McMaster Engineering Society - Expense Reporting Platform
(MES-ERP)
Simplifying Club Finance Management at McMaster
### Team 26 - Ethical Pals

Motivation

Student clubs within the McMaster Engineering Society (MES) face significant challenges in managing reimbursements, tracking budgets, and maintaining transparency due to outdated, manual processes involving spreadsheets and email chains. MES-ERP was developed in response to these inefficiencies, streamlining financial operations through a centralized web platform. Our system simplifies reimbursement workflows, enforces role-based access control, and provides real-time budget visibility, empowering clubs to operate independently yet cohesively. Designed with input from actual MES stakeholders, MES-ERP reflects the unique needs of student organizations and scales to support over 60 groups while maintaining security, usability, and transparency.

Engineering Overview

Component Diagrams
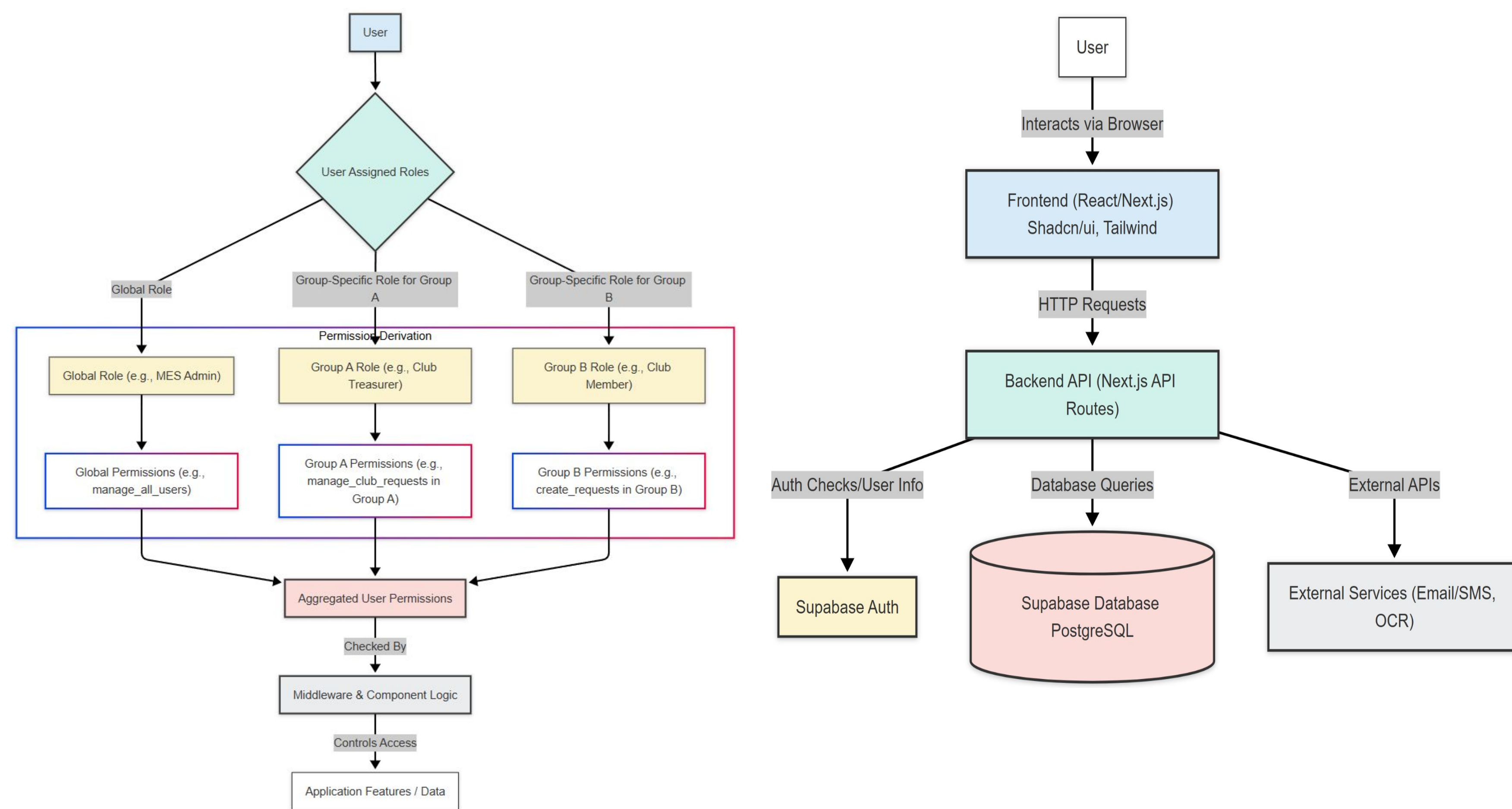
User-Centric Design & Validation:

➤ **Real-World User Testing:** Incorporated insights gathered from external user testing sessions and a POC/Rev0 demonstration.

➤ **Feedback-Driven Features:** User testing directly led to key enhancements:

◆ **OCR Receipt Scanning:** Added to eliminate tedious manual data entry from receipts.

◆ **Analytics Dashboard:** Developed to provide visual spending reports for better budget management.

◆ **Real-Time Input Validation:** Implemented to catch form errors proactively before submission.

➤ **Technical Validation:** Ensured code quality and component reliability through comprehensive unit testing using the Jest framework.
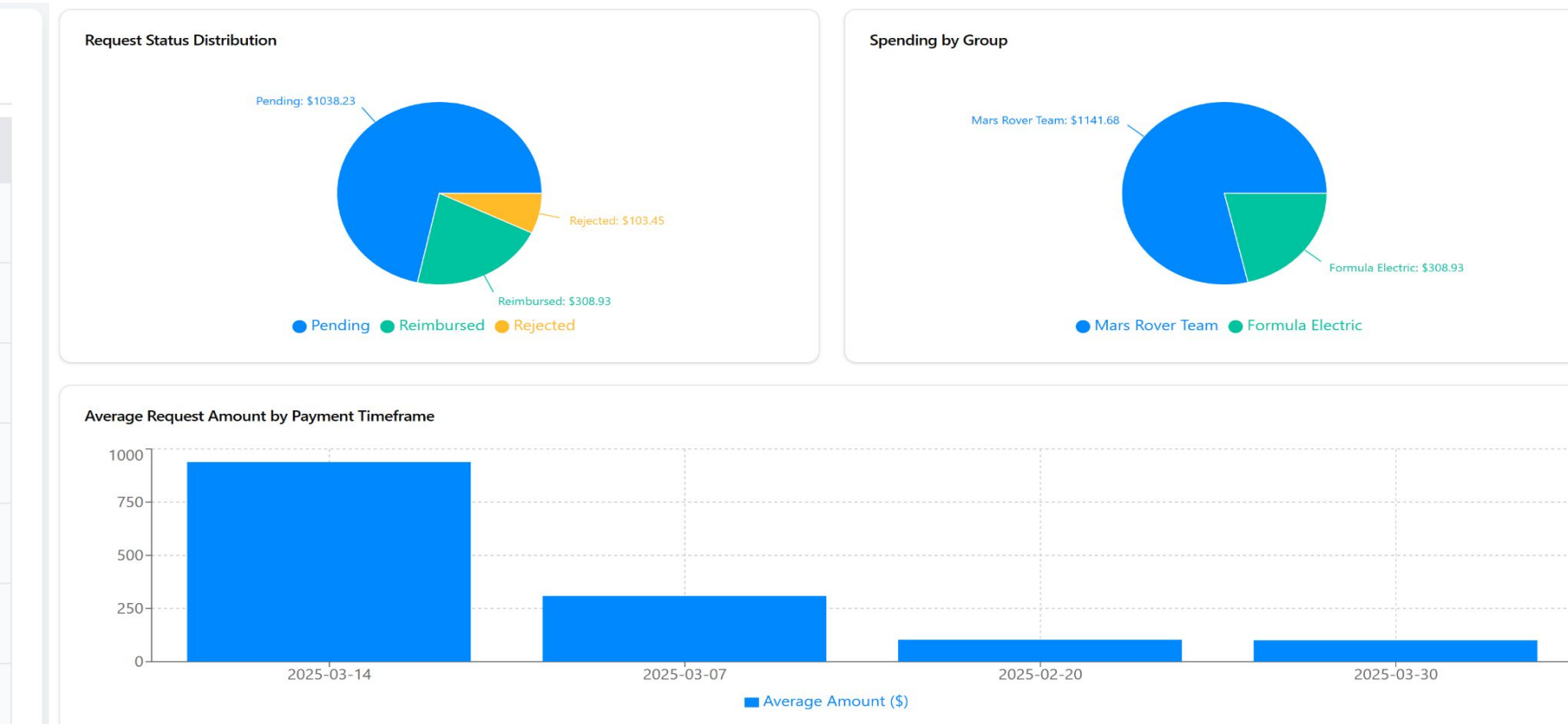
Key Features

Requests

Operating Budget

Analytics

Users

Groups

Roles

Key Benefits

➤ **Streamlined Reimbursement Workflow:** Faster, error-reduced submission & tracking from initial request to final payment approval. (Addresses manual delays, lack of standard workflow)

➤ **Secure & Granular Access Control:** Role-based permissions (unique per group membership) ensure users only access relevant data and actions. (Addresses access control issues, security)

➤ **Real-Time Budget Management:** Instantly view group budget allocations and track spending against them via the integrated budget tool. (Addresses lack of visibility, budget tracking)

➤ **Actionable Financial Insights:** Analytics dashboard visualizes spending trends, request statuses, and budget utilization for informed decision-making. (Adds value beyond basic tracking)

➤ **Effortless Receipt Capture:** OCR automatically extracts key details from uploaded receipts, saving significant manual entry time. (Highlights a specific user-friendly feature)

➤ **Centralized Operations:** One reliable platform for all MES club financial requests, approvals, budget records, and user management. (Addresses fragmentation, record-keeping)
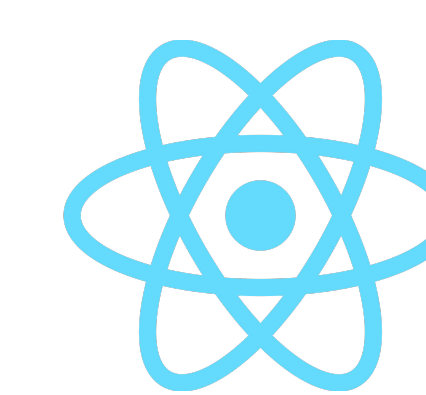
Advanced Role-Based Access Control

➤ **Multi-Group Membership with Unique Roles:** Users can belong to multiple clubs/groups, holding distinct roles (Treasurer, Member) with different permissions within each group.

➤ **Granular, Role-Based Permissions:** Access to specific features and data (viewing requests, approving budgets, managing users) is strictly controlled by permissions assigned to roles (manage_club_requests, view_all_requests).

Our Team

Housam Alamour, Software Engineering
Omar Muhammad, Software Engineering
Sufyan Motala, Software Engineering
Taaha Atif, Software Engineering
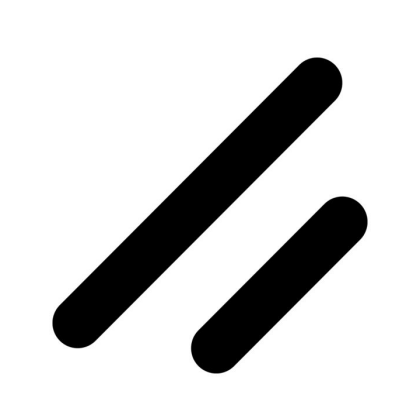**Rachid Khneisser**, Software Engineering

Tools Used

React   Next.js   Tailwind   Shadcn   Supabase

Access our site at: macengsociety.ca/erp