



ESTATE PROTOCOL

Version 1.2

Whitepaper



INTRODUCTION

Estate Protocol is a platform changing the real estate investing landscape. We believe access to real estate investments should be for everyone, as it is the best way for most people to secure their long term financial future. We are on a mission to make these investments accessible to everyone, and to turn it from an illiquid to a liquid investment unlocking a large amount of value in the world's largest asset class. We aim to make real estate investments frictionless, solving multiple problems within the crypto space along the way. With an incredibly strong team experienced in both, the real estate market, and blockchain technology, we understand the nuances of the market and the technology required to solve those problems.

WHAT'S THE NEED?

Real estate prices have been rising steadily across the globe over the last few decades. While incomes have been rising in parts of the developing world, they have stagnated in much of the developed world. This has meant that real estate ownership has evolved from almost a basic right, to becoming a pipe dream for a large portion of young people in one generation. In London, it takes an average worker 10 years of saving to be able to afford a deposit on a mortgage. In the 10 years, they lose out on all the capital gains and dividends, resulting in property ownership slipping away even further for future generations. The market is even more broken for commercial real estate. In most places, commercial real estate (office spaces, malls, data centres), the type of real estate with higher, more stable yields, better potential for value increase, and higher quality tenants is an investment most people don't even consider because of how high the barriers to entry are. Having high growth assets be inaccessible to the majority is a problem leading to extreme wealth inequality within jurisdictions.

This concentration of wealth also results in lower transaction volumes, resulting in an illiquid market steadily moving towards lower liquidity. This results in a slow, inefficient market that leaves a lot of value on the table with every transaction. In other words, its an industry ripe for disruption.

PROBLEMS



The barrier to entry is extremely high. In most regions, a single real estate investment costs multiple years of average wages. This disqualifies a majority of the people from being able to enter the market and contributes to rising wealth inequality.



Illiquidity. Real estate investments are highly illiquid. The extremely high transaction costs, time, documentation, middlemen, and registration required makes real estate lose out on an estimated 12-22% liquidity premium according to research.



Friction in cross-market transactions. Real estate is still a very localised asset class with investors rarely exploring options outside their local area. This is largely because of the difficulty in conducting cross-border transactions within our current systems.



Transparency. In regions where heavy regulation isn't present, the industry is filled with scams and frauds in terms of performance, quality, and delivery times.



Idiosyncratic nature of properties. Previous attempts at tokenising real estate failed because the underlying technology did not factor in the individualistic essence of the property market.

These problems lead to suboptimal allocation of resources in the wider picture, loss of potential value for property owners, and lack of options and a high barrier for entry for potential buyers. In other words, it's an industry ripe for disruption.

HOW WE SOLVE THESE PROBLEMS

Increasing liquidity and accessibility can be achieved by removing friction from the markets, lowering the ticket size for entry, and expanding the potential market to the entire world. We have developed a technical and legal system that would allow users to purchase a fraction of an income generating asset like a commercial property. The system would also enable seasoned investors to diversify their portfolio across the globe.

How does it work?

In order to achieve fractional real estate effectively, securely, and legally, and for the sake of simplicity, we need to divide the process into three parts -

1. Digitisation of ownership in the form of an NFT - creation of Title NFT
2. Fractionalising the Title NFT into BRIX tokens
3. Investor management and secondary sales

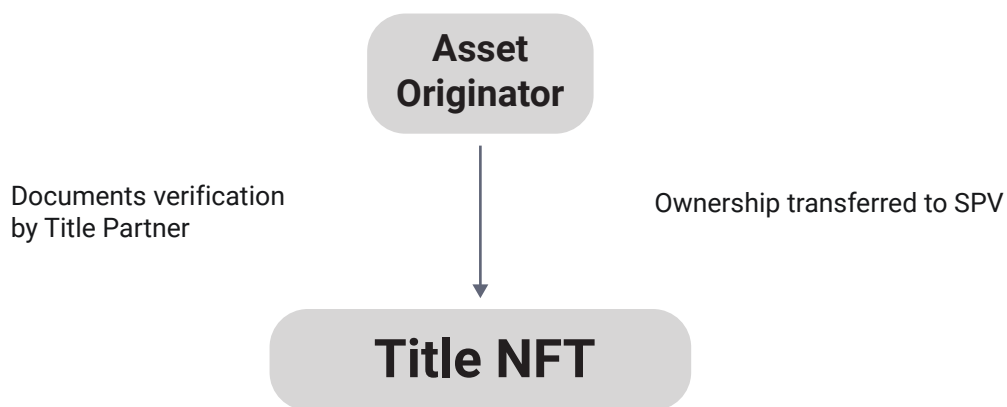


DIGITIZING OWNERSHIP

Real estate ownership in many countries, including the US, is recorded through a general warranty deed. It's a document that verifies the legal description of the property, the seller has the right to transfer the property, there are no existing claims against the property, and other necessary details.

Estate Protocol would use a local partner title company in every jurisdiction where we tokenize real estate to check and verify the validity of the title. We would then register a Delaware LLC that would act as an SPV, ie, its only purpose would be to hold the property in question. The Delaware LLC would be governed by operating agreements drafted and standardized by our law team. Delaware's blockchain law, with the clauses drafted by our legal experts, allows us to store corporate records, including information about ownership in the LLC to be stored on-chain. For that reason, an NFT would be minted and be listed as the owner of the LLC.

Once the ownership is transferred to the LLC, it's effectively tokenized. Whoever owns the NFT now owns the property. The asset originator can proceed to list the property on platforms like OpenSea.



FRACTIONALIZING THE NFT

The NFT owner would then be able to send the NFT representing property ownership on the Estate Protocol platform. They would then be able to choose attributes of the process like the number of fractions, price per fraction, the timeline of the sale, etc and be asked to submit a standard set of documents for our users to assess. Our "fractionalisation smart contract" would lock up that NFT, and issue ERC20 tokens against it. We call these tokens BRIX tokens.

Estate Protocol would then list that set of tokens for sale, alongside detailed information about the property, the market it's in, exact location data using APIs, information about the property's management, and the average price per sq/ft in that zip code delivered by our partnership with Chainlink. Users of the platform would be able to purchase the tokens that now represent ownership in the underlying property.

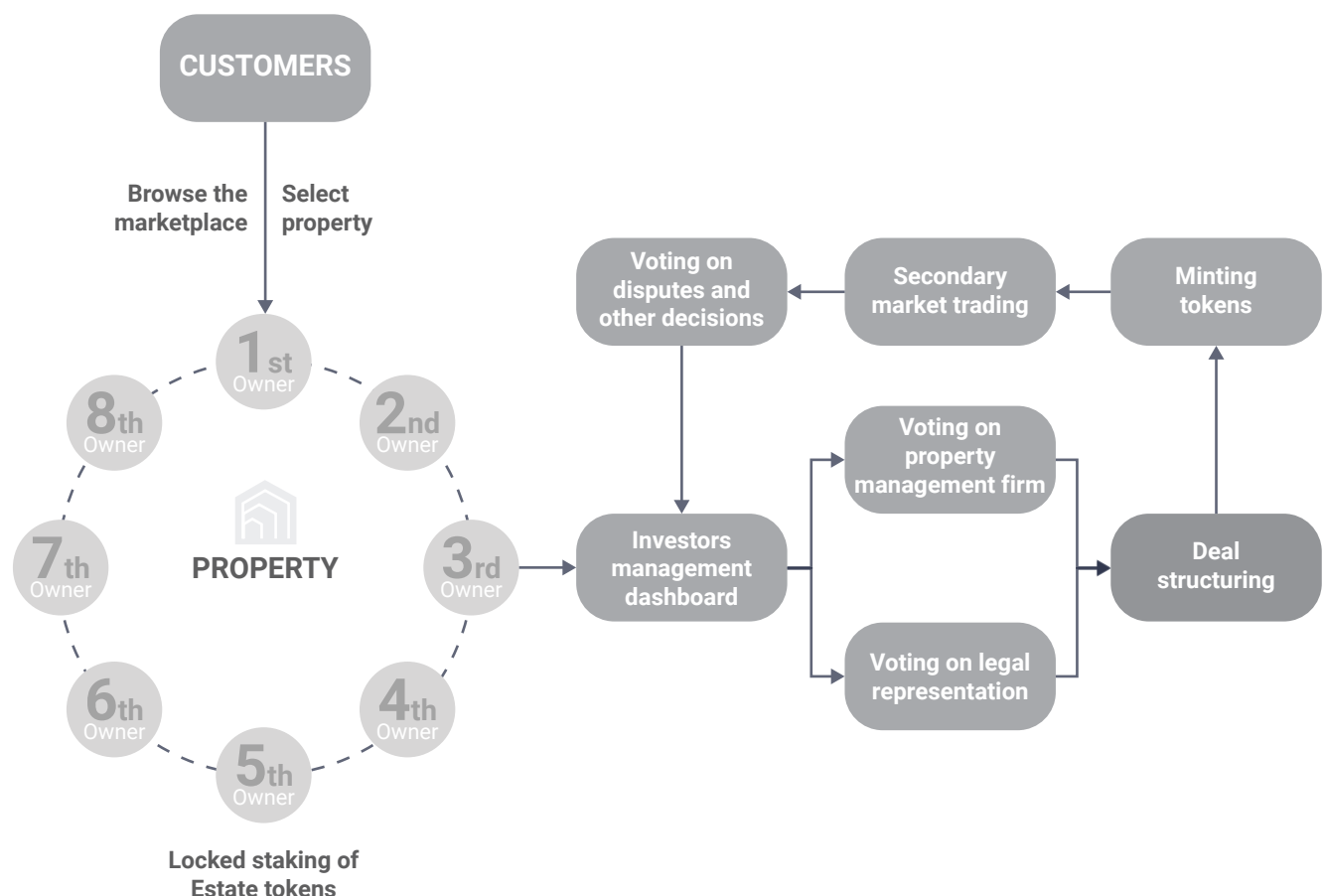


CORPORATE ACTION MANAGEMENT AND SECONDARY TRADING

We want the owners of the property fractions to have as much control over the decisions relating to their property as possible. For that reason, we've designed a governance system that would allow the fraction holders to vote on proposals that can be submitted by any owner. The manager would get to give their endorsement for the proposals, as someone that's at the property on the ground, and the proposals with a majority vote would pass and be executed by the property managers. All income generated by the asset would be automatically transferred to the holders of BRIX tokens after deducting the expenses.

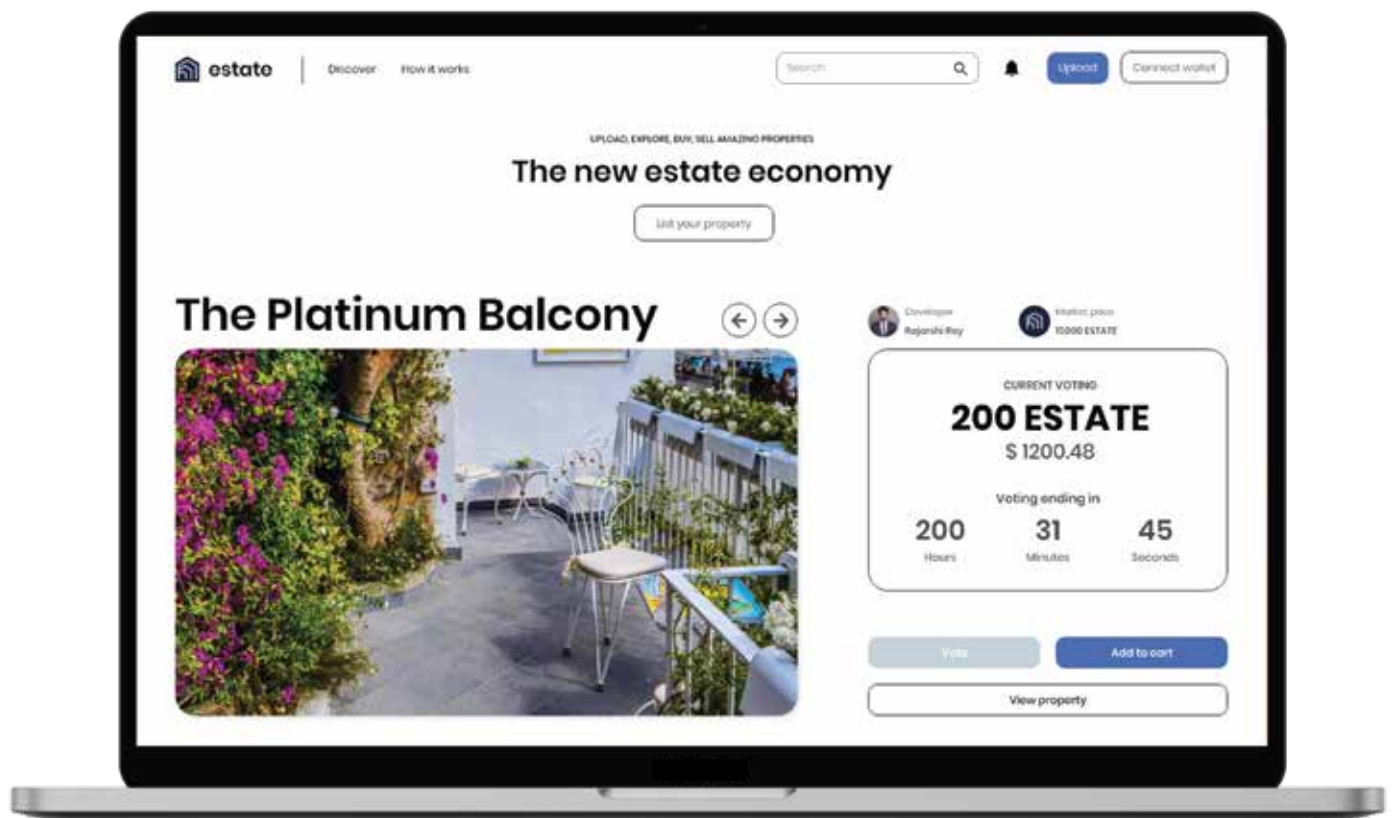
The users would then also be able to trade the property backed tokens amongst each other with very low slippage by adding liquidity at the price of their choice on each property's pool on Uniswap V3. This trading would happen in a decentralised manner and only the people that are on our KYC'd whitelist would be able to purchase the tokens.

This is what a typical listing process would look like -





SYSTEM ARCHITECTURE





SYSTEM DESCRIPTION

The Estate Protocol system is composed of five subsystems:

- A Web3 frontend application, for users to interact with smart contracts
- A frontend application for administrative tasks
- A set of smart contracts
- A backend application to provide API services and
- A database to store common data.

SMART CONTRACTS

Several smart contracts have been developed to manage the lifecycles of the product.

- A PropertyManager contract manages the life cycle of real estate property. User with administrative roles can create asset on the chain and mint an ERC721 NFT representing ownership for each property.
- A contract that can receive the aforementioned NFT, lock it up, and issue ERC20 tokens called BRIX against it. The contract also provides functions to receive revenues and distribute profits among its investors.
- A PropertyListing contract manages the lifecycles of property listings. Administrative users can launch a listing for an on-chain property, and prospective investors can stake their stable coins for the listing of their choice. If the funding target is not met, investors will be refunded automatically when the listing expires.
- A Whitelist contract manages the authorization of investors. Only whitelisted users can participate in the investment on the platform.
- An ERC20 contract manages the fractionalized properties.

WEB3 FRONTEND

The web3.0 frontend application provides the access for users to interact with Estate Protocol smart contracts. Users can browse a selection of real estate properties and check the facts, features and financial details of these properties. If they would like to purchase property backed ERC20 tokens, they need to go through a KYC process first, provided by Blockpass. Then users are able to connect with their crypto wallets and to stake and purchase these Estate tokens. In the personal vault, users can have a detailed breakdown view of their current holdings of properties they have staked in and properties they have owned tokens for.





FRONTEND FOR ADMINISTRATION

In the administrative panel, managerial tasks are organized into three major categories: property management, listing management and whitelist management.

- In the property management section, users with administrative privileges can submit information such as facts and features of a new property to the database, and then create that property on the chain. They can also act as delegates for house tenants and pay rent for a specified period for any property with stable coins. In addition, administrators can initiate reward distribution for any property if there are any profits generated by the underlying real estate property.
- In the listing management section, administrators can create a listing from an onchain real estate property and launch it for staking by prospective investors. If staking end time has lapsed and the funding target is missed, any user can initiate the termination of the listing which would automatically trigger the refunding of staking coins to its owners.
- In the whitelist management section, administrators can add a new address to whitelist once it has gone through the KYC process. Administrators can also choose to enable or disable the functionality of whitelisting, for scenarios of internal testing or issue testing.

BACKEND SERVICES AND DATABASE

The backend system provides the necessary services and APIs for ordinary CRUD actions. It also serves as a pivotal connection between web3 frontends and underlying storage aswell as database services. It offers expeditious lookup services for properties and listings. More importantly, it enables multiple deployment of smart contracts and provides the essential utilities to coordinate these different deployments.

In addition to these features, the backend provides necessary authentication services to protect the security of underlying data. For instance, multimedia contents for properties are stored securely in AWS S3 storage services and can be only visited by authorized requests.





SYSTEM ELEMENTS



1. User login and connection with external wallet

- Users would be able to create an account in a simple procedure. They would then be able to connect their external self hosted wallets parties in order to buy, sell, stake, or hold their property backed tokens.



2. Legal compliance

- To stay compliant with the AML laws, users would need to complete KYC before they can purchase any property tokens. We would present the KYC process to our users in the form of an API in partnership with Blockpass.org. We would maintain a whitelist with the approved Ethereum address hashes and would only use the hash to internally identify who is allowed to buy, sell, or trade tokens.



2. Minting a group of NFTs for each property using smart contracts

- Each property listing that gets enough votes in the form of staked stablecoins would be minted into a unique set of tokens, with the property's terms stored in the contract and transparently available to the potential buyers.



3. Voting for property to be listed for trading

- On the platform website, properties approved by our in-house real estate experts would be listed along with the terms, price, all the other details about the property, and the amount of time the owner is willing to wait for the transaction to finish. Users would be able to stake their stablecoins and lock them for the time period in order to vote for the particular property to be tokenised. If the selling price is hit in the staking process, the contract will mint and list the property's ERC20 BRIX tokens with the stakers receiving their part. If the stakers do not fulfil the selling price in the given time, the tokens would be returned and the listing cancelled. This would be the process until we have enough traction on both sides and are able to build a system that would allow users to tokenise their own properties.



4. Receiving rent

- In the smart contract for the properties, the logic for receiving rent, and passing it on after deducting the expenses to the owners in the ratio of their ownership would be built in. The renters would be able to use a simple interface to pay their rent using fiat or stablecoins.

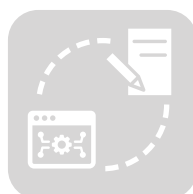


For the property owners, the process in essence would be the same as staking their crypto to receive rewards, like in traditional yield farming platforms, except with Estate Protocol, that staking and those rewards would be backed by real estate.



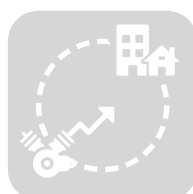
5. Voting for localities for new listings

- Token owners would be able to use their tokens for governance actions within our ecosystem. One of those actions would be to stake their tokens in order to vote for the city or locality, options for which would be provided by our in-house real estate experts based on different categories like development level, stability, rental yield, etc. Detailed information about each option would be provided so users can make an informed decision.



6. APIs and Oracle-based information about each listing

- We would use APIs from services like Google Maps and Zillow.com, among others, to provide users with as much accurate, third party, verifiable information as possible from multiple different sources, all available conveniently within our marketplace. We will also use decentralised Oracles such as Chainlink to provide per square feet pricing information based on ZIP Codes. There would be a lot of focus on the UI/UX and integration to make the experience seamless.



7. Trading engine for the properties' tokens

- We would integrate our whitelist of approved Ethereum addresses with Uniswap V3, so trading pools of individual properties would be maintained. Users would be able to place their bids and buy or sell the fractions of the property they have from those pools just like any other decentralised token exchange. This would be the process until we apply for a secondary market trading license, beyond which we will streamline the entire trading process.



8. Rights and data storage

- All of the data about the ownership and its history would be stored on the blockchain for everyone to verify. In case of any legal dispute which we would miss in our initial smart contract terms, the parties would be able to present their case using the immutable data on the blockchain. Our legal entity being based in Delaware means we can store our corporate records (such as who owns what property) on the blockchain completely legally.



LEGAL STRUCTURE

Real estate is an asset class that people tend to invest in for longer terms. For that reason, our biggest focus while designing the entire system is to ensure property token owners have a legal right to the underlying real estate under all circumstances, even in the event Estate Protocol goes out of business. Other areas of focus are tax optimisation, and potential dispute resolution in a cross-border environment.

We are a registered business in the US state of Delaware. Delaware has favourable tax laws and advanced blockchain regulations.

For each property that gets listed, at the time of deal structuring (see diagram below), we will register an individual Special Purpose Vehicle (SPV). By using the unique legal structuring and engineering that we use, we ensure that the property token owners have a right to the underlying properties even if the entity, Estate Protocol, goes out of business under Delaware law. This process would happen in the background, so the token owners do not need to perform any extra tasks and can purchase the tokens like any other NFT and still claim legal right to the properties they purchase.

Each property management firm and law firm would create a one page proposal including their experience, costs, and other information relevant to property owners for them to make an informed decision when needed. The final decision on how to proceed would be on property owners, where a majority decision, i.e. at least 50% of owning rights, would prevail.

When we tokenise small fractions of a large property (for example, 5% of a data center that costs \$200 million), we will not have any limits on percentage ownership. When we tokenise a large portion of a small asset (for example, 100% of a single-family home that costs \$1 million), we will have a 10% ownership limit per wallet to avoid whales manipulating the asset's governance.



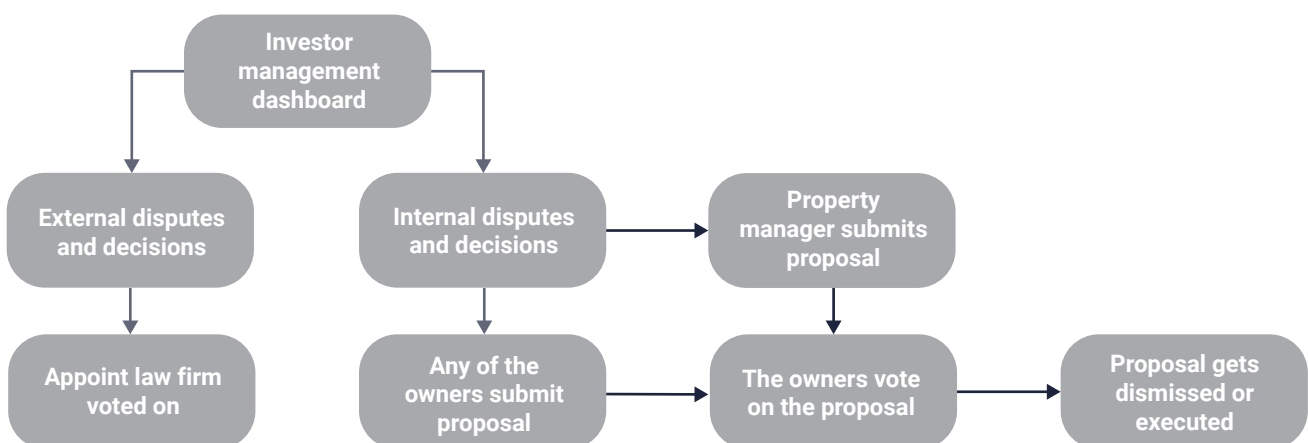
DISPUTE RESOLUTION SYSTEM

1. Disputes among owners of a particular property

In the governance section of the property, the owners would be able to raise a proposal, and the other owners would be able to vote on that proposal. We will call this PIP (property improvement proposal). The weightage of the votes would depend on the percentage share in the property by each owner. For example - some owners of a particular property believe the property would generate higher yield if there was renovation done to it. All owners of the property would be able to vote on the proposal and if the majority vote wins, the decision would be confirmed and the dividends or costs transferred to the owners.

2. Disputes between owners and external parties

In case of a dispute between the (owners of) property and an external party like a renter, the law firm voted on at the time of property listing would be appointed to represent the property owners in court.



ESTATE PROTOCOL GOVERNANCE SYSTEM

All property token owners on the Estate Protocol platform would be able to use their BRIX tokens in order to vote for the decisions relating to their properties.

At the time of listing, the first owners of the property would vote to select the local property management company, and the local law firm of their choice from the options we provide. Our aim would be to have multiple options for each and gradually grow them in the future. The property management company would be responsible for making sure the property is occupied, and would be responsible for executing any renovations or changes that the owners of the property might vote on. They would be required to perform regular check-ups for each property with the results communicated to the property owners.

The law firm would only come into the picture in case of a dispute outside the owners of the property (For example, evicting an unruly tenant).



TEAM

The Estate Protocol team consists of a diverse group of people from different parts of the world that bring some incredible skills to the table. We are a purpose driven project that believes in only onboarding the best.

Parv Prabhakar, CEO - Blockchain and cryptocurrency native having grown up with DeFi being the primary financial system. Long serving, analyst, researcher and technical investor with an Economics background. Ex technical guest writer for India's biggest crypto exchange, WazirX. Invited to give a masterclasses at the country's premier technology institute, IIT Bombay and spoke at Financial Express's Digital Currency Conclave. Enjoys geopolitics and philosophy in his free time.

Ryan Smith, Head of Real Estate - 26+ years of experience in managing real estate finance, investments, operations, and complex projects. Having acquired over \$600M of education facilities for a publicly traded REIT and over \$100M of retail properties with a national developer, Ryan is meticulous and diligent. His expertise lies in the analysis of a project's risk and reward, and clearly and concisely communicating with stakeholders and business partners to build lasting and productive relationships.

Cody Coex Foo, Business Development Lead - A long time entrepreneur having founded multiple companies himself, Cody has a decade worth experience in logistics and business development. An expert in marketing and communication, Cody has led teams to execute strategies while maintaining macro vision. He is also a 6x TEDx speaker, an early investor in Celcius, and an avid NFT collector.

George Qing, CTO - George has over ten years of experience in software development and holds a long record of accomplishment in the IT industry. An active developer in the blockchain sector since 2017, he has been an influential contributor in applying blockchain technology to the insurance industry and has helped build several popular open-source frameworks. Before pivoting to blockchain, he led a technical team and built the most successful health-care application in China, beloved by more than 2 million users. He holds a bachelor and a master's degree in information technology from K. U. Leuven.

Vijeet Malik (VJ), Community and Social Media Manager - An international hospitality professional who stumbled upon crypto in 2017, Vijeet has a master's degree in International Hospitality Business from Glion Institute of Higher Education, Montreux, Switzerland. In 2020, he decided to make the switch and got an internship at Polygon (previously Matic). He is now synthesizing his enthusiasm for hospitality and crypto leading the community at Estate Protocol.



Tadej Francelj, Head of Legal - Tadej Francelj is a Lawyer and Business Developer. He is currently doing his Ph.D in Banking, Corporate Finance and Securities Law. With over 6 years of experience in the legal field, including working with Bitstamp, the world's longest running crypto exchange where he worked with the business development team in order to explore new functionalities and jurisdictions that could be implemented to the platform to offer its traders the best possible experience. Moreover, he has worked for several startups and offered legal advice to several blockchain projects. Mr. Francelj is also well versed in the fields of Finance, Banking, Real Estate, Data Privacy, Blockchain and Fintech. He has also been involved with real estate investing in a professional and personal capacity for over 6 years.

D&P law group (<https://dnplawgroup.com/>) is our core internal legal counsel.

We also have extremely accomplished real estate advisors in various jurisdictions helping

ROADMAP

▶ STAGE 0 - INFANCY

[Q4 2020 - Q2 2021]

1. Market research
2. Conceptualisation
3. Team building
4. Landing page development

▶ STAGE 2 - DEVELOPMENT

[Q4 2021 - Q2 2022]

1. Marketplace beta testing
2. Oracle Partnership
3. Membership NFT development
4. Seed fundraise
5. Contract audits
6. Property onboarding

▶ STAGE 1 - FUNDRAISE

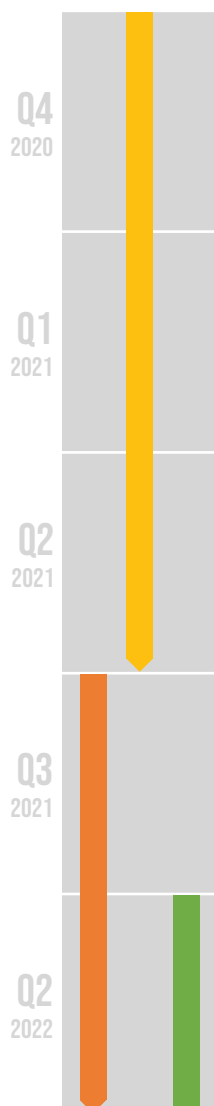
[Q3 2021 - Q4 2021]

1. Documentation release
2. Pre-seed fundraising
3. Social media community building
4. Engaging community events

▶ STAGE 3 - LAUNCH

[Q2 2022 - Q3 2022]

1. Tech team expansion
2. Onboarding Marketing Experts
3. Real estate marketplace launch
4. Expanding global presence





ROADMAP

► STAGE 4 - EXPANSION [Q1 2023 - Q3 2023]

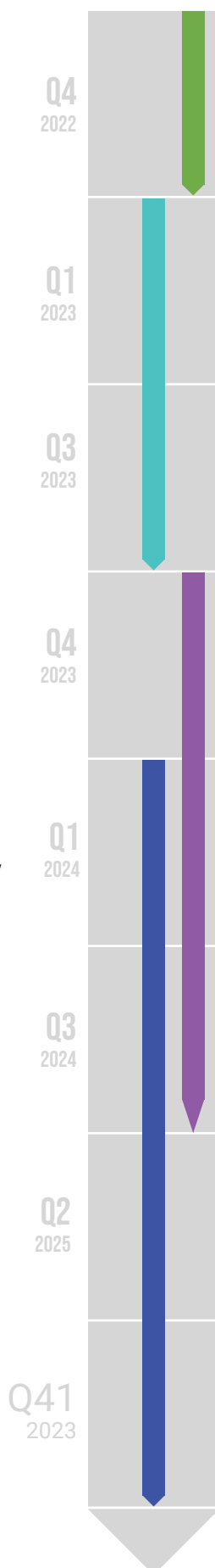
1. Start of marketing to non-crypto consumers
2. Collaborations with institutions
3. Index tokens
4. Collateralised lending + borrowing

► STAGE 6 - DIVERSIFICATION [Q1 2024 - Q4 2025]

1. Use deal flow data to create industry standard AVMs.
2. Mobile app launch
3. Debt tokenization
4. APIs creation for the AVM

► STAGE 5 - DECENTRALISATION [Q4 2023 - Q2 2024]

1. Optimising and Automating listing standards
2. Automate governance
3. Standardise applications for property managers and lawfirms
4. Use APIs and Oracles to create accurate pricing standards
5. Create staking requirements for sellers
6. Series A fundraise





FAQs

1. Will the prices of the properties be as volatile as cryptocurrencies?

- No, prices for the properties are denoted in US dollar denominated and regulated stablecoins. There's no additional currency risk compared to purchasing a property in the traditional fashion.

2. How do I make sure that if I buy your token on the open market, I have a legal claim to the property?

- We have a very experienced team of lawyers helping us with our legal strategy. When a property gets tokenised, a Delaware SPV would be registered which would only hold that property. The terms of the SPV would state that the token owners are owners of the SPV in the same proportion (this is possible due to Delaware's advanced blockchain regulations). So the token owners also have a legal claim to the property under any circumstance solely by purchasing the tokens.

3. What do you do that other real estate tokenisation projects didn't?

- We have a unique tokenization process that factors in the idiosyncratic nature of properties. By separating the processes of digitizing ownership and fractionalising it, we are able to account for the unique nature of every property we list. At the same time, people are only now starting to get comfortable with on-chain real world assets being owned as NFTs. Uniswap V3 also let's us enable secondary market trading with very low slippage and fee. The regulatory environment is now much more clear, and millions of people are comfortable with NFT technology.

4. What are Estate Protocol's future plans?

- We plan on expanding to a diversified selection of property markets. We also plan to expand further vertically by offering products like collateralised lending and borrowing, entering the licensed securities exchange market, offering NFTs that give people exposure to a broad number of assets, allowing compounding yields, entering the debt tokenisation market, creating APIs for the protocol to be used for other security token platforms, and others. One step at a time.

5. Where can I contact the Estate Protocol team?

- You can send us a message on our Twitter account @EstateProtocol, or send us an email at team@estateprotocol.com.



SOURCES

1. <https://www.wider.unu.edu/publication/global-distribution-household-wealth>
2. <https://public.tableau.com/profile/ips.inequality#!/vizhome/TheRichest1OwnMorethanHalfofStocks-2021/Dashboard1>
3. https://ethz.ch/content/dam/ethz/special-interest/mtec/chair-of-entrepreneurial-risks-dam/documents/dissertation/master%20thesis/final_kuert.pdf
4. <https://www.ipf.org.uk/static/uploaded/f79ab58d-a84e-4449-83cf842d8da4d020.pdf>
5. <http://www.diva-portal.org/smash/get/diva2:1190343/FULLTEXT01.pdf>
6. https://www.netspar.nl/assets/uploads/P20190321_DP16.pdf
7. <https://onlinelibrary.wiley.com/doi/epdf/10.1111/1080-8620.00026>
8. <http://people.stern.nyu.edu/adamodar/pdfiles/papers/liquidity.pdf>