**Transition Plan**

# Overview of Project

## Client and Project Description

Dr. John Hogland is a research forester working for the Rocky Mountain Research Station (RMRS), an integral part of USDA Forest Service Research and Development. Much of Dr. Hogland’s research revolves around improving the quantitative methods used in geographic information systems (GIS). This leads to the creation of powerful data visualization software that helps scientists more quickly understand their data when conducting ecological research. One such tool is the RMRS Raster Utility. This tool provides quick access to a multitude of spatial and statistical analysis operations and is well-geared toward handling large data sets; it is most similar in overall desired functionality to this project.

The challenge of this project will be scaling the functionality of the RMRS Raster Utility to work in a more visual, interactive, and browser-based environment. Efforts will be made to flesh out a more robust UI that easily conveys the options available for various data visualization models. The end goal is increased accessibility.

The aim is to empower researchers with an environment that promotes informed decision-making. This should be accomplished by creating an accessible platform from which individuals of various skill and knowledge of raster analysis can readily interact with visualization tools.

## Major Stakeholder and Their Roles

**Administrators** will have full access to backend and frontend components of the web-based application. Primary tasks will involve monitoring and maintaining the application by addressing security issues, resolving software conflicts, and maintaining backups. Administrators will also implement and update new and existing features based on user feedback.

**Practitioners** come from various professions but share the need of a lightweight client to visualize spatial modeling results that aid in decision making. They will have some knowledge of raster graphics, primarily using GeoTIFF’s to produce visualizations in the form of vector data frames and spatial arrays. They will use most of the application’s features, e.g., producing 2D/3D visualizations, interacting with results be means of pan, zoom, color rendering, etc., and exporting outputs. Practitioners are normal users and are expected to frequently access the application through a web client on desktop/laptop PCs, phones, and tablets.

**Researchers** will also use the application to produce visualizations to make data-driven decisions. They will have a high level of understanding of spatial modeling and will look for ways to visualize the output of more complex models. In addition to GeoTIFF’s, researchers may use custom batch files, containing multiple spatial operations, to visualize their outputs. Researchers will utilize the same features of the application as frequently and through the same means as Practitioners.

## Status of Requirements

Our client is looking for the ability to adjust the opacity of the layers on the web page. This is a feature we didn’t get to and would be a high priority for the next group. Another feature would be to implement rulers on the map view so that people could see how big of an area they are looking at. This would be a medium priority for the next group.

## Contact Information

Client:

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Capstone Team:

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# Technical Information

## Source Code Repository

GitHub: https://github.com/Raster-Viz/Raster-Viz

## Technical Stack

* + 1. Django
    2. HTML / CSS
    3. Anaconda
    4. PyCharm
    5. WebStorm
    6. Microsoft Teams
    7. Ubuntu
    8. Docker

## Hardware Requirements

The hardware requirements to run this software would be a laptop that has more than one processor, Windows laptop is preferred because it’s an easier setup and installation. Linux or macOS will work as well just may be more difficult.

## Design Information

Graphical user interface, application

Description automatically generated

Our design prototype is the image that follows. This was our design starting out and features that we thought should be implemented. This contained the higher-level features as we wanted to prioritize what work needed to get done first. Our project was going to be built in a web browser. The big grey box is the map view where layers would be displayed. The layer information would be in the table of contents on the left and each layer would have options that could be adjusted and viewed. The bottom left box was meant to be the point information cell where a user could click a spot on the map and see the information regarding the cell.

## Docker File

During the semester our team worked with another class to build and test our software. This was our Software Testing team and they helped us build a docker file to build the project in one step. This file is stored on GitHub and allows users to set up the environment quickly and easily.