Capstone Project My Commercial AD.com

CST 499 Capstone Project

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**Executive Summary**

Today, technology provides the ability for anyone to become a freelance media creator. The average smart cellular telephone can record hours of high definition video, and development within the world wide web has provided a series of website platforms that allow those videos to be published for viewing the internet-connected world. Simultaneously during the period of the development of advanced smart cellular telephone technology, a revolution in the advertising industry occurred. Large companies began to recognize that amateur advertising media creators possessed the ability to create advertising that is not only entertaining but appeals to their base target audience. While several companies have been able to gain access to the previously untapped resource of amateur commercial advertising creators (via the creation of specialized websites for amateur advertising campaigns), many companies have not had the ability or the funding to mount an amateur commercial advertising campaign. One of the reasons for the inability to access amateur commercial advertising creators is the time and effort it takes to create a functional website for a single advertising campaign. For a small to medium-sized company, create a functional website for a single advertising campaign is a risky venture. It is believed that what is needed is an online intermediary system that provides a platform to connect businesses seeking to have an amateur commercial with amateur commercial makers

The primary goal of this capstone project (called "**My Commercial Ad.com**") is to provide an online system to connect companies looking to create an amateur adverting commercial with amateur commercial makers. One of the primary objectives of the My Commerical Ad.com capstone project is to develop a website that provides companies with the ability to login and create an advertising campaign for which prospective amateur commercial makers can respond. Another objective of the My Commerical Ad.com capstone project is to provide amateur commercial

makers with the ability to log into the system and search for currently open advertising campaigns, and to make a submission to an open advertising campaign. The third and final objective is to provide a method for businesses to review submitted responses to their open amateur commercial advertising campaign, select and notify a possible winner, and then close the open advertising campaign.

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**Introduction**

In 2006, the National Football League became the third advertiser to announce that it was going to use the creative talents of amateurs to make a commercial for the Super Bowl (Morrissey). At that time, almost all television commercials were created by professional advertising agencies. However, over the years, the trend of using amateur talent (artists) to make commercial advertisements has been growing each year exponentially. This trend is not just limited to sporting events (such as the Super Bowl) but includes major companies using amateur commercial ideas for the regular product advertisement, such as those by Johnnie Walker (Dan) and Snickers (Kiefaber).

As technology has rapidly developed, so has the ability of an amateur commercial maker to create an amateur video quickly. Most cellular telephones have a built-in camera that is more than capable of allowing an amateur commercial artist to create a homemade commercial quickly. Additionally, rapid technological developments have provided websites for amateur artists to store and present their videos. Such websites like YouTube, Vimeo, and Flickr have skyrocketed in posting and users. However, the primary purpose of those sites is to storage videos of all types. As such, those sites do not provide an organized method for creating an advertising campaign and getting submissions. Additionally, none of those online video sites provide the ability for a business owner to mount a campaign for an amateur commercial advertisement.

Amateurs commercial makers often find that there are no websites that exist that allow them to showcase their ideas without worrying about theft of intellectual property. Moreover, there are limited places on the web that allow owners of small to medium-size businesses to connect with amateur commercial makers. Large corporations that want to have the campaign to use an amateur commercial advertisement must spend the time and effort to build an inhouse website for

that purpose. Those corporations take a risk that the time and effort to build the website might not yield a return on the investment (ROI), as often the effort to create a functional website for one advertising campaign is both time consuming and costly. The fact is that there are hardly any websites that exist with the primary purpose of connecting amateur commercial makers with businesses. The creation of a website specifically oriented to showcase amateur commercial advertisements and provide businesses with a way to quickly mount an advertising campaign would benefit both amateur commercial makers and business owners

The purpose of the **My Commercial AD.com** capstone project is to create the core foundation of a website that will provide an online system for showcasing amateur commercials (via scripts or rough video footage) and connecting those amateur commercial makers (Amateur Artist) with potential businesses (Business Owners). The system would provide the ability for companies to log into the website and create an advertising campaign seeking prospective submitters. These campaigns would include a description, start and end dates, and awarded bid amounts. Creative amateur commercial makers can find advertising campaigns that they are interested in and submit their proposed ideas. Once the advertising campaign has closed, if the company finds a prospective idea that is appealing, then they may select that idea and award the submitter. Additionally, submitters will be given ranking based on the number of ideas that they have submitted that has been selected and will be given a rating based on the quality of the ideas (originality, ability to reach the target audience, etc.)

**My Commercial AD.com Capstone Project Goals**

Based on the need for an online intermediary system that provides a platform to connect businesses seeking to have an amateur commercial with amateur commercial makers, the goals of the **My Commercial AD.com** capstone project are the following:

- Developed an online system for showcasing Freelance or homemade commercials (via scripts or rough video footage) and connecting these with potential businesses.

- Give companies the ability to log in an online system and create an AD campaign seeking prospective submitters. These campaigns would include a description, start and end dates, and awarded a bid amount. Creative people could find AD campaigns that they are interested in and submit their proposed ideas

- Allow companies to close an open campaign. Once the AD campaign has closed, if the company finds a prospective idea that is appealing, they may select that idea and award the submitter.

- Allow submitters to be ranked and rated based on the number of ideas selected and the quality of the ideas (originality, ability to reach the target audience, etc.). Companies looking to generate an AD quickly may choose to contact all submitters with high rankings.

**My Commercial AD.com Capstone Project Objectives**

In order to reach the goal of having an online system that connects companies with amateur commercial makers, the **My Commerical Ad.com** capstone project has the following project objectives that culminate to the goal

- Design and create an online website that provides companies that ability to login and create an advertising campaign for which prospective amateur commercial makers can respond

- Design and create and integrate a web portal, dashboard, and process flow that provides amateur commercial makers with the ability to log into the system and search for currently open advertising campaigns. This process flow will include the ability of

amateur commercial makers to submit a video response to an open advertising campaign.

- Design and implement an online process flow that allows businesses that have created an amateur commercial advertising campaign to be able to 1) review submitted responses to their open amateur commercial advertising campaign, 2) select and notify a possible winner, and 3) close the open advertising campaign

**Stakeholders and Community**

There are two primary stakeholders for the **My Commercial AD.com** capstone project, 1) Business Owner, and 2) Amateur Artist. While their roles and interaction within the My Commercial Ad system are on opposite functional sides, they are equally valued. The system does not designate the role the user has within the **My Commercial AD.com** capstone project system. Instead, the user selects or defines their role when creating an account. While it is very likely that a user of the system could be both user types, once an account has been created as a specific user type, it cannot be changed

The first type of user is a business owner, or a person working for a business that is designated as the account owner. The business that the business owner is associated with can range from a small business to a large corporation. It is anticipated that the Business Owner, or the business that they represent, have a budget for an advertising campaign.

The second type of user is a person who wants to create an amateur commercial advertisement (Amateur Artist). This user has a creative idea and the ability to create an amateur video (record a video, edit it, and post it). This user could be a person representing another business, such as a person from an advertising agency. The Business Owner will be responsible for vetting this user after selecting a submitted video that appeals to them.

**Evidence of Need for My Commercial AD.com**

Video hosting is not a new idea, and in fact, there are over one hundred video hosting websites on the world wide web. The most popular ones are YouTube, Twitch, and Vimeo. These video hosting websites have an abundance of content on them, including professional and amateur commercials. Since the primary purpose of these websites are to allow anyone to upload almost any video, the websites do not provide a methodology for sponsoring amateur commercial advertising campaigns. Until 2016, there were virtually no websites that attempted to provide a method for connecting business with amateur commercial makers. In March 206, however, a new website called "Make Your TV Ad" emerged. To date, this is the only website in this category.

The website "Make Your TV Ad" is nicely designed. It offers a series of videos and texts that explain the purpose of the website and how to use it. In reviewing the information on the website, it seems that the primary function of the website is to provide a place for amateur commercial makers to store their videos. It does not provide any method for businesses to create an amateur video campaign. Clearly, a person who is interested in participating in an amateur video contest could search the world wide web for an open contest. Once they have found an amateur video contest, they could create their video and upload it to the "Make Your TV Ad" site. After this, they would have to go back to the original amateur video contest website and post a link to their video on the "Make Your TV Ad" site. The method does not differ any from the amateur video makers perspective than using YouTube as the place to store their video.

The **My Commercial AD.com** capstone project differs from "Make Your TV Ad" in several ways. The first way it differs is that the primary function of the **My Commercial AD.com** capstone project is to provide a place to connect business and amateur commercial makers. It does this by providing a place for businesses to host amateur commercial campaigns, and amateur

commercial makers to find open amateur commercial campaigns. MyCommercialAD will provide business owners with a portal to log into for creating and posting an open amateur commercial advertising campaign. Subsequently, **My Commercial AD.com** capstone project will provide amateur commercial makers with a single place to look for amateur commercial advertising campaigns

Another way that the **My Commercial AD.com** capstone project will differ from the "Make Your TV Ad" website is that it will provide users with the ability to log into a secure portal. Provide each user with a secure login allows users to have a place group all of their amateur commercial advertising data. From the perspective of the business user, it allows them the check on the progress of their commercial advertising campaign, as well as review videos, select a winner, and closeout the campaign. Amateur commercial makers are presented with all their submission in one place and can quickly check their submission status.

Lastly, the most exciting way **My Commercial AD.com** capstone project will differ from "Make Your TV Ad" is that **My Commercial AD.com** capstone project will use Google authentication. "Make Your TV Ad" does not provide a method for a user to log into the site. Not only will MyCommercialAD provide users with a login account, but it will also use Google to authenticate the user. Using Google as an authenticator means that there is a requirement for users to have a Google account to access **My Commercial AD.com** capstone project. The use of Google as a secure authentication system is not an outrageous requirement, as according to website LifeWire.com and ecloudbuzz.com, Gmail is the most popular online email service. Another benefit of using Google as the authentication service is that it will allow the storage of user videos on their YouTube account (as YouTube is owned by Google and therefore allows granting permission to a users YouTube account). The **My Commercial AD.com** capstone project website

becomes a way to be able to list and access their videos quickly. Storing videos on the users YouTube account means that YouTube can be the repository for video storage. This method of using YouTube as the video storage is a massive shift in paradigm, as there will not be a database repository created to store the users video. Instead, all user videos will be created and maintained on YouTube using their Google account to access their YouTube account

While there exist many video hosting websites on the world wide web, only one of them, "Make Your TV Ad," has the primary function of providing for a place for amateur commercial videos. However, the site "Make Your TV Ad" provides a limited set of functionally. It does not provide a method for a business to create amateur video advertising campaigns, it does not provide a portal for the user to log into, and it does not provide any authentication methods. **My Commercial AD.com** capstone project will differ from "Make Your TV Ad," as it will all of these functions.

## Design Requirements

One of the objectives of the **My Commercial AD.com** capstone project is to provide the users of the application with an experience that is meaningful and relevant.  The **My Commercial AD.com** capstone project requires a technology-based solution that includes the following primary functional requirements:

**General User Requirements**

- Provide a website portal for users to access the application

- Allow users to access the application using Google authentication

- Provide the user with a notification that they are granting the application permission to access their Google account and access information about videos uploaded to their related YouTube account.

- Provide user the ability to declare one of two roles (Amateur Artist, or Business Owner)

**Business Owner Requirements**

- Provide Business Owners with the ability to create a new campaign for amateur videos.

- Provide Business Owners with the ability to enter all information needed to create a new campaign.

- Provide Business Owners with the ability to close a campaign at any time.

- Provide Business Owners with the ability to select a "Winner" of a campaign when closing it.

- Provide the ability to send the selected "Winner" notification of the winning award

- Provide Business Owners with the ability to close a without a "Winner."

**Amateur Artist Requirements**

- Provide Amateur Artist with the ability to view a list of current campaigns that they have submitted.

- Provide Amateur Artist with the ability to search for open campaigns

- Provide Amateur Artist with the ability to select a campaign from the search list to view more information about it.

- Provide Amateur Artist with the ability to submit an amateur commercial video to an open campaign that they have not already made a submission.

- Provide Amateur Artist with the ability to make a campaign submission by selecting a video from the list of their uploaded YouTube videos.

**Functional Decomposition**

Using the based requirements fo the **My Commerical Ad.com** capstone project,

the following represents the functional decomposition of the application:
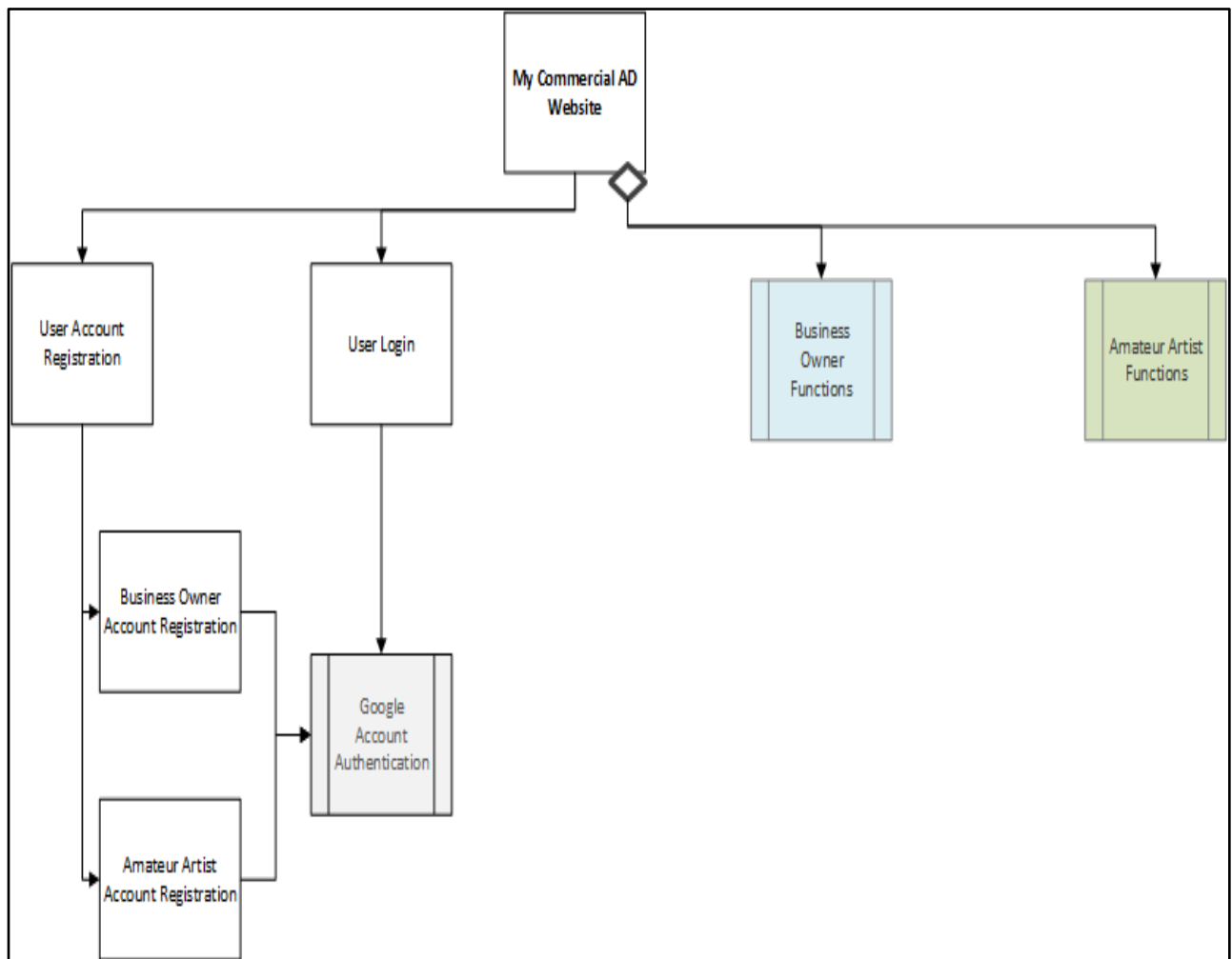
**Primary Functional Decomposition**



*Figure 1- Primary Functional Decomposition Diagram*

- *User Account Registration* – The User Account Registration function provides the user

  with the ability to register an account with the application.  In the registration process,

  the user selects the role of either a "Business Owner" or an "Amateur Artist."  Both roles

  require the user to have a Google account, which is used to authenticate the user.

- ***User Login*** – The User Login function provides the user with the ability to access the application using their Google account, which they have previously authenticated in the User Account Registration function.

- ***Business Owner Functions*** – The Business Owner Functions represent all functionality that a Business Owner can perform.

- ***Amateur Artist Functions*** – The Amateur Artist Functions represents all functionality that an Amateur Artist can perform.
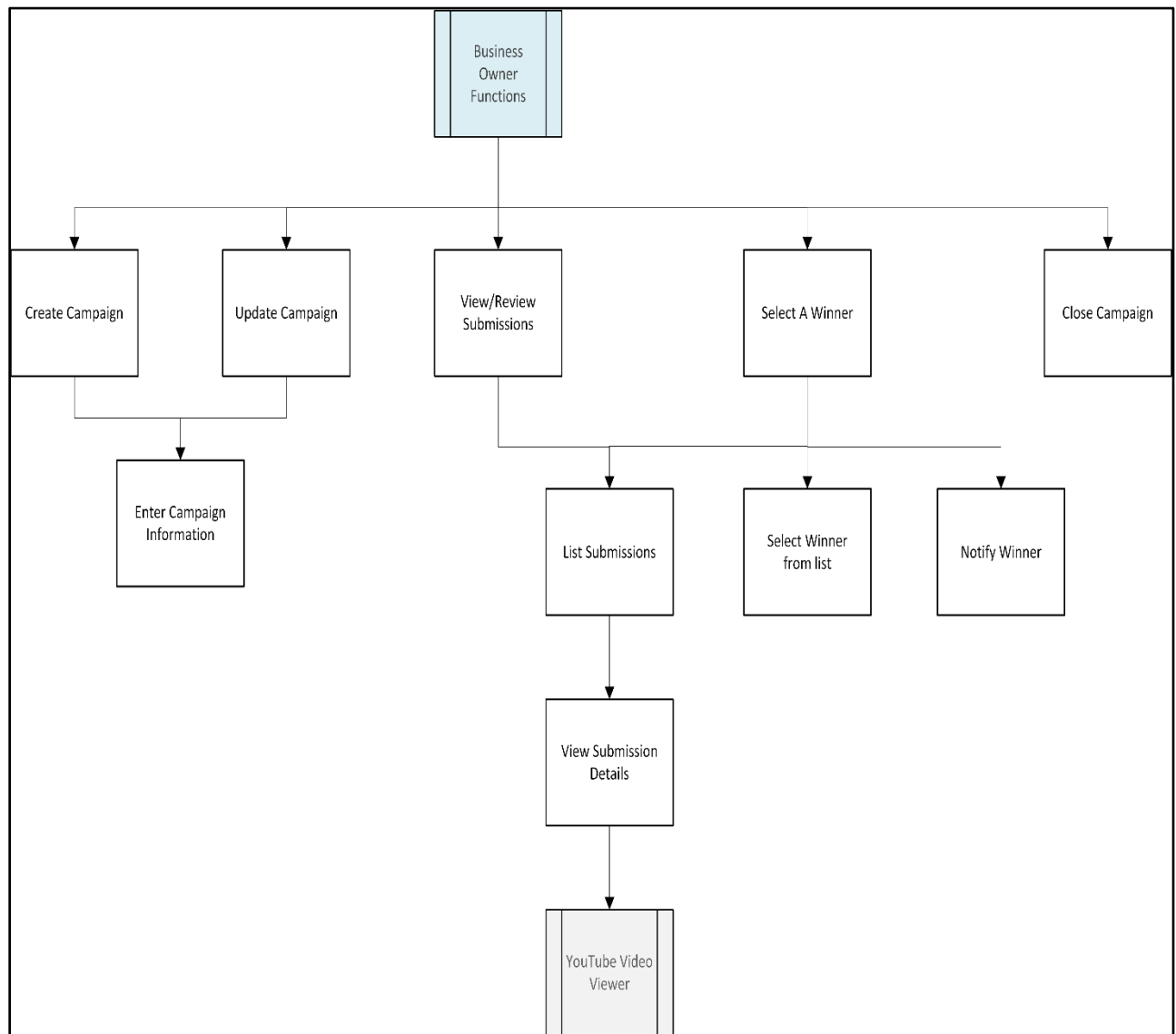
**Business Owner Functions Functional Decomposition**



*Figure 2- Business Owner Functions - Functional Decomposition*

- ***Create Campaign*** – The Create Campaign function provides the Business Owner with the ability to create an advertising campaign to solicit Amateur Artist for ideas. The process gathers campaign information for the user.

- *Update Campaign* – The Update Campaign function provides the Business Owner with the ability to update information for a created advertising campaign.

- *View/Review Submissions* – The View/Review Submissions function provides the Business Owner with the ability to view a list of submissions for the advertising campaign. An individual submission can be selected from the list of submissions to see the detailed information, including viewing the associated YouTube video.

- *Select A Winner* – The Select A Winner Function provides the Business Owner with the ability to select a Winner from the listed of submissions. The Select A Winner function will send a notification to the selected winner.

- *Close Campaign* – The Close Campaign provides the Business Owner with the ability to close an open campaign.

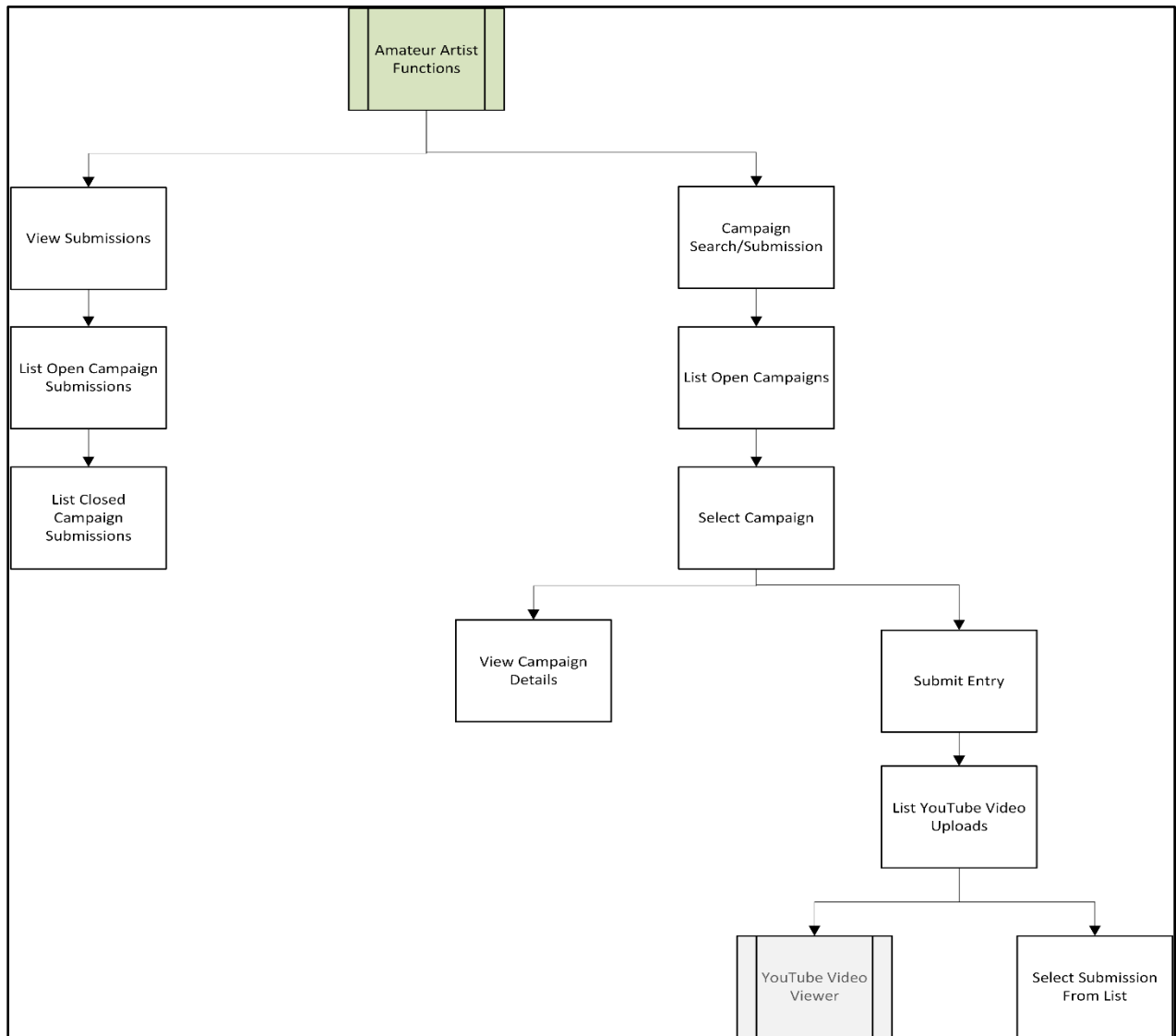**Amateur Artist Functions Functional Decomposition**



*Figure 3- Amateur Artist Functions - Functional Decomposition*

- *View Submissions* – The View Submissions function provides the Amateur Artist with the ability to view a list of open and closed campaigns where they have made a submission. A list of open campaign submissions is listed, followed by a list of closed campaign submissions.

- *Campaign Search and Submission* – The Campaign Search and Submission function provides the Amateur Artist with the ability to perform the following functions:

  - *List Open Campaigns* – The List Open Campaigns function provides the Amateur Artist with the ability to view a list of open campaigns. Detailed information about an Open Campaign can be viewed by selecting a campaign from the list.

  - *Submit Entry* – The Submit Entry function provides the Amateur Artist with the ability to submit an entry to an open campaign that has been selected. The Submit Entry function provides a list of the videos that have been uploaded to the Amateur Artist's YouTube account. The Amateur Artist selects a video from the list of their uploaded videos and completes the submission.

**Selection of Design Criterion**

One of the key factors in the decision for the design of the **My Commercial AD.com** capstone project is that it must be responsive and be visually appealing, yet simple enough to be self-navigate. Having a responsive design will all the **My Commercial AD.com** capstone project to be view on both desktop computers and mobile devices. Additionally, designing a simple, less complexed, and cluttered application will allow both Business Owners and Amateur Artists to quickly adapt to the application without having to spend a lot of time pursuing training material.

**Final Deliverables**

The deliverables for the MCA capstone project consist of all the artifacts and proprietary assets that make up the core project. The core of the project deliverables for the **My Commercial AD.com** capstone project are as follows:

- Project Documentation

  - Project Proposal

  - Project Schedule in Microsoft Project

  - Design documentation, such as Storyboard (wireframe diagrams), sitemaps, and mockups.

- Project Website

  - A registered Domain Name

  - A functional website allowing users access at their convenience (Twenty Four (24) hours a day, seven (7) days a week)

- Project Code and Images

  - Website code (including HTML, CSS, JavaScript, Etc.)

  - Website images and media (i.e., videos, animation, etc.)

- SQL Server Database

  - SQL Server Database Backup

  - SQL Server Database Scripts

**Artifact Storage**

The following table provides information about the format and storage of the project artifacts.

*Table 1- Table of Project Artifacts*

| Project Artifact | Location | Storage Method (Paper or Electronic) |
|---|---|---|
| Documentation | Github Respository | Electronic |
| Website | http://www.mycommercialad.com/ | Electronic |
| Source Code | Github Respository | Electronic |
| Database | SQL Server | Electronic |

| Database scripts | Github Respository | Electronic |
|---|---|---|

**Approach and Methodology**

While there are many development practices and methodologies (such as Agile Development, DevOps Development, Waterfall Development, Rapid application development, etc.), it is believed that "agile software development methodologies perform better than traditional methodologies" (Papadopoulos, 2015).  The agile methodology will be used for **My Commercial AD.com** capstone project.

In the agile methodology, the project will be developed in iterations, where each iteration is a subproject that includes design, coding, testing, and release. At the beginning of each iteration, a selection of the project functions to be worked on during that iteration is made. At the end of each iteration, the project priorities are reevaluated before starting the next iteration. The basic outline of the adopted agile methodology is as follows:

- Create the base user stories and requirements
- Conduct a release planning meeting
- Then for each interaction, the following tasks are performed:

  - Select the user stories to work on.

  - Conduct an iteration planning meeting

  - Create the design for the iteration

  - Create the unit tests for the iteration

  - Perform the programming for the iteration

  - Conduct the unit tests and fix any issues

  - Perform the acceptance test

  - Refactor the code

o   Release the iteration.

When the final iteration is complete, the project will be released/published, and the lessons learned artifact will be produced.

**Ethical Considerations**

Since the goal of the capstone project is primarily to develop a website, it is prone to the many ethical ramifications that are prominent of so many other web-based software solutions. It is not just the idea that if it can be built, then build it, but there exist a series of ethical questions that range from the very basic, like whether the technology should even be built in the first place, to the very extreme, like how to ensure the safety of those using it. Moreover, while the process of examining all ethical issues could proceed ad nauseam, the ethical issues surrounding the *My Commercial AD.com* capstone project seem to fall into the two dominant groups of 1) Information Security and Privacy, and 2) Social Injustice.

**Information Security and Privacy**

When it comes to software development, those who develop and implement software projects can likely be responsible for implementing or planning the technical components that secure and protect other's information and privacy. Since the **My Commercial AD.com** capstone project website will not be handling financial transactions, then the main focuses of information and privacy ethical issues are securing and controlling access to the user's information (such as name, address, company information,  etc.) from intrusion, and assuring that files on the website are free from viruses.

**Securing and Control of Personal Information**

Christians (1991, p. 7) states that "The use of technology in the processing of information can therefore not be seen as ethically neutral" , p. 7), and it is a firm belief that users of the **My Commercial AD.com** capstone project website should have the ability to use the site without having to worry as to whether their personal information will be compromised or sold to marketing companies. It is an ethical issue that exists not only in the development stage but also throughout the life of the **My Commercial AD.com** capstone project website. The best way to mitigate these problems and garner the trust of the users is by establishing a legal banner that outlines the policies of the website and posting it for users to see and approve before entering the site. Additionally, the policies of the website will be sent to the users via email. By explicitly stating and posting the privacy policies, violation of those policies can result in lawsuits in which users can point to a breach of trust by the site (or site administrators).

**Protecting Users from the Spread of Viruses**

One of the major concerns for many computer users and companies is computer viruses (which include trojan horse programs and worms). Computer viruses can cause unexpected and undesired behavior on the infected computer that ranges from minor annoyances to widespread damage. The ethical issue concerning computer viruses is whether the administrator of a website has a responsibility to make sure that every precaution has been taken to prevent the spread of a virus from the site. This issue is another example of an ethical issue that exists not only in the development stage, but it is also present throughout the life of the website. Since the **My Commercial AD.com** capstone project website will allow file uploads (in the form of videos, pictures, and text documents), it is of the highest importance that the site is as secure as possible against the threat of viruses. The techniques for protecting the site will be through various

industry-standard methods, which range from virus software to encryption and network intrusion detection.   While the issue of virus protection has been viewed as an ethical issue, it should be noted that there may be a legal standing for a website administrator to assure that there are safeguards in place for protecting against viruses.   "A victim of computer virus infection may bring legal action under a negligence theory against entities such as web site operators and other providers and distributors of infected software" (De Villers).

### Social Injustice

While not directly stated as an ethical issue, there exists a social obligation for all developers to assure that they are developing technology that is anti-elitist.  An anti-elitist stand would mean that people of all socioeconomic backgrounds would have equal opportunity to utilize the newly developed technology.   The **My Commercial AD.com** capstone project website addresses this issue by offering free membership to individuals, only requiring a validated email address (initially corporate members will be free also, but this model may change in time).  Any member may use private computers or public computers (like ones at the local libraries or schools) to access the site.   Images of members will only be avatars, as a way to mitigate racial, gender, and transgender biases.  The project team for the **My Commercial AD.com** capstone project website firmly believes that creativity comes from all types of backgrounds, and it is hoped that the many and varied backgrounds are properly represented on the **My Commercial AD.com** capstone project website. Thus, it is hoped that the steps to be undertaken will eliminate, or mitigate, both short term and long term adverse impacts due to social injustice, with the goal of the steps to create a leveled playing field.

**Legal Considerations**

Intellectual property is a term which is used to refer to the ownership of things that are created by the human mind. Often these are an intangible or non-physical type of goods (such as artwork, designs, scientific discoveries, software applications, writings, etc.). (World Intellectual Property Organization, 2008, p. 3) States that "Intellectual property relates to items of information or knowledge, which may be incorporated intangible objects at the same time in an unlimited number of copies at different locations anywhere in the world. The property is not in those copies, but in the information or knowledge reflected in them." Because intellectual property is intangible, there are more issues related to its protection than tangible property. Intellectual property embodies an important legal consideration of ownership (and all that comes with ownership like reverence and worth). An advertising campaign idea is an intangible thing like writing, music, or software design (while most of these have legal protection under copyright laws), the legal consideration that arises concerning an advertising concept is whether the advertising concept (or advertising idea) should be given the same intellectual protections as writing, music and software designs. While it may appear that this issue is another example of a legal consideration that exists not only in the development stage but throughout the life of the **My Commercial AD.com** capstone project website, proper planning prior to implementation makes this issue an implementation issue. The solution for **My Commercial AD.com** capstone project website will be to have every user accept a legal agreement that acknowledges the intellectual property rights as set forth in the Industrial Property Rights document created by the World Intellectual Property Organization. An intellectual property rights law firm will have vetted this legal agreement, and thus allowing the acknowledgment to serve as an artifact in a court case, should such an action be required.

**Timeline**

One of the primary items for keeping a project on track and ensuring the key objectives are delivered is to have an established project timeline with milestones. The following figure shows the original proposed time for the **My Commercial AD.com** capstone project, and the accompanying table shows how the actual time compared to the proposed time.
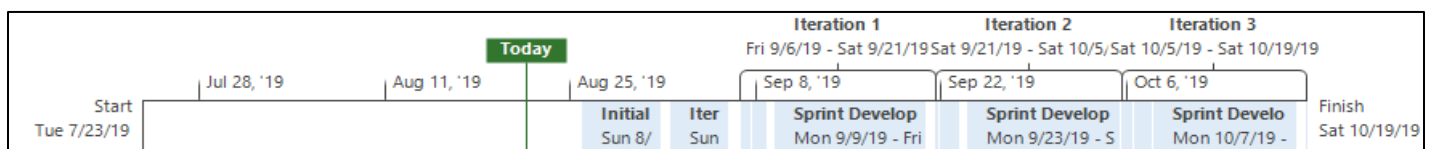
*Figure 4 -Original Project Timeline*



*Table 2- Proposed Timeline vs. Actual Timeline*

| Task | Proposed | | Actual | |
|---|---|---|---|---|
| | **Start** | **End** | **Start** | **End** |
| **Project Planning and Design** | 8/25/2019 | 8/31/2019 | 8/25/2019 | 8/31/2019 |
| **Environment Configuration**. | 9/1/2019 | 9/5/2019 | 9/1/2019 | 9/7/2019 |
| **Iterative Development** | 9/6/2019 | 10/18/2019 | 9/8/2019 | 10/18/2019 |
| Sprint 1 | 9/6/2019 | 9/20/2019 | 9/8/2019 | 9/24/2019 |
| Sprint 2 | 9/21/2019 | 10/4/2019 | 9/24/2019 | 10/8/2019 |
| Sprint 3 | 10/5/2019 | 10/17/2019 | 10/8/2019 | 10/17/2019 |

| Finalization | 10/18/2019 | 10/19/2019 | 10/18/2019 | 10/19/2019 |
|---|---|---|---|---|

**Timeline Tasks Differential Information**

*Environment Configuration Differential* - The Environment Configuration phase of the project consisted of the installation and configuration of needed environments, including server space, database, etc.  Because of some issues related to Google shutting down the original API Key for OAuth 2 authentication, there were some days of delay where the configuration could not be thoroughly tested.  This issue was resolved through contact will the Google Corporation staff. However, this delay further propagated to subsequent phases (as the original timeline was very constricted).

*Sprint 2* – The first Sprint of the project initially appeared to be successful. However, the primary testers provide feedback about some issues.  These issues were included in the second Sprint, which creates a small delay further propagated to subsequent phases (again, it is worth noting that the original timeline was very constricted).

**Usability Testing and Evaluation**

The goals of usability testing for the My Commercial AD.com capstone project included generating a baseline of user performance, creating and validating user performance measures, and identifying potential design issues that needed to be addressed to improve the user's navigation, productivity, and satisfaction.

The usability test objectives are:

- To uncover any issues in the design of the User Interface (UI). Such issues would include, but not limited the following:

| **Navigation-related issues** | Navigation-related issues are issues in which the user has to perform extra typing or extra clicking to complete a function within the system. |
|---|---|
| **Display related issues** | Display related issues are issues in which information presented is not readily apparent to the user that might create issues related to performing needed actions. |
| **Icon and control related issues** | Icon and control related issues are issues that force the user to perform extra searching to find system functions. |

- Perform a complete series of functional testing of the system while gathering metrics on the performance of the system.
- Gather user-satisfaction levels from user questionnaires and surveys.

**Methodology**

After being given an overview of the **My Commercial AD.com** capstone project, usability testing participants were] asked to attempt to complete a series of functions in a timely manner and provide feedback regarding the degree of usability (via formal surveys and questionnaires).

The functional areas participants tested are as follows:

**General User Testing**

General User functions are a series of functions that all **My Commercial AD.com** capstone project system user types perform.

- Can the User access the system via a website portal

- Can the User create register a new account or log in to an existing one.

- Can the User grant the system permission to access their email account address listed within their Google account and access information about videos uploaded to their related YouTube account.

- Is the User only allowed to authenticate through the federated services of Google authentication (OAuth 2 and Open Connect).

- Can the User declare themselves as one of two roles (Amateur Artist, or Business Owner)

**Business Owner Testing**

Business Owner functions are a series of functions that business owners user types can perform in the **My Commercial AD.com** capstone project.

- Can the Business Owner view information about their current campaign on their dashboard (the number of responses submitted, and the number of days left in the campaign)

- If a current campaign does not exist, can the Business Owner create a new campaign for amateur videos if one does not exist?

- Can the Business Owner close a campaign at any time?

- Can the Business Owner can select a "Winner" of a campaign when closing it.

- Does the system send notification of selection to the"Winner" selected Amateur Artist

- Can the Business Owner elect to close a campaign without a "Winner."

**Amateur Artist Testing**

Amateur Artist functions are a series of functions that amateur artist user types can perform in the **My Commercial AD.com** capstone project.

- Can the Amateur Artist view a list of current campaigns that they where they have made a submission?

- Can the Amateur Artist look for open campaigns

- Can the Amateur Artist can select a campaign from the search list to view more information about it.

- Can the Amateur Artist submit an amateur commercial video to an open campaign?

- Can the Amateur Artist link their YouTube video to the selected campaign?

**Focus Group Feedback**

A series of feedback sessions were held, and the information to those sessions was cataloged. When time permitted, suggestions were incorporated into the project development.

### Final Implementation

The following sections describe the implemented **My Commercial AD.com** capstone project.

### Workflows

The implemented project consisted of the following series of user workflows:

#### Login and Registration

The login and registration workflow provides all users with the ability to perform a one-time registration where they register their Google account with the application. After their Google account has been registered, the user uses their google account to access the system.
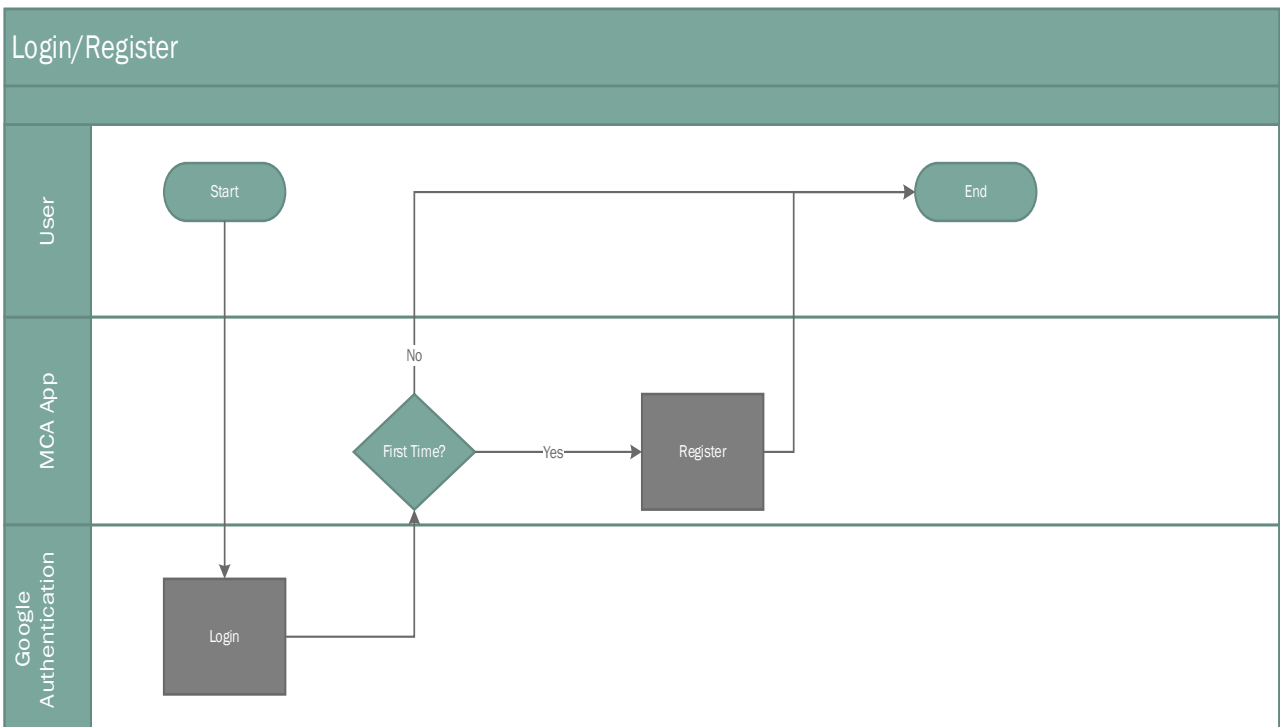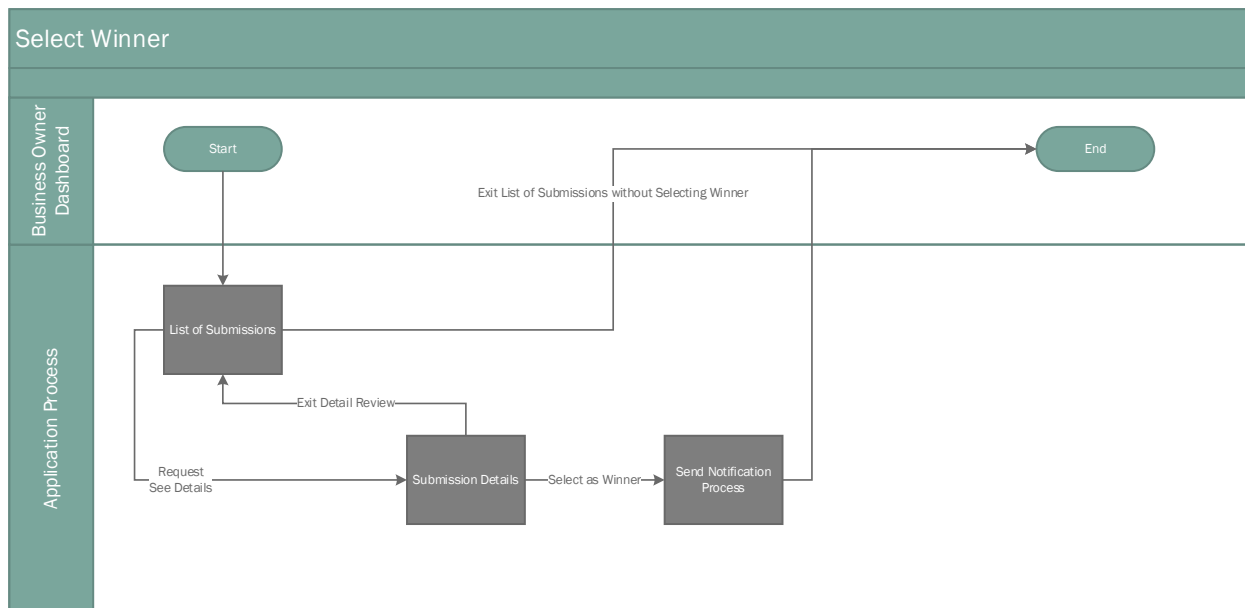
**Campaign Search and Submission**

The search and submission workflow provides Amateur Artist with the ability to search

for open campaigns and make a submission.
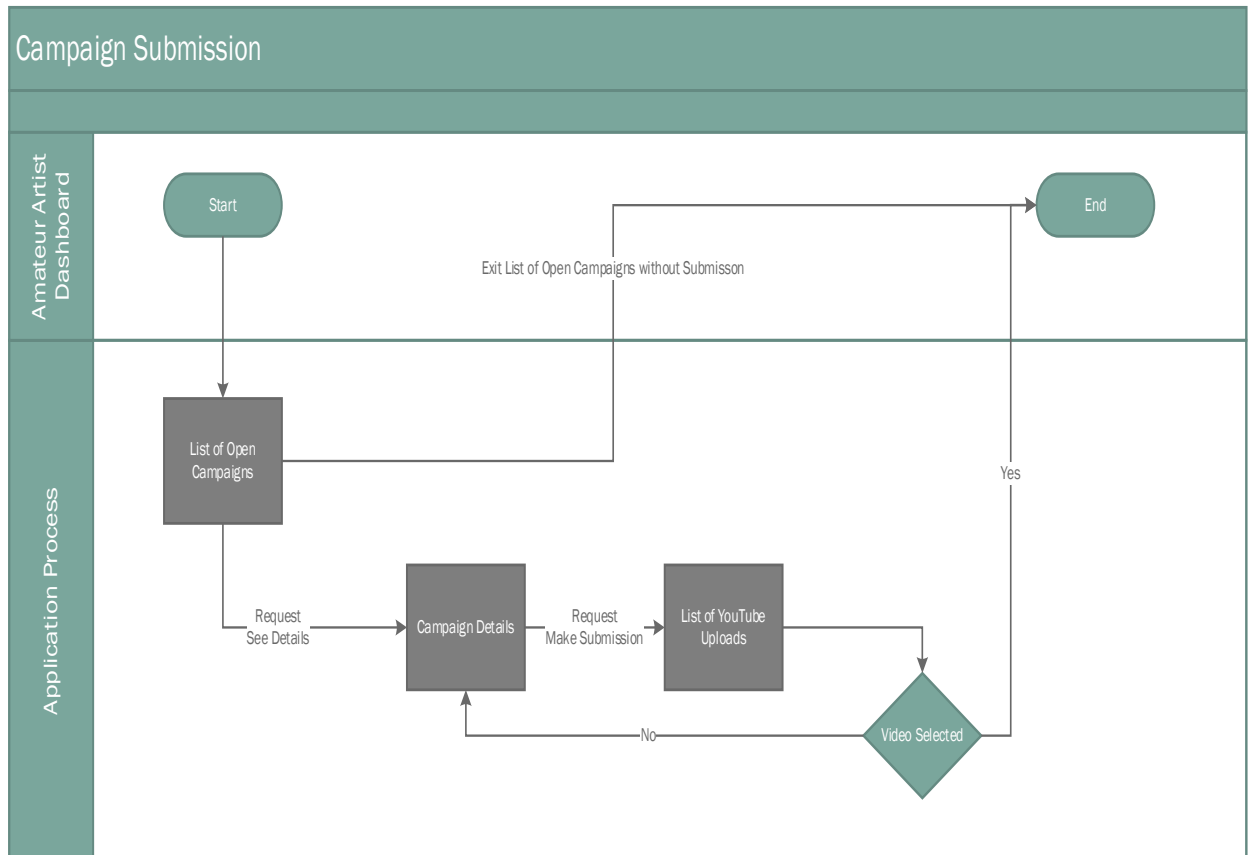


**Campaign Winner Selection**

The campaign winner selection workflow provides Business Owners with the ability to

close out a campaign and select a winner.

Select Winner

Business Owner Dashboard

Start

End

Exit List of Submissions without Selecting Winner

Application Process

List of Submissions

Exit Detail Review

Request See Details

Submission Details — Select as Winner → Send Notification Process

## Discussion (Final)

The **My Commercial AD.com** capstone project encompassed various avant-garde technologies that are quickly becoming technology standard (such as OAuth 2.0 and third party authentication).  While the **My Commercial AD.com** capstone project met many of the project objectives, there were some setbacks related to the implementation of these newer technologies.  Additionally, the project development timeline encountered some issues that were not related to technology but unexpected events.

## Project Issues

During the development of the **My Commercial AD.com** capstone project, there were several complications that were encountered.

### Google API Disabled

Since the **My Commercial AD.com** capstone project application uses the Google OAuth 2.0 API authentication, it is critical that it is active.  To use Google, the developer

and project must be registered with the Google developer site.  After this, the project is given a client and secret for connecting via the Google API.  The Google API for the **My Commercial AD.com** capstone project had expired as it had not been active during the required time period. The resolution required contacting Google and providing information about the project (including the contact information for the Capstone Project Advisor) for them to reenable the API.

**Application Issues Found in Testing**

During the iteration testing, the tester found several significant issues that required addressing before the next development iteration could be performed.  While these issues were resolved, the resolution created a delay in the project timeline.

**Project Material Used**

The material resources that were used for the **My Commerical Ad.com** capstone project are as following:

- Hosting Site with the following components:
    - Windows Server
    - SQL Server Database
    - Asp.net Framework
- Domain Name
- Secure Socket Layer (SSL) certification
- Google Developer API components
    - Account
    - Key and Secret
- GitHub account and repository

- Project tracking software (Monday.com)

- Online usability testing

**Milestones**

The following are significant milestones for the **My Commerical Ad.com** capstone project:

| Name |
| --- |
| Completed Initial planning |
| Completed Hosting Environment and Configuration |
| Sprint 1 |
| Completed Sprint Planning |
| Completed Website UI for Iteration |
| Completed Database Design and Definition |
| Coding and unit testing complete |
| Completed Sprint User Acceptance Testing |
| Sprint 2 |
| Completed Sprint Planning |
| Completed Website UI for Iteration |
| Completed Database Updates |

| |
|---|
| Coding and unit testing complete |
| Completed Sprint User Acceptance Testing |
| Sprint 3 |
| Completed Sprint Planning |
| Completed Website UI for Iteration |
| Completed Database Updates |
| Coding and unit testing complete |
| Completed Sprint User Acceptance Testing |
| Completed Project |

**Conclussion**

The purpose of the **My Commercial AD.com** capstone project was to create a website that provides an online system for showcasing amateur commercials (via scripts or rough video footage) and connecting those amateur commercial makers (Amateur Artist) with potential businesses (Business Owners). The system provides the ability for companies to log into the website and create an advertising campaign seeking prospective submitters. These campaigns would include a description, start and end dates, and awarded bid amounts. Creative amateur commercial makers can find advertising campaigns that they are interested in and submit their proposed ideas. Once the advertising campaign has closed, if the company finds a prospective idea that is appealing, then they may select that idea and award the submitter. Additionally, submitters will be given ranking based on the number of ideas that they have submitted that has been selected and will be given a rating based on the quality of the ideas (originality, ability to reach the target audience, etc.)

The development of the **My Commercial AD.com** capstone project was done using an agile methodology that consisted of development iterations. Each iteration was a subproject that includes design, coding, testing, and release. At the beginning of each iteration, a selection of the project functions to be worked on during that iteration was made. At the end of each iteration, the project priorities were reevaluated before starting the next iteration. The basic outline of the adopted agile methodology is as follows:

- Create the base user stories and requirements

- Conduct a release planning meeting

- Then for each interaction, the following tasks are performed:

  o Select the user stories to work on.

- o   Conduct an iteration planning meeting

- o   Create the design for the iteration

- o   Create the unit tests for the iteration

- o   Perform the programming for the iteration

- o   Conduct the unit tests and fix any issues

- o   Perform the acceptance test

- o   Refactor the code

- o   Release the iteration.

The **My Commercial AD.com** capstone project encompassed various avant-garde technologies that are quickly becoming technology standard (such as OAuth 2.0 and third party authentication). While the **My Commercial AD.com** capstone project met many of the project objectives, there were some setbacks related to the implementation of these newer technologies. Additionally, the project development timeline encountered some issues that were not related to technology but unexpected events.

**Lessons Learned**

While performing the **My Commercial AD.com** capstone project, several complications were encountered. These complications were resolved, and the following list the lessons that were gained:

**Keep the tasks and objectives as simple as possible**

The application was originally planned to have more features. However, changes in the project timeline resulted in some features being pushed to post-implementation. While it is often very easy to want to provide a robust application, it is best to provide a simpler

application initially. Once the simple objectives have been met, additional tasks can be added.

**Account for unexpected events in the project timeline**

During the project development, several unplanned tasks and events came up. Providing buffer time in the original estimated timeline can lessen the effects of unexpected tasks and events.

**Do not rush development**

Because of the time constraint, the application development cycles were rushed. Rushing the development cycle resulted in an increased number of testing feedback items (some of them were obstacles to further progress). These testing feedback items required additional resolution time in the next development cycle.

## References

Christians, C. G. *Ethics and the Librarian*. Urbana-Champaign: University of Illinois, Graduate School of Library and Information Science, 1991. Print.

Dan, Avi. *This Stunning Amateur Commercial For Johnnie Walker Will Make You Cry*. 16 December 2016. Online. 18 July 2019. <https://www.forbes.com/sites/tmobile/2019/06/21/how-social-media-on-tomorrows-mobile-network-will-be-game-changing-for-business/#6b5ca858ad57>.

De Villers, M. "Virus Ex Machina: Res Ipsa Loquitur." N.p., 3 Mar. 2003. Web. <https://journals.law.stanford.edu/stanford-technology-law-review/online/virus-ex-machina-res-ipsa-loquitur>.

Kiefaber, David. *Here's the Amateur Snickers Ad That Just Won Its Creator $50,000*. 23 September 2015. Online. 18 July 2019. <https://www.adweek.com/creativity/heres-amateur-snickers-ad-just-won-its-creator-50000-167053/>.

Morrissey, Brian. "Super Bowl spots: who needs an ad agency?" *ADWeek* 16 October 2006: 6. Print. 18 July 2019.

Papadopoulos, G. (2015, February 12). Moving from Traditional to Agile Software Development Methodologies Also on Large, Distributed Projects. *Procedia - Social and Behavioral Sciences*, pp. 455-463.

Rubin, J., & Chisnell, D. (2008). Handbook of usability testing: How to plan, design, and conduct effective tests (Second ed., Safari Books Online). Indianapolis, IN: Wiley Pub.

*Understanding Industrial Property*. Geneva: World Intellectual Property Organization, 2008.

Web. 26 Mar. 2016.

<http://www.wipo.int/edocs/pubdocs/en/intproperty/895/wipo_pub_895.pdf>.

**Appendix A – Usability Test Plan**

# Introduction

The purpose of this capstone project is to create the core foundation of a website that will provide an online system for showcasing amateur commercials (via scripts or rough video footage) and connecting those amateur commercial makers (Amateur Artist) with potential businesses (Business Owners). The system would provide the ability for companies to log into the website and create an advertising campaign seeking prospective submitters. These campaigns would include a description, start and end dates, and awarded bid amounts. Creative amateur commercial makers can find advertising campaigns that they are interested in and submit their proposed ideas. Once the advertising campaign has closed, if the company finds a prospective idea that is appealing, then they may select that idea and award the submitter.

**Target audience**

There are two primary target groups for the *My Commercial Ad* capstone project, 1) Business Owner, and 2) Amateur Artist. While their roles and interaction within the My Commercial Ad system are on opposite functional sides, they are equally valued. The system does not designate the users role within the My Commercial Ad system. Instead, the user selects or defines their role when creating an account. While it is very likely that a user of the system could be both user types, once an account has been created as a specific user type, it cannot be changed.

The first type of user is a business owner, or a person working for a business that is designated as the account owner. The business that the business owner is associated with can

range from a small business to a large corporation. It is anticipated that the Business Owner, or the business that they represent, have a budget for an advertising campaign.

The second type of user is a person who wants to create an amateur commercial advertisement (Amateur Artist). This user has a creative idea and the ability to create an amateur video (record a video, edit it, and post it). This user could be a person representing another business, such as a person from an advertising agency. The Business Owner will be responsible for vetting this user after selecting a submitted video that appeals to them.

**test group**

The principle testers for the *My Commercial Ad* capstone project are focus groups of friends and family members.

### Amateur Artist Test group

The Amateur Artist target audience group of the *My Commercial Ad* capstone project possibly has little experience with complex online software applications. Therefore, the selected members of this test group have little experience with complex software applications.

### The business Owner Test group

Business owners, as a whole, are generally familiar with various types of software applications and therefore selected focus test members that represent this audience should have experience with software applications.

**testing structure**

Testing for the *My Commercial Ad* capstone project is divided into three (3) primary sections of 1) General Users functions, 2) Amateur Artist functions, and 3) Business Owner functions. Members of the focus group attempt to perform a series of functions that are listed for their group type. They report any issues that they encounter when performing the functions.

### General User Functions

General User functions are those functions that are executed by both Amateur Artist and Business Owners. They are as follows:

- Access the system via a website portal
- Create a new account or log in to an existing one.
- Grant the system permission to access their email account listed within their Google account and access information about videos uploaded to their related YouTube account

- Authenticate through the federated services of Google authentication (OAuth 2 and Open Connect).

- Declare one of two roles (Amateur Artist, or Business Owner)

- User will be able to search for existing campaigns

**Amateur Artist Functions**

Amateur Artist functions are those functions that are executed by only Amateur Artists.

They are as follows:

- User will be able to search for existing campaigns

- View a list of current campaigns that they have submitted.

- Select a campaign from the search list to view more information about it.

- Submit an amateur commercial video to an open campaign that they have not already made a submission.

- Make a campaign submission by selecting a video from the list of their uploaded YouTube videos.

**Business Owner Functions**

Business owner functions are those functions that are executed by only Business owners.

They are as follows:

- View current campaign Dashboard that should be displayed on login that shows information about the current campaign (the number of responses submitted, and the number of days left in the campaign)

- Create a new campaign for amateur videos if one does not exist.

- Enter all the information needed to create a new campaign.

- Close a campaign at any time.

- Select a "Winner" of a campaign when closing it.

- Selection of a "Winner" sends a notification of the winning award the Amateur Artist

- Elect to close a without a "Winner."

# Focus Group Feedback

Since it would have been challenging to gather all focus group members at one time,

individual sessions were performed.  The information from all sessions was aggregated into the

following:

### General User Functions

- *Issue:* The message for granting permission to Google account functions seem concerning.
- *Suggestion:* Perhaps put an explanation on the main login screen

- *Issue:* Application times out after a time and you have grant Google permission again
- *Suggestion:* Add code to store refresh token to prevent reauthentication

### Amateur Artist Functions

- *Issue:* Search does not allow criteria
- *Suggestion:*  Add search criteria (maybe added later)

- *Issue:* Can pick same AD campaign again for submission
- *Suggestion:*  Try to add code to check for already selected AD Campaigns

- *Issue:* Cannot know if you were selected for a campaign
- *Suggestion:*  Add code for winner selection and have Business Owner group close some

  project with winners

### Business Owner Functions

- *Issue:* Can only create one campaign at a time
- *Suggestion:*  Add ability to add additional campaign (by design, but maybe added later)

- ***Issue:*** Clicking of submitted video takes you to the YouTube video and out of application

- *Suggestion:* Embed video playing in the application (not yet coded)

- ***Issue:*** Cannot close a campaign with a winner selected

- *Suggestion:* Add code for winner selection

   **Other Issues**

- ***Issue:*** The application is very plain.  Can images and color be added?.

- *Suggestion:* Add images and styling (not yet implemented)

**Appendix B – Team Member Roles**

## Team Members

The team members and responsibilities for the **My Commercial AD.com** capstone project consist of the following people:

| Name | Role | Responsibility |
|------|------|----------------|
| Dr. Eric Tao | *Project Sponsor* | • *Provides input into the Project Scope*<br>• *Approves changes to the project timeline.*<br>• *Signs off on the Project.* |
| Professor Brian Robertson | *Project Reviewer* | • *Reviews and assist in decisions on the proposed project*<br>• *Confirms the Project's proposal is clear*<br>• *Confirms the project's goals and objectives are achievable* |
| Cassandra Humphrey | *Project Sponsor Support* | • *Provides input into the Project Scope*<br>• *Establishes standard requirements for the project*<br>• *Validates project information* |
| Clarence Mitchell | *Project Manager* | • *Creates project timeline, tracks project progress, and reports project progress and issues to the project sponsor*<br>• *Obtains sign-off on Project from the Sponsor*<br>• *Coordinate with the other project members* |
| Clarence Mitchell | *Developer* | • *Inform the project manager on current programming tasks.*<br>• *Produce well-organized, optimized, and documented source code*<br>• *Provide a built solution*<br>• *Testing the product.* |
| Selected friends and family members | *User Tester* | • *Conducts Usability testing the product.* |

**Appendix C – SiteMap**

**Main SiteMap**



My Commercial AD.Com SiteMap

Main Login

Google Login

Register
(if First Time)

Amateur Artist Home
(Dashboard)

Business Owner Home
(Dashboard)
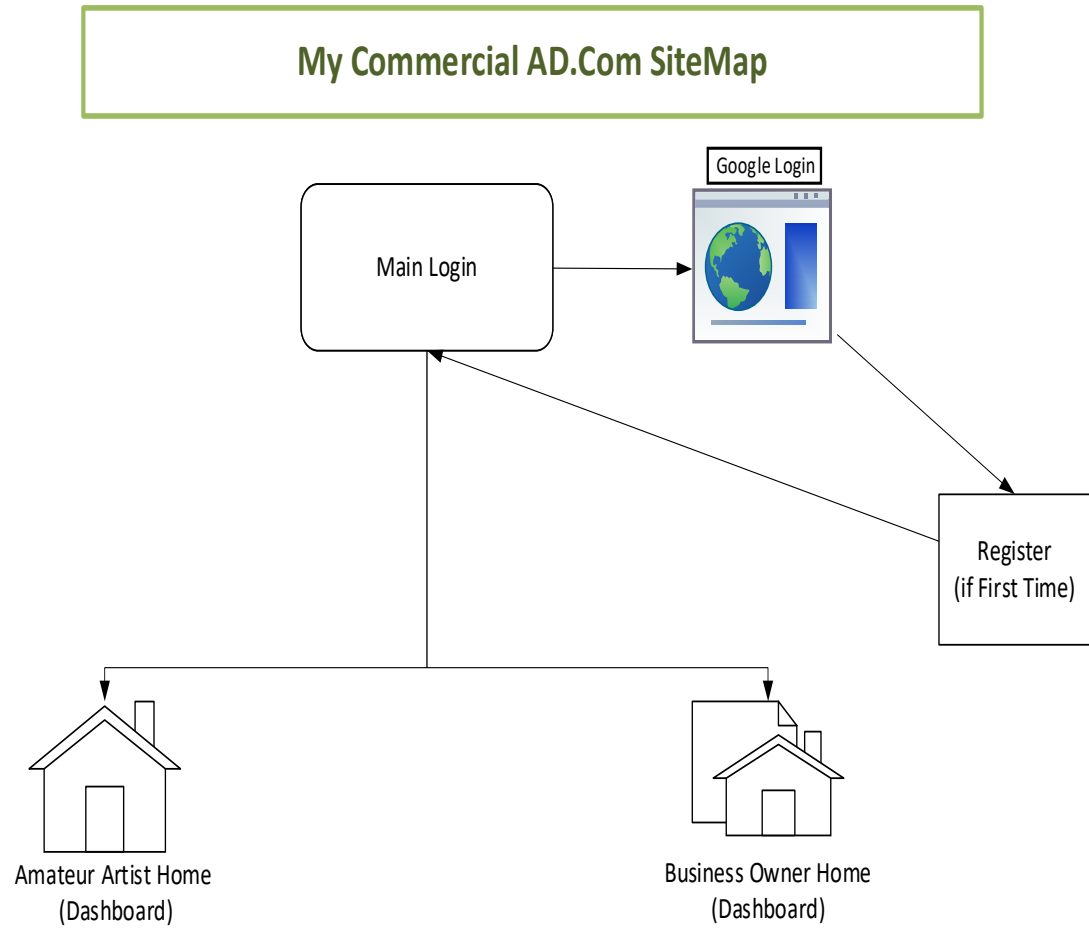
**Amateur Artist SiteMap**



My Commercial AD.Com SiteMap

Amateur Artist Home
(Dashboard)

DASHBOARD
<No Submission>
or
List of Submssions

Delete
Dialog

Submission
Details

List of Open Campaigns

Campaign
Detials

List of YouTube
Uploads
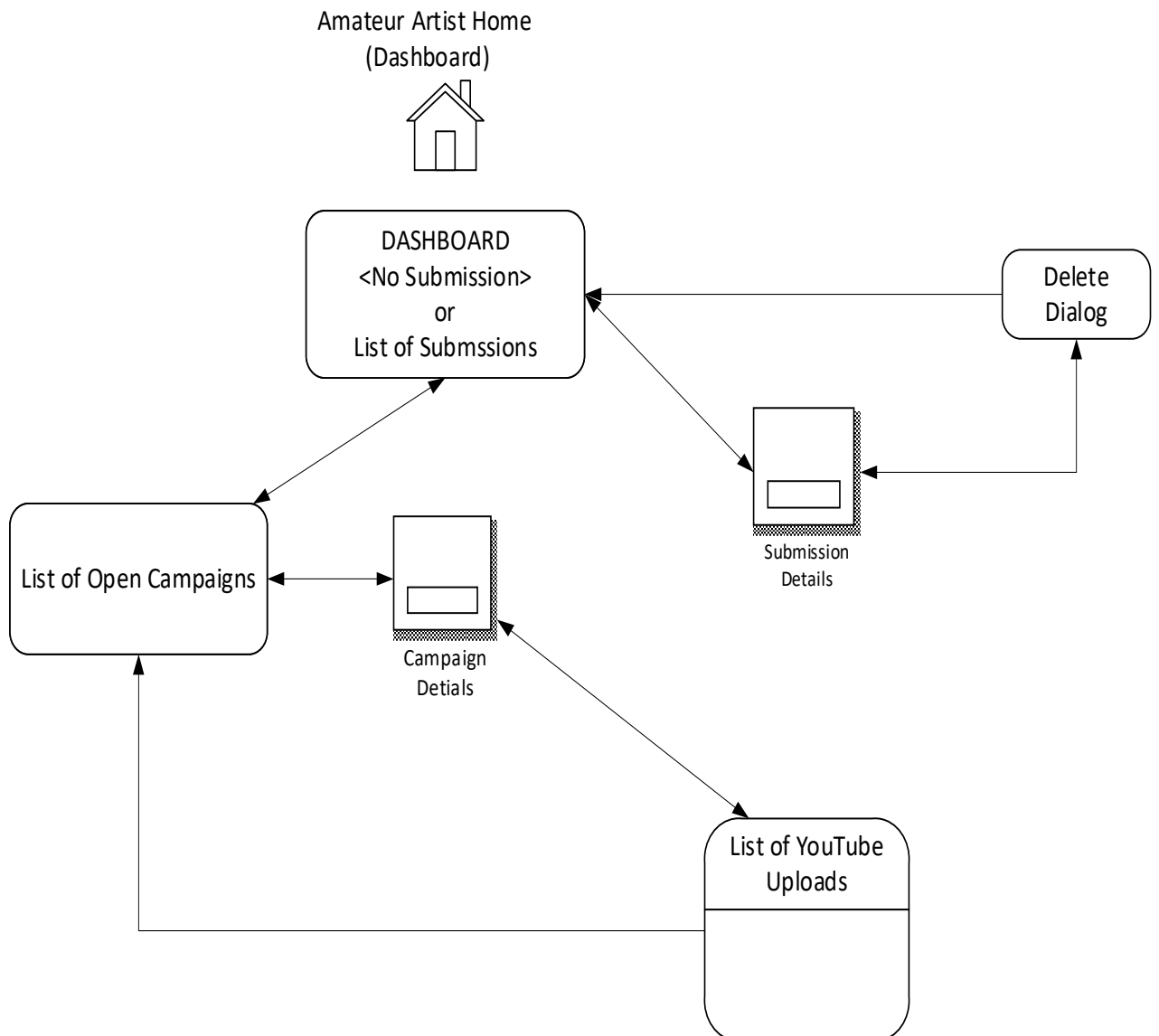
**Business Owner SiteMap**

# My Commercial AD.Com SiteMap

Business Owner Home
(Dashboard)

Close
w/o Winner
Confirmation
Dialog

DASHBOARD
<No Campaign>
or
Current Campaign

Campaign
Detials

List of Submissions

Submission
Details

Select Winner
Confirmation
Dialog
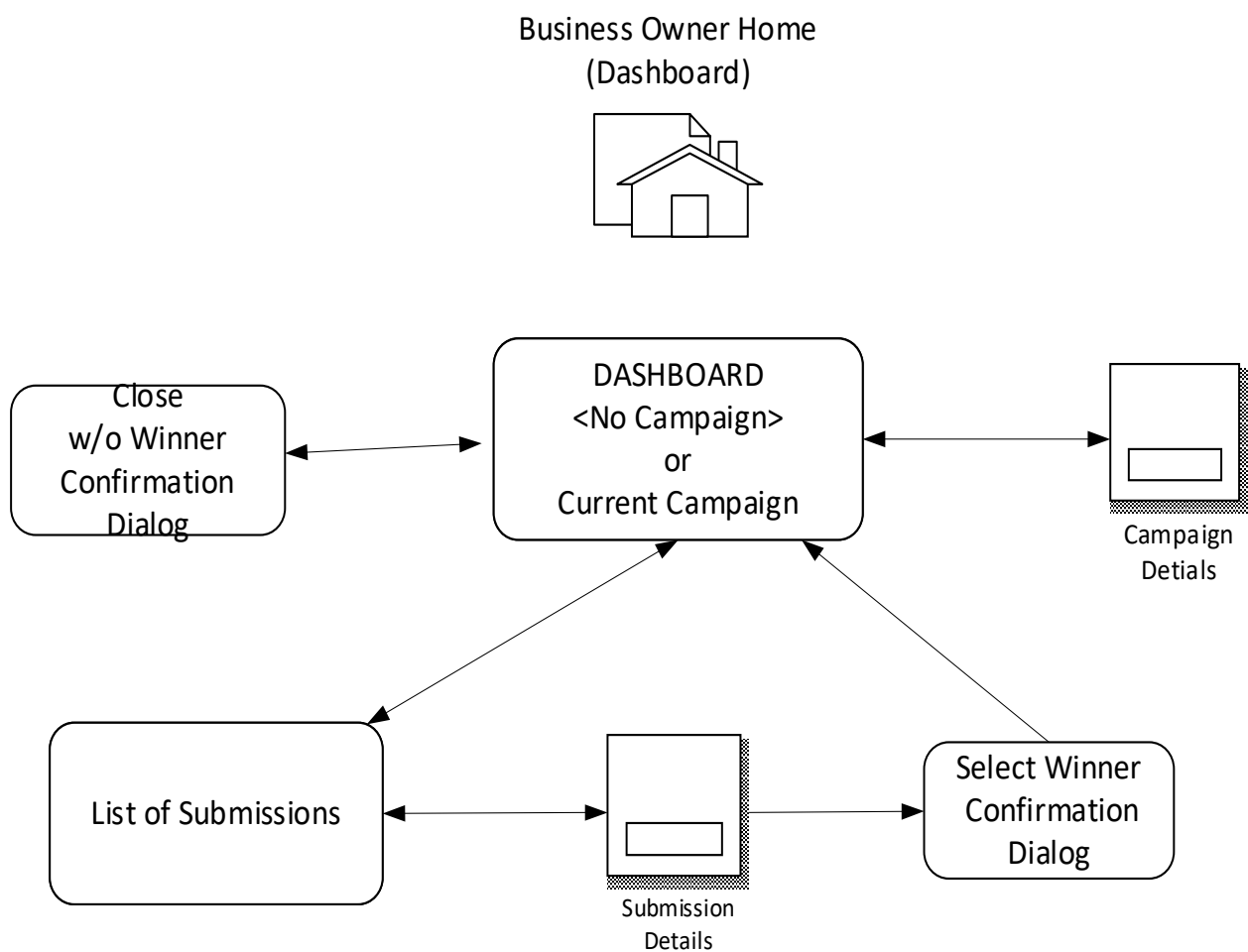
**Appendix D – Database Design**

**Database Diagram**
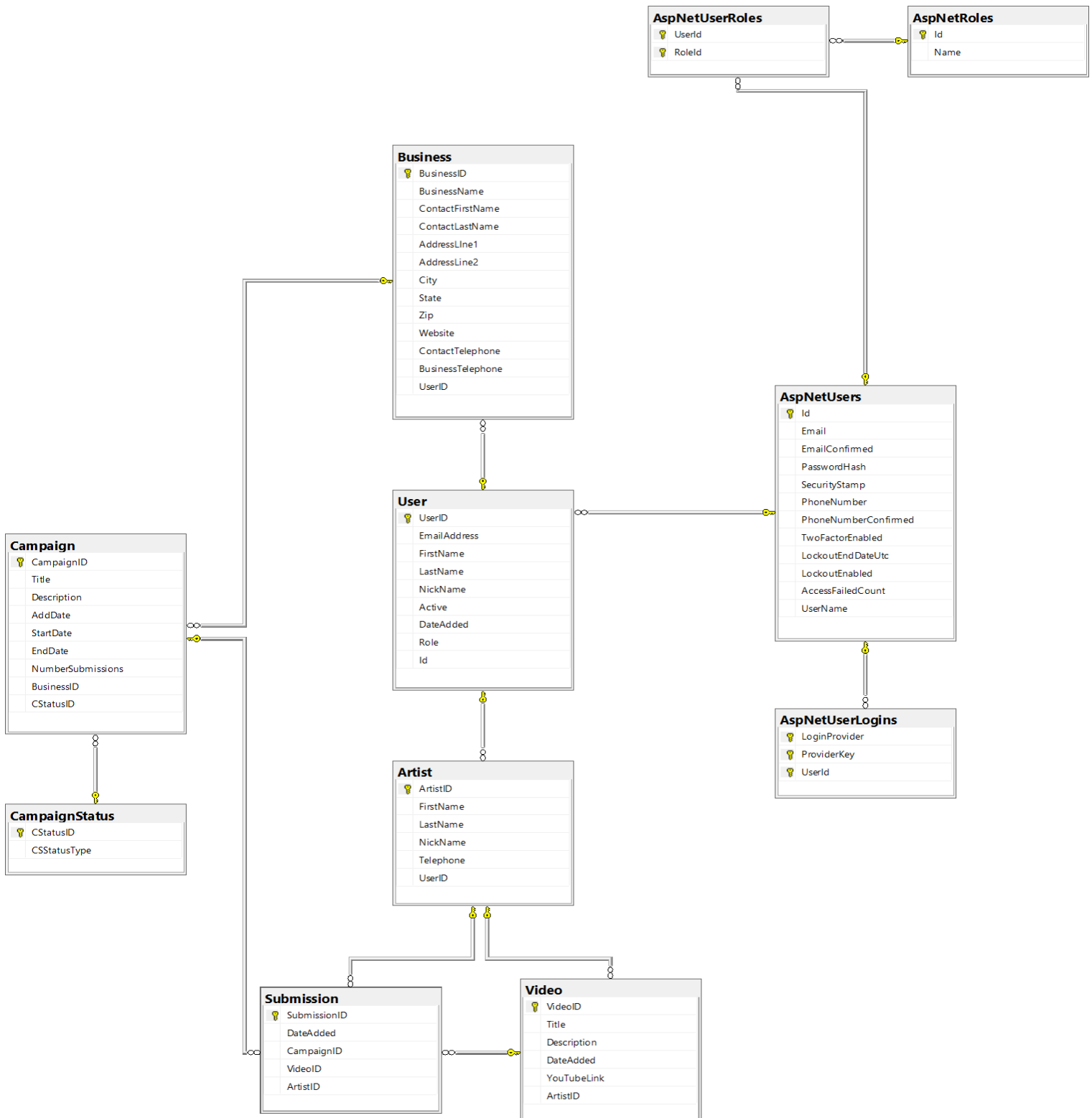
## Database Information

| 🗄 *MCADB Database* |
| --- |

### Database Properties

| Property | Value |
| --- | --- |
| SQL Server Version | SQL Server 2017 |
| Compatibility Level | SQL Server 2017 |

| 🖻 *Tables* |
| --- |

### Objects

| Name |
| --- |
| dbo.Artist |
| dbo.AspNetRoles |
| dbo.AspNetUserLogins |
| dbo.AspNetUserRoles |
| dbo.AspNetUsers |
| dbo.Business |
| dbo.Campaign |
| dbo.CampaignStatus |
| dbo.Submission |
| dbo.User |
| dbo.Video |

☷ [dbo].[Artist]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability | Identity |
|---|---|---|---|---|---|
| PK 🔑 C ⛁ | ArtistID | int | 4 | NOT NULL | 1 - 1 |
| | FirstName | nvarchar(50) | 100 | NULL allowed | |
| | LastName | nvarchar(50) | 100 | NULL allowed | |
| | Nick-Name | nvarchar(50) | 100 | NULL allowed | |
| | Telephone | nvarchar(50) | 100 | NULL allowed | |
| FK 🔑 | UserID | int | 4 | NOT NULL | |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK 🔑 C | PK_Artist | ArtistID | True |
| | DF_Artist_ArtistID | ArtistID | True |

## Foreign Keys

| Name | Columns |
|---|---|
| FK_User_Artist | UserID->[dbo].[User].[UserID] |

**SQL Script**

```sql
CREATE TABLE [dbo].[Artist]

(

[ArtistID] [int] NOT NULL IDENTITY(1, 1),

[FirstName] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[LastName] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[NickName] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[Telephone] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[UserID] [int] NOT NULL

) ON [PRIMARY]

GO

ALTER TABLE [dbo].[Artist] ADD CONSTRAINT [PK_Artist] PRIMARY KEY CLUSTERED  ([Artist-
ID]) ON [PRIMARY]

GO

ALTER TABLE [dbo].[Artist] ADD CONSTRAINT [DF_Artist_ArtistID] UNIQUE NONCLUSTERED
([ArtistID]) ON [PRIMARY]

GO

ALTER TABLE [dbo].[Artist] ADD CONSTRAINT [FK_User_Artist] FOREIGN KEY ([UserID])
REFERENCES [dbo].[User] ([UserID])

GO
```

⊞ [dbo].[AspNetRoles]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability |
|-----|------|-----------|--------------------|-------------|
| PK/C | Id | nvarchar(128) | 256 | NOT NULL |
| | Name | nvarchar(256) | 512 | NOT NULL |

## Indexes

| Key | Name | Key Columns | Unique |
|-----|------|-------------|--------|
| PK/C | PK_dbo.AspNetRoles | Id | True |
| | RoleNameIndex | Name | True |

## SQL Script

```
CREATE TABLE [dbo].[AspNetRoles]

(

[Id] [nvarchar] (128) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,

[Name] [nvarchar] (256) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL

) ON [PRIMARY]

GO

ALTER TABLE [dbo].[AspNetRoles] ADD CONSTRAINT [PK_dbo.AspNetRoles] PRIMARY KEY
CLUSTERED ([Id]) ON [PRIMARY]

GO

CREATE UNIQUE NONCLUSTERED INDEX [RoleNameIndex] ON [dbo].[AspNetRoles] ([Name]) ON
[PRIMARY]

GO
```

⊞ [dbo].[AspNetUserLogins]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability |
|---|---|---|---|---|
| PK C | Login-Provider | nvarchar(128) | 256 | NOT NULL |
| PK C | ProviderKey | nvarchar(128) | 256 | NOT NULL |
| PK C FK | UserId | nvarchar(128) | 256 | NOT NULL |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK C | PK_dbo.AspNetUserLogins | LoginProvider, ProviderKey, UserId | True |
|  | IX_UserId | UserId |  |

## Foreign Keys

| Name | Delete | Columns |
|---|---|---|
| FK_dbo.AspNetUserLogins_dbo.AspNetUsers_UserId | Cascade | UserId->[dbo].[AspNetUsers].[Id] |

**SQL Script**

```sql
CREATE TABLE [dbo].[AspNetUserLogins]

(

[LoginProvider] [nvarchar] (128) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,

[ProviderKey] [nvarchar] (128) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,

[UserId] [nvarchar] (128) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL

) ON [PRIMARY]

GO

ALTER TABLE [dbo].[AspNetUserLogins] ADD CONSTRAINT [PK_dbo.AspNetUserLogins] PRIMARY
KEY CLUSTERED  ([LoginProvider], [ProviderKey], [UserId]) ON [PRIMARY]

GO

CREATE NONCLUSTERED INDEX [IX_UserId] ON [dbo].[AspNetUserLogins] ([UserId]) ON
[PRIMARY]

GO

ALTER TABLE [dbo].[AspNetUserLogins] ADD CONSTRAINT [FK_dbo.AspNetUserLogins_dbo.Asp-
NetUsers_UserId] FOREIGN KEY ([UserId]) REFERENCES [dbo].[AspNetUsers] ([Id]) ON DELETE CASCADE

GO
```

⊞ [dbo].[AspNetUserRoles]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability |
|---|---|---|---|---|
| PK C FK | UserId | nvarchar(128) | 256 | NOT NULL |
| PK C FK | RoleId | nvarchar(128) | 256 | NOT NULL |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK C | PK_dbo.AspNetUserRoles | UserId, RoleId | True |
| | IX_RoleId | RoleId | |
| | IX_UserId | UserId | |

## Foreign Keys

| Name | Delete | Columns |
|---|---|---|
| FK_dbo.AspNetUserRoles_dbo.AspNetRoles_RoleId | Cascade | RoleId->[dbo].[AspNetRoles].[Id] |
| FK_dbo.AspNetUserRoles_dbo.AspNetUsers_UserId | Cascade | UserId->[dbo].[AspNetUsers].[Id] |

## SQL Script

```
CREATE TABLE [dbo].[AspNetUserRoles]

(

[UserId] [nvarchar] (128) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,

[RoleId] [nvarchar] (128) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL

) ON [PRIMARY]

GO

ALTER TABLE [dbo].[AspNetUserRoles] ADD CONSTRAINT [PK_dbo.AspNetUserRoles] PRIMARY KEY
CLUSTERED  ([UserId], [RoleId]) ON [PRIMARY]
```

```
        GO

        CREATE NONCLUSTERED INDEX [IX_RoleId] ON [dbo].[AspNetUserRoles] ([RoleId]) ON

[PRIMARY]

        GO

        CREATE NONCLUSTERED INDEX [IX_UserId] ON [dbo].[AspNetUserRoles] ([UserId]) ON

[PRIMARY]

        GO

        ALTER TABLE [dbo].[AspNetUserRoles] ADD CONSTRAINT [FK_dbo.AspNetUserRoles_dbo.AspNet-

Roles_RoleId] FOREIGN KEY ([RoleId]) REFERENCES [dbo].[AspNetRoles] ([Id]) ON DELETE CASCADE

        GO

        ALTER TABLE [dbo].[AspNetUserRoles] ADD CONSTRAINT [FK_dbo.AspNetUserRoles_dbo.AspNet-

Users_UserId] FOREIGN KEY ([UserId]) REFERENCES [dbo].[AspNetUsers] ([Id]) ON DELETE CASCADE

        GO
```

⊞ [dbo].[AspNetUsers]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability |
|---|---|---|---|---|
| PK C | Id | nvarchar(128) | 256 | NOT NULL |
| | Email | nvarchar(256) | 512 | NULL allowed |
| | EmailConfirmed | bit | 1 | NOT NULL |
| | PasswordHash | nvarchar(max) | max | NULL allowed |
| | SecurityStamp | nvarchar(max) | max | NULL allowed |
| | PhoneNumber | nvarchar(max) | max | NULL allowed |
| | PhoneNumber-Confirmed | bit | 1 | NOT NULL |
| | TwoFactorEnabled | bit | 1 | NOT NULL |
| | LockoutEndDateUtc | datetime | 8 | NULL allowed |
| | LockoutEnabled | bit | 1 | NOT NULL |
| | AccessFailedCount | int | 4 | NOT NULL |
| ⊹ | UserName | nvarchar(256) | 512 | NOT NULL |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK C | PK_dbo.AspNetUsers | Id | True |
| | UserNameIndex | UserName | True |

**SQL Script**

```
CREATE TABLE [dbo].[AspNetUsers]
(
[Id] [nvarchar] (128) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,
[Email] [nvarchar] (256) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
[EmailConfirmed] [bit] NOT NULL,
[PasswordHash] [nvarchar] (max) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
[SecurityStamp] [nvarchar] (max) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
[PhoneNumber] [nvarchar] (max) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
[PhoneNumberConfirmed] [bit] NOT NULL,
[TwoFactorEnabled] [bit] NOT NULL,
[LockoutEndDateUtc] [datetime] NULL,
[LockoutEnabled] [bit] NOT NULL,
[AccessFailedCount] [int] NOT NULL,
[UserName] [nvarchar] (256) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL
) ON [PRIMARY]
GO
ALTER TABLE [dbo].[AspNetUsers] ADD CONSTRAINT [PK_dbo.AspNetUsers] PRIMARY KEY
CLUSTERED  ([Id]) ON [PRIMARY]
GO
CREATE UNIQUE NONCLUSTERED INDEX [UserNameIndex] ON [dbo].[AspNetUsers] ([UserName]) ON
[PRIMARY]
GO
```

[dbo].[Business]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability | Identity |
|---|---|---|---|---|---|
| PK C | Business-ID | int | 4 | NOT NULL | 1 - 1 |
| | Business-Name | nvarchar(150) | 300 | NULL allowed | |
| | Contact-FirstName | nvarchar(50) | 100 | NULL allowed | |
| | Contact-LastName | nvarchar(50) | 100 | NULL allowed | |
| | Address-LIne1 | nvarchar(50) | 100 | NULL allowed | |
| | Address-Line2 | nvarchar(50) | 100 | NULL allowed | |
| | City | nvarchar(80) | 160 | NULL allowed | |
| | State | nchar(2) | 4 | NULL allowed | |
| | Zip | nvarchar(10) | 20 | NULL allowed | |
| | Website | nvarchar(60) | 120 | NULL allowed | |
| | Contact-Telephone | nvarchar(50) | 100 | NULL allowed | |
| | Business-Telephone | nvarchar(50) | 100 | NULL allowed | |
| FK | UserID | int | 4 | NOT NULL | |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK C | PK_Business | BusinessID | True |
| | DF_Business_BusinessID | BusinessID | True |

## Foreign Keys

| Name | Columns |
|---|---|
| FK_User_Business | UserID->[dbo].[User].[UserID] |

## SQL Script

```
CREATE TABLE [dbo].[Business]

(

[BusinessID] [int] NOT NULL IDENTITY(1, 1),

[BusinessName] [nvarchar] (150) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[ContactFirstName] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[ContactLastName] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[AddressLIne1] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[AddressLine2] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[City] [nvarchar] (80) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[State] [nchar] (2) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[Zip] [nvarchar] (10) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[Website] [nvarchar] (60) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[ContactTelephone] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[BusinessTelephone] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[UserID] [int] NOT NULL

) ON [PRIMARY]

GO

ALTER TABLE [dbo].[Business] ADD CONSTRAINT [PK_Business] PRIMARY KEY CLUSTERED

([BusinessID]) ON [PRIMARY]

GO

ALTER TABLE [dbo].[Business] ADD CONSTRAINT [DF_Business_BusinessID] UNIQUE

NONCLUSTERED  ([BusinessID]) ON [PRIMARY]
```

```
        GO

        ALTER TABLE [dbo].[Business] ADD CONSTRAINT [FK_User_Business] FOREIGN KEY ([UserID])

REFERENCES [dbo].[User] ([UserID])

        GO
```

☷ [dbo].[Campaign]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability | Identity |
|---|---|---|---|---|---|
| PK, C | Campaign-ID | int | 4 | NOT NULL | 1 - 1 |
| | Title | nvarchar(50) | 100 | NOT NULL | |
| | Description | nvarchar(max) | max | NULL allowed | |
| | AddDate | datetime | 8 | NOT NULL | |
| | StartDate | datetime | 8 | NULL allowed | |
| | EndDate | datetime | 8 | NULL allowed | |
| | Number-Submissions | int | 4 | NOT NULL | |
| FK | BusinessID | int | 4 | NOT NULL | |
| FK | CStatusID | int | 4 | NOT NULL | |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK, C | PK_Campaign | CampaignID | True |
| | UQ__Campaign__3F5E8D786CBF9299 | CampaignID | True |

## Foreign Keys

| Name | Columns |
|------|---------|
| FK_Business_Campaign | BusinessID->[dbo].[Business].[BusinessID] |
| FK_Campaign_Status | CStatusID->[dbo].[CampaignStatus].[CStatusID] |

## SQL Script

```
CREATE TABLE [dbo].[Campaign]
(
[CampaignID] [int] NOT NULL IDENTITY(1, 1),
[Title] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,
[Description] [nvarchar] (max) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
[AddDate] [datetime] NOT NULL,
[StartDate] [datetime] NULL,
[EndDate] [datetime] NULL,
[NumberSubmissions] [int] NOT NULL,
[BusinessID] [int] NOT NULL,
[CStatusID] [int] NOT NULL
) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Campaign] ADD CONSTRAINT [PK_Campaign] PRIMARY KEY CLUSTERED ([CampaignID]) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Campaign] ADD CONSTRAINT [UQ__Campaign__3F5E8D786CBF9299] UNIQUE NONCLUSTERED ([CampaignID]) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Campaign] ADD CONSTRAINT [FK_Business_Campaign] FOREIGN KEY ([BusinessID]) REFERENCES [dbo].[Business] ([BusinessID])
GO
ALTER TABLE [dbo].[Campaign] ADD CONSTRAINT [FK_Campaign_Status] FOREIGN KEY ([CStatus-ID]) REFERENCES [dbo].[CampaignStatus] ([CStatusID])
GO
```

⊞ [dbo].[CampaignStatus]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability | Identity |
|---|---|---|---|---|---|
| PK C | CStatusID | int | 4 | NOT NULL | 1 - 1 |
| | CSStatus-Type | nvarchar(50) | 100 | NOT NULL | |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK C | PK_CampaignStatus | CStatusID | True |
| | DF_CampaignStatus_CStatusID | CStatusID | True |

## SQL Script

```
CREATE TABLE [dbo].[CampaignStatus]
(
[CStatusID] [int] NOT NULL IDENTITY(1, 1),
[CSStatusType] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL
) ON [PRIMARY]
GO
ALTER TABLE [dbo].[CampaignStatus] ADD CONSTRAINT [PK_CampaignStatus] PRIMARY KEY
CLUSTERED  ([CStatusID]) ON [PRIMARY]
GO
ALTER TABLE [dbo].[CampaignStatus] ADD CONSTRAINT [DF_CampaignStatus_CStatusID] UNIQUE
NONCLUSTERED  ([CStatusID]) ON [PRIMARY]
GO
```

⊞ [dbo].[Submission]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability | Identity |
|---|---|---|---|---|---|
| PK C | Submission-ID | int | 4 | NOT NULL | 1 - 1 |
| | DateAdded | datetime | 8 | NOT NULL | |
| FK | CampaignID | int | 4 | NOT NULL | |
| FK | VideoID | int | 4 | NOT NULL | |
| FK | ArtistID | int | 4 | NOT NULL | |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK C | PK_Submission | SubmissionID | True |
| | DF_Submission_SubmissionID | SubmissionID | True |

## Foreign Keys

| Name | Columns |
|---|---|
| FK_Artist_Submission | ArtistID->[dbo].[Artist].[ArtistID] |
| FK_Campaign_Submission | CampaignID->[dbo].[Campaign].[CampaignID] |
| FK_Video_Submission | VideoID->[dbo].[Video].[VideoID] |

**SQL Script**

```sql
CREATE TABLE [dbo].[Submission]
(
[SubmissionID] [int] NOT NULL IDENTITY(1, 1),
[DateAdded] [datetime] NOT NULL,
[CampaignID] [int] NOT NULL,
[VideoID] [int] NOT NULL,
[ArtistID] [int] NOT NULL
) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Submission] ADD CONSTRAINT [PK_Submission] PRIMARY KEY CLUSTERED
([SubmissionID]) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Submission] ADD CONSTRAINT [DF_Submission_SubmissionID] UNIQUE
NONCLUSTERED  ([SubmissionID]) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Submission] ADD CONSTRAINT [FK_Artist_Submission] FOREIGN KEY
([ArtistID]) REFERENCES [dbo].[Artist] ([ArtistID])
GO
ALTER TABLE [dbo].[Submission] ADD CONSTRAINT [FK_Campaign_Submission] FOREIGN KEY
([CampaignID]) REFERENCES [dbo].[Campaign] ([CampaignID])
GO
ALTER TABLE [dbo].[Submission] ADD CONSTRAINT [FK_Video_Submission] FOREIGN KEY
([VideoID]) REFERENCES [dbo].[Video] ([VideoID])
GO
```

⊞ [dbo].[User]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability | Identity |
|---|---|---|---|---|---|
| PK C (2) | UserID | int | 4 | NOT NULL | 1 - 1 |
| | Email-Address | nvarchar(256) | 512 | NOT NULL | |
| | First-Name | nvarchar(50) | 100 | NULL allowed | |
| | Last-Name | nvarchar(50) | 100 | NULL allowed | |
| | Nick-Name | nvarchar(50) | 100 | NULL allowed | |
| | Active | int | 4 | NOT NULL | |
| | Date-Added | datetime | 8 | NOT NULL | |
| | Role | nvarchar(20) | 40 | NOT NULL | |
| FK | Id | nvarchar(128) | 256 | NOT NULL | |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK C | PK_User | UserID | True |
| | DF_User_UserID | UserID | True |
| | Ind_UserID | UserID | True |

## Foreign Keys

| Name | Columns |
|------|---------|
| FK_AspNU_User | Id->[dbo].[AspNetUsers].[Id] |

## SQL Script

```
CREATE TABLE [dbo].[User]

(

[UserID] [int] NOT NULL IDENTITY(1, 1),

[EmailAddress] [nvarchar] (256) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,

[FirstName] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[LastName] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[NickName] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,

[Active] [int] NOT NULL,

[DateAdded] [datetime] NOT NULL,

[Role] [nvarchar] (20) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,

[Id] [nvarchar] (128) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL

) ON [PRIMARY]

GO

ALTER TABLE [dbo].[User] ADD CONSTRAINT [PK_User] PRIMARY KEY CLUSTERED  ([UserID]) ON
[PRIMARY]

GO

ALTER TABLE [dbo].[User] ADD CONSTRAINT [DF_User_UserID] UNIQUE NONCLUSTERED  ([User-
ID]) ON [PRIMARY]

GO

ALTER TABLE [dbo].[User] ADD CONSTRAINT [Ind_UserID] UNIQUE NONCLUSTERED  ([UserID]) ON
[PRIMARY]

GO

ALTER TABLE [dbo].[User] ADD CONSTRAINT [FK_AspNU_User] FOREIGN KEY ([Id]) REFERENCES
[dbo].[AspNetUsers] ([Id])

GO
```

[dbo].[Video]

## Columns

| Key | Name | Data Type | Max Length (Bytes) | Nullability | Identity |
|---|---|---|---|---|---|
| PK | VideoID | int | 4 | NOT NULL | 1 - 1 |
| | Title | nvarchar(50) | 100 | NOT NULL | |
| | Description | nvarchar(max) | max | NULL allowed | |
| | DateAdded | datetime | 8 | NOT NULL | |
| | YouTube-Link | nvarchar(max) | max | NOT NULL | |
| FK | ArtistID | int | 4 | NOT NULL | |

## Indexes

| Key | Name | Key Columns | Unique |
|---|---|---|---|
| PK | PK_Video | VideoID | True |
| | DF_Video_VideoID | VideoID | True |

## Foreign Keys

| Name | Columns |
|---|---|
| FK_Artist_Video | ArtistID->[dbo].[Artist].[ArtistID] |

**SQL Script**

```sql
CREATE TABLE [dbo].[Video]
(
[VideoID] [int] NOT NULL IDENTITY(1, 1),
[Title] [nvarchar] (50) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,
[Description] [nvarchar] (max) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
[DateAdded] [datetime] NOT NULL,
[YouTubeLink] [nvarchar] (max) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,
[ArtistID] [int] NOT NULL
) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Video] ADD CONSTRAINT [PK_Video] PRIMARY KEY CLUSTERED  ([VideoID])
ON [PRIMARY]
GO
ALTER TABLE [dbo].[Video] ADD CONSTRAINT [DF_Video_VideoID] UNIQUE NONCLUSTERED
([VideoID]) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Video] ADD CONSTRAINT [FK_Artist_Video] FOREIGN KEY ([ArtistID])
REFERENCES [dbo].[Artist] ([ArtistID])
GO
```