**System Design Document**

**Project Terra**

**Arbor Animalia**

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**Table of Contents**

[Introduction 3](#_gjdgxs)

[Purpose 3](#_30j0zll)

[System Overview 3](#_1fob9te)

[Design Constraints 4](#_3znysh7)

[Roles and Responsibilities 5](#_2et92p0)

[Project References 5](#_tyjcwt)

[System Architecture 6](#_3dy6vkm)

[Database Design 7](#_1t3h5sf)

[Hardware and Software Detailed Design 7](#_4d34og8)

[System Security and Integrity Controls 8](#_2s8eyo1)

# **Introduction**

This system design document has been created to detail the intended design of Arbor Animalia’s Project Terra, an interactive animal kingdom tree built for educational purposes. As a project intended to build an application focused around taxonomy, Project Terra seeks to strengthen the consumer’s knowledge of the living world through an easily accessible interface.

# **Purpose**

This system design document is created for the purpose of ensuring that Project Terra meets the criteria laid out in the project requirements documentation. It will detail the architecture, databases, hardware, software, and security implementations of the ongoing coding project. We will use these high-level descriptions to keep sight of our project goals.

# **System Overview**

Arbor Animalia has decided to create a system that allows the user to easily identify wildlife. Project Terra will utilize existing API’s to provide a commercial tool which will improve the efficiency of identifying animals.

Project Terra is designed as a commercial software tool which is compatible with mobile devices. Project Terra tool will provide a user interface which will allow easy navigation, basic information, and recent history. One of the primary benefits of Project Terra is its ability to consolidate the Tree of Life/taxonomy and provide information about the identified creatures.

Project Terra will provide the following capabilities:

* A user authentication service will be implemented to log users into the program and store these credentials for personal history.
* The program will accurately populate and visualize the species of the animal kingdom in such a way as to present their taxonomical situation and relation to other species.

# **Design Constraints**

The project team has identified several working constraints that may impede, but most likely not nullify, the project:

* Communication with remote servers will add a layer of network latency to the project. While high-speed internet is certainly the norm in the United States, there could be significant bottle-necks between the 3rd-party server(s) supplying megabytes of data at a time, and our local client program.
* Log-in mechanic will rely on a remote party authentication. This serves to add a layer of security by not storing credentials locally and saving these to a database accessible to the administrator. However, in doing so the program is at the mercy of this remote party, i.e. should it become inaccessible for some reason then the program itself would be inaccessible to the user.
* The recursive generation of data visualized in the program will limit the extent of content initially available. As this is a small project team working in a limited time, the primary method of generating the data visible to the consumer will be through recursively building the entries in the tree. Doing this will require ensuring the appropriate data is applied to specific fields, but this can inhibit how much of what data we can use.

**Roles and Responsibilities**

| **Name** | **Role** | **Phone** | **Email** |
| --- | --- | --- | --- |
| Ben Gagliano | Project Manager | 636-577-8458 | bg249757@my.stchas.edu |
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| Brad Mercurio | Developer |  | bm252725@my.stchas.edu |

# **Project References**

Project Terra is designed in accordance with several organizational guidelines, standards. These references serve as the basis for the requirement of a new maintenance management system. The following is a list of references. It should be noted that some of these documents are periodically updated and if more detailed information is needed, they should be referred to individually.

* Unity Terms and Conditions
* COPPA
* CPT-200 Instructions

# **System Architecture**

**Hardware:**

* x64/x86 capable CPU (minimum single core, 1GHz clock speed)
* >1GB RAM (>850 MHz)
* 2GB free system storage
* Backlit display interface w/ >30Hz refresh rate
* Tactile or mouse & keyboard I/O interface
* 100Mbps wired or wireless internet connection

**Software:**

* Windows or Android OS
* IP UDP/TCP open ports
* Google Chrome or Microsoft Edge browser

# **Database Design**

Project Terra will incorporate the existing API’s from The Tree of Life Project and Wikipedia. The API’s will also allow the system to formulate the tree structure and access animal data.

Structured data stored in the database will be searchable in order to meet manual input requirements, utilizing taxonomy terms as the sorting system.

# **Hardware and Software Detailed Design**

**Hardware:**

Project Terra utilizes mobile devices via mobile app. No additional hardware design is

required for Project Terra.

**Software:**

Project Terra software design is coded by Arbor Animalia developers to provide

customized functionality specific to the application. It was determined through various

analyses and studies that there is not an existing commercial-off-the-shelf (COTS) product with the ability to easily identify wildlife.

# **System Security and Integrity Controls**

Project Terra’s design incorporates security and integrity controls to ensure that the system and its data are continually protected. This is done through a multi-tiered approach to ensuring data integrity is achieved through only authorized user functions and assignments.

The first design consideration is user authorization or permissions. All Project Terra users will be authorized in order to operate the app. These users will be able to utilize the app once logged in.

The next design consideration is data backup. Project Terra database will be backed up in accordance with Arbor Animalia Security Policies and Guidelines. This will provide a fail-over capability to revert to in the event of a database corruption or system failure. Project Terra was also designed to perform in degraded modes of operation should maintenance need to be performed on a particular module.

Arbor Animalia developers will also have the capability, in the event of a catastrophic system failure, to restore a previous version until such time that Project Terra can be fully restored.