

Software Design Document for Viper Rocks!

Version 1.0.0

Group 2

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Revision History

Name	Date	Reasons for Changes	Version
Tony Lau	2/20/25	First Draft	1.0.0

1 Introduction

The VIPER Rocks! project is a thrilling initiative that empowers citizen scientists, both amateur and expert, to participate in unraveling the mysteries of lunar geology. This project leverages the power of citizen science to map and classify lunar rocks encountered during VIPER's historic exploration of the Moon's South Pole.

Ultimately, VIPER Rocks! plays a vital role in establishing a sustainable presence on the Moon. By mapping and analyzing the distribution of ice and other resources near the Moon's South Pole, VIPER Rocks! paves the way for future missions to Mars and beyond.

This Software Requirements Specification (SRS) serves as a comprehensive guide to the technical aspects of the VIPER Rocks! project. It outlines the requirements, features, and functionality of the software that will enable citizen scientists to contribute to lunar geology research. The document also contains the project's objectives, user interfaces, technical approach, and testing strategies to ensure the successful development of VIPER Rocks!

1.1 Purpose

This SRS is intended for various stakeholders involved in the VIPER Rocks! project, including software developers, project managers, data analysts, beta testers, and anyone interested in the technical details of the application. It provides a reference for understanding the project's scope, technical requirements, and functionality. It is organized for various types of readers, and each type of reader may interpret this document differently:

1.2 Internal Audience and Reading Suggestions

Our intended audience includes:

- Software Developers
- Project Managers
- Data Analysts

1.3 Product Scope

1.3.1 Product

This product is the "VIPER Rocks!" citizen science website

1.3.2 Description

The VIPER Rocks! software will enable citizen scientists to actively participate in mapping and classifying lunar rocks encountered during NASA's VIPER mission. It will facilitate the scientific analysis of lunar rock populations and enhance our understanding of lunar geology. The software will allow users to measure rock size and classify rock shape, on both mobile and desktop displays.

1.3.3 Objectives

The software aims to enhance the science return of the VIPER mission and engage the public in lunar exploration. The objectives include creating this citizen science platform and improving our understanding of lunar rock populations.

1.4 Definitions, Acronyms, and Abbreviations

- VIPER - Volatiles Investigating Polar Exploration Rover
- UI - User Interface

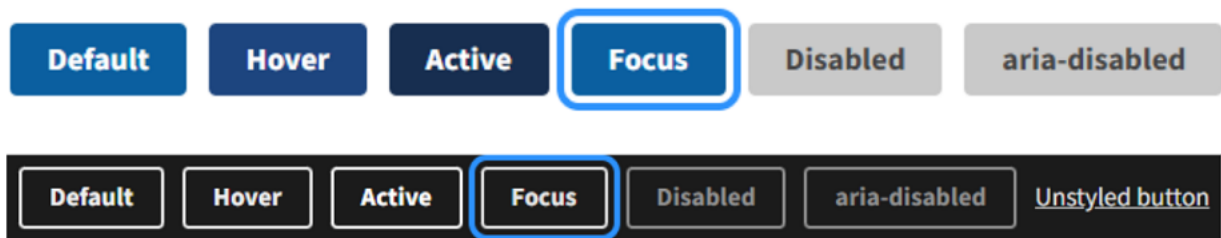
2 External Interface Requirements

2.1 User Interfaces

USDS: <https://designsystem.digital.gov/>

NASAWDS: <https://github.com/brufridge/nasawds>

We will be sticking with a dark and blue color scheme. Below are the components we will make use of:
Buttons:



Headers, Footers, Radio Buttons:

DEFAULT

Select one historical figure

- ☒ Sojourner Truth
- ☐ Frederick Douglass
- ☐ Booker T. Washington
- ☐ George Washington Carver

TILE

Select one historical figure

- ☒ Sojourner Truth
- ☐ Frederick Douglass
This is optional text that can be used to describe the label in more detail.
- ☐ Booker T. Washington
- ☐ George Washington Carver

Select:

Dropdown label

A rectangular dropdown menu with a thin black border. Inside, the text "- Select -" is displayed in a dark grey font. On the right side, there are two small, dark grey chevron arrows pointing up and down.

Tags:

DEFAULT TAG

INFO

BIG TAG

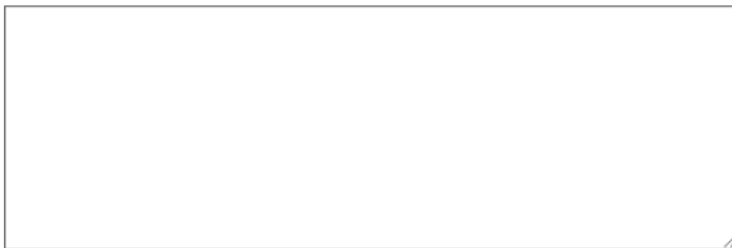
BIG

Text Inputs:

Text input label

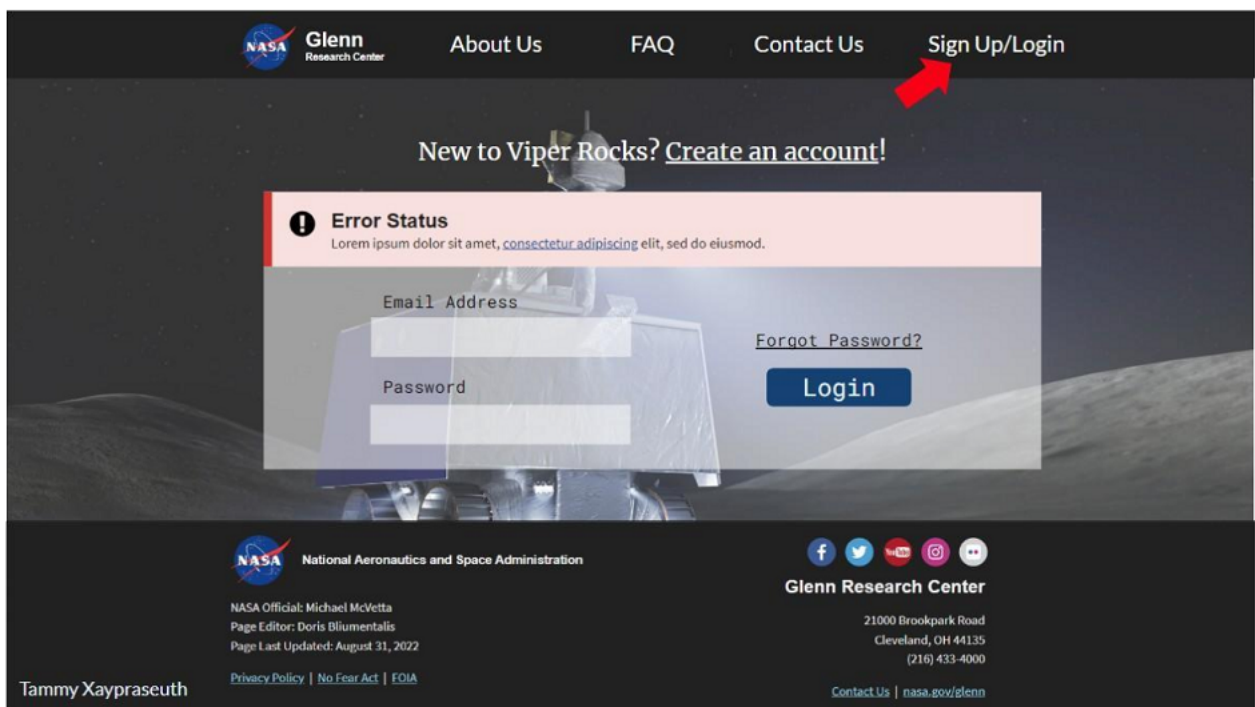
A simple rectangular text input field with a thin black border and no text inside.

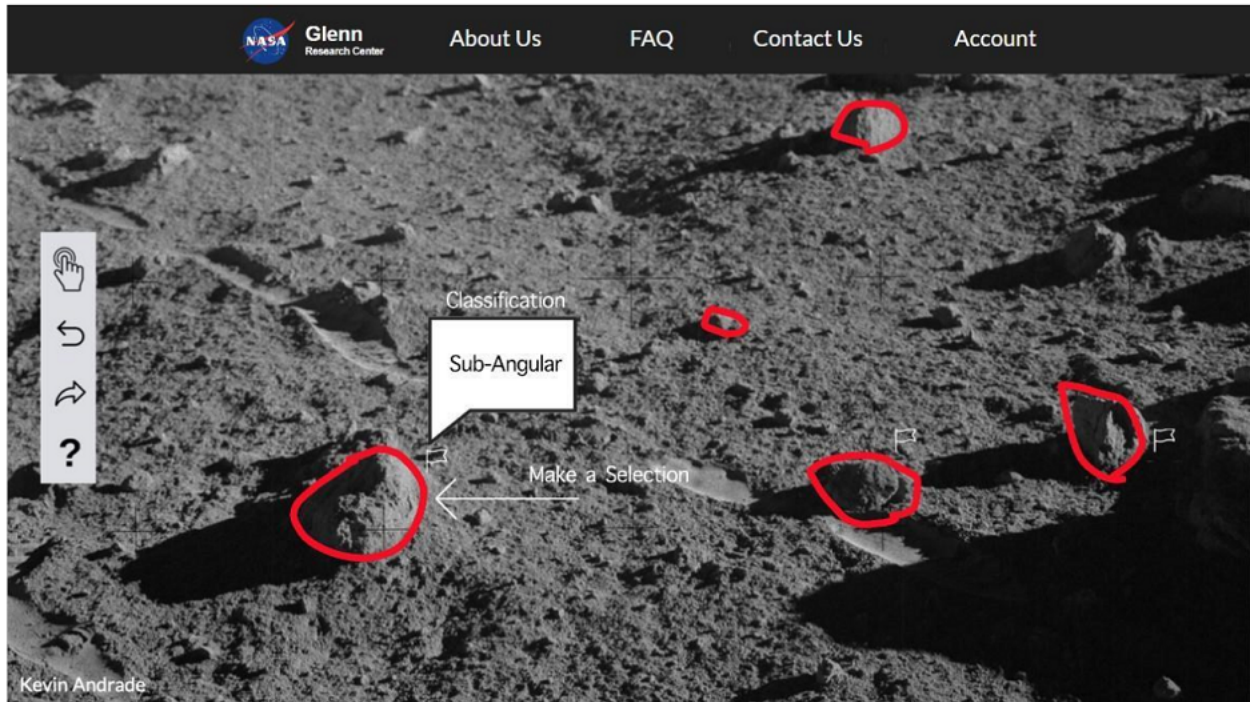
Text area label

A rectangular text area field with a thin black border. It is empty, except for a small diagonal line in the bottom right corner.

Typefaces: Source Sans Pro, Public Sans, Roboto Mono, Merriweather

The following images are draft mockups of the landing and scouting pages (not all mockups are finished yet):





We will be adhering closely to the Americans with Disabilities Act to make it accessible to as many users as possible. We will also look to and reference the USWDS and NASA Guidelines for guidance on accessible designs.

2.2 Hardware Interfaces

The following are different input systems that will be kept in mind while developing this web application. Users will need a mobile device or personal computer. If they have a personal computer, they will require a mouse and keyboard or a trackpad.

2.3 Software Interfaces

The following are software interfaces that will be used for this product

- React
- MySQL
- MongoDB
- Javascript
- Node.js

2.4 Communications Interfaces

Users will need an email if they choose to contact the team. The team's emails are listed on the website for anybody to contact.

3 Legal and Ethical Considerations

The various legal and ethical considerations that must be addressed to ensure the protection of users and the responsible conduct of scientific research include:

Privacy:

- The project must clearly inform users about the types of data collected through the application and how it will be used.

- User consent must be obtained explicitly before collecting any personal information.

Security:

- The security of the user's data must be maintained. Methods will be implemented to ensure it stays secure and private.

4 Appendix A: Glossary

- LUNAR - Lunar Uplink for Navigation and Analysis of Reconnaissance