# FinanceHero Architecture

FinanceHero is a mobile application designed to empower users with financial management tools. This document presents a high-level architecture overview, highlighting key components, interactions, security, scalability, and cost considerations.

System Context Diagram

System Context Diagram for FinanceHero
The system context diagram for the FinanceHero
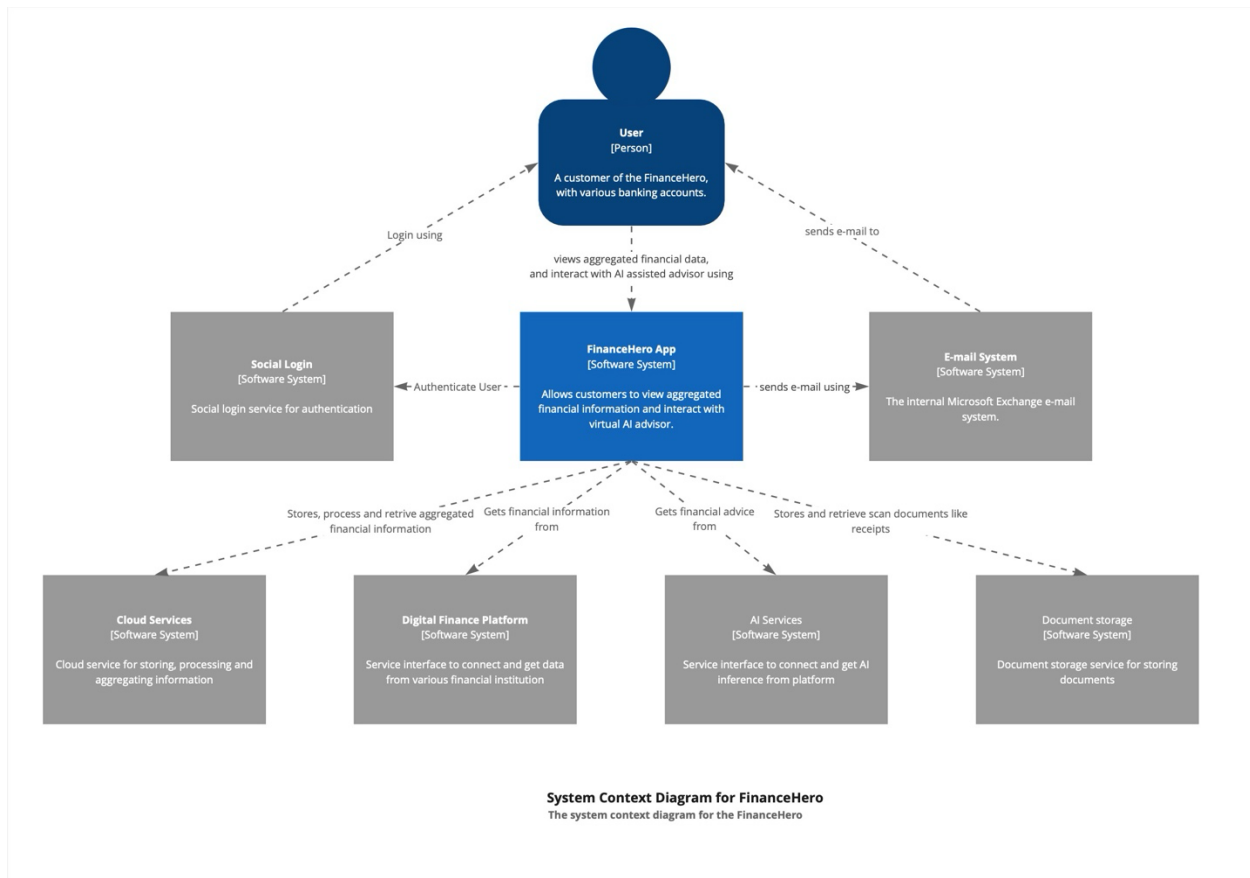
Callout Descriptions

1. Users interact with the FinanceHero mobile app for financial management tasks.
2. The FinanceHero mobile app leverages social logins like Google, Facebook, etc, to authenticate users.
3. The FinanceHero mobile app leverages a cloud provider for storing and processing aggregated financial data.
4. The FinanceHero mobile app interacts with Financial Institutions' APIs like Plaid to securely access user data.
5. The FinanceHero mobile app uses an AI model to generate inferences for financial advice.

6. The FinanceHero mobile app leverages document storage services like Dropbox, Google Drive, etc., to store documents like receipts.
7. The FinanceHero uses email exchange to send out email notifications to users to update their finance health regularly.

Container Diagram
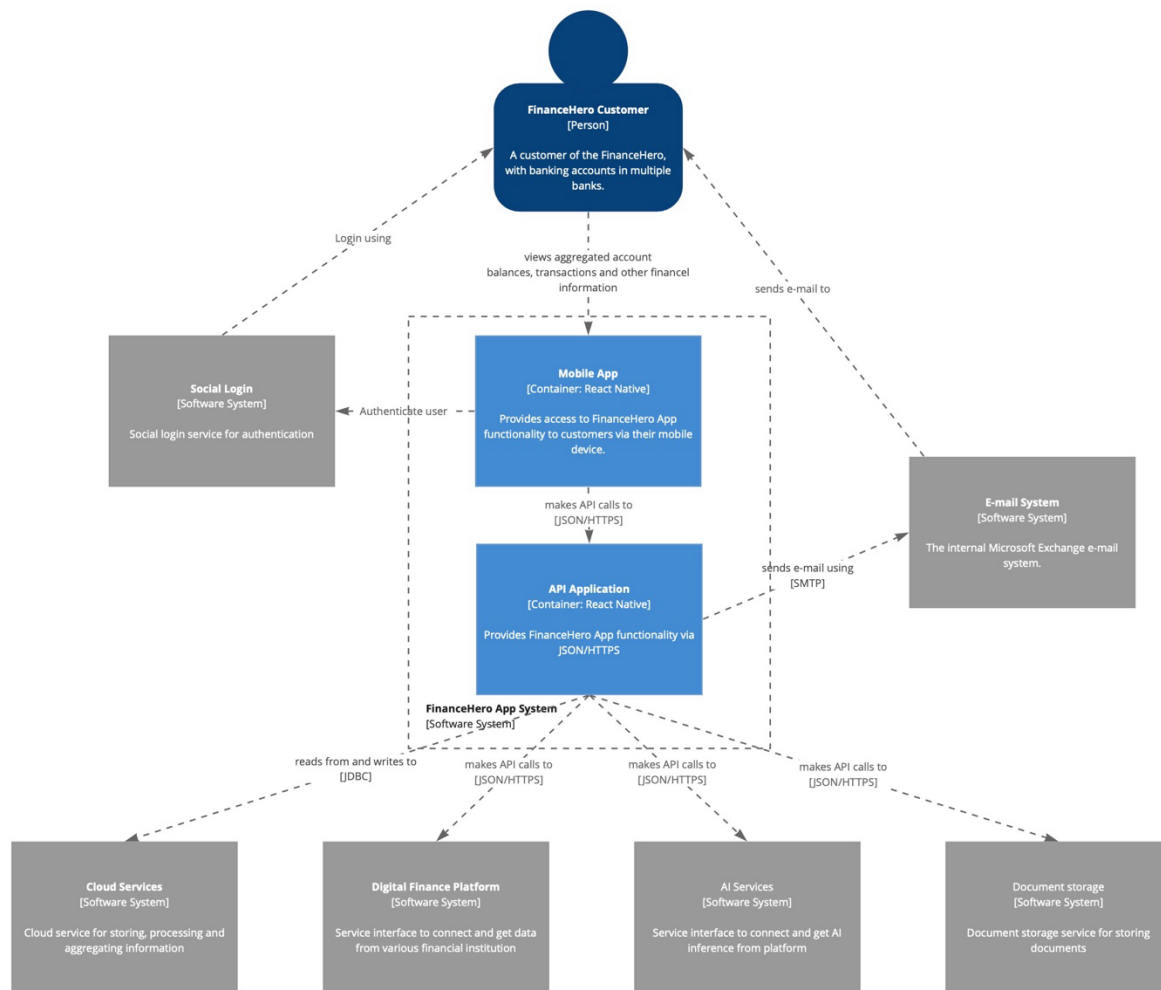
Container Diagram for FinanceHero
The container diagram for the FinanceHero

Callout Descriptions

1. Mobile App: Provides a user interface for financial management tasks.
2. API Application: Routes incoming API requests to appropriate services.

Key Considerations

- **Security:**
    - User financial data is encrypted at rest and in transit (e.g., AES-256).
    - Secure authentication protocols (MFA) are enforced via social login.
    - Regular security audits, penetration testing, and threat modeling are conducted.
    - Cloud document storage provider offers robust security measures.
    - Access to Financial Institution APIs is controlled and monitored.
- **Scalability:**
    - Cloud-based architecture allows for elastic scaling of resources like databases and serverless services like Lambda.
    - Microservices architecture enables independent scaling of functionalities.
    - API Application facilitates load balancing and distribution of requests.
- **Cost:**
    - Cloud storage offers pay-as-you-go models, optimizing costs based on usage.
    - Utilizing open-source technologies where feasible reduces licensing costs.
    - The architecture is designed for efficient resource utilization.

Conclusion

The ability to architect FinanceHero using various external services has reduced the platform's scope tremendously, resulting in better security posture, scalability, and reliability. It allowed it to focus on secret sauce, i.e., aggregation of data and using AI to provide insights and inferences to educate users about their financial health and make better decisions. By using

- Social login has improved user experience by avoiding remembering another username and password. It has also saved FinanceHero from reinventing the wheel and the overhead of compliance and security associated with managing the functionality.
- Cloud services for storage and processing data asynchronously have allowed FinanceHero to scale the platform as users increase, are cost-effective due to the pay-as-you-go model, and can utilize other services to make the platform secure and better.
- Digital finance platforms have helped immensely in seamless integration with various financial institutions. They have also helped reduce the security scope and responsibility of storing user financial institution credentials.
- Public document storage, which allows users to choose where they would like to store their documents, contributed to reducing the scope of the platform and making it cost-effective.