Project Plan 2 Senior Project

Real Ease: Comprehensive Real Estate Insights Platform Donovan Murphy, Enrique Obregon, and Jonathan Bailey Faculty advisor from CSE: Fitzroy Nembhard, <u>fnembhard@fit.edu</u> Client: Fitzroy Nembhard, Advisor

Date(s) of Meeting(s) with the Client for developing this Plan

Date's of Meetings with the Client

Project Goals:

The primary goal of RealEase is to simplify the homebuying and real estate investment process by providing a unified platform for detailed insights and analyses. Users can access advanced home comparison tools, a real-time ROI calculator, and a Neighborhood Insights Dashboard, empowering them to make well-informed decisions confidently and efficiently.

Our motivation:

The primary goal of RealEase is to streamline the home search process by delivering clear, accessible information that enables users to make well-informed decisions. By providing a robust platform, RealEase empowers buyers and investors to confidently and accurately identify their ideal homes using advanced tools such as the home comparison feature, real-time ROI calculator, and Neighborhood Insights Dashboard. The motivation for this project stems from the limitations and frustrations users face when using existing platforms. Many neighborhood insight platforms impose high entry costs, lack user-friendly interfaces, or fail to provide accurate and up-to-date data. These challenges create barriers for users seeking affordable, comprehensive solutions. RealEase addresses these pain points by offering an intuitive, cost-effective platform that prioritizes data accuracy and user experience. By ensuring users can access detailed, real-time information through an easy-to-use interface, RealEase empowers individuals to make informed decisions without financial or usability constraints.

Approach (key features of the system):

Neighborhood Insights Dashboard:

The user can explore comprehensive and dynamic neighborhood data using the Neighborhood Insights Dashboard. This feature aggregates and presents detailed information about local neighborhoods, including schools, crime rates, demographics, nearby food options, entertainment venues, hospitals, and libraries.

Additionally, the user can access valuable insights into local infrastructure, such as public transportation availability, walkability, and safety services like fire and police stations. The interactive map now includes real-time filtering and search options, enabling users to customize their exploration based on specific preferences or priorities.

Comprehensive reports offer a deeper dive into the data, allowing users to effectively evaluate the quality, lifestyle fit, and investment potential of various neighborhoods. Ongoing improvements focus on expanding data sources for greater accuracy, integrating user feedback to refine the dashboard's usability, and enhancing visualization features to make the evaluation process even more intuitive.

Detailed Home Comparison:

The user (home buyer) can now compare multiple homes side-by-side with an enhanced Detailed Home Comparison feature. This tool allows the user to input and view detailed information about properties, including price, square footage, number of bedrooms and bathrooms, and unique selling points like energy efficiency, backyard size, or special amenities.

The improved interface offers sortable columns, customizable comparison criteria, and interactive visuals to better highlight differences between homes. Users can save and revisit comparisons or share them directly with others for collaborative decision-making. The feature helps streamline the evaluation process by delivering a comprehensive and centralized overview of potential options. Future updates will include the integration of user reviews, property history, and estimated appreciation rates to further aid decision-making.

Real-Time ROI Calculator:

The user (investor) can assess the financial potential of a property using the advanced Real-Time ROI Calculator. This tool empowers users by providing a detailed analysis of expected returns based on customizable parameters. Inputs include the property's purchase price, down payment, closing costs, property taxes, insurance, maintenance costs, rental income, projected sale price, and holding period.

With real-time feedback and intuitive visual graphs, the user can explore how different variables—such as changes in rental income or tax rates—impact profitability. Enhanced functionality now offers calculations for net profit, annualized ROI, cash-on-cash return, break-even point, internal rate of return (IRR), and sensitivity analysis to help users understand potential risks and rewards.

Upcoming improvements will focus on integrating predictive analytics, leveraging historical market trends and machine learning to provide even more accurate projections. By delivering this robust feature, the ROI Calculator equips users with the insights needed to make confident and informed investment decisions.

Algorithms & Tools:

For this semester, the project will be leveraging a Flask backend to handle server-side operations, providing a more streamlined and scalable environment for data processing and API integration. The frontend will continue to be developed using JavaScript, HTML, and CSS, ensuring an interactive and user-friendly experience.

For retrieving housing data, the team will use the open-source Python library HomeHarvest, which allows for efficient querying and integration of real estate listings. This setup will provide a robust foundation for aggregating property data while maintaining flexibility in handling real-time information and ensuring the platform remains responsive and performant.

Novel features/functionalities:

RealEase differentiates itself from mainstream platforms like Zillow and Realtor.com by integrating advanced APIs to deliver real-time insights that are typically scattered across multiple sources. The Neighborhood Insights Dashboard offers comprehensive ratings and data on local amenities, such as schools, restaurants, entertainment options, and walkability, all in one location. This holistic approach enables users to evaluate neighborhoods based on their lifestyle preferences.

Additionally, the Detailed Home Comparison tool and Real-Time ROI Calculator offer unique functionality not commonly found in existing platforms, equipping users with critical data for decision-making. The intuitive interface further streamlines the user experience, making RealEase a novel and user-focused solution in the real estate domain.

Technical Challenges:

For this semester, one of the primary technical challenges will be the development and implementation of the **Neighborhood Insights Dashboard**, which is a core feature of the platform. This dashboard will aggregate a wide range of essential neighborhood data, such as schools, crime rates, demographics, food options, entertainment venues, hospitals, and libraries. Users will also be able to access detailed information about local infrastructure, including public transportation and safety services.

The challenge lies in ensuring that all this data is presented effectively through an interactive map or comprehensive reports, allowing users to easily evaluate neighborhoods for potential living or investment. This centralized source of localized information will be crucial in empowering users to make well-informed decisions.

Additionally, continuing the development of the frontend will be another key challenge. The team needs to ensure that the user interface is fast, intuitive, and user-friendly, maintaining a smooth experience as users interact with the platform and access complex data.

Evaluation:

Speed: The system's efficiency will be evaluated based on how quickly it achieves its goals. This includes measuring how fast data is retrieved and displayed on the Neighborhood Insights Dashboard, how quickly the ROI Calculator processes input and provides feedback, and how swiftly users can compare homes in the Home Comparison Tool. Speed will be monitored in terms of response time for key actions, aiming for sub-second response times for basic operations and quick loading times for detailed neighborhood data.

Accuracy: The accuracy of the data presented through the platform is critical. Success will be assessed by comparing the information provided by the Neighborhood Insights Dashboard with real-world data sources and verifying that the ROI Calculator computes financial metrics correctly. Accuracy will also include the reliability of the recommendations made by the home comparison and scoring algorithms, ensuring they match user preferences and available data.

Reliability: Reliability will be evaluated by determining how consistently the system meets its goals. For instance, if the system successfully retrieves neighborhood data or calculates ROI, it should do so correctly and consistently. We'll measure how many times the system performs as expected out of a set number of trials (e.g., out of 10 tries). The goal will be for the system to achieve at least 95% reliability across all features.

User Surveys: User feedback will be gathered via surveys, where participants will rate various features of the platform on a scale of 1 to 5. Key areas for feedback will include the usability and intuitiveness of the Neighborhood Insights Dashboard, the accuracy and usefulness of the ROI Calculator, and the overall design and responsiveness of the frontend. Additionally, user satisfaction with the speed and reliability of the platform will be assessed. This feedback will provide valuable insights into user experience and identify areas for improvement.

Milestone 4:

- **Neighborhood Insights Dashboard**: Start implementing and integrating data for the dashboard, including schools, crime rates, demographics, and local infrastructure.
- Frontend and UI Improvements: Focus on refining the overall design to ensure it is intuitive, responsive, and user-friendly.
- **Testing and Refinement**: Conduct further testing on the **ROI Calculator** and **Home Comparison Tool**, ensuring smooth functionality and addressing any bugs.
- Stakeholder Feedback: Provide a demo of the Neighborhood Insights Dashboard for early feedback.
- Functionality Enhancements: Touch up other system features to improve the overall user experience.

Milestone 5:

- **Expand Neighborhood Insights**: Add more data layers and refine the user interface for better navigation and data presentation.
- **Testing and Data Validation**: Conduct thorough testing on data accuracy and integration of external APIs.
- Feature Refinement: Continue refining the ROI Calculator and Home Comparison Tool, optimizing for performance.
- **Evaluation**: Conduct evaluation based on speed, accuracy, reliability, and user feedback; analyze results for improvement.
- Senior Design Showcase Preparation and Web Publishing: Start designing the project poster for the Senior Design Showcase.

Milestone 6:

- **Full System Testing**: Test the entire system for integration and ensure all features work cohesively, with a focus on the **Neighborhood Insights Dashboard**.
- Frontend Polish: Final refinements to the front end to ensure a smooth user experience across all devices.
- **Final Demo**: Conduct a final demo of the full system to stakeholders, showcasing all features and gathering feedback.
- Evaluation and Adjustments: Revisit the evaluation process, analyze the results, and make any final adjustments to the system.
- **Documentation**: Create a user/developer manual and a demo video to document the system and assist future users.

Task	Jonathan	Donovan	Enrique
Implement, test, and demo Neighborhood Insights Dashboard	25%	50%	25%
Implement Frontend and UI improvements	30%	30%	40%
Test, and demo ROI Calculator refinements	80%	10%	10%
Test, and demo Home Comparison Tool	10%	10%	80%
Conduct testing and gather feedback	33%	33%	33%

Approval from Faculty Advisor

"I have discussed with the team and approved this project plan. I will evaluate the progress and assign a grade for each of the three milestones."

Signature:

Date:
