

Form Buster**Team Members:**

- Daniel Acosta (dacosta2022@my.fit.edu)
- Christopher Demuro (cdemuro2022@my.fit.edu)
- Alex Merino (amerino2022@my.fit.edu)
- Luka Miodrag Starcevic (lstarcevic2022@my.fit.edu)

Faculty Advisor: Phillip Bernhard (pbernhar@fit.edu)

Date of Meeting:

- 8/29/2025

Client: Phillip Bernhard (pbernhar@fit.edu)

Goal and Motivation:

The current PDF form system used at FIT is slow and does not indicate any progress to students, as all communication must be done explicitly through emails. This system has been disliked by students and advisors equally since its inception in 2018. With this proposed web application, students will be able to better track their forms' progress, and administrators will be able to easily approve/modify forms all in one place. This new system will increase the efficiency of administrators while also improving the user experience for students.

Approach:***Web-based Form Tracking for Students***

Students can sign in and choose a form to complete and fill out the information needed. Using their profile information, the form will auto-complete fields such as name, student ID, etc. After completing a form, students will be able to track the progress of the form. Depending on which form was filled out, the student will be given a specified list of persons the form will be given to for processing.

Creation and Management of Registrar Forms

Administrators, such as the registrar, can create new forms that students can complete. Administrators will be able to use the form creator, which gives full control over the form fields and user types the form will be sent to after initialization. They will also be able to modify already existing forms and save drafts or publish them. When a form becomes obsolete, the Admins will be able to unpublish or delete the form.

Email Notifications

The application will automatically notify a student when they are eligible to submit certain forms, such as graduation petitions or CLEP exam eligibility information. Students will also get notified when their form is modified, accepted, denied, or completed by any party. Advisors and staff will get recurring notifications when forms are sent to them to be completed and signed.

Novel Features/Functionalities:

There are three user types: **Students, Advisors, and Staff/Moderators**

- Students can fill out and submit a course registration form online
 - Normally, students have to email PDF files to advisors
- Students can track the progress of completed forms
 - Currently, there is no way for students to track the progress of their PDFs
- Administrators can update and modify forms online
 - Currently have to modify PDFs and manually publish/email the changes to other administrators

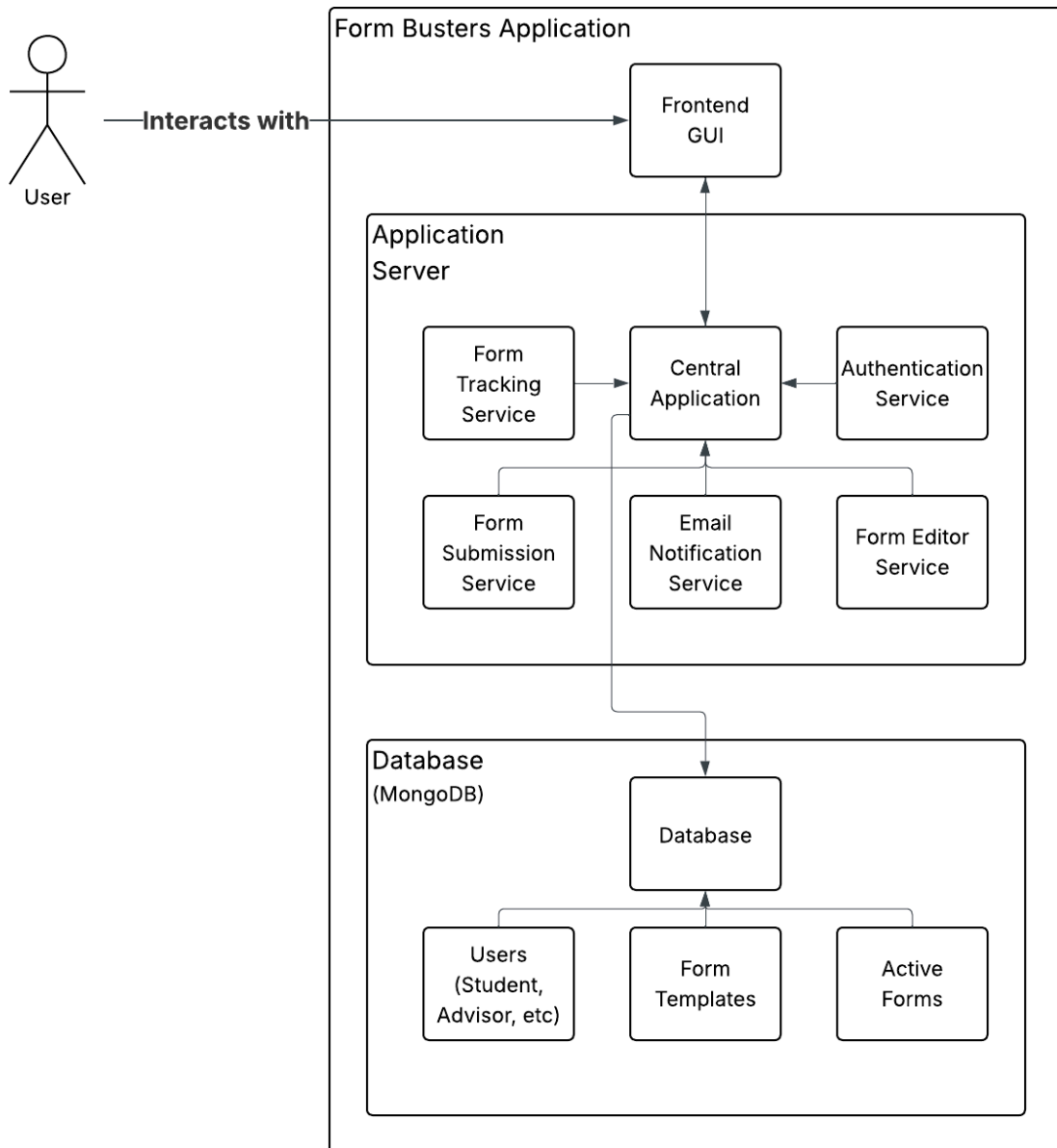
Algorithms and Tools:

For the web app's development, we will be using the MERN stack, which includes MongoDB, Express, React, Node, HTML, and CSS. These languages provide all of the frontend and backend functionality that is required for the project. For documentation and slide creation, we are utilizing the tools from Google Suite. As for communication, the team messages and occasionally conducts meetings on the social platform Discord.

Technical Challenges:

- Working with external React packages such as Quill has proven to be difficult in how we would like to implement our Form Builder.
- Attaching active forms to individual users and the required signatories is a complicated process and is the most difficult portion of assembling our database schema.
- Dynamic, per-user notifications for form updates require a complicated backend database query that touches several different parts of the database.
- Tracking the status and progress of forms and providing feedback when forms are rejected is difficult due to the arbitrary and potentially non-linear nature of the process.

Design:



Evaluation:

The main goal of the web app is to provide students with a way to complete and track school related forms they have completed. Therefore the evaluation of the web app must be based on these goals.

- **Accuracy:** To ensure that the form system is fully functional, we will need to evaluate the accuracy of our system. Measuring accuracy will include ensuring that form data will only be shared to those that should have access to the forms, ensuring that form data and form creations are saved correctly, and that the form tracker accurately shows the correct and current data on user signatures.

- **Reliability:** It is one thing for a system to be accurate, and another for that same system to be reliable. To evaluate reliability, we will repeatedly complete the same task/set of functions to ensure that the task will not fail or throw an error. We also want the web application to be reliably accurate as well, which means that while evaluating each task, we will be checking it is still accurate.
- **Speed:** In current times, users expect web applications to complete tasks almost instantaneously. With these expectations in mind, our goal is to have each function available for users to take less than 3 seconds to complete. We believe that 3 seconds is a fair amount of time for users to wait for forms with large amounts of sensitive data to be submitted. Once we achieve this goal, we will still attempt to reduce the time, to hopefully around 1 second.
- **User Testing:** After the web interface and system are close to complete, the team will gather testers which have never seen or used the web app before. In parallel with collecting testers, the team will also create a list of tasks for the testers to complete. There will be three separate lists for the three separate user types. The team will time the testers to see how long each task takes to complete and using the results will see how user experience can be improved.
- **User Survey:** After completion of the User Testing, the testers will then be asked to complete a survey which will ask about the intuitiveness of different components that they interacted with on a scale of 1 to 5 (Not Intuitive to Intuitive).

Progress Summary:

Module/Feature	Completion %	To Do
Sign Up/Login	70%	Password auth, tying in forms to users
Dashboard/Form Tracker	40%	Warning for late signatures, page for more information about form
Menu Bar	100%	N/A
Form Builder	30%	UI Design, Adding Comments to forms
Account/Settings	70%	UI Design, change password/information
Notification Center	50%	Create notification objects, connect frontend to backend
Form Completion	50%	Add more forms, standardize UI and input fields
Home Page	20 %	Add more information about product and look more palatable

Milestone 4 (Sep 29):

- Implement, Test Form Tracking
- Implement, Test Active Form User
- Implement, Demo, Test Adding comments to Forms
- Implement, Test User Authentication

Milestone 5 (Oct 27):

- Implement, Test, Demo Form Editor
- Implement, Demo, Test Updating a Form
- Implement, Demo, Test Forms in the Inbox
- Conduct evaluation and analyze results
- Create poster for Senior Design Showcase

Milestone 6 (Nov 24):

- Implement, test, and demo Email Notifications
- Implement, test, and demo Form Editor
- Test/demo of the entire system
- Conduct evaluation and analyze results
- Create user/developer manual
- Create demo video

Milestone 4 Task Matrix:

Task	Daniel	Chris	Alex	Luka
Implement, Test Form Tracking	0%	0%	100%	0%
Implement, Test Active Forms	100%	0%	0%	0%
Implement, Demo, Test Adding comments to Forms	0%	0%	0%	100%
Implement, Test User Authentication	0%	100%	0%	0%

Discussion of Planned Tasks:

- **Implement, Test Form Tracking:** Continuing the completion of fully-functional form tracking feature. Users should be able to see active forms in their home dashboard, as well as the progress of each form along its approval process. Tests will be performed to ensure full functionality and stability of the form tracking front-end interface.
- **Implement, Test Active Forms:** Continue developing the ability to submit forms to the database, and brainstorm a solution on how to handle the newly found complexities with attaching required individuals to the forms upon creation. Ensure submitted forms appear in the database with the correct information (submitter, form data, recipients/approvers). Tests will be performed to ensure that all submitted forms are saved to the active form database and can be reliably retrieved.
- **Implement, Demo, Test Adding comments to Forms:** Implement the ability for faculty to comment on submitted forms, explaining why the form was approved/disapproved. Add an option to send notifications of form comments for approved forms to the student who submitted it. All form disapproval notes should immediately send notifications to the student who submitted it. Tests will be performed to ensure that notifications are properly sent to the inbox and that the notes are visible when inspecting the notification.
- **Implement, Test User Authentication:** Test Login and SignUp modules to ensure user verification, specifically with the password. Currently the application logs users in with incorrect passwords, which is a bug that is not intended. The implementation will include a small rework of the current user authentication system frontend to backend. Once the implementation is complete, the team will test to ensure that the authentication works according to the test cases laid out in the test documentation.