

# Capychain

Proving digital assets  
[www.capychain.com](http://www.capychain.com)

2023 Franklin Templeton Blockchain Competition

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# I. Introduction

- Capychain provides proof-of-reserve for crypto assets and empowers people to best capitalize on their crypto portfolios.
- Cryptocurrency ownership has witnessed a remarkable surge in recent years, with particular countries standing out as leaders in embracing this digital asset revolution. According to research conducted by GWI, Turkey ranks at the top with a staggering 27.1% ownership of digital currencies, closely followed by Argentina at 23.5%. These figures significantly surpass the global average crypto ownership rate estimated at 11.9%.

## II. Team

### Team



#### **Ziting Guo**

Full-stack Data Scientist  
Financial Engineer

UC Berkeley, MFE  
Yale-NUS, BS Physics




#### **Andy Young**

Investment Banking Analyst,

UC Berkeley, BA Economics

### III. Customer Profiles

Customer Profiles		
<b>1</b> Evgenia 33 years old  Ukrainian refugee  Converted her family savings to USDC when the war broke out  Needs to prove assets for rental property in new country  	<b>2</b> Mateo 28 years old  Argentine programmer at a global shipping startup  Paid exclusively in crypto  Needs to prove income and assets for mortgage application	<b>3</b> Asli 35 years old  Digital nomad from Turkey  Applying to a computer science masters at Stanford  Needs to prove assets for scholarship application

- Evgenia
  - Demographics: 33 years old, Ukrainian refugee
  - Situation: Converted her family savings to USDC when the war broke out
  - Needs: Must prove assets for rental property in a new country
- Mateo
  - Demographics: 28 years old, Argentine programmer at a global shipping startup
  - Situation: Paid exclusively in crypto
  - Needs: Must prove income and assets for a mortgage application
- Asli
  - Demographics: 35 years old, digital nomad from Turkey
  - Situation: Applying to a computer science master's program at Stanford
  - Needs: Must prove assets for a scholarship application
- Analysis of Customer Profiles
  - Evgenia:

- Evgenia's case highlights the challenge faced by individuals who have converted their savings to crypto assets in unstable or conflict-affected regions.
- The need to provide proof of assets for rental property in a new country is crucial for Evgenia's integration into a new community and establishing a stable living situation.
- Mateo:
  - Mateo's situation represents the growing number of professionals who receive income exclusively in cryptocurrency.
  - Proving income and assets in crypto for mortgage applications can be challenging due to the lack of standardized financial statements and accepted proof-of-reserve services.
- Asli
  - Asli's case demonstrates the needs of digital nomads or international students who hold crypto assets and need to prove their financial stability for educational scholarships.
  - Providing proof of assets can be a significant requirement in scholarship applications, and the lack of widely accepted proof-of-reserve services creates hurdles for applicants like Asli.

## IV. Problem

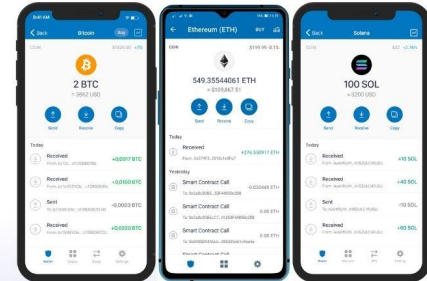
# Problem

### Proving digital assets is hard...

Legitimacy of screenshots

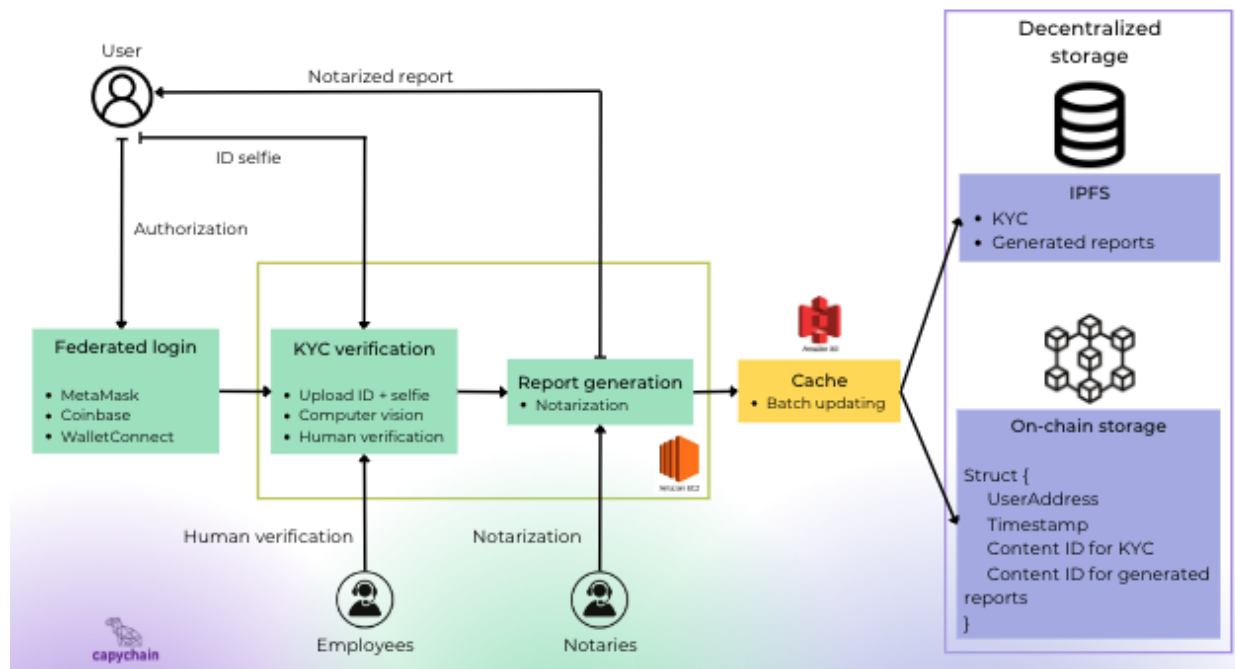
Multiple chains

Multiple wallets



- **Lack of Proof-of-Reserve Services for Crypto Assets**
  - Many fiat institutions hesitate to accept crypto assets as reserves due to the absence of reliable proof-of-reserve services.
  - Existing wallet providers often do not offer financial statements, making it difficult to validate the ownership and value of crypto assets.
  - The few wallet providers that do produce reports often present them in an ad-hoc and ill-formatted manner, rendering them unacceptable to fiat institutions.
  - Unnotarized reports fail to provide sufficient authentication of owners' identities, further hindering the acceptance of crypto assets as reserves.
  - The status-quo of using screenshots is not secure method of proving ownership of digital assets
  - The lack of analytics tools for evaluating the value and performance of a crypto portfolio poses challenges for fiat institutions.

## V. Solution



### User Authentication and KYC Verification Process:

- Users log into Capychain using a federated login (Metamask, Coinbase, or WalletConnect).
- The user is directed to a KYC app server where they are prompted to upload their ID and a photo.
- The uploaded ID and photo undergo a verification process.
  - Computer vision technology analyzes the ID and photo to detect any signs of tampering or forgery.
  - Human verification experts also review the submitted ID and photo to ensure accuracy and authenticity.
- Upon successful verification, the user's KYC data is securely stored.

### Report Generation and Notarization:

- The user's verified data is processed by the report generation server.
- Using the authenticated information, the report generation server generates a comprehensive report, including the user's proof of assets and ownership.
- The report is notarized, adding an additional layer of credibility and authenticity to the document.

- The notarized report is sent to the user for their records and use in various applications.

#### **Decentralized Storage of Reports and KYC Data:**

- The generated reports and KYC data are securely stored using decentralized storage solutions.
- IFPS, a decentralized storage platform, is utilized to store the reports and KYC data, ensuring resilience, security, and accessibility.

#### **On-Chain Storage of Timestamp, Wallet Address, and KYC Data:**

- The timestamp, wallet address, and relevant KYC data are stored on the blockchain.
- This on-chain storage provides an immutable record of the user's verified identity, ownership, and proof of assets.

#### **What Do We Solve?**

- Implementing a comprehensive user authentication and KYC verification process to establish the credibility and authenticity of the user's identity and ownership.
- Generating standardized and notarized reports that present the ownership and value of crypto assets in an acceptable format for fiat institutions.
- Providing secure decentralized storage for storing the generated reports and KYC data, ensuring resilience, security, and accessibility.
- Leveraging blockchain technology for on-chain storage, which creates an immutable record of ownership and proof of assets, enhancing authentication and trust.
- Eliminating the reliance on insecure methods, such as screenshots, for proving ownership of digital assets.
- Enabling the potential integration of analytics tools for evaluating the value and performance of a crypto portfolio, addressing the lack of analytics tools for fiat institutions.
- Overall, the solution establishes a robust and trustworthy framework for proof-of-reserve services, bridging the gap between fiat institutions and crypto assets, and facilitating wider acceptance and application of crypto assets in various domains.



# Solution

We make it easy.



# Solution

We make it easy.



**We make it easy.**



## Portfolio analytics as of 13th June 2023



**Flickr**

Yearly slope ratio	0.21
Maximum downward	\$120
95% yearly value at risk	\$15706.14 / 29.81%
95% yearly conditional value at risk	\$25467 / 46.73%
Hoeffding-Hirschman index (H-H)	0.08
Gini Coef. (G <sup>2</sup> 50%)	0.21

## Tax and fees:

## Capital gains tax (USD)

	2018	2019	2020	2021	2022	2023
Short-term	\$14.39	\$145.42	\$112.31	\$17.68	\$25.76	\$108.91
Long-term	\$0	\$17.39	\$48.93	\$13.54	\$0	\$1.24

## income-gains tax (45%)

2018	2019	2020	2021	2022	2023
\$0	\$0	\$0.00	\$ (71.08)	\$0	\$0.00

Case Report (2002)

2018	2019	2020	2021	2022	2023
\$24.85	\$25.29	\$238.57	\$111.58	\$55.57	\$45.52

*Approved not sure*

2018	2019	2020	2021	2022	2023
10.78%	83.91%	201.82%	4.07%	-86.30%	0.71%

## Solution

**We make it easy.**



8949

#### Sales and Other Dispositions of Capital Assets

Go to [www.fordmkt.com](http://www.fordmkt.com) for instructions and the latest information.  
 For all your Schedule II to III and Schedule III to IV, V, VI, VII, and VIII Schedule II

22

012 10 22  
 012 10 22  
 012 10 22

Before you check line A, B, or C below, see whether you received any family (SGLI) or substitute payments from your broker. A substitute payment will have the same information as form 1099-D. Enter all three whether you have already paid your cost was reported to the IRS by your broker and may want to pay what you owe to check.

**Part I Short-Term.** Transactions involving capital assets you held 1 year or less are generally short-term (see instructions). For long-term transactions, see page 2.

**Notes:** Your day is made up of short-term transactions reported on Form(s) 1099-D showing basis was reported to the IRS and for which no adjustments or codes are required. Enter the total directly on Schedule D, line 1a; you aren't required to report these transactions on Form 999-B (see instructions).

**You must check Box A, B, or C below. Check only one box.** If more than one box applies for your short-term transactions, complete a separate Form 8009, page 1, for each applicable box. If you have more short-term transactions than will fit on this page for one or more of the boxes, complete as many forms with the same box checked as you need.

☐ (Q) Check item transactions reported on Form(s) 1099-D showing basis was reported to the IRS (see **Notes above**)

<input type="checkbox"/> (d) Disclaim transactions not reported to you on Form 1099-D					
1				2	3
				Adjusted, 1099-D box 100	100

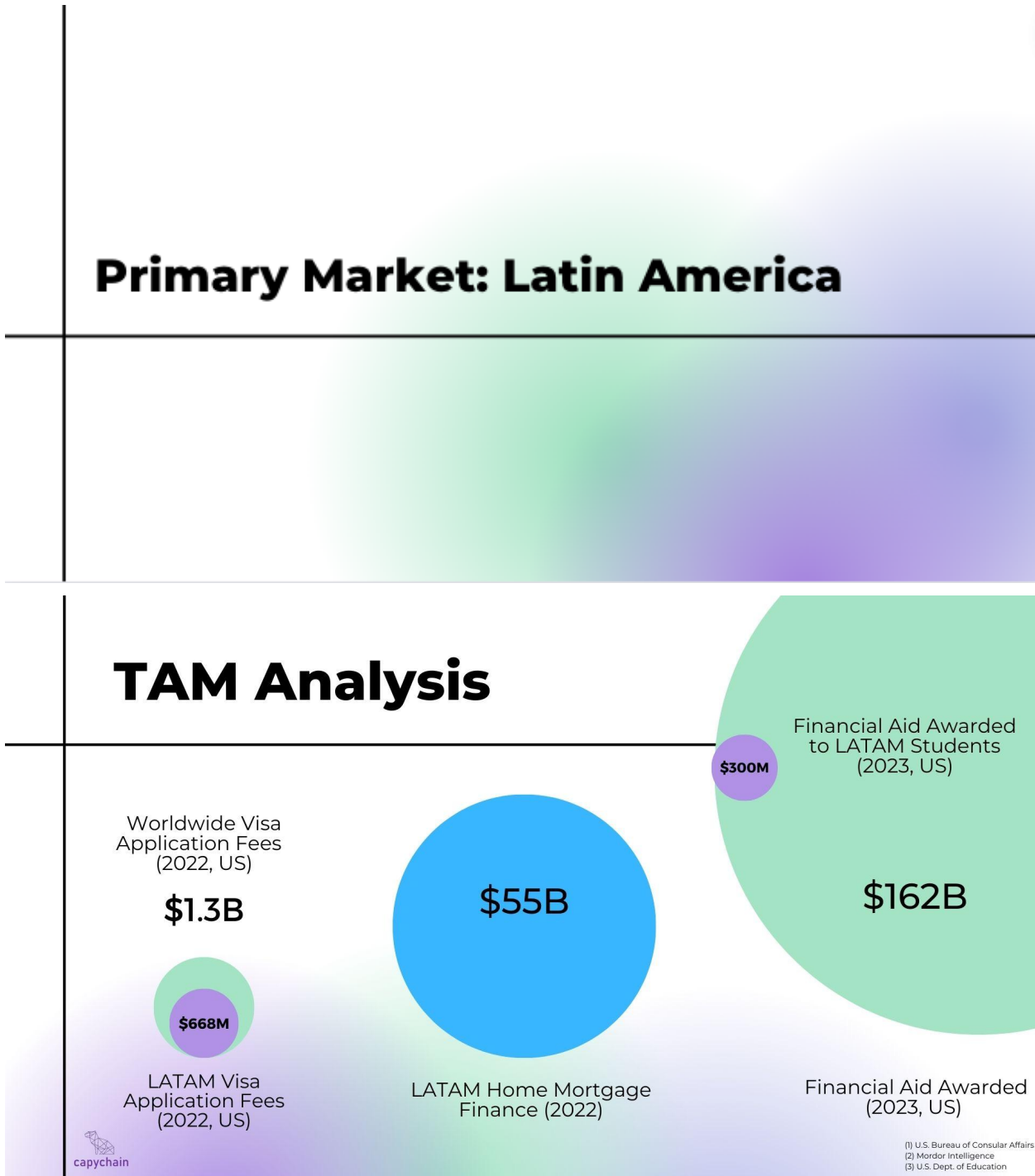
[illegible]

**F** **Taxes.** Identify the provision columns (b), (c), (g), and (h) with the appropriate negative amounts. Enter each line item and include on your Schedule C line 12. If Box 4 (gross) is checked, line 2 of Box 4 should be checked; if line 2 of Box 4 is checked, line 2 of Box 4 should be checked; if line 2 of Box 4 is checked, line 2 of Box 4 should be checked.

Note: If you checked/Uncheck A above BUT the Cash reported to the IRS was incorrect, enter a value in the Cash as reported to the IRS, and enter adjustment in calculating to correct the Cash. See [Circ 600499](#) for the step-by-step instructions for how to figure the amount of the adjustment.

For Papermate Products A3 Refills, see your local retailer instructions. Cat No. 31002 

VI. Market, Competition, and Risks



- **LATAM Market:**

- Latin America, and specifically Argentina, presents a unique market opportunity for Capychain due to the significant adoption and reliance on cryptocurrencies in the region. The following factors highlight the importance of this market:
- **Economic Instability and Inflation:** Cryptocurrencies have gained popularity among Argentines as a safe haven investment amidst economic instability and surging inflation. The ongoing economic challenges in Argentina, such as excessive government spending and high inflation, have eroded trust in the traditional currency, the peso. This has led individuals to turn to cryptocurrencies as an alternative store of value.
- **High Cryptocurrency Adoption:** Argentina stands out with a notable percentage of the population regularly buying or selling cryptocurrencies, roughly double the percentage in the United States. This demonstrates the widespread acceptance and use of cryptocurrencies as a financial tool in everyday transactions. Capychain's proof-of-reserve services can cater to the needs of this crypto-oriented market, providing reliable verification of crypto assets for various purposes, including visa and mortgage applications.
- **Perception of Future Value:** Despite recent declines in cryptocurrency values, many Argentines believe that cryptocurrencies will rebound compared to the devaluing peso. This perception further strengthens the demand for secure proof-of-reserve services that can validate and authenticate the value of crypto assets, offering individuals confidence and stability in their financial decisions.
- **Risks and Trust Issues:** While cryptocurrencies bring opportunities, they also carry risks. The collapse of stablecoins, such as TerraUSD, highlights the importance of trustworthy and reliable services for verifying crypto assets. Capychain's solution can help mitigate these risks by providing transparent and secure proof-of-reserve services, enhancing trust among individuals who rely on cryptocurrencies.
- **Emerging Market Dominance:** Low-income and emerging countries, including those in Latin America, have emerged as significant users of cryptocurrencies,

surpassing the United States and Europe. This underscores the growing importance of catering to the unique needs of these markets and offering reliable solutions for verifying crypto assets.











- **Advantages Over Traditional Currencies:** Cryptocurrencies provide distinct advantages over traditional currencies, especially in regions with currency controls and concerns about carrying large amounts of cash. By enabling individuals to bypass currency controls and securely demonstrate ownership of crypto assets, Capychain's services align with the needs of individuals in countries like Argentina.
- **Market Analysis:**
  - **US Financial Aid Market:**
    - Data Source: U.S. Department of Education, Bankrate, Statistica
    - Methodology: This calculation is derived from the assumption that 11,521,865 students applied for financial aid, with an average aid amount of \$14,080 per student based on data from the 2019-2020 academic year. It's important to note that these figures are approximate and subject to change based on various factors and updated data.
    - Result:
      - Based on a 1% growth rate in college enrollment and the provided data on financial aid applicants, the estimated market size for student financial aid in 2023 is approximately \$162 billion.
  - **Visa Application Market:**
    - Data Source: U.S. State Department Bureau of Consular Affairs (2022)
    - Methodology: Calculated the total number of B1 and B2 visas issued worldwide and in Latin America during the specified period.
    - Average Visa Application Fee: Used to estimate the market size by multiplying it with the total number of visas issued.
    - Result:
      - Latin America US Visa Market Size estimated at \$667.6 million, offering a substantial market potential for Capychain to establish itself as a trusted provider of proof-of-reserve services.

- Argentina's US Visa Market Size is estimated at \$40.5 billion (~220,000 B1/B2 applicants in 2022)
- Global US Visa Market Size estimated at \$1.3 billion.

■ **Latin America Home Mortgage Finance Market:**

- Data Source: Market research reports and industry analysis from Mordor Intelligence
- Result:
  - Revenue generated in the current year is \$55 billion with a projected CAGR of 3% for the forecast period.

## VII. Competitors:

Competitor Analysis		
Wallet Providers	Crypto Tax Filing Solutions	Status Quo
     	   	Legitimacy of screenshots Multiple chains Multiple wallets

- **Crypto Tax Filing Solutions:**

- **Accounting:**

- Accounting provides comprehensive portfolio management and tax reporting solutions for cryptocurrencies.
    - The platform allows users to track and analyze their crypto holdings, transactions, and performance across multiple exchanges and wallets.
    - Accounting offers features such as automatic transaction imports, portfolio performance tracking, and tax optimization tools.
    - Additionally, it provides tax reporting services, helping users generate accurate tax reports and summaries for cryptocurrency-related activities.

- **CoinLedger:**

- CoinLedger is a platform designed to simplify cryptocurrency portfolio management and tax reporting.
    - Users can import transactions from various exchanges and wallets, categorize them, and generate comprehensive tax reports.

- CoinLedger offers features such as real-time portfolio tracking, gain/loss calculations, and support for multiple fiat currencies.
  - The platform aims to streamline the process of managing cryptocurrency portfolios and ensuring compliance with tax regulations.
- **Koinly:**
  - Koinly is a popular cryptocurrency tax software that enables users to import and reconcile their transactions from various exchanges and wallets.
  - The platform offers automated tax calculations, including capital gains, losses, and cost basis tracking.
- Koinly supports multiple countries' tax regulations and provides tax reports that can be easily integrated with popular tax filing software.
  - The platform also offers features like portfolio tracking, transaction history analysis, and support for DeFi transactions.
- **ZenLedger:**
  - ZenLedger is a cryptocurrency tax software that helps users track their crypto investments and generate accurate tax reports.
  - Users can import transactions from exchanges, wallets, and DeFi platforms to calculate gains, losses, and taxable events.
  - ZenLedger supports various tax accounting methods and provides users with tax forms compatible with tax authorities in different countries.
  - The platform aims to simplify the tax reporting process and ensure compliance for cryptocurrency investors and traders.
- **Potential Risks:**
  - **Regulatory Uncertainty:** Evolving regulations in the cryptocurrency space may pose challenges for Capychain's compliance with existing and future requirements, potentially impacting the acceptance and adoption of its services.
  - **Security and Privacy Concerns:** Robust security measures are essential to protect sensitive financial and personal data on Capychain. Any security




vulnerabilities or data privacy issues could damage Capychain's reputation and undermine user trust.

- **Market Volatility:** The volatile nature of the cryptocurrency market could affect Capychain's business model, which relies on the adoption and usage of crypto assets. Sudden and significant market fluctuations may impact demand for Capychain's services and revenue streams.

## VIII. Revenue Model

Revenue Model	
Free	Premium
account summary & transaction history	+ portfolio analytics
2 financial statements	+ unlimited financial statements
no notarization	+ notarization
5 non-custodial wallets only	+ custodial wallets



- Capychain adopts a revenue model that offers both free and premium subscription options to cater to the diverse needs of its users. The revenue model is structured as follows:
- **Free Model:**
  - **Account Summaries and Transaction History:** Free users can access their account summaries and transaction history, allowing them to track their crypto assets and monitor their financial activities.
  - **Evaluation of Two Financial Statements:** Free users have the ability to evaluate up to two financial statements, providing them with insights into the ownership and value of their crypto assets.
  - **Evaluation of Five Non-Custodial Wallets:** Free users can evaluate up to five non-custodial wallets, enabling them to verify and authenticate the ownership of their crypto assets held in these wallets.

- **No Notarization:** Free users do not have access to notarization services, which are essential for providing official validation and authentication of their crypto asset ownership.
- **Premium Model:**
  - **All Features of the Free Model:** Premium subscribers enjoy all the features available in the free model, including access to account summaries, transaction history, and evaluation of financial statements and non-custodial wallets.
  - **Portfolio Analytics:** Premium users gain access to portfolio analytics, enabling them to analyze the performance, value, and composition of their crypto portfolios. This feature provides valuable insights for making informed investment decisions.
  - **Unlimited Financial Statements:** Premium subscribers can evaluate an unlimited number of financial statements, allowing for a comprehensive assessment of their crypto asset ownership.
  - **Notarization:** Premium users have the privilege of accessing notarization services, which provide official authentication and validation of their crypto asset ownership. This feature adds an extra layer of credibility and trust when presenting proof-of-reserve to third parties.
  - **Unlimited Custodial Wallets:** Premium subscribers can evaluate an unlimited number of custodial wallets, facilitating a thorough examination of their crypto asset holdings across various platforms and exchanges.

## IX. Next Steps

### Next Steps

- Join an incubator
- Conduct market research in Argentina
- Service localization & compliance
- Proof-of-reserve for DeFi products
- Partner with crypto KYC services



- **Join an Incubator:** Capychain should explore opportunities to join an incubator program. Incubators provide valuable resources, mentorship, and networking opportunities to help startups grow and scale their business. By joining an incubator, Capychain can gain access to expertise, funding, and guidance to further develop its product and expand its market reach.
- **Conduct Market Research in Argentina:** Given the significant cryptocurrency adoption and economic challenges in Argentina, it is crucial for Capychain to conduct in-depth market research in the country. This research will provide insights into the local market dynamics, customer preferences, regulatory landscape, and competition. It will enable Capychain to tailor its offerings and marketing strategies specifically for the Argentine market.
- **Service Localization & Compliance:** To effectively cater to the Argentine market and expand to other regions, Capychain should focus on service localization and compliance. This involves adapting its platform, user interface, and customer support to

meet the specific needs and preferences of local users. Additionally, ensuring compliance with relevant regulations and guidelines is essential to gain trust and credibility from both users and regulatory authorities.

- **Proof-of-Reserve for DeFi Products:** **DeFi (Decentralized Finance)** has gained significant traction in the cryptocurrency industry. Capychain should explore opportunities to provide proof-of-reserve services specifically tailored for DeFi products. This will enable DeFi platforms to offer transparency and proof of their reserves, increasing trust and confidence among users and potential investors.
- **Partner with Crypto KYC Services:** Collaborating with established crypto KYC (Know Your Customer) service providers can enhance Capychain's offering and expand its reach. By partnering with reputable KYC service providers, Capychain can streamline the identity verification process, ensure compliance with regulatory requirements, and offer a more comprehensive solution to its users.

## X. Conclusion

- **Key Findings**

- **Problem:** The lack of reliable proof-of-reserve services for crypto assets hinders the acceptance of cryptocurrencies as reserves by fiat institutions. Existing solutions often lack financial statements, produce ad-hoc reports, fail to authenticate owners' identities, and offer limited analytics for evaluating crypto portfolios.
- **Solution:** Capychain offers a comprehensive proof-of-reserve platform that addresses the challenges faced by crypto asset owners and fiat institutions. It provides secure and notarized financial statements, robust analytics tools, and authentication of owners' identities through KYC verification.
- **Markets:** Latin America represents a significant market for visa and mortgage applications, where proof of assets is crucial due to high inflation and crypto penetration.
- **Revenue Model:** Capychain's revenue model consists of a free and premium subscription model. The free tier offers basic features like account summaries and limited financial statement evaluations. The premium subscription provides additional benefits, including portfolio analytics, unlimited financial statement evaluations, notarization services, and support for unlimited custodial wallets. By offering a tiered subscription model, Capychain generates revenue from premium subscriptions while catering to a wider range of users.

# Thank You



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