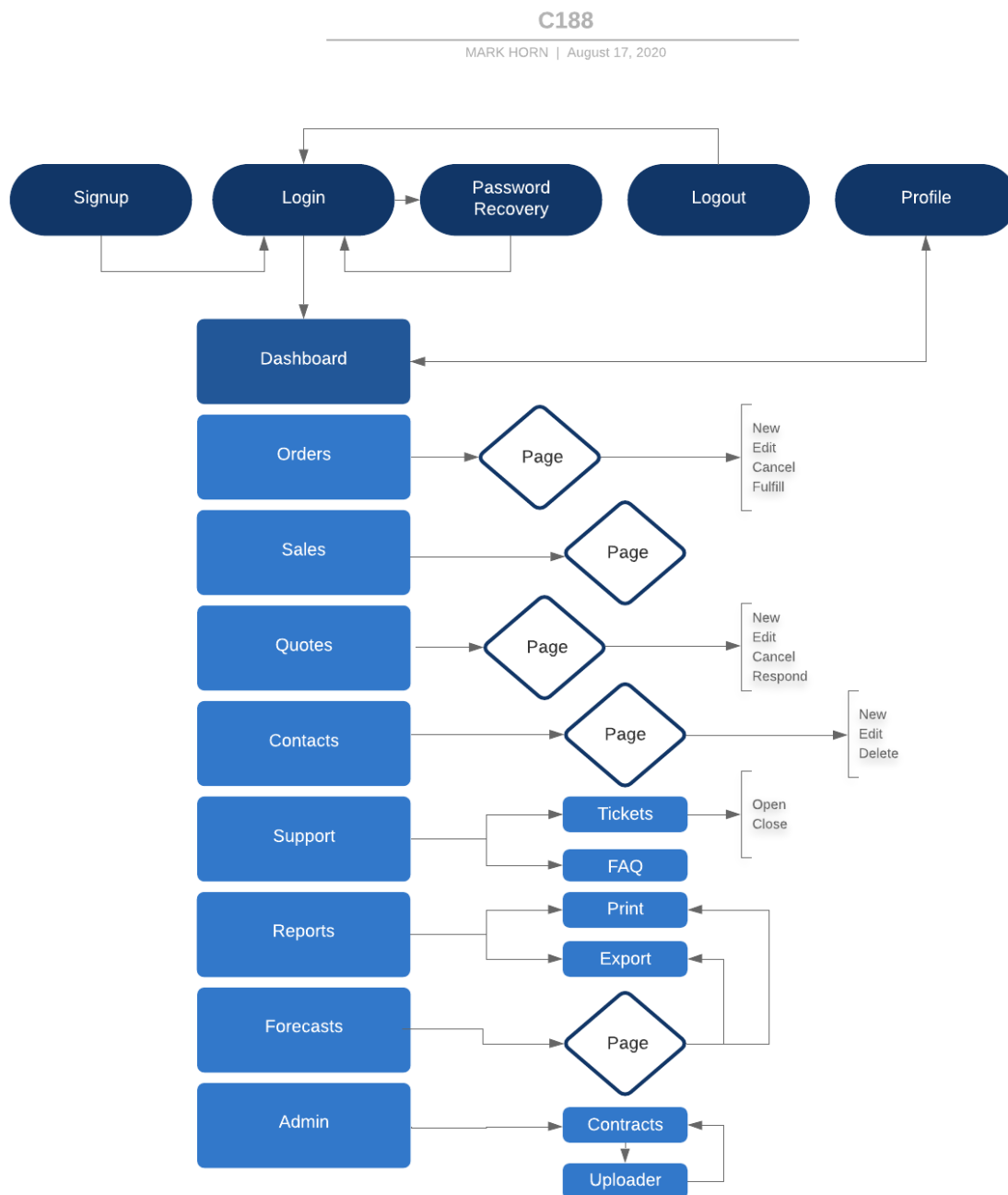
Had the requirements been vague or "let's see where this goes" we would have chosen the Agile approach. However, the requirements documentation provided to us for this project is very clear and detailed, and has all bases covered. There is little to no risk of having to retreat and implement major changes. With the waterfall approach we are able to give a definitive timeline with little thought of having to extend that timeline and keep costs affordable. Our development team will develop, test and deploy all deliverables in-house, and the American Video Game Company can go about business as usual.
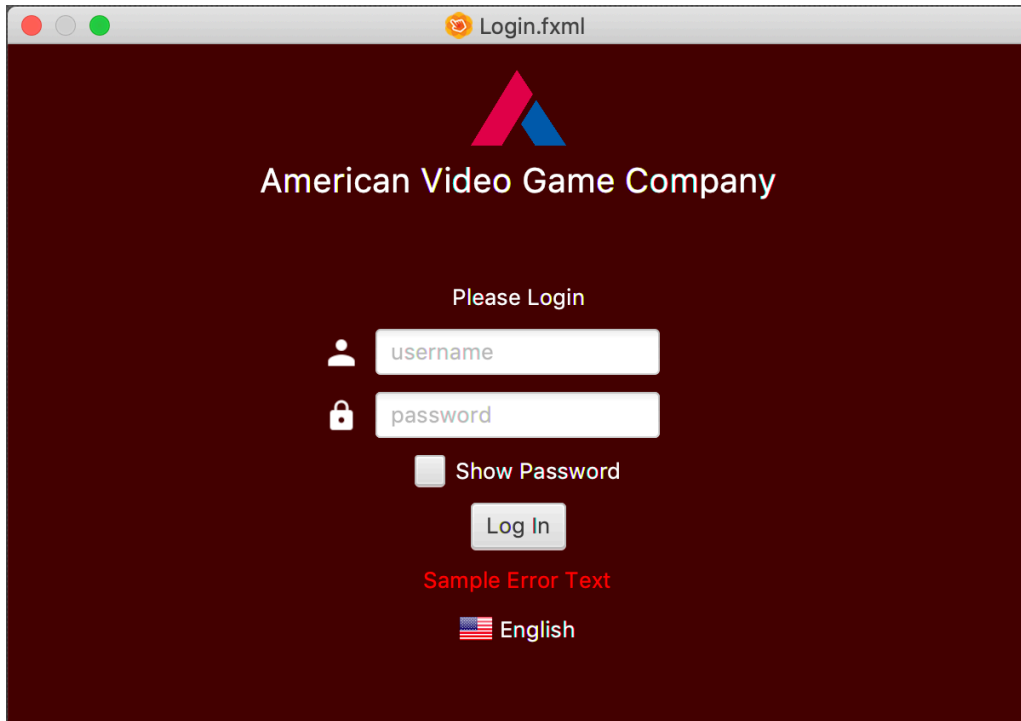
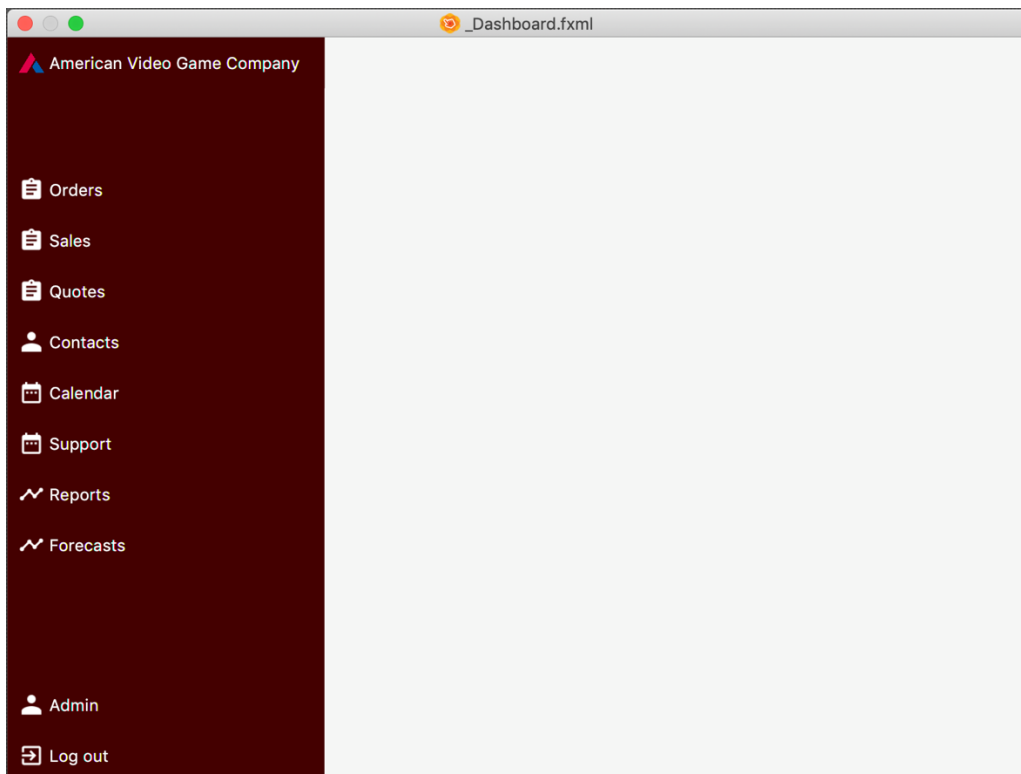**WESTERN GOVERNORS UNIVERSITY**

D. DESIGN

The design will consist of a professional grade flexible dashboard layout, bootstrapped with a customizable GUI. Business data deserves a clean and easy to use interface with easy navigation.

Visual representation #1 (Flowchart)

Visual representation #2 (GUI Mockup Example Layouts)

Login Screen

Dashboard Layout

Popup Dialog (A sample popup dialog for entering data)

Calendar View

E. TESTING

Three critical black-box tests will be performed. Black box method is being selected since it focuses on functionality from the end-user perspective.

The three (3) tests being performed are as follows:

- Authentication (login, logout)
- Reporting (generation, print or export)
- Support (specifically, support tickets)

E.1.1. AUTHENTICATION TEST

Requirement to be tested   All created accounts must be able to login to access the system across all roles. We will be using sample user/password credentials to validate the authentication system is working as expected.
Preconditions: Conditions that must be present before test case can successfully run   A valid user must be present in the relational database with the following credentials: Username: JohnDoe   Password: Password1
Steps: The steps the tester must execute to test the feature.   1) Direct the browser to the following URL -> https://www.americanvideogamecompany.com/crm   2) Enter the following credentials in the appropriate fields   Username: JohnDo   Password: Password1   3) Enter the following credentials in the appropriate fields   Username: JohnDoe   Password: Password12   Click Login   4) Enter the following credentials in the appropriate fields   Username: JohnDoe   Password: Password1   Click Login   5) Click Logout
Expected results: Step 2 expects a User Not Found exception   Step 3 expects an Incorrect Password exception   Step 4 expects a successful login   Step 5 expects a successful logout and a return to the login screen.

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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.

PASS: This was a multi-step test and each step passed as expected, resulting in a Passing grade for the entire test.

E.1.2 REPORTS TEST

Requirement to be tested
This test will validate the reports requirement is working as expected. This test will generate reports based on sample or actual business data

Preconditions: Conditions that must be present before test case can successfully run
Sample or actual business data must already be present in the database

Steps: The steps the tester must execute to test the feature.
1) Login with test credentials JohnDoe Password1
2) Navigate to Reports by clicking on the "Reports" button
3) In the "Select Report" Combo-Box drop down, select "Orders: Year-To-Date"
4) Click "Execute Report"
5) Open MySQL and execute a query with the same params
6) Verify the data shown in MySQL and the executed report match.
   (pay close attention to order numbers and dates)

Expected results:
It is expected first, that the record count of both the report and the SQL query be equal. Furthermore, each record order ID should also be matched (order_ID is the primary key and does not allow duplicates). Finally, all entries in the report should fall with the date range of the current Year.

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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.

PASS:

Record Count in both the reports tab and SQL matched (32) records.

All records pulled Order ID matched the column order_ID in MySQL

All records pulled fell within the date range (2020)

E.1.3. SUPPORT TICKET TEST

Requirement to be tested

Support system is a critical requirement, specifically the "Support Ticket". In this test, we will verify a new ticket can be created from the end-user perspective and responded to and closed from the company perspective.

Preconditions: Conditions that must be present before test case can successfully run

No conditions must be present to execute this test.

Steps: The steps the tester must execute to test the feature.

1) Login with test credentials EndUser123 Password1
2) Navigate to the "Support" tab
3) Under tickets, click "Create New Ticket"
4) Enter a title, and description of the problem in the provided UI controls.
5) Click Submit and verify if a dialogue appears stating "Successfully Submitted"
6) Take note of the ticket number
7) Logout
8) Login with test credentials Admin123 Password1
9) Navigate to the "Support" tab
10) Under tickets, click "View Open Tickets"
11) Visually inspect if a ticket exists with the ticket number from step 6
12) Scroll to and double click on the ticket.
13) Enter a desired response
14) Click "Close Ticket"
15) Verify the Status of the ticket is "Closed" and the record does not display under "Open Tickets"

Expected results:

It is expected that the End-User should be able to login and easily create a ticket.

It is expected that the Company user should be able to login and easily find and respond to the ticket.

It is expected that the status of the ticket be changed to closed upon completion.

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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.

PASS:
The test passed from both the user and company perspective. The user was able to navigate to and create a ticket with minimal effort. When the user created a ticket it was moved to "Open" status, and when the company responded and closed it, it changed to "Closed" status.

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F. SOURCES

Ouriken, U. Which One Is Right for You Waterfall or Agile (November 2019) Retrieved from: http://ouriken.com/blog/which-one-is-right-for-you-waterfall-or-agile/

Brooklin Nash. What is the Difference Between Agile vs Waterfall? (April 2020) Retrieved from: https://www.trustradius.com/buyer-blog/difference-between-agile-vs-waterfall

Waterfall Methodology: Advantages, Disadvantages and When to Use It? (March 15, 2018). Retrieved from: https://lvivity.com/waterfall-model

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