

ELIMS: The Environmental Lab Informatics and Management System

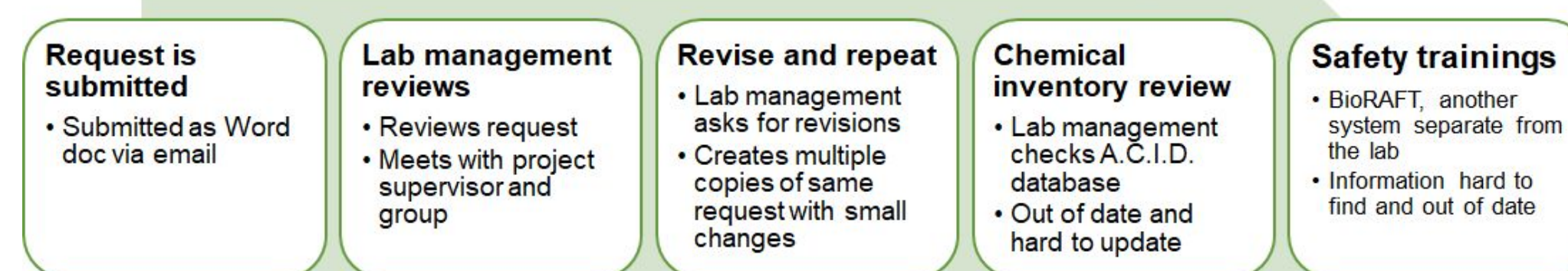
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The Big Picture

Environmental engineering is an incredibly important field, dealing with pressing issues like pollution, water treatment, and a variety of other topics that are profoundly impactful in our everyday lives. NAU's Environmental Engineering Lab is at the forefront of these issues at our own university, but currently, it lacks a sufficient system for lab operations, leading to four major problem areas:

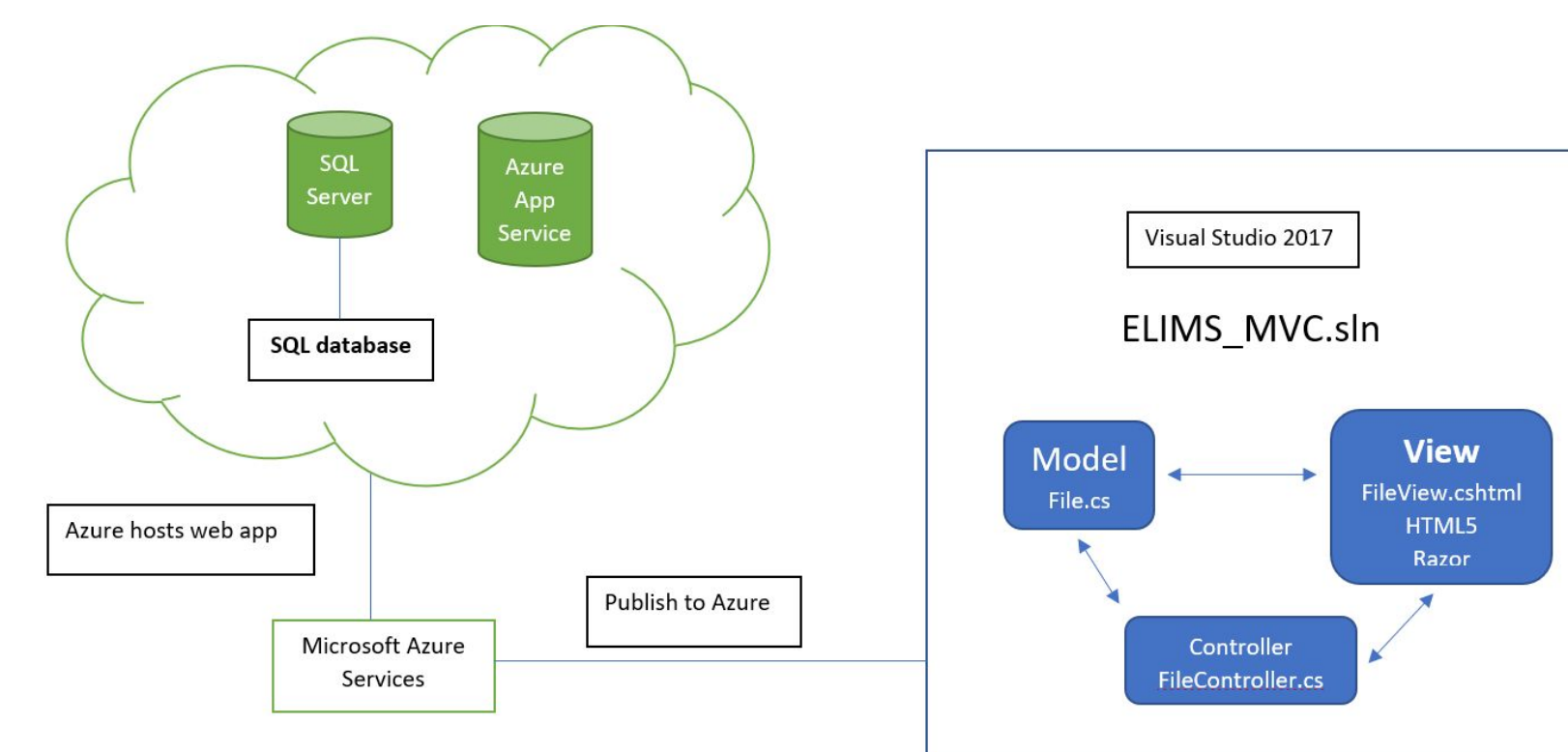
- Inefficient
- Decentralized
- Unsustainable
- Disorganized



Our proposed system, ELIMS, will solve these problems, as explained in its key features and overview of the solution.

Architecture

- ASP.NET Core framework with MVC design pattern



Technologies

Developed in Visual Studio 2017

Front end: C#, Bootstrap 4, HTML5, CSS, Javascript

Back end: C#, SQL/LINQ

Hosting: Microsoft Azure web server and SQL server



Key Features

- **Efficient** and streamlined processes
- **Centralized** location for lab management and interaction
- Designed to be **sustainable** for the lab's future growth
- **Organizes** all relevant information (i.e. lab safety trainings and chemical inventory) in one place
- Optimized for *usability, accessibility, and extensibility*

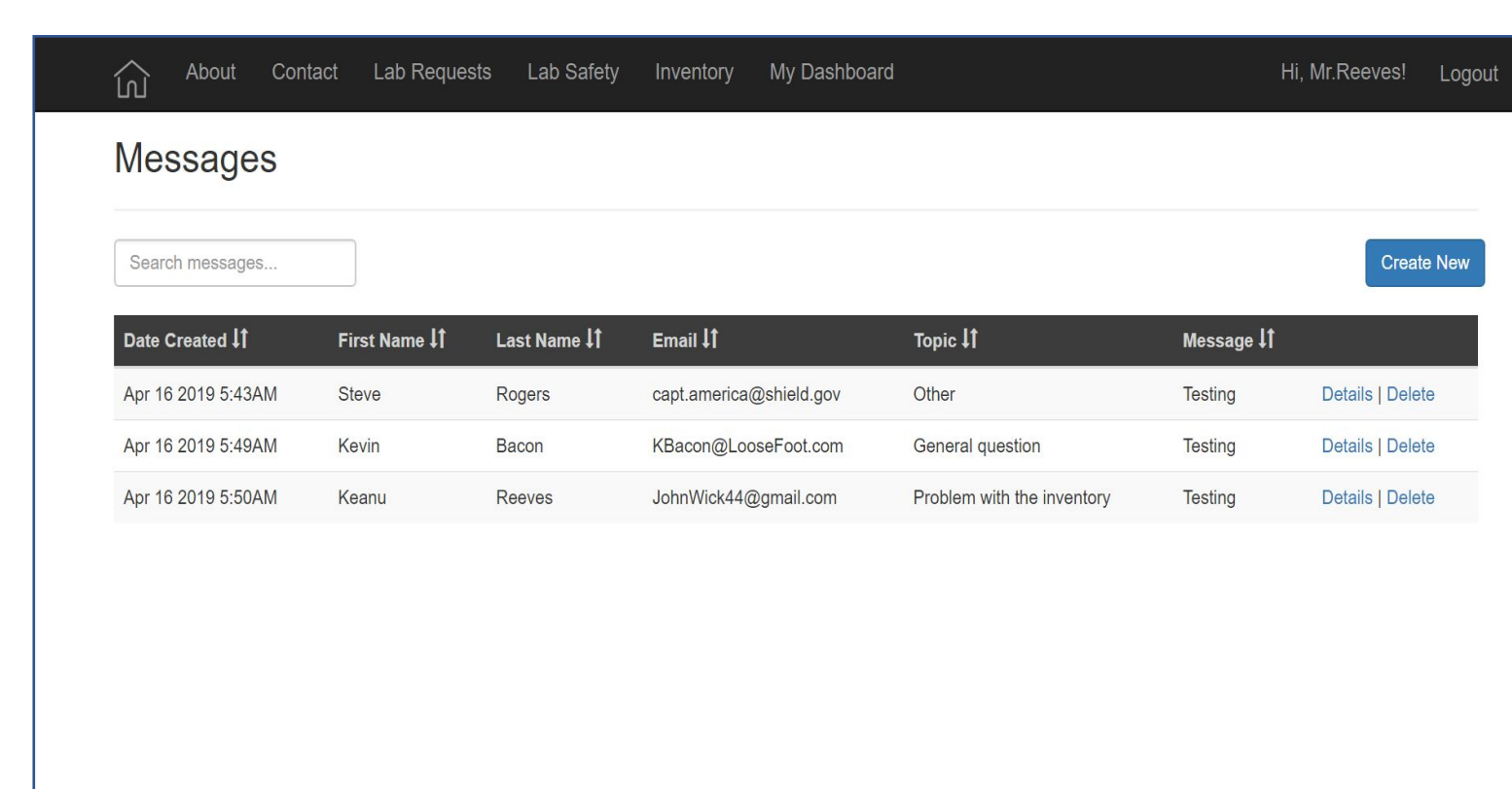
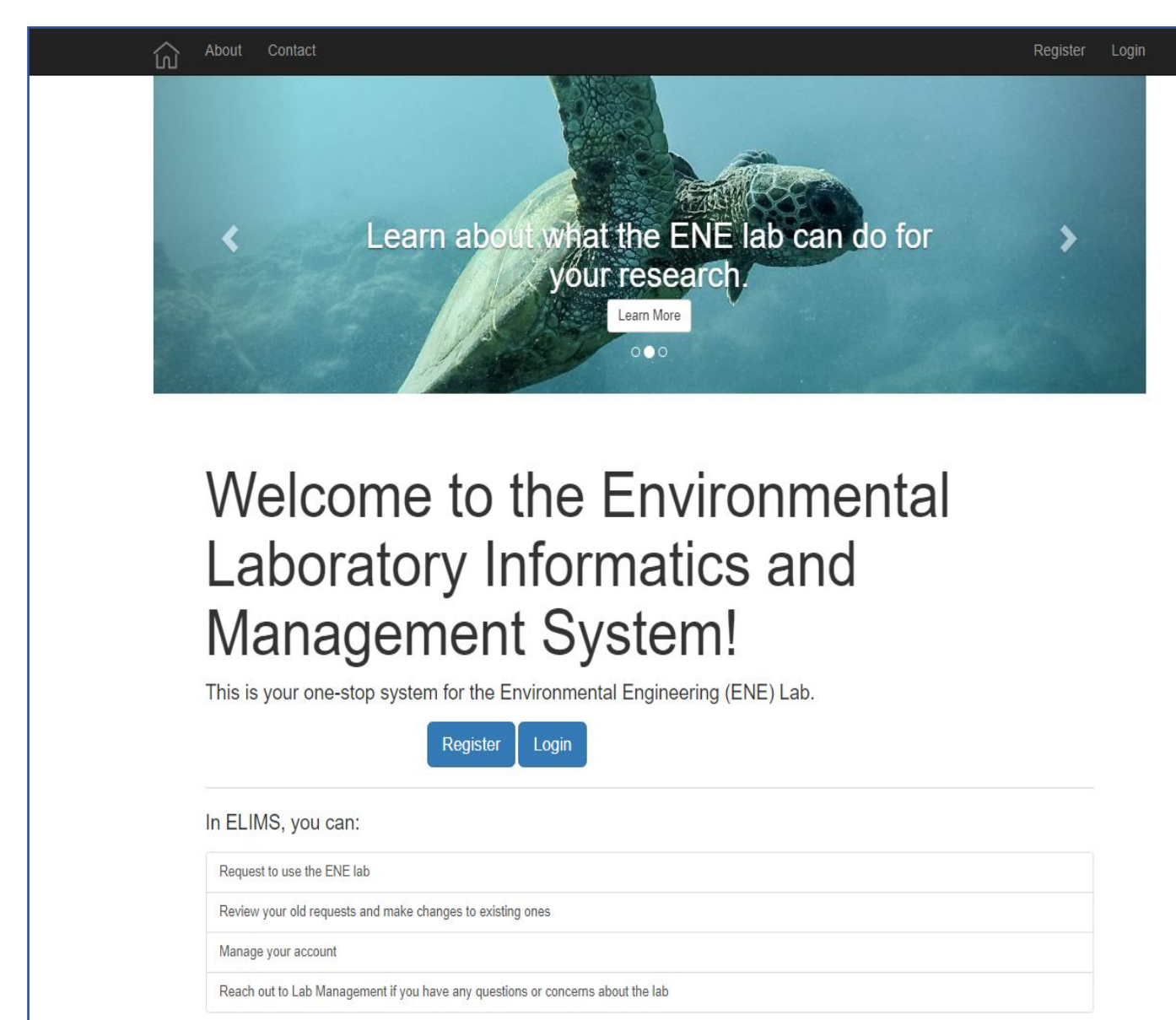
The Future of ELIMS

ELIMS will be supported by NAU ITS, and may be developed further by ITS or another CS capstone team. This might include...

- Expanding ELIMS' lab management ability to include tracking experiments happening in the lab
- Managing individual lab spaces
- Increased interactivity with lab users
- Potential commercial use
- Improved tracking of chemicals and materials using QR codes

Solution Overview

This is the front page. This shows what ELIMS can provide and how it will solve our main problems.

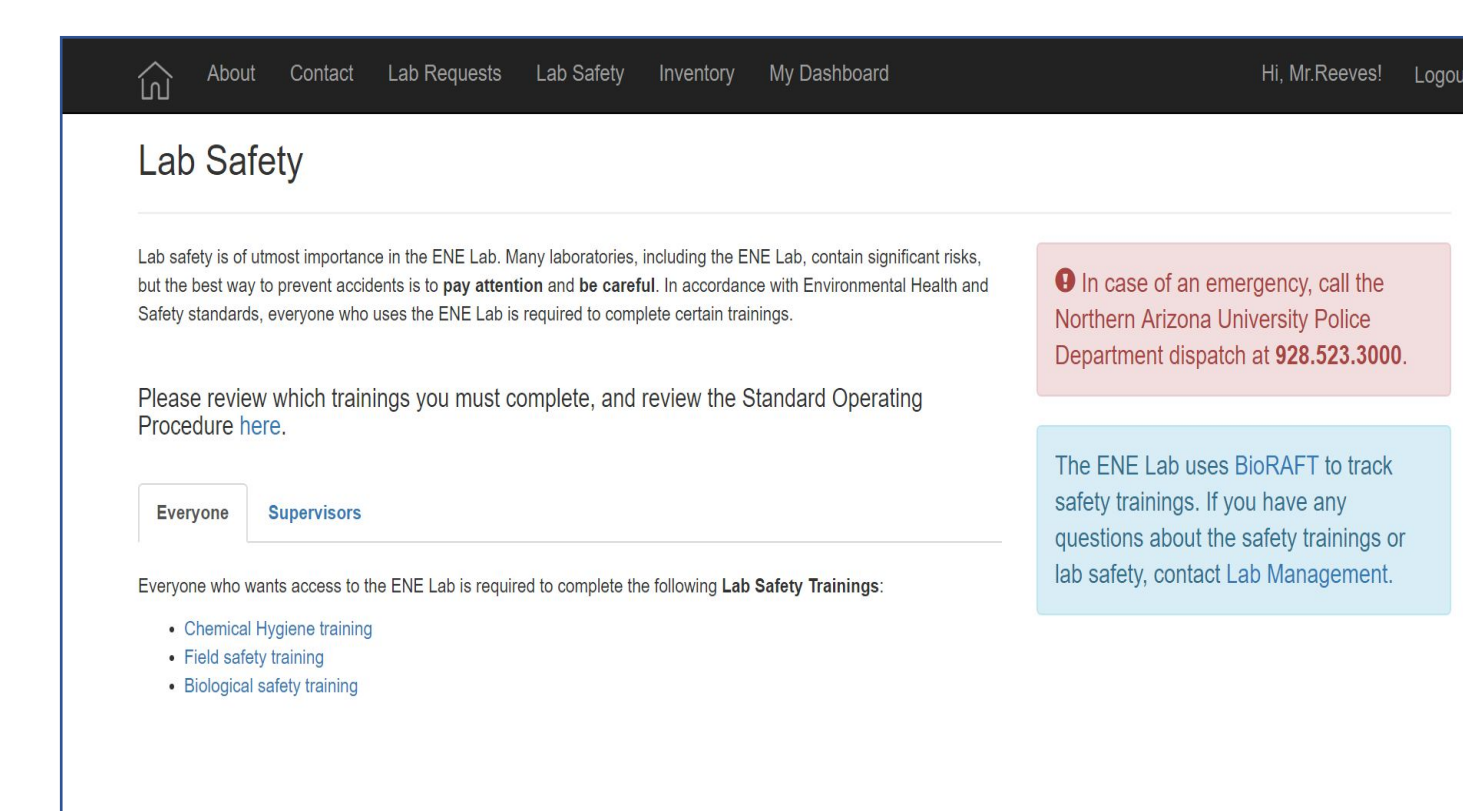
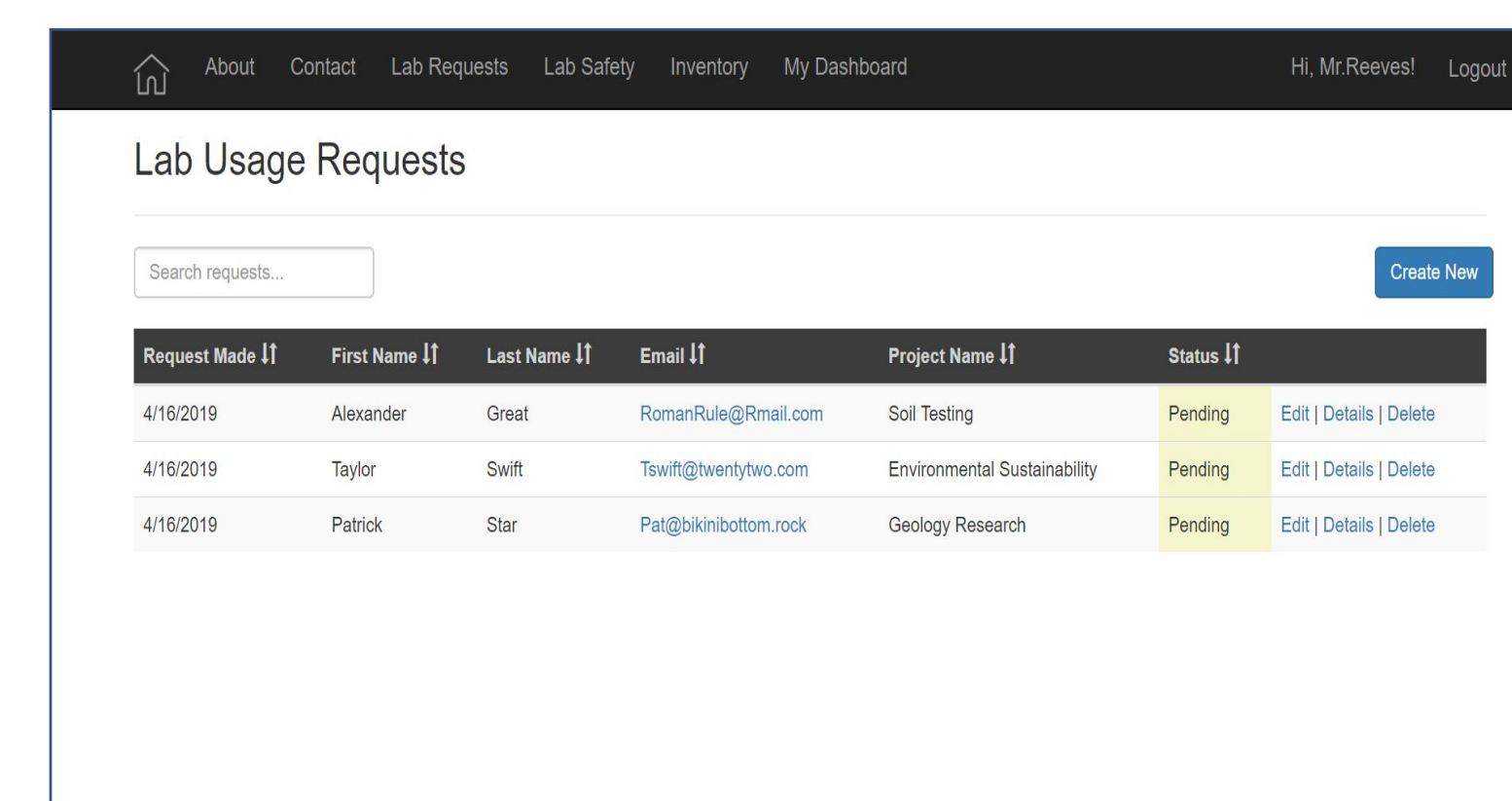


Contact Form

- User can create a contact for the lab administrator if any issues arise with the website or the lab
- Lab administrator can oversee all contact request in an organized fashion with a search bar

Lab Request

- Allows users to create detailed request to use the lab
- Lab administrators are able to look through each request in a detailed list along with a search bar and either approve or deny the request



Lab Safety

- A centralized web page of all necessary lab safety trainings
- Allows users to check if they have completed their trainings required to use the lab
- Organized for both supervisors and general lab users

Inventory

- Organized user interface for the inventory database for the ENE lab
- Easily allows lab administrators to add or delete chemicals
- Only seen by management personnel to keep confidentiality of lab chemicals

