Sprint #2 – Project Planning: MedBuddy

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Part 1 – Project Topic

Background

Managing medications can be difficult for patients who take multiple prescriptions or follow complex schedules. Missed or incorrect doses are common and can reduce treatment effectiveness. Many existing apps provide reminders or medication lists, but they are usually stand-alone solutions that don't communicate with a patient's medical records or providers.

The MedBuddy project aims to create a simple, connected application that helps patients track medication adherence while maintaining compatibility with healthcare data standards. The app will use the SMART on FHIR framework to securely access patient medication information from a connected FHIR server. This approach enables a standards-based, interoperable design that could be extended or connected to provider systems in the future.

Justification

A patient-focused adherence tool that follows interoperability standards can fill a useful gap between basic reminder apps and full electronic health record systems. By connecting directly to a FHIR server, patients can view up-to-date prescriptions, record their own adherence, and as a stretch goal–share this information in a structured format if needed.

The project will demonstrate how a lightweight web app can leverage modern interoperability frameworks without requiring a large technical infrastructure. It also provides a practical example of how patient and provider systems can communicate using the same data standards.

Solution

MedBuddy will be a single-page web application that helps patients review their prescribed medications, log when they take them, and view simple summaries of adherence trends. The app will authenticate through SMART on FHIR, read prescribed medications (*MedicationRequest*), and allow the patient to post adherence information (*MedicationStatement*).

The system will demonstrate interoperability by connecting to two FHIR-based servers. The SMART on FHIR demo server will serve as the main integration for retrieving and recording data. The HAPI FHIR server is being considered as a secondary integration point for

interoperability testing and validation. Final selection of the second integration will be confirmed with the project mentor.

Part 2 – Technical Design

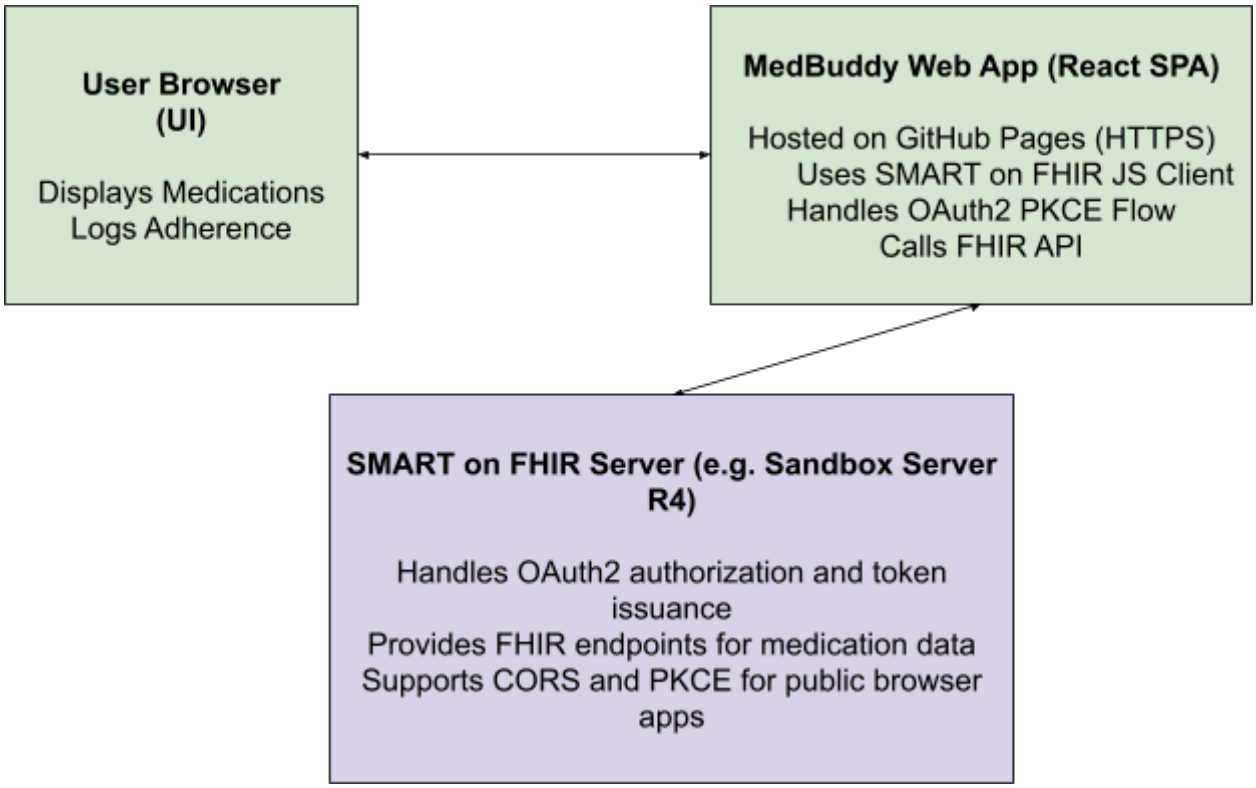
Tools / Technology

- **Frontend Framework:** ReactJS (or Vue.js – to be finalized)
- **FHIR Integration:** SMART on FHIR JavaScript client library
- **Secondary Integration (Tentative):** HAPI FHIR Server
- **Optional Backend:** Node.js/Express (for proxy or authentication handling if required)
- **Hosting Options:** GitHub Pages or Vercel
- **Version Control:** GitHub
- **UI Design:** Figma
- **Authentication:** SMART on FHIR OAuth2 workflow

Datasets and Data Sources

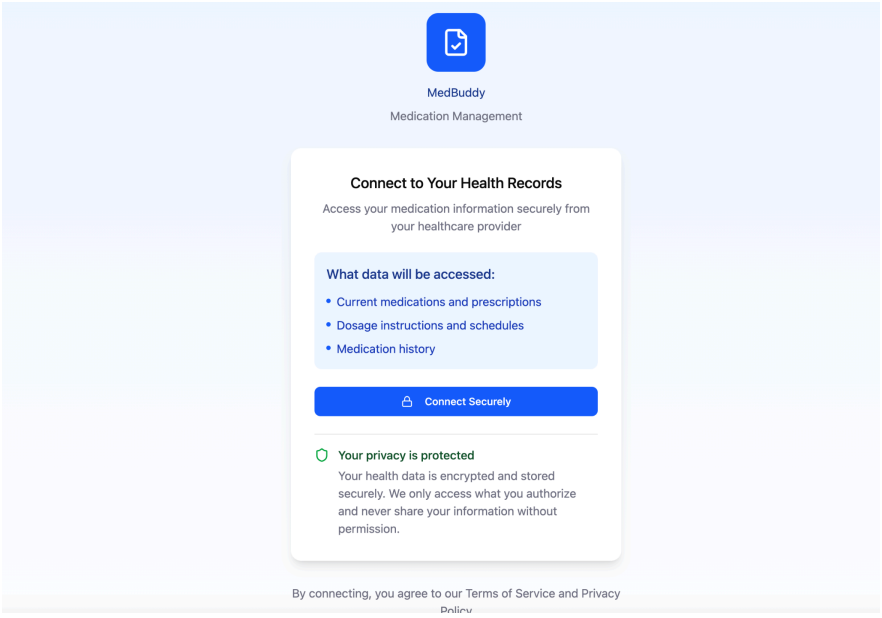
- **SMART on FHIR Demo Server:**
    - Used for authentication, retrieving medication data (*MedicationRequest*), and recording adherence logs (*MedicationStatement*).
- **HAPI FHIR Server (tentative):**
    - Considered as a secondary integration point to test interoperability and data transfer between two FHIR systems.
- **Synthetic Data:**
    - Handcrafted or generated sample patient data will be used for development and testing.

Architecture Diagram

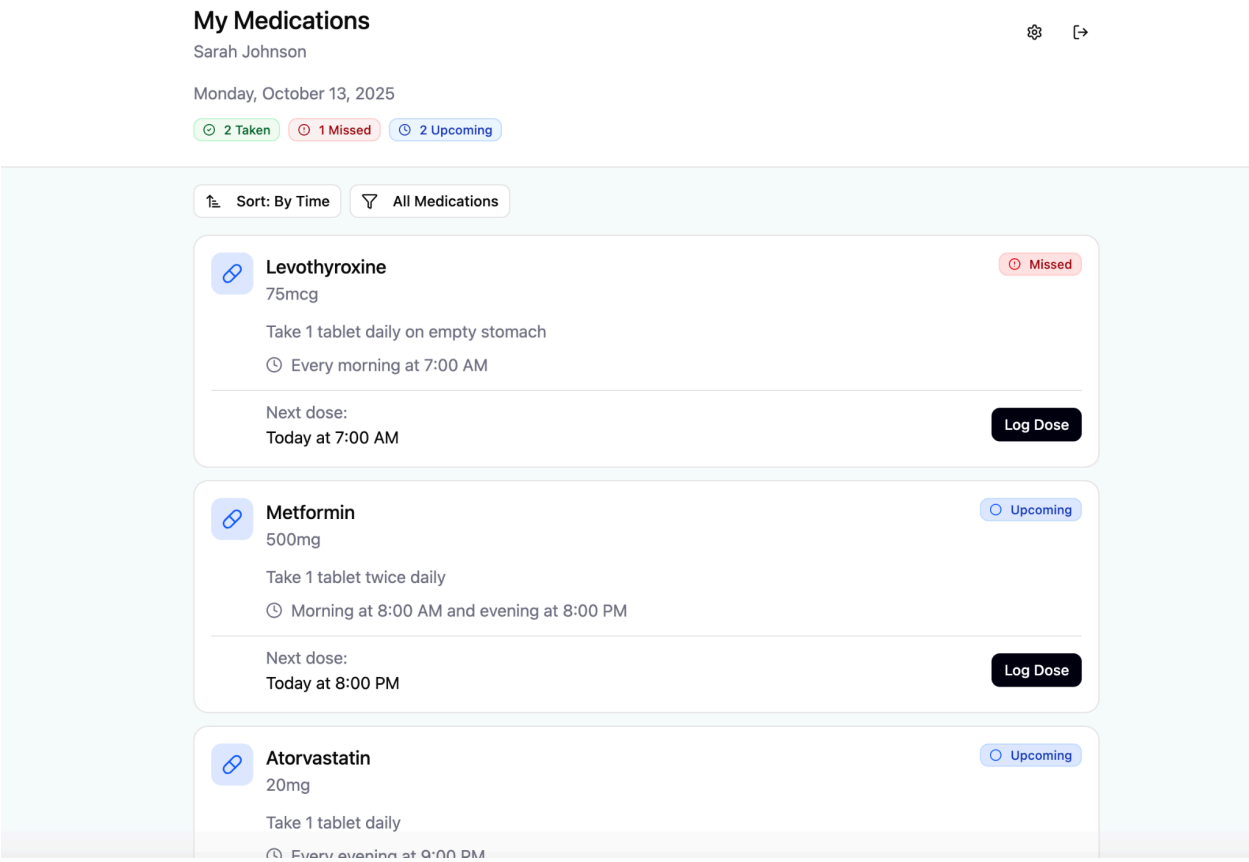


Screen Mock-ups

1. **MedBuddy login View:** Initial page to connect with SMART



2. **Medication List View:** Displays active medications with dosage, timing, and next scheduled dose.



Part 3 – Implementation Plan

Task	Sprint / Week	Start	End	Needs / Risks
1. Finalize project requirements and confirm FHIR servers	Sprint 2	Week 1	Week 3	Need mentor confirmation of secondary integration (HAPI or alternative)
2. Set up GitHub repository and hosting pipeline	Sprint 2	Week 2	Week 3	Deployment setup may vary by platform
3. Implement SMART on FHIR authentication	Sprint 3	Week 3	Week 4	OAuth2 configuration and redirect handling

4. Build medication list component (MedicationRequest)	Sprint 3	Week 4	Week 5	Parsing and rendering FHIR resource fields
5. Implement adherence logging (MedicationStatement)	Sprint 4	Week 5	Week 6	Write access and validation on FHIR server
6. Test interoperability with second FHIR server (tentative HAPI)	Sprint 5	Week 7	Week 8	Potential format or compatibility differences
7. Final testing, documentation, and presentation prep	Sprint 5	Week 8	Week 9	Time management and bug resolution

Needs / Risks Summary

- **FHIR Server Access:** Both SMART and HAPI servers must be reachable and stable for testing.
- **Integration Confirmation:** The secondary integration (HAPI or alternate) must be finalized early enough to allow for testing.
- **Deployment Considerations:** Some hosting options may limit OAuth or redirect behavior.
- **Team Coordination:** A two-person team will divide front-end and integration work to stay on schedule.