California State University, Long Beach

Project Report

PLOT

Property Ledger and Ownership Tracker

Tech Start Ups- App AI & Blockchain

By

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Problem Statement

The real estate sector in the United States is currently plagued by several systemic challenges that hinder efficiency, transparency, and equitable access. Chief among these are fragmented land registration systems, inconsistent property valuations, and a lack of centralized, tamper-proof records. Land records are often maintained by disparate local authorities using outdated or paper-based systems, making them highly susceptible to data loss, human error, and fraudulent alterations. As a result, verifying ownership or conducting due diligence can be time-consuming, costly, and unreliable.

These inefficiencies have a ripple effect on multiple stakeholders:

- Government bodies struggle with zoning enforcement, tax assessments, and urban planning due to unreliable data.
- Financial institutions face risk exposure during mortgage processing and title evaluations.
- Citizens and property owners deal with ownership disputes, unclear entitlements, and legal ambiguities.
- Investors and developers lack access to real-time market insights and verified ownership histories, which undermines trust and slows down investments.

To overcome these issues, there is a critical need for a digitally integrated, Blockchain-based property registration system. Blockchain technology offers a decentralized, tamper-proof ledger that ensures:

- Immutable ownership records
- Instant verification of transactions
- Real-time visibility for all authorized parties
- Elimination of fraudulent claims through cryptographic proof

Such a system would not only streamline property registration and reduce administrative burden but also restore public trust, enable smarter governance, and unlock new levels of efficiency and market participation across the real estate ecosystem.

Objective

The primary goal of this project is to simulate a blockchain-powered land and property registration and monitoring system using real-world real estate data and Tableau-based analytics. The

solution is designed to address the pressing need for transparency, security, and efficiency in property management by laying the groundwork for a fully integrated Blockchain-based land registry ecosystem.

This system targets a diverse set of stakeholders, each with specific interests and responsibilities:

- Government agencies require accurate land records for taxation, urban planning, and dispute resolution.
- Citizens and property owners demand secure, verifiable proof of ownership and the ability to monitor their assets digitally.
- Financial institutions depend on trustworthy records for mortgage issuance, risk assessment, and valuation processes.
- Investors seek verified property histories and real-time market intelligence to inform their investment strategies.
- Law enforcement needs access to ownership logs to investigate fraud, encroachment, and asset laundering.
- Technical teams responsible for implementing secure registries benefit from a prototype architecture that demonstrates the value of blockchain-based authentication and audit trails.

The proposed solution achieves this by:

- Utilizing real estate datasets to visualize property distributions, price fairness, and market trends across states.
- Detecting anomalies and outliers in property valuations or land listings, which may indicate speculative pricing or manipulation.
- Highlighting broker or agency influence patterns using filters such as listing frequency and price deviation.
- Building interactive dashboards in Tableau to provide a user-friendly interface for real-time data exploration.
- Designing a conceptual blockchain model where each property is tokenized, enabling digital ownership, secure transfers, and tamper-proof documentation.

This simulation not only demonstrates the practical application of emerging technologies in real estate governance but also sets a precedent for future implementation of decentralized, transparent, and user-centric land management systems.

Customer Segment Business Model

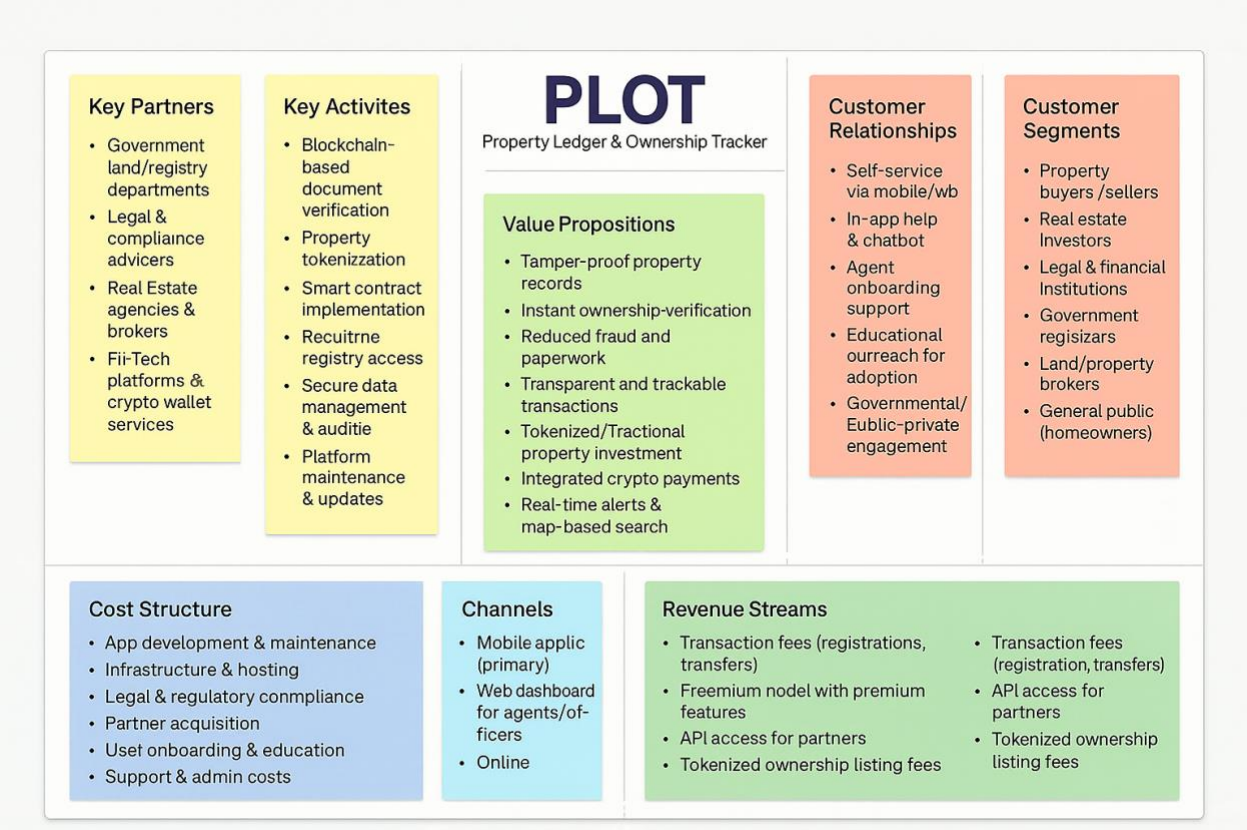


Figure 1

Value Proposition Canvas

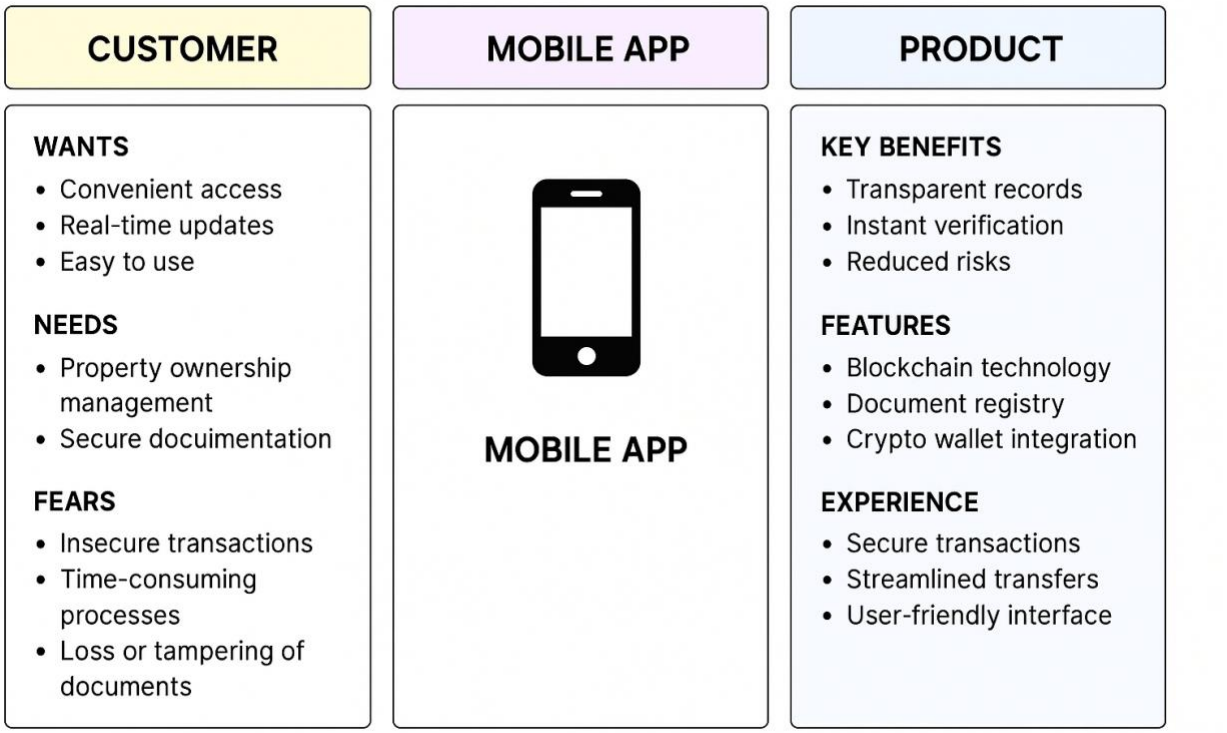


Figure 2

Hypothesis

PLOT proposes a transformative solution to long-standing issues in property registration and ownership verification by integrating blockchain technology, real-time analytics, and mobile accessibility. Traditional systems rely heavily on fragmented paper-based records and centralized authority, which often result in fraud, inefficiencies, and lack of transparency. By digitizing and decentralizing this process, PLOT aims to foster trust, improve public access, and enhance regulatory oversight in the real estate sector.

The platform addresses several pain points:

Lack of Transparency – PLOT ensures immutable, auditable property records using blockchain, eliminating disputes over ownership and documentation history.

Slow and Manual Processes – Through a mobile-first interface, users can instantly verify, update, or transfer property rights without in-person visits or paperwork delays.

Risk of Fraud and Duplication – By assigning unique digital tokens and private/public key encryption to each property, PLOT mitigates title fraud, duplicate sales, and record tampering.

Data Inaccessibility – Public dashboards and integrated Tableau analytics provide government bodies and users with clear, real-time insights into land use trends, pricing disparities, and registration volume across regions.

Considering these advantages, the following hypotheses have been formulated to evaluate the potential impact of PLOT:

Hypothesis 1

The implementation of PLOT will reduce property fraud cases and title disputes by at least 50% within the first year of deployment, due to the introduction of blockchain-based ownership authentication and transparent transfer records.

Hypothesis 2

PLOT will improve registration turnaround time by over 60% through the use of automated smart contracts and mobile verification, replacing traditional in-office procedures and manual approvals.

Hypothesis 3

Governments and regulatory bodies using PLOT will gain increased policy effectiveness, as real-time visual dashboards and geospatial data will allow better identification of market anomalies, underutilized land parcels, and broker manipulation patterns.

Hypothesis 4

User adoption of the PLOT platform will surpass 30% in the first year within pilot cities, driven by mobile accessibility, legal recognition, and integration with official government databases.

By solving these core challenges, PLOT is expected to modernize the property registration ecosystem enhancing trust, reducing costs, democratizing access, and enabling data-driven governance.

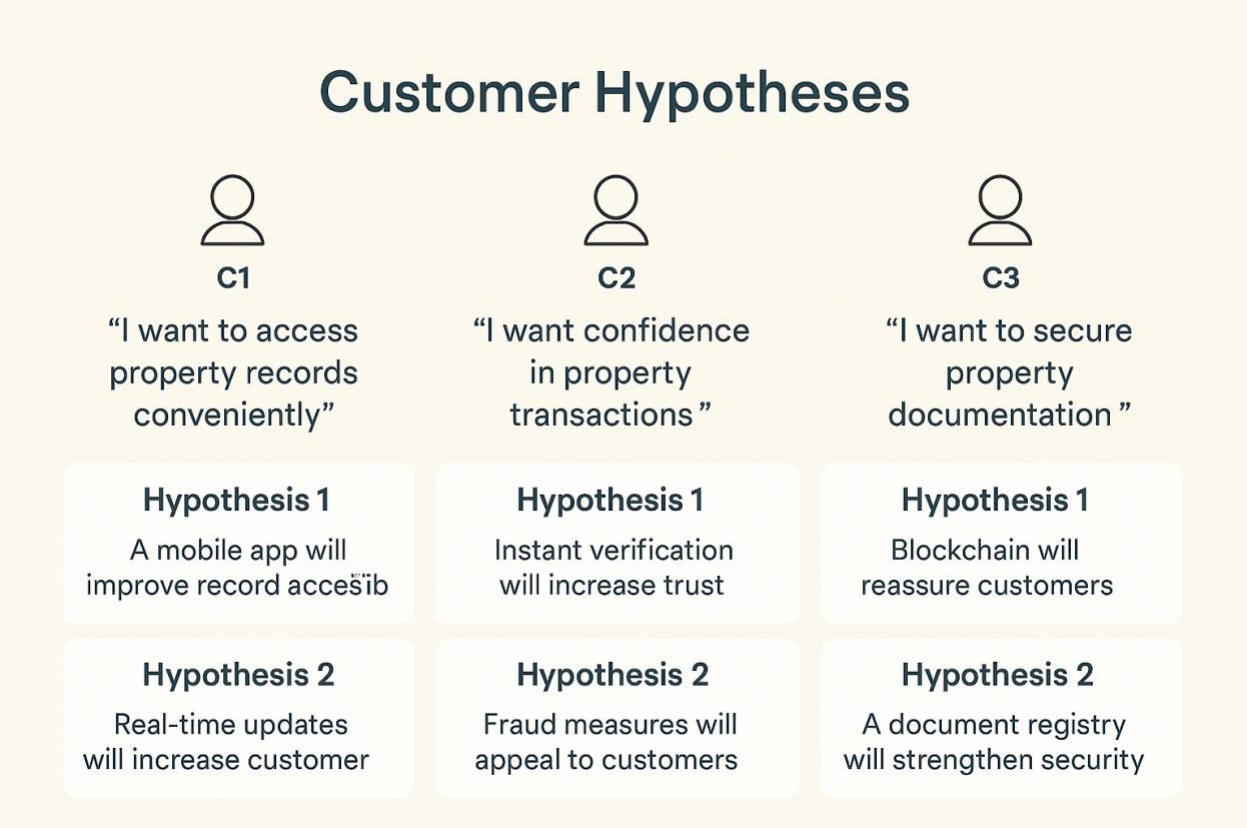


Figure 3

Dataset

This dataset provides a snapshot of real estate property listings across various U.S. states. It includes key features related to property characteristics, location, pricing, and brokerage details. The data is useful for analyzing pricing trends, property distribution, and market anomalies making it well-suited for simulating a land/property registration system.

Number of Records:

- 70,000+ property listings

Source:

- Kaggle – USA Real Estate Dataset by Ahmed Shahriar Sakib

Features in the Dataset:

Name	Description
city	Name of the city where the property is located

Name	Description
state	U.S. state abbreviation (e.g., CA, TX, NY)
zip_code	Postal zip code of the property location
street	Street address of the property
price	Listing price of the property (in USD)
bed	Number of bedrooms
bath	Number of bathrooms
acre_lot	Size of the lot in acres
house_size	Size of the house in square feet
status	Listing status (e.g., Sold, Pending, Listed)
brokered_by	Name of the brokerage or agent listing the property
latitude	Geographic latitude (used for map plotting)
longitude	Geographic longitude (used for map plotting)

Tableau Prep Cleaning Steps:

Step 1: Changing Data Roles

Purpose: To ensure Tableau correctly interprets geographic and categorical fields.

- Changed the role of the following fields:
    - city → to City
    - state → to State/Province
    - zip_code → to ZIP Code/Postcode

This step enables Tableau to apply correct geographic hierarchies for mapping and filtering, which is critical for dashboard interactivity and regional analysis.

Step 2: Standardizing and Filtering City Names

Purpose: To clean inconsistent city names and remove unusable data entries.

- Grouped and replaced inconsistent city names, e.g.:
    - "Ash Township" → "Ash Grove"
    - "Altamonte Spg" → "Altamonte Springs"
    - "Berlin Township" → "Berlin"
- Removed invalid or incomplete city entries by filtering out:
    - Blank city names
    - Entries with special formats or errors like "480th Saint" and "Al 35447"

This Step ensures accurate aggregation by city, avoids misleading statistics, and prepares clean filters for dashboard users.

Step 3: Handling Nulls and Replacing Inconsistent Values

Purpose: To ensure data completeness and integrity by replacing null or incorrect values with standard estimates or valid alternatives.

Grouped/Replaced Values:

- acre_lot: Null values replaced with 0.02 (a conservative minimum land size based on dataset observation).
- bed: Null values replaced with 3 (median/most common bedroom count).
- bath: Null values replaced with 2 (median/typical bathroom count).
- house_size: Null replaced with 1,200 (average house size approximation).
- zip_code: Entries with value 0 replaced with null to avoid invalid geolocation mapping.

Field Removal:

- Removed field prev_sold_date: It contained sparse or non-relevant data and wasn't essential to current analysis goals.

These imputations ensure consistency for key calculations like price per acre, price per bed, and allow regression models to perform without being skewed by missing or zero values.

Step 4: Grouping and Aggregating Property Listings by Bedroom Count

Purpose: To analyze and summarize the distribution of property listings based on the number of bedrooms.

- **Grouped Field:** bed

    - Grouping was done to consolidate duplicate or inconsistent entries.
    - Tableau displays 54 unique values in the bed column, including potential outliers (like 475 or null).
    - Null values were found to be dominant before imputation (as shown by the bar distribution).
- **Aggregated Metric:** Number of Rows
    - Total property counts were calculated for each distinct bedroom count.
    - This helps identify how many listings exist for each bedroom category (e.g., 2-bed, 3-bed homes).

A large number of listings were missing the bed value (as seen from the bar next to null).

- Majority of entries were clustered around the lower to mid bedroom counts (likely 2–4 beds).
- A few extreme outliers existed (e.g., 475 bedrooms) - these are almost certainly data errors or anomalies.
- This operation was crucial in:
    - Supporting the data cleaning decisions (e.g., replacing nulls with a reasonable median like 3).
    - Validating the logic of your calculated field Price per Bed.
    - Identifying suspicious entries that may be flagged in the Outliers dashboard.

Step 5: Grouping & Aggregation - Acre Lot Analysis

Tool Used: Group and Aggregate pane

- Grouped acre_lot values to inspect distribution and null presence
- Insight:
    - A high number of listings had null values in acre_lot
    - 338 rows were null and needed replacement (with 0.02 acres as conservative default)
    - After cleaning, field became usable for calculations like Price per Acre

Step 6: Grouping & Aggregation - House Size Distribution

Tool Used: Group and Aggregate pane

- Reviewed house_size as a standalone field
- **Insight:**
    - 385,400 valid rows remained after filtering out nulls or unrealistic values
    - Enabled average house size calculation (1,646 sq ft)
    - Critical for pricing validation and regression modeling

Step 7: Grouping & Aggregation - Bathroom Analysis

Tool Used: Group and Aggregate pane

- Grouped bath field to check spread, nulls, and errors
- **Findings:**
    - Most listings had 2–4 bathrooms
    - Many entries had nulls (replaced with 2 during cleanup)
    - Few outliers (like 190 baths) were identified as clear data errors

Step 8: Summary of Transformations

Visual Validation of Cleaned Data:

- Final cleaned dataset showed corrected values for all key fields
- Key visual indicators:
    - Grouped fields now consistent (e.g., bed, bath, acre_lot)
    - Imputed values successfully integrated (e.g., 1,200 sq ft house size)
    - prev_sold_date removed

Visualizations

State-Level Property Count by Acre Lot (Map Visualization)

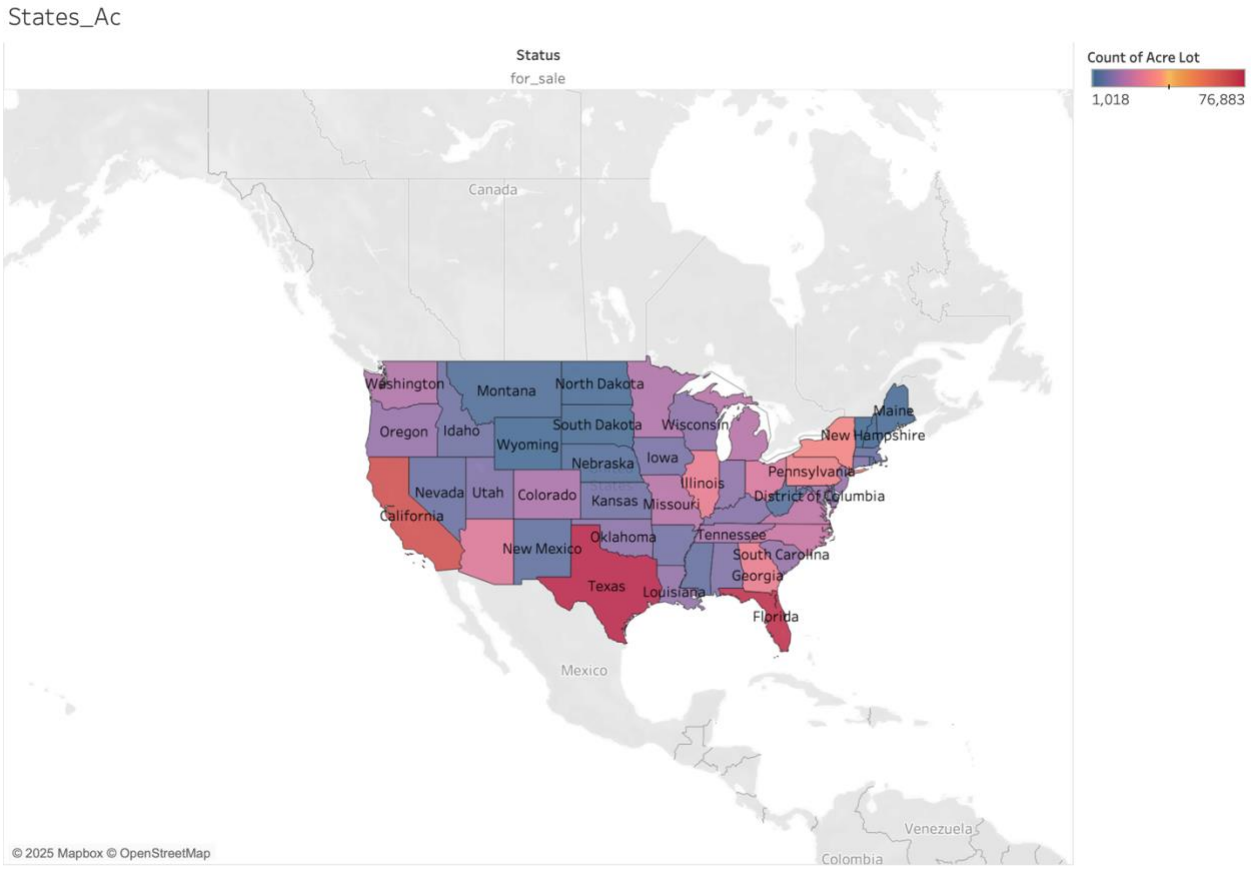


Figure 4

The image is a choropleth map of the United States that displays the number of real estate properties currently listed for sale, specifically those with valid land size data (acre_lot). Each state is shaded based on how many such listings are present, providing a geographic overview of active land property markets across the country. The map is filtered to show only properties with a (status) of “for_sale,” ensuring that the data reflects the current real estate landscape. This visualization is particularly useful for government stakeholders, as it allows them to analyze the distribution of land-based property listings across states and monitor regional real estate dynamics for planning and regulatory purposes.

Color Grading and Key Insights

The map uses a color gradient from dark blue to bright red to indicate the volume of listings:

- Dark Blue = Fewer land listings (lower market activity).

- Bright Red = Higher number of land listings (more active market).

This color coding provides quick visual cues to identify states with active land markets. For example, Texas, Florida, and California appear in warmer shades, suggesting a high volume of land property transactions. States shaded in cooler tones like North Dakota or Wyoming indicate limited activity or data availability.

Government stakeholders to analyze:

- Evaluate which states have a high demand for land regulation or zoning reviews.
- Identify regions with limited listing activity that may require data improvements or policy attention.
- Support data-driven decisions in housing development, taxation, and infrastructure planning.

Avg House Size by State (Updated Horizontal Bar Chart)

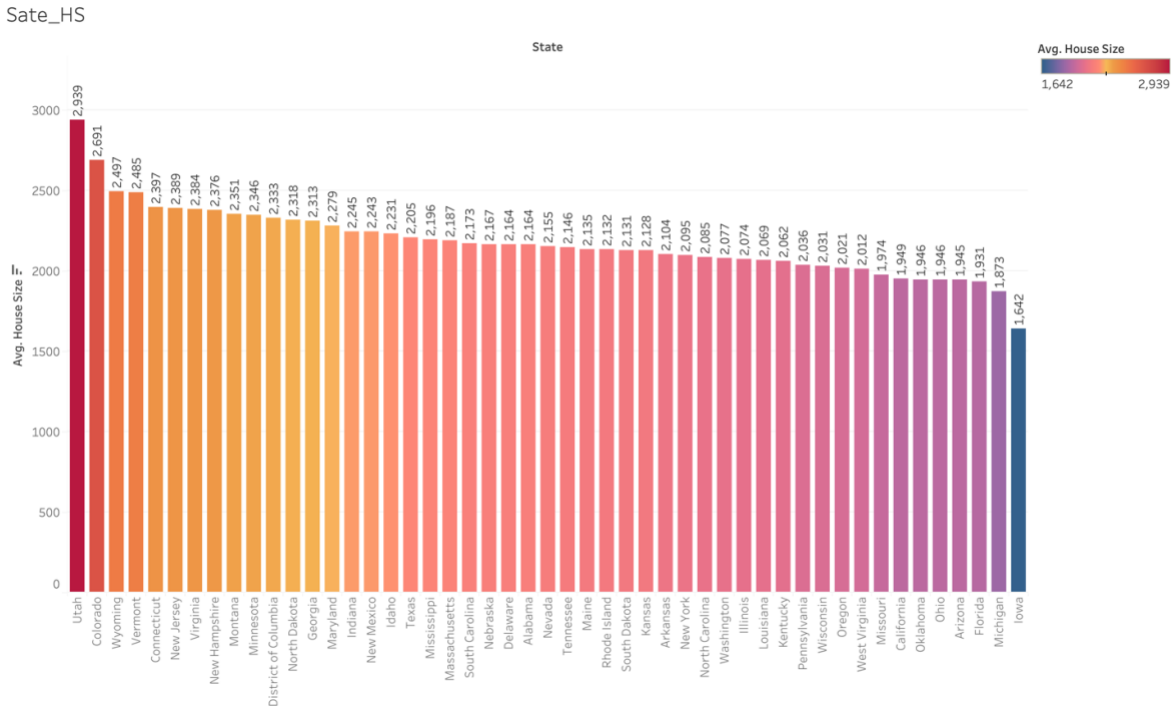


Figure 5

This bar chart, titled "State_HS", illustrates the average house size (in square feet) for each U.S. state. Each vertical bar represents a state and is labeled with its respective average house size, helping users quickly compare housing dimensions across regions. The data reflects currently listed properties and is ordered from largest to smallest average house size, providing a clear

visual ranking. This chart serves as a valuable resource for government stakeholders, enabling them to evaluate regional housing trends, urban density, and residential construction standards, which are critical for infrastructure planning, zoning policies, and sustainability goals.

Color Grading and Key Insights:

The bars are colored using a sequential gradient from dark red to dark blue:

- Red shades indicate larger average house sizes, with Utah (2,939 sq ft) leading the nation.
- Blue shades represent smaller house sizes, with Iowa (1,642 sq ft) at the lower end.

This visual gradient reinforces the size differences and highlights states with significantly larger or smaller homes. Notably, Utah, Colorado, and Wyoming top the list, suggesting a trend of more spacious housing in these regions. In contrast, Michigan, Florida, and Iowa appear at the bottom, pointing to more compact housing stock, possibly due to urbanization, economic factors, or land constraints.

Government stakeholders to analyze:

- Urban planning by identifying where housing is expanding or downsizing.
- Resource allocation based on housing size and associated land use.
- Policy development to address overdevelopment or encourage space-efficient housing in dense states.

Average Price by State (Bar Chart)

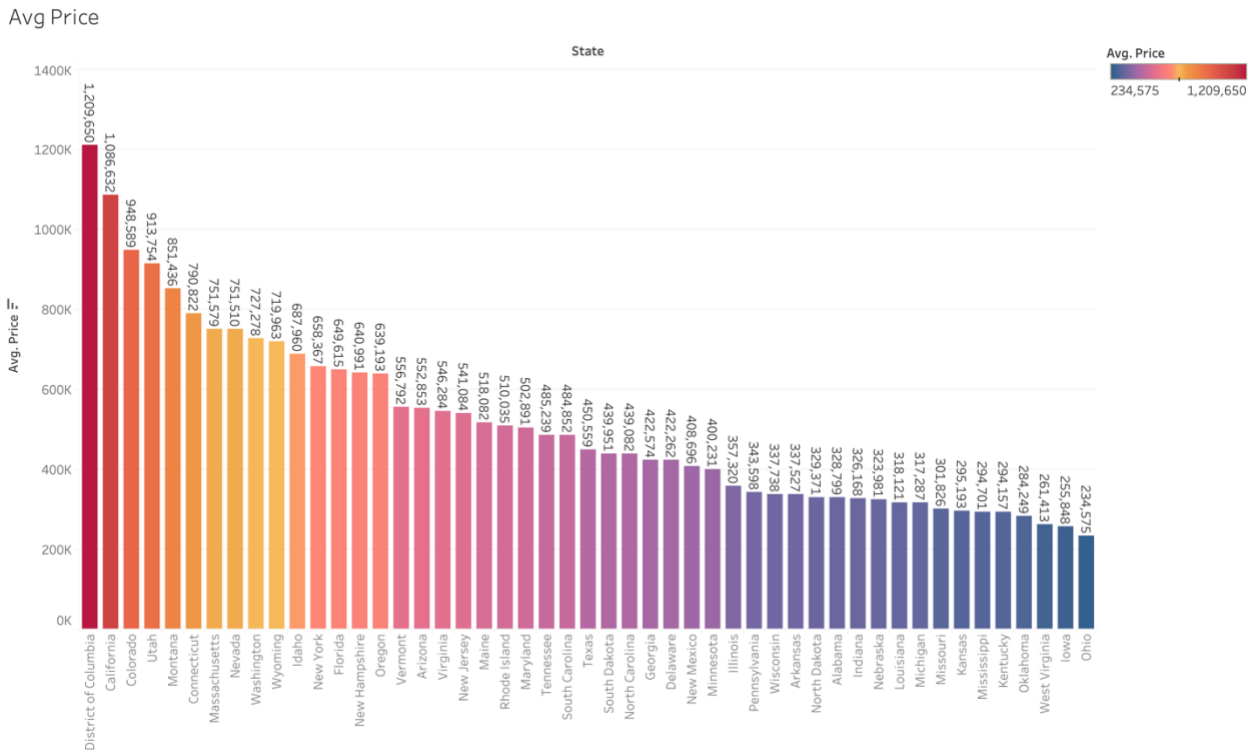


Figure 6

This bar chart titled “Avg Price” illustrates the average property listing price for each U.S. state based on current real estate data. Each vertical bar represents a state, arranged in descending order of average price, with the exact value displayed on top of each bar. The visualization provides a clear comparison of property price levels across different states, offering valuable insights into regional affordability, real estate demand, and economic factors driving price variations. This visualization supports market benchmarking and price fairness assessments for both public and private decision-makers.

Color Grading and Key Insights

The color gradient moves from dark red to dark blue:

- Dark red shades indicate higher average prices, with District of Columbia leading at $1,209,650, followed by California and Colorado.
- Dark blue shades highlight lower-priced states, including Ohio, West Virginia, and Iowa, each averaging below $265,000.

Key Observations:

- Coastal and capital regions such as D.C., California, and Virginia show significantly high property prices, likely due to urban density, demand, and economic prosperity.
- States with lower average prices, such as Ohio and West Virginia, may reflect broader affordability or less competitive markets.
- The mid-range states form a smooth gradient, helping stakeholders interpret price stratification across the nation.

Government stakeholders to analyze:

This chart is particularly useful for public sector analysts, housing authorities, and financial institutions who need to:

- Assess housing affordability by comparing national and regional pricing benchmarks.
- Identify states needing intervention such as affordable housing programs or homebuyer assistance.
- Support mortgage lending strategy by aligning loan limits and interest rates with regional pricing trends.
- Evaluate taxation policies, where high-value states might warrant different brackets or incentives.

By providing a national lens into real estate pricing, this visualization empowers informed decision-making in housing policy, urban development, and economic planning.

Key Performance Indicators (KPIs) Summary

To provide a snapshot of the current real estate market based on the filtered dataset, the following key metrics offer a concise overview of property characteristics and pricing across the U.S.

Average Bedroom Count

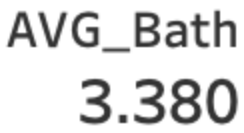


Figure 7

The average number of bedrooms per property is 3.38, indicating that most homes listed are designed for small to medium-sized families. This metric aligns with the standard for residential housing in suburban and semi-urban regions.

Average Bathroom Count

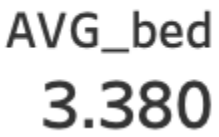


Figure 8

Similarly, the average number of bathrooms also stands at 3.38, suggesting that the listed homes are well-equipped, possibly featuring additional ensuite or guest bathrooms—common in mid-to-upper-tier real estate offerings.

Average Property Price

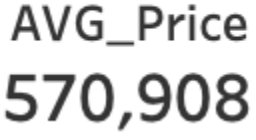


Figure 9

The average listing price across the dataset is $570,908, offering a benchmark for evaluating housing affordability and market trends. This figure reflects an aggregation of pricing across diverse states, including both high-cost urban zones and lower-cost rural regions.

Total Properties with Acre Lot Data

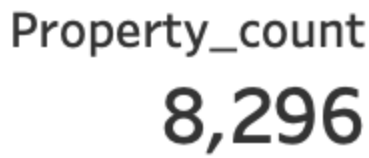


Figure 10

The total number of properties listed with valid acre_lot information is 8,296. This count is critical for stakeholders focusing on land-related transactions, zoning analysis, and spatial development planning.

Average House Size

Figure 11

The average house size is 2,117 square feet, indicating that the majority of homes fall within the standard single-family residential range. This supports comparisons with historical housing trends and aids in identifying shifts toward larger or more compact living spaces.

These KPIs are essential for government agencies, planners, real estate investors, and data analysts, as they provide a data-driven foundation for evaluating current housing market dynamics and planning future development strategies.

Dashboard Overview

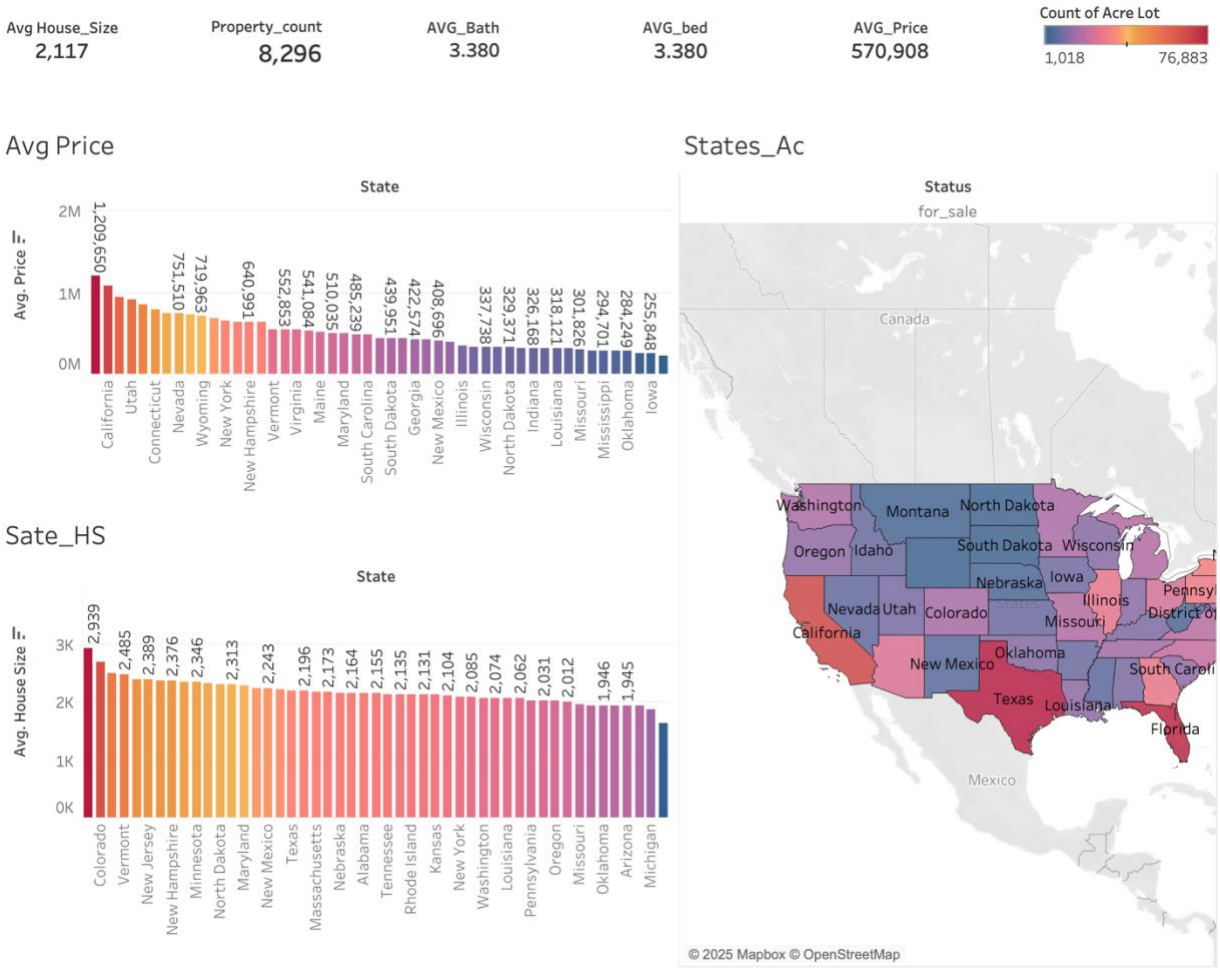


Figure 12

Dashboard Overview

The real estate dashboard presents a holistic view of the U.S. property market by combining key metrics, visual breakdowns, and regional comparisons. It draws insights from actively listed properties across all 50 states, helping stakeholders evaluate land activity, housing affordability, and structural trends.

Top-Level KPIs

At the top of the dashboard, several key performance indicators (KPIs) provide a summarized snapshot of national real estate characteristics. The average house size is 2,117 square feet, reflecting the dominance of single-family homes in the current market. The average number of bedrooms and bathrooms is 3.38 each, indicating that most homes are built for family living and equipped with modern amenities. With a total property count of 8,296 listings that include valid acre lot data, the dashboard reflects a sizable and representative sample of the market. The average property price across all listings stands at $570,908, serving as a national benchmark for evaluating affordability and pricing trends.

Average Price by State (Bar Chart)

The “Avg Price” bar chart visually represents average listing prices per state. States like the District of Columbia, California, and Colorado are shown to have the highest average prices, exceeding $900,000, while Ohio, Iowa, and West Virginia fall on the more affordable end of the spectrum, with averages around $234,000–$260,000. This visualization helps in understanding regional disparities in property value and provides a strong foundation for decision-making related to mortgage strategies, buyer targeting, and affordability policies.

Average House Size by State (Bar Chart)

The “Sate_HS” bar chart focuses on the average house size by state, with Utah (2,939 sq ft), Colorado, and Vermont ranking highest in residential space offered. States like Michigan, Oklahoma, and Arizona, by contrast, exhibit more compact homes below 2,000 sq ft. This chart is especially useful for urban planners and real estate developers, as it informs zoning decisions, infrastructure planning, and housing density assessments across states.

Land Listing Density by State (Choropleth Map)

The “States_Ac” choropleth map presents the distribution of land listings with valid acre lot data across U.S. states. A red-to-blue color gradient highlights volume variations, where warmer shades indicate states with higher acre lot listing counts. Texas, California, and Florida stand out with the most active land markets, while states such as North Dakota and Montana appear with relatively low listing counts. This map is critical for identifying geographic concentration in land transactions and serves as a tool for market surveillance and land-use policy planning.

Stakeholder Analysis and Key Takeaways

In conclusion, this dashboard enables cross-sectional insights into property size, pricing, and land availability. For government agencies, it supports zoning regulations, housing program planning, and regional development policies. Investors and developers can use it to locate profitable markets based on pricing and lot availability. Urban planners benefit from the detailed house size distribution to optimize infrastructure layouts, while financial institutions can better align loan offerings with market conditions. Overall, the dashboard equips all stakeholders with a clear, data-driven foundation to make informed, strategic decisions in the real estate sector.

Monetization

PLOT's pricing strategy is designed to be flexible and scalable, ensuring affordability for municipalities of varying sizes while sustaining long-term profitability. The revenue model primarily targets government land registry departments, urban planning authorities, and real estate regulatory bodies. The pricing will be determined on a per-customer basis, factoring in the population size, number of registered properties, expected usage frequency, and required customization levels.

Pricing Structure

Product Description	Fee	Details
Onboarding Fee	$125,000 (one-time)	Setup, integration, data import, training, and customization
Annual License Fee	$375,000 per year	Access to core platform, blockchain hosting, analytics dashboards
Support & Maintenance	$90,000 per year	Technical support, updates, compliance monitoring
Professional Services (Optional)	$200 per hour	Custom dashboards, legal system integration, analytics customization
Total Cost (Year 1)	**$590,000**	Includes onboarding and annual license

Operational Cost Overview

As a cloud-native platform, PLOT maintains low overhead by leveraging blockchain infrastructure, open-source visualization tools (e.g., Tableau Public), and a lean engineering team. The estimated annual costs are as follows:

Expense Category	Estimated Annual Cost
Cloud Infrastructure (AWS/Azure)	$220,000
Engineering & Staff Salaries	$980,000
Security & Compliance Monitoring	$160,000
Administrative & Legal	$95,000
Total Annual Expenses	**$1,455,000**

Revenue Forecast (Example Scenario)

Assuming a successful pilot with the State of California and expansion into three other jurisdictions (e.g., Texas, Arizona, and Georgia), PLOT could break even by Year 2.

Year	California	Texas	Arizona	Georgia	Implementation Fees	Annual Revenue	Expenses	Profit
Year 1	$375,000	–	–	–	$125,000	$500,000	$1,455,000	($955,000)
Year 2	$375,000	$350,000	$300,000	–	$150,000	$1,175,000	$1,455,000	($280,000)
Year 3	$375,000	$350,000	$300,000	$300,000	$100,000	$1,425,000	$1,455,000	($30,000)

Break-even is expected by mid-Year 3, with profits increasing as more cities adopt the system and feature requests drive optional service revenues.

Future Monetization Opportunities

Tokenized Property Ownership: Introduce a micro-fee per transfer via blockchain.

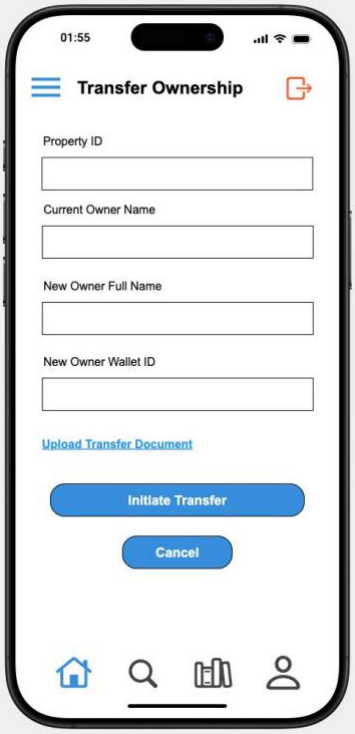
Data Licensing: Offer anonymized property market insights to financial institutions.

Smart Contract Templates: Subscription model for advanced legal automation tools.

B2C Premium Features: Future app versions can offer enhanced property tracking or AI-based fraud alerts for a fee to individual property owners.

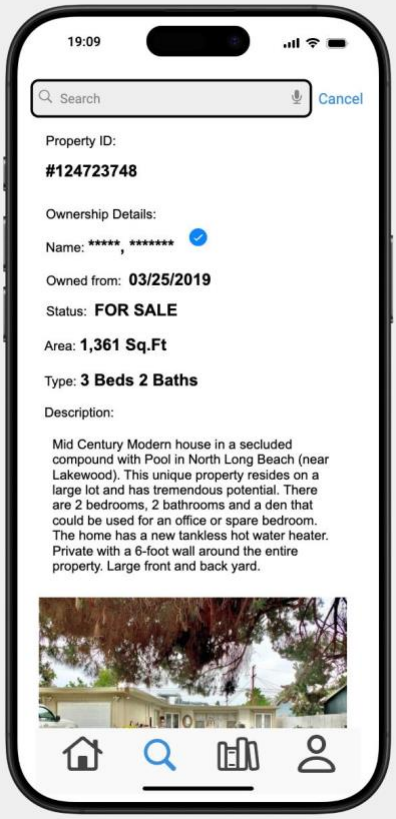
Prototype


01:55
Property 1
Property Value Growth Trend
25
4
13
Total Registered Properties
Fraud Alerts Detected
Requests Pending
Review Fraud & Verification Alerts

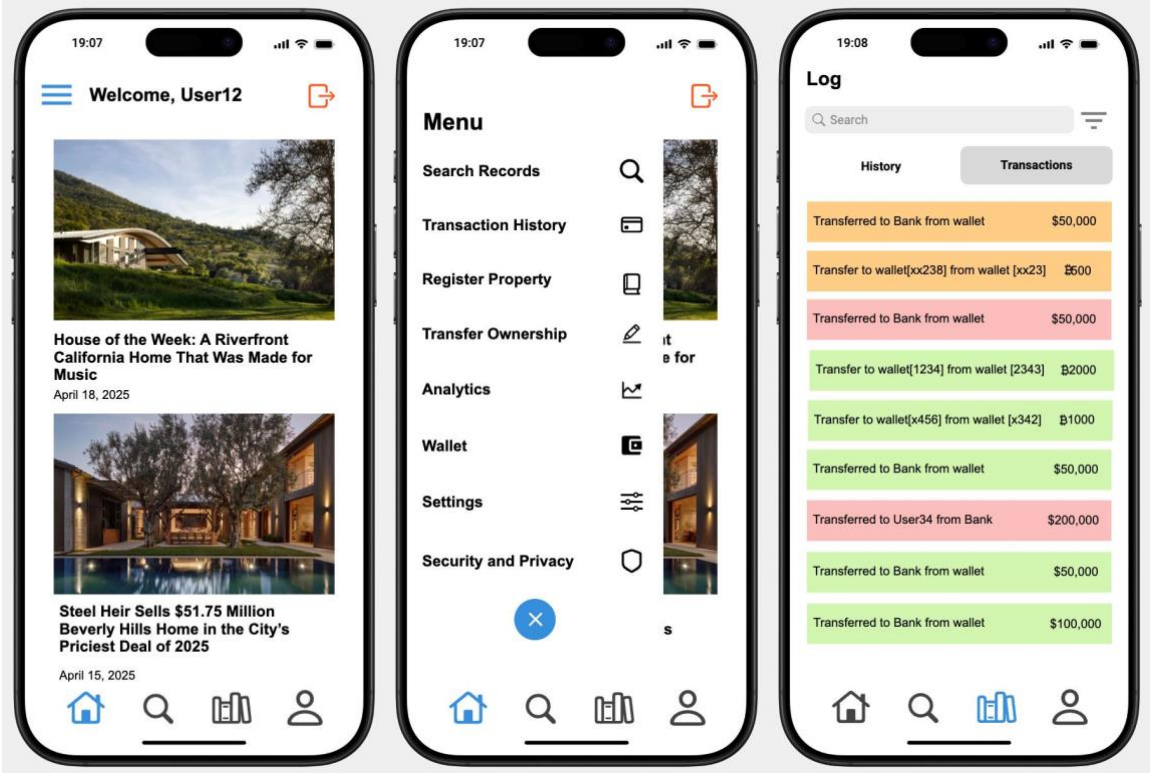

01:55
Transfer Ownership
Property ID
Current Owner Name
New Owner Full Name
New Owner Wallet ID
Upload Transfer Document
Initiate Transfer
Cancel

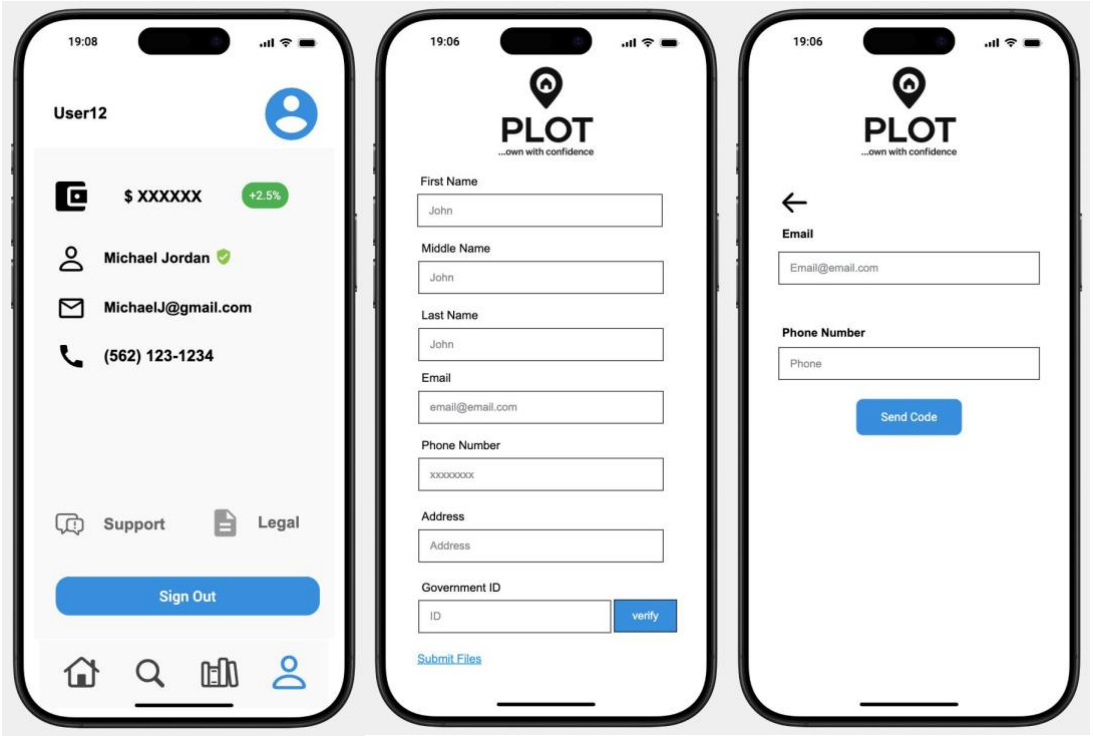

19:15
Register Property
Full Name of the owner
Wallet ID of the Owner
Property Address
City/State
Area size
Property Type
Upload Property Documents
Register Property

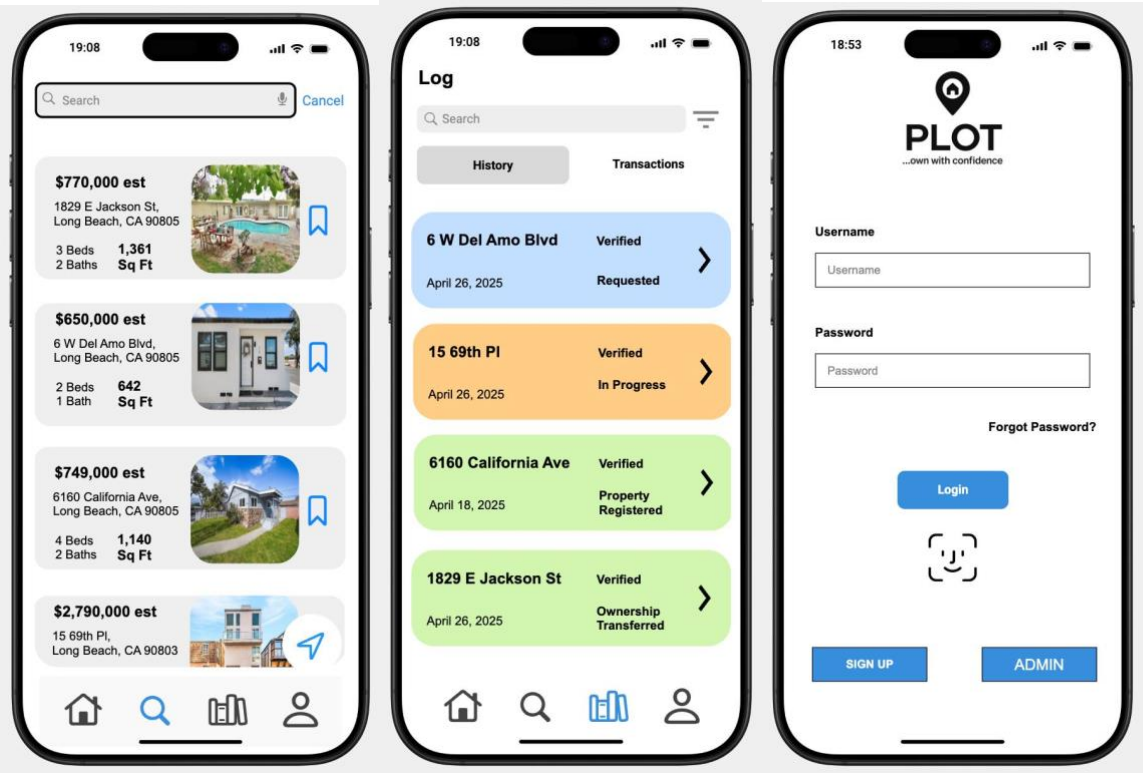

House of the Week: A Riverfront California Home That Was Made for Music


19:09
Search
Cancel
Property ID:
#124723748
Ownership Details:
Name: *****, *******
Owned from: 03/25/2019
Status: FOR SALE
Area: 1,361 Sq.Ft
Type: 3 Beds 2 Baths
Description:
Mid Century Modern house in a secluded compound with Pool in North Long Beach (near Lakewood). This unique property resides on a large lot and has tremendous potential. There are 2 bedrooms, 2 bathrooms and a den that could be used for an office or spare bedroom. The home has a new tankless hot water heater. Private with a 6-foot wall around the entire property. Large front and back yard.


21:40
Search
Cancel
LOS ALTOS
T.J.Maxx
Walter Pyramid
California State University Long Beach
Recreation Park 18
Tibor Rubin VA Medical Center
ALAMITOS HEIGHTS
BELMONT SHORE


19:07
Welcome, User12
House of the Week: A Riverfront California Home That Was Made for Music
April 18, 2025
Steel Heir Sells $51.75 Million Beverly Hills Home in the City's Priciest Deal of 2025
April 15, 2025
19:07
Menu
Search Records
Transaction History
Register Property
Transfer Ownership
Analytics
Wallet
Settings
Security and Privacy
19:08
Log
Search
History
Transactions
Transferred to Bank from wallet $50,000
Transfer to wallet[xx238] from wallet [xx23] ฿500
Transferred to Bank from wallet $50,000
Transfer to wallet[1234] from wallet [2343] ฿2000
Transfer to wallet[x456] from wallet [x342] ฿1000
Transferred to Bank from wallet $50,000
Transferred to User34 from Bank $200,000
Transferred to Bank from wallet $50,000
Transferred to Bank from wallet $100,000


19:08
User12
$ XXXXXX
+2.5%
Michael Jordan
MichaelJ@gmail.com
(562) 123-1234
Support
Legal
Sign Out
19:06
PLOT
...own with confidence
First Name
John
Middle Name
John
Last Name
John
Email
email@email.com
Phone Number
xxxxxxxx
Address
Address
Government ID
ID
verify
Submit Files
19:06
PLOT
...own with confidence
Email
Email@email.com
Phone Number
Phone
Send Code



The PLOT (Property Ledger & Ownership Tracker) prototype was designed with a mobile-first approach to ensure accessibility, transparency, and security in property registration and verification. The prototype simulates core functionalities through a series of intuitive screens that reflect real-world property documentation workflows.

Key UI/UX Elements

Login & Signup Pages

Designed for user ease with biometric options (e.g., Face ID) and secure authentication. The signup flow includes ID verification to comply with regulatory norms.

Homepage & Dashboard

A clean, organized interface shows real-time status of registered properties, recent document activity, pending approvals, and ownership history. Color-coded indicators help users quickly assess the state of each document or transfer.

Menu Navigation

Tabbed navigation includes:

Search: Live, location-based property search with filters (price, broker, status).

Registry: View, upload, and update official property documents.

Transfer: Initiate or approve ownership transfer via blockchain.

Analytics: State-wise insights on average prices, property sizes, and land availability.

Integrated Crypto Wallet Support

The prototype allows users to link crypto wallets, enabling secure property payments, token-based ownership, and transaction recording on-chain.

Document History & Audit Trail

Each property includes a detailed timeline of ownership and documentation activity. Blockchain ensures immutability and transparency of these records.

Design Goals Achieved

Accessibility: Mobile-friendly layout for non-technical users.

Security: Use of biometric login and cryptographic validation for transfers.

Efficiency: Minimal-step registration and real-time updates.

Transparency: Every document interaction is recorded and traceable.

Future Enhancements

The prototype lays the foundation for upcoming features like:

AI-powered document verification

Government portal integration

Multi-language localization

Agent dashboards for real estate professionals

By combining blockchain technology with a user-centered design, the PLOT prototype demonstrates a transformative approach to digitizing and securing the real estate ecosystem.

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