MEDICATION VISUALIZER: DESIGN

INITIAL STEPS AND PLANNING

Business Case

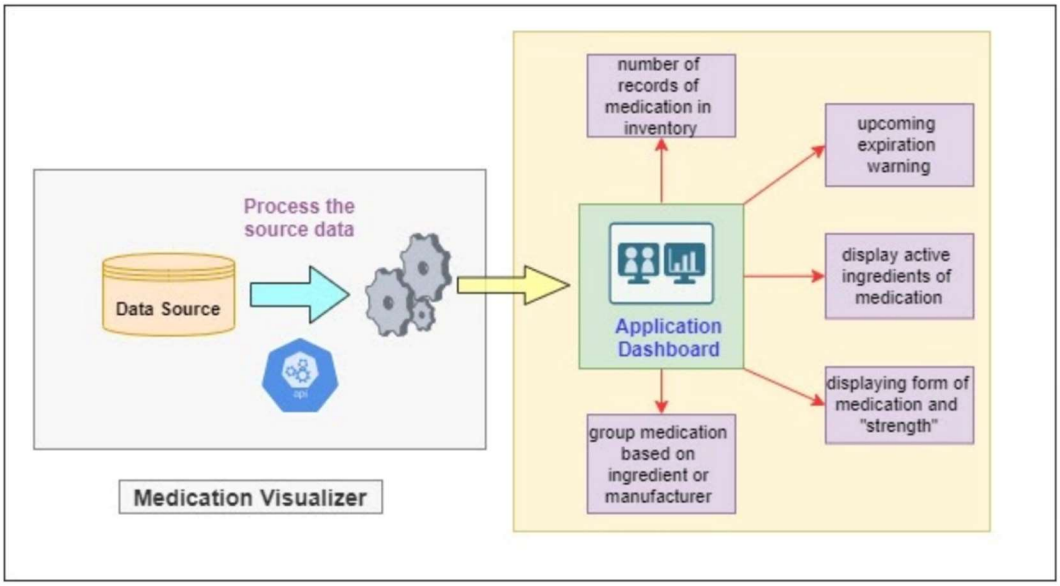
Problem	Meaningful presentation of medical data
End Users	Hospital staff (doctors, pharmacist, nurses, medical technicians)
Usage	Manage, administer, and dispense medication to the patients effectively.
Solution	dashboard with different views or visualizations to show relevant aspects of medication data.

- The problem we wanted to solve had to be solidified as well as the people who would be using the application.
- We then established the form that our solution would take.

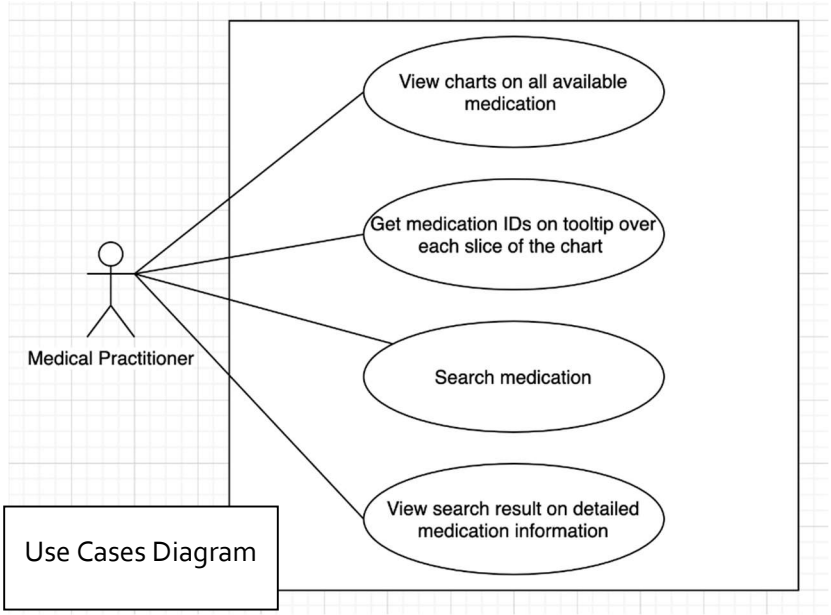
Team Member	Role
Uday Bag	UX, Developer
Patrick Chen	Developer
Marco Colasito	Developer
Dasom Eom	Project Manager, Developer
Rory Mcgurty	UX, Quality Assurance/Quality Control

- In order to divide up the workload amongst the team members, we took up roles based on our individual skillsets and experiences.

Architectural Diagram



- We established early on that we would need to pull data from an external source, such as FHIR.
- Data would be processed by a backend before being displayed on the application's dashboard.



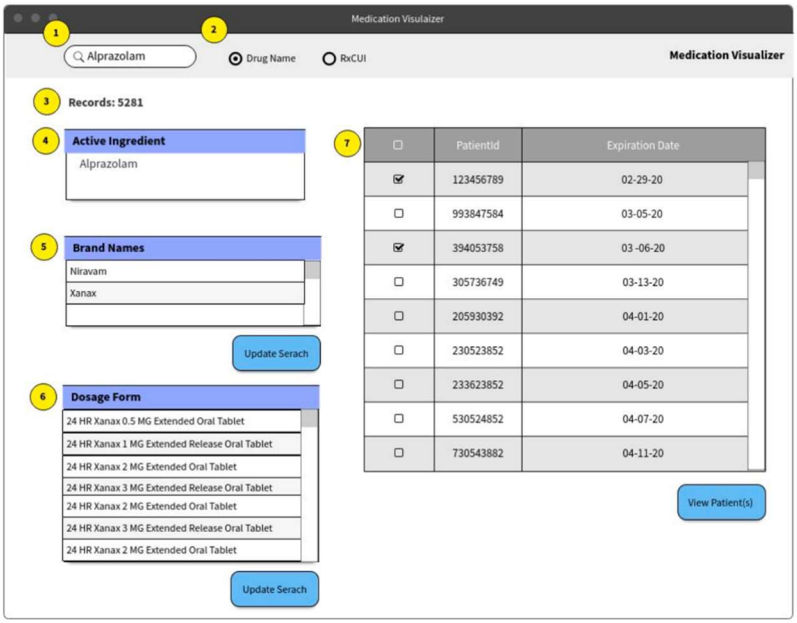
Use Cases Diagram

The different use case scenarios had to be established before attempting to create the front-end.

These scenarios would dictate the different components we would need to develop.

The User Interface

1. Search Field
2. Radio Buttons - select either “Drug Name” or “RxCUI’ before searching
3. Num of Records
4. Active Ingredient
5. Brand Names (can use to update search)
6. Dosage Forms (can use to update search)
7. Expiration Table - A user can select a patient or patients using a checkbox and view their records



- With the use of Balsamiq, we drafted a prototype for the user interface to illustrate the types of possible components we would need as well as their relation to the back-end.

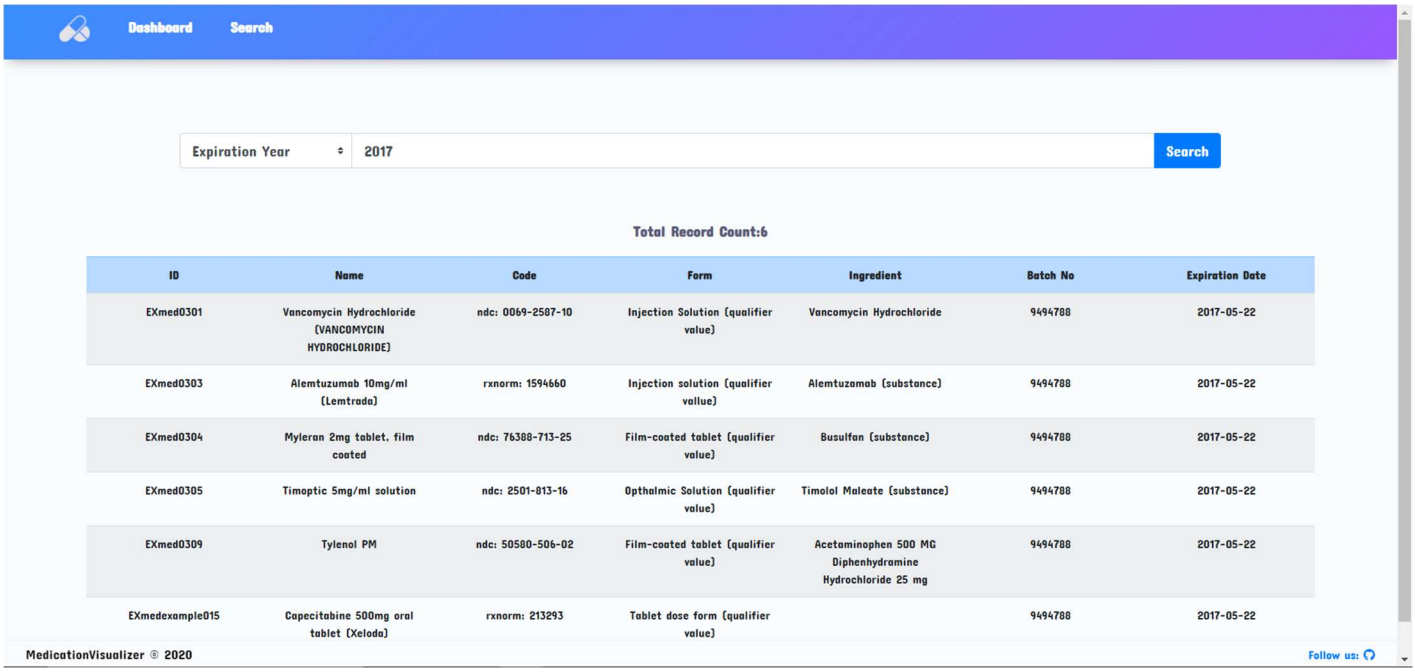
UPDATED PROTOTYPE

Updated User Interface with Visualization

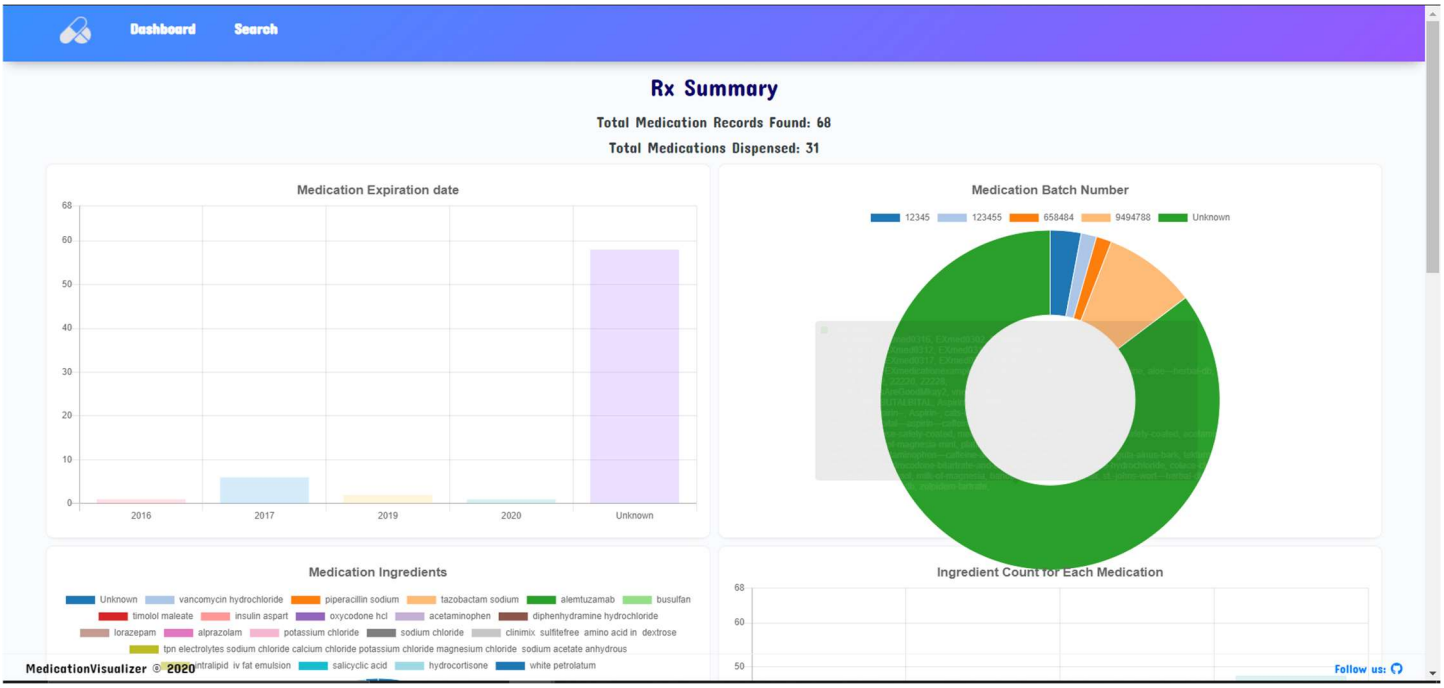
1. Search Field
2. Search Button
3. Num of Records
4. A table of relevant medications
5. Visualization of the relevant info in pie chart/ bar chart

- After giving more thought and consideration to the end user and overall appearance of the application, we opted for a simple "search and display" page.
- The user would type a medication in the search field at the top, and the table/charts below would change to reflect the results of the query.

FINAL PRODUCT AND BACK-END REVISION



- To simplify the visual presentation of the search page, we separated the graph and chart presentations of the data from the results table.
- The user can now choose what to search by, given these options:
    - ID
    - Code System
    - Code
    - Ingredient
    - Form
    - Expiration Year
    - Batch #



- On the new Dashboard page, we display a summarization of all available medications in the database. Each chart/graph provides a visualization of a certain attribute of the medications.
- Additionally, due to the size of the FHIR database, we had all the medication data saved onto a local JSON file in order to decrease the loading time for the dashboard. However, the search page still utilizes API calls to query the actual FHIR database.