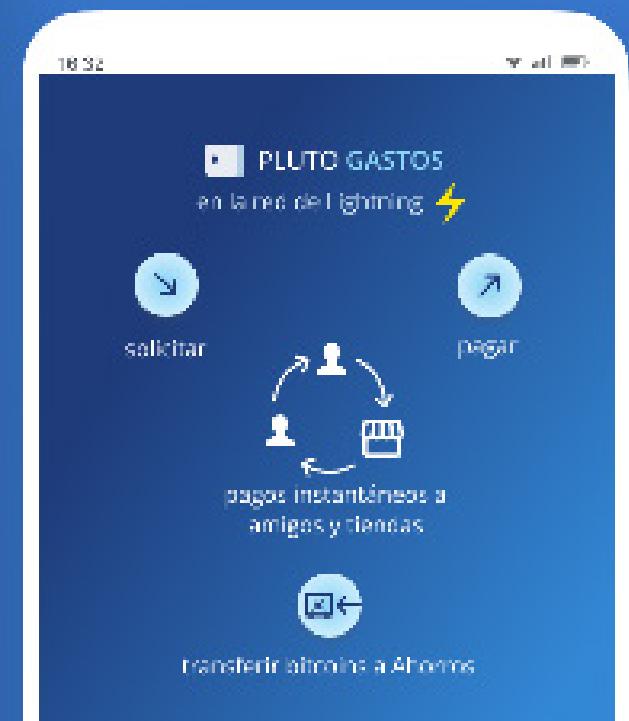
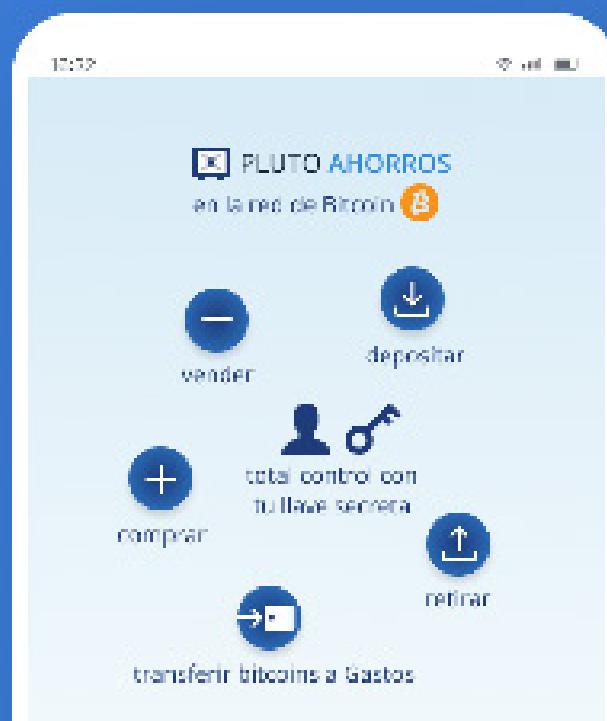


# PLUTOPAY MOBILE WEB APP

## Bitcoin para los argentinos



Case Study by Le Trang Nguyen  
Last updated: 13.10.2022

# CONTEXT

**Project duration:** November 2021 to May 2022.

**Final delivery:** a mock-up prototype of a web app.

E-wallet design aligns with my concerns about the current turbulence in the global economy that affects people's daily life. Economics is ultimately the study of human choice. Yet mainstream economists still cited classics who were long gone from any living person's lifetime, and whose theories of value predated the Internet.

Since 2009 a parallel economy has been being built on top of the internet, known as "blockchain", "cryptocurrencies", Web 3.0 etc. The closest definition of this new phenomenon is "the internet of value".

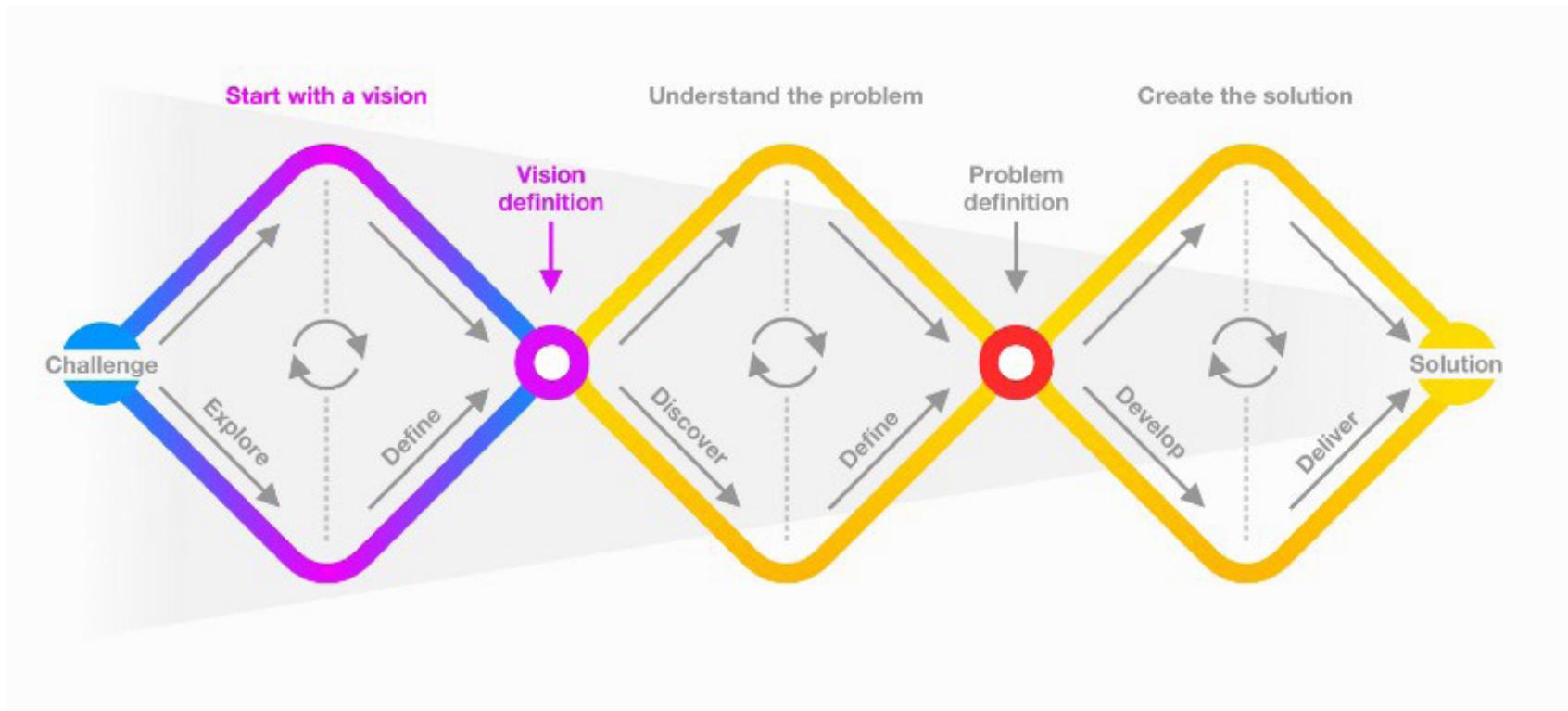
Like building the Internet, engineers prioritized in building the infrastructure first. Later came the designers to make the interface more friendly to users. Like the Internet in its infancy, the "internet of value" is still difficult to use or to understand. I see my role here as an UX designer who participates in building this bridge, making it ready for the next internet-native generation.

## OBJECTIVES

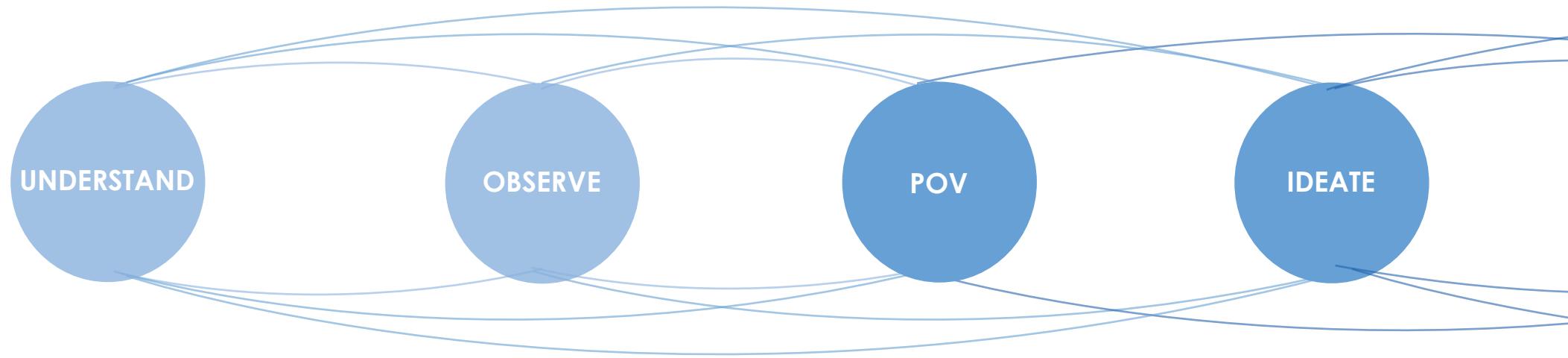
“Allow anyone to shop, transfer  
money, and more without a  
debit or credit card or the need  
to visit a physical bank or store.”

# FRAMEWORK

Since the given topic is rather generic and there is no specific target audience, the research phase takes longer time to define the users and their problems. The **Double Diamond** model is the authodox framework for design thinking, but I implemented here the **Tripple Diamond** model in which it started with a vision. I stay firm in my UX approach: Research should **take up to 50%** of the time allocation. It is important to **solve the right problem**.



# DESIGN THINKING PROCESS



My initial step is a short research about how digital payment works. This is for fundamental understanding about the product.

To have an overview of a payment app's user-interface, I conduct a **competitor analysis**, from a traditional banking app to more progressive financial services.

The target audience is then defined and the target market is narrowed down.

User research is started by **recruiting interviewees** from my target audience. Since a switch from physical cash/card to digital payment requires some mental or generational change, my target users are likely the young population.

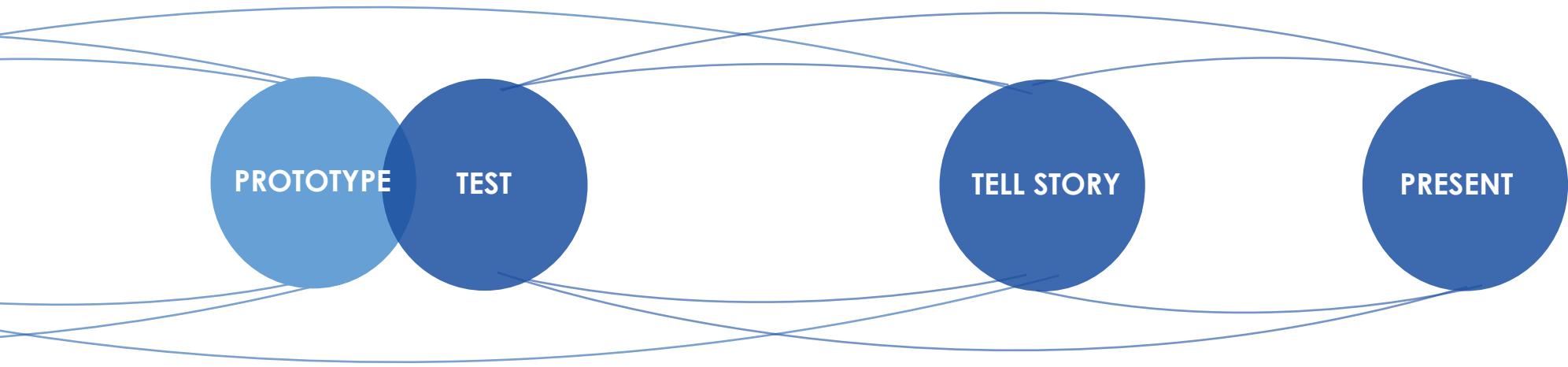
Interviews are recorded and documented to be analyzed for further insights. A **problem statement** is then clearly defined and **user stories** are constructed.

**Personas** are created based on the interviewees' commonalities. The main persona is most likely in their 20s and grew up with digital tools.

As I also aim to be **inclusive** in my design, my second persona is someone in the older demography who is reluctant to use any new form of digital payment. I also explore the social aspect of payment apps for possible growth in users through this connectivity.

For each feature of the app I create an **user flow**. Methods like **mental model** and **user journey mapping** are applied in this phase. **Task flows** make each step more specific and easier to locate where could be the possible pain point to users.

From here I can construct a **sitemap** to manage the web app's structure. A **card sorting** exercise is conducted to determine if the sitemap arrangement is logical enough.



**Figma** is the main tool to put my wireframes in digital format and to create a clickable prototype for testing.

This phase intertwines heavily with the **Usability Testing**. During the process of creating wireframes and prototype, it is always good to have a second opinion by asking friends, colleagues etc. When the prototype with basic functionalities is ready, I conduct an usability test with 6 people using a test script and a test plan. The observation from the test is recorded and documented for analyzing. The result of the analysis is then evaluated and based on this evaluation, the prototype is re-adjusted. **Preference Testing** is used when the design choice is still indecisive.

After the final mockup version of the app is finished, an unmoderated User Testing in survey form is conducted to collect final feedbacks.

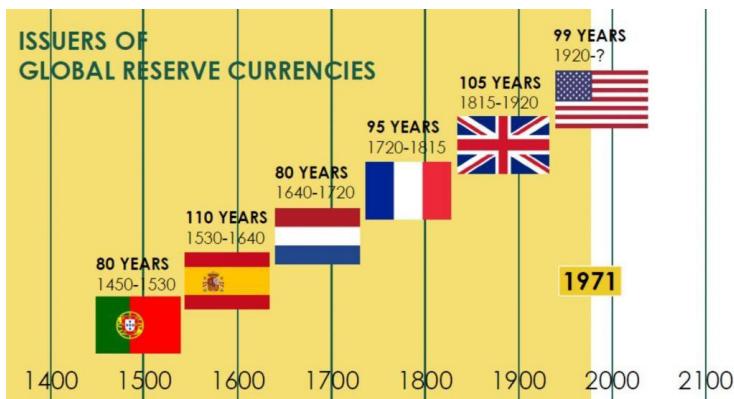
In this step I go back to the POV to adjust my personas' necessary traits to make the story coherent and engaging.

The second persona, for example, plays the role of parents/grandparents of the first persona. It is not unusual the children teach their parents nowadays to use the computer or speak english. They could teach them to use digital wallet, too.

For the final delivery a video presentation is required to demonstrate a walk-through the main functionality of the app. **Vidyard** is a suitable tool for recording the screen that also includes the presenter.

A demo video or GIF image showcasing how the app works can be used to put on social media or embedded in webpages like my online portfolio.

# UNDERSTANDING MONEY & CURRENCY



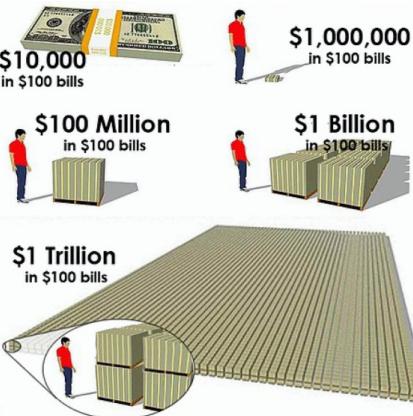
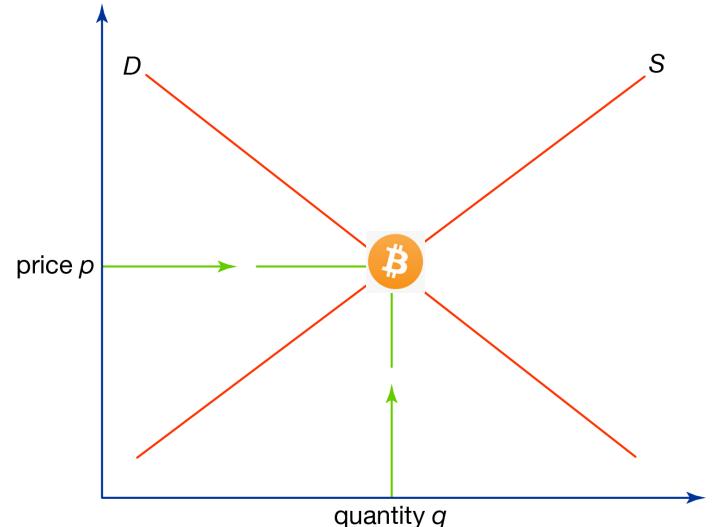
The current monetary system is called fiat money (money issued and enforced by a government). Since 1971, the currencies issued by governments have been detached from the gold standard that allows issuers to create new money without production cost. A currency has an average lifespan of about 35 years<sup>1</sup>, and 100% likely to collapse, if we look long enough the history of paper money. In 2020, 23.5% of all US dollar were created. This is the result of the easy money policy. Fiat money is simply debts borrowed from the future. Current global debts are about 303 trillion USD (IIF, BIS, IMF, National sources, Haver).

## FIAT MONEY

(1) <https://ginifoundation.org/kb/flat-currency-graveyard-a-history-of-monetary-folly/>

(2) <https://bitnodes.io/>

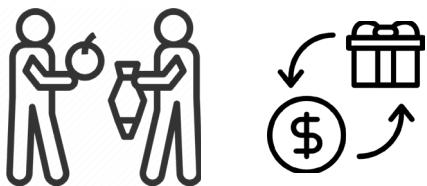
## Supply and demand



Alternative money using Blockchain technology is not issued by any government but monetary networks. These networks claim to be decentralized, but the spectrum could be ranged from just two computers to 14,500 Bitcoin nodes<sup>2</sup>. The value of this type of money is determined by the supply and demand. In Bitcoin, the supply is fixed at 21 million coins. The production cost is the energy used to create new bitcoins and secure the network, known as proof-of-work, or mining.

## ALTERNATIVE MONEY

# UNDERSTANDING PAYMENT SYSTEM



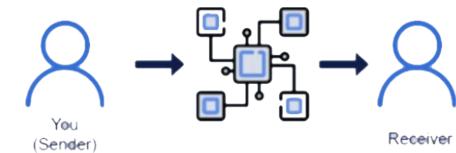
Barter or **peer-to-peer** payment is the most basic and primitive method of payment. The most common barter payment nowadays is exchanging physical cash for goods or services.

BARTER



The transaction is conducted by a **trustworthy third party** like a bank or Fintech companies that offer banking services. This has been the dominant system for centuries with regulated infrastructure.

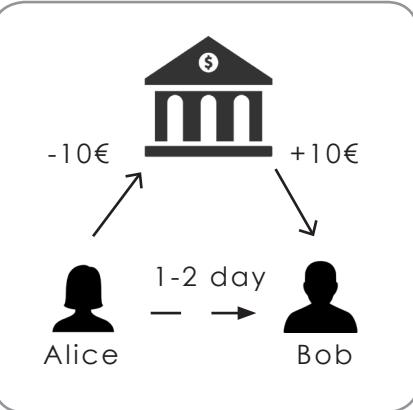
TRUST SYSTEM



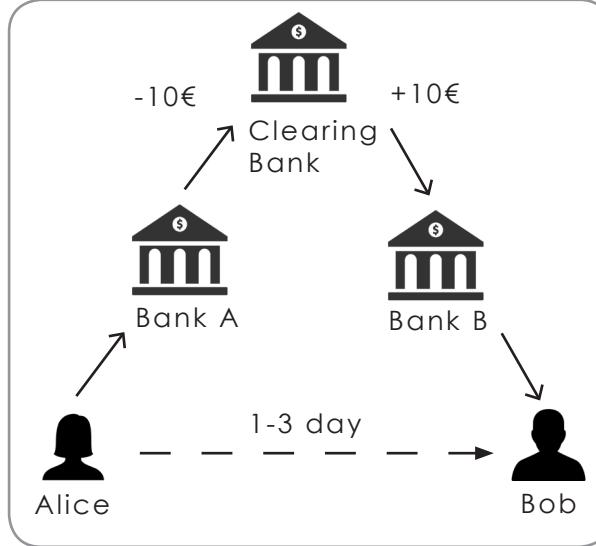
Latest innovation in finance is decentralized monetary networks using blockchain technology. This operates purely digitally on the internet and enables transactions **without any specific third party** having to approve or being able to deny it.

TRUSTLESS SYSTEM

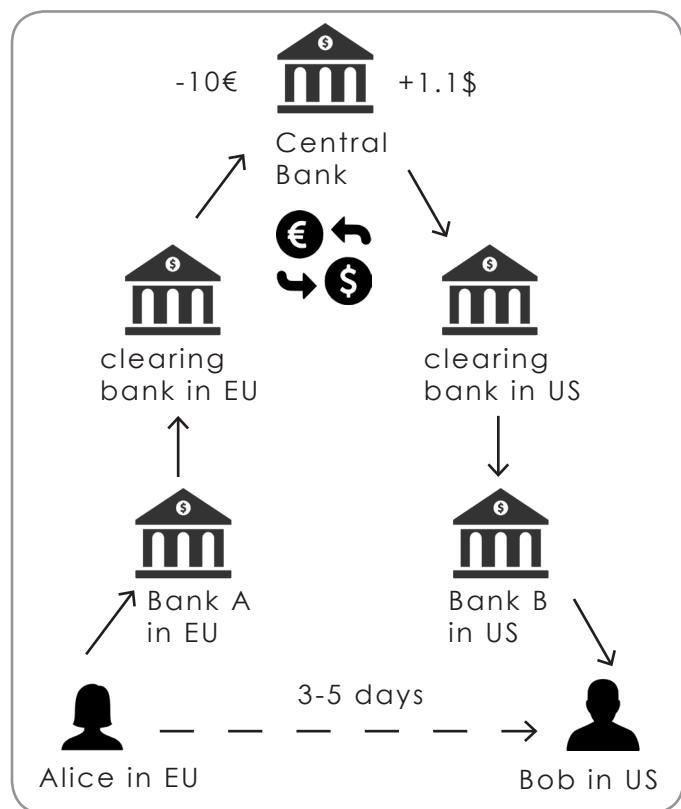
### SAME BANK



### DIFFERENT BANKS

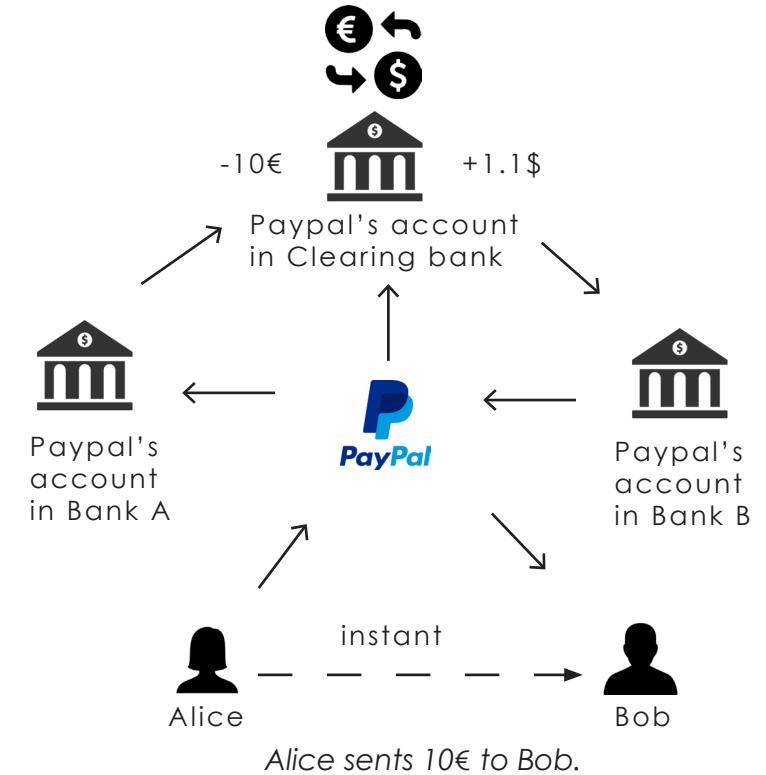


### INTERNATIONAL BANKS



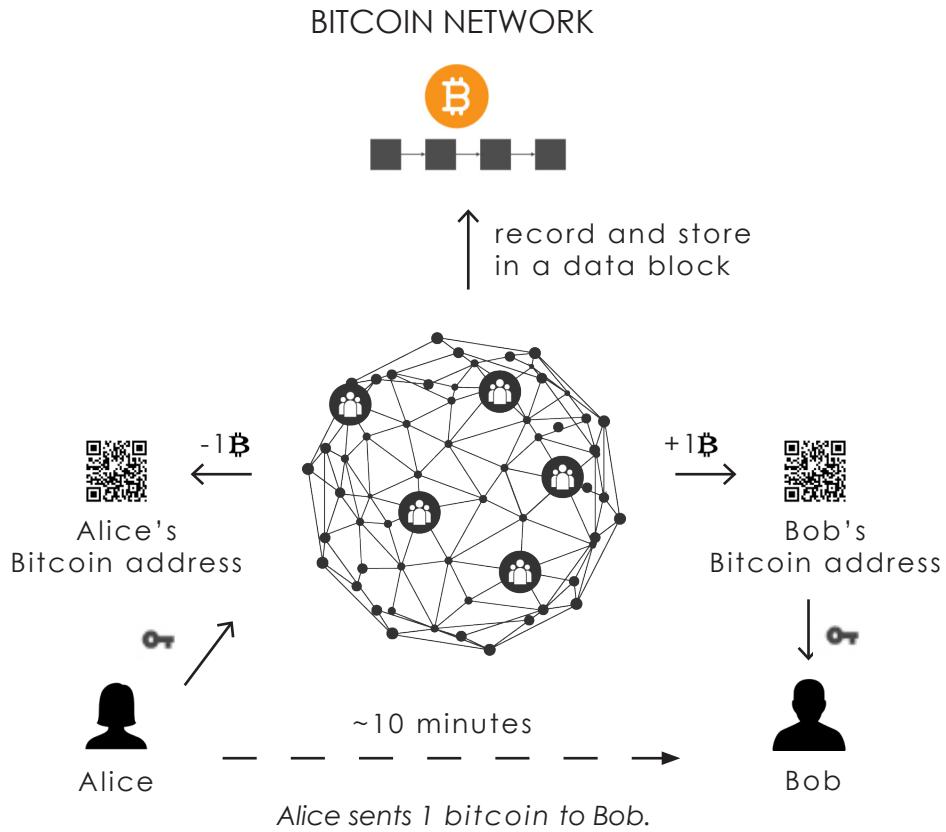
Banks need to build infrastructure where they are subjected to regulations in money transmitting. To apply for a bank account there are certain requirements like identity, permanent address, income limit for further credit services.

### TRADITIONAL BANKING



Private monetary networks like MasterCard, Visa, and PayPal operate transactions within the network by linking their accounts to correspondent banks. These companies offer faster and more convenient than traditional banking, but they are built on top of banking system. Users need a bank account to access their services.

### PRIVATE MONETARY NETWORK



Open monetary networks allow anyone with an internet connection to participate. The software is open-source, and the ledger that recorded every single transactions is public. Bitcoin is by far the most secure open monetary network. The native currency in the Bitcoin network is also called *bitcoin*. The transaction processed in the Bitcoin network is rather slow and costly compared with other competitive blockchains. What other blockchains often don't mention is the trade-off: security for speed and cost.

Layer 2 development since 2017 in the Bitcoin network is called Bitcoin Lightning. This is a separate protocol, but using the same currency, only commonly denominated as *satoshi* (or *sat*, 1 bitcoin = 100,000,000 sat). Lightning makes payment using bitcoin is much faster and cheaper, but still has the security of the base layer. The network still grows exponentially in terms of validators but rather small in market cap.

# UNDERSTANDING THE PROBLEM

**Exclusive:** The underlying problem of the legacy financial system is still the access to a bank account. This excludes the unbanked population, the refugees, immigrants without a permanent address, the nomads or digital nomads etc. Globally, 31.5% out of 5,502,400,000 people over the age of 15 - 1.7 billion people were unbanked<sup>3</sup> - without an account at a financial institution or through a mobile money provider. The top world's most unbanked countries are, however, have over 60% internet penetration.<sup>4</sup>

**Privacy & Trust:** PayPal shares their users' data to over 600 other third-parties<sup>5</sup>. Identity data, shopping habits, credit card information are stored in a database. Users never truly own their data. Banks and trust parties can unilaterally freeze users' account and reverse transactions. Users never truly own their fund if they don't have full control to it.

**International payment:** Banking is the technology of the 19<sup>th</sup> century still operating in the context of the 21<sup>st</sup> century. The increasing demand for remittance each year<sup>6</sup> still has to go through institutions like Western Union with high fee and long processing time. The travel rule in banking for capital control can't be applied in blockchains in which users can access their fund from anywhere with internet connection.

All the problems of the legacy financial system could be solved with the new open monetary networks, only that they are also facing other problems:

**Resistance from current system:** Banks and governments have been gatekeepers of the monetary systems for centuries. A disruptive technology for moving value across the internet permissionlessly creates an existential threat.

**Steep learning curve:** Open monetary networks using cryptocurrencies are completely different from conventional ones. They also introduce the concept of "self-custody" or "being your own bank". To people who never got exposure to bank risks, these concepts are quite alien. To enter the space, users need to be relatively technological competent because the transactions in the network can't be reserved.

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(3) Global Findex Database 2017

(4) <https://www.gfmag.com/global-data/economic-data/worlds-most-unbanked-countries>

(5) <https://rebecca-ricks.com/paypal-data/>

(6) <https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT>

# COMPETITOR ANALYSIS

My competitor analysis covers four main aspects: **Key objective**, **Overall Strategy**, **Market Profile** and **Market Advantage**. I chose prominent players in both legacy and alternative monetary systems, also different business models to see my potential share in each model. For each choice I do a thorough analysis using **SWOT** method, and focus on each app's UX elements: **Usability**, **Navigation Structure**, **Layout**, **Compatibility**, **Differentiation** and **CTA**.



ING is a prestigious bank. The app design also reflects its rigid but trust-worthy features. However, in the new context of global economy and the latest development in FinTech, banks cannot compete with softwares that never sleep.

Design a new bank app is like designing a new fancy fax machine. It will be eventually made obsolete.



PayPal has the largest network by users since 2000. Its app is still user-friendly but lacks the innovation edge. The company's strategy is an aggressive expansion by acquiring smaller online payment services like Xoom, iZettle and Venmo.

Designing UX for big corporation is no use because it is easier for them to buy up smaller companies.



Revolut offers all-in-one solution in a Super app. The design reflects exactly that and makes it rather overwhelming and overcrowded with choices. Option to trade cryptocurrencies is available as assets, not as payment.  
Design a payment app with a startup spirit and flexible exchange between currencies appears to be essential to be able to compete.



BlueWallet is a Bitcoin wallet with support for the Lightning Network. The project is open-source and developed by its community. The app design is simple, almost too basic, but easy to use for a complex product.  
Design payment type is challenging. But this bottom-up approach has been proved to be resilient and constantly improved by the effort of the contributors.



Valora wallet is a part of the project initiated by the Celo Foundation with focus on financial inclusion and social good. The app design is highly asthetical, with a young, fresh and modern touch. The challenge here is its own currency celo adding more complexity.  
Design for an NGO project is promising. NGOs also have further reach to potential users and are better in hosting communities.

**INSTITUTION**

**COOPERATION**

**START-UP**

**GRASSROOTS**

**NGO**

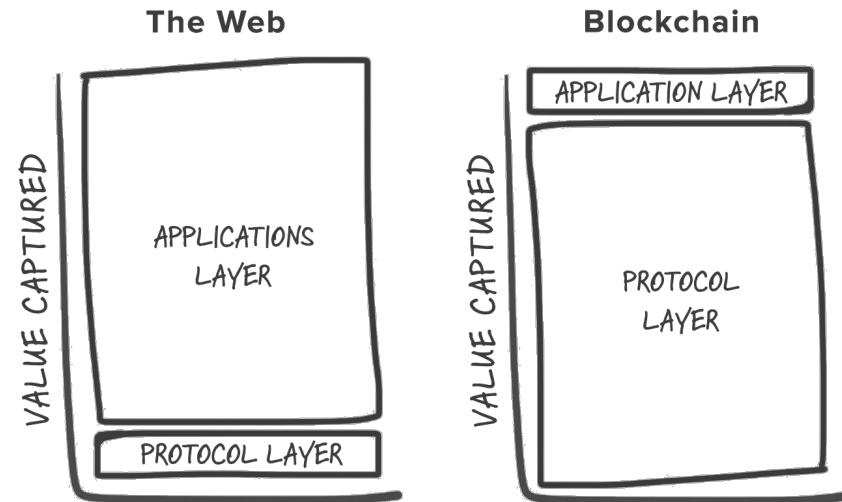
# THINKING BUSINESS

Business models built on the Web have maxed out their potentials to bring value to users. Advertising has become pervasive, social media polarizing society, and e-commerce misusing their customers' data. There is a clear trend that largest companies are redirecting themselves to blockchain technology. A trillion dollar market has been built from scratch within a decade. The Bitcoin and Ethereum protocols are known to attract the most talented developers. These are their Everest.

I decide to go in the same direction with the developers, because they are the builders of the Internet.

Of all the blockchain protocols, I choose Bitcoin because it has been tested through time to be the most secure and most adopted in terms of network effect. With the latest development of Layer 2 solution, it now offers the potential of a complete product, from savings to payment.

My vision for PlutoPay the e-wallet is it could become the vessel that brings the value of Bitcoin to users, similar like what PayPal did with the SSL/TLS protocol. The landscape of web applications has transformed massively, but the Internet still operates on the TCP/IP protocol. Similarly an immutable base layer for money is a solid foundation for all financial applications built on it.



Difference in value captured proportion in the Web and blockchains (<https://www.usv.com/writing/2016/08/fat-protocols/>)

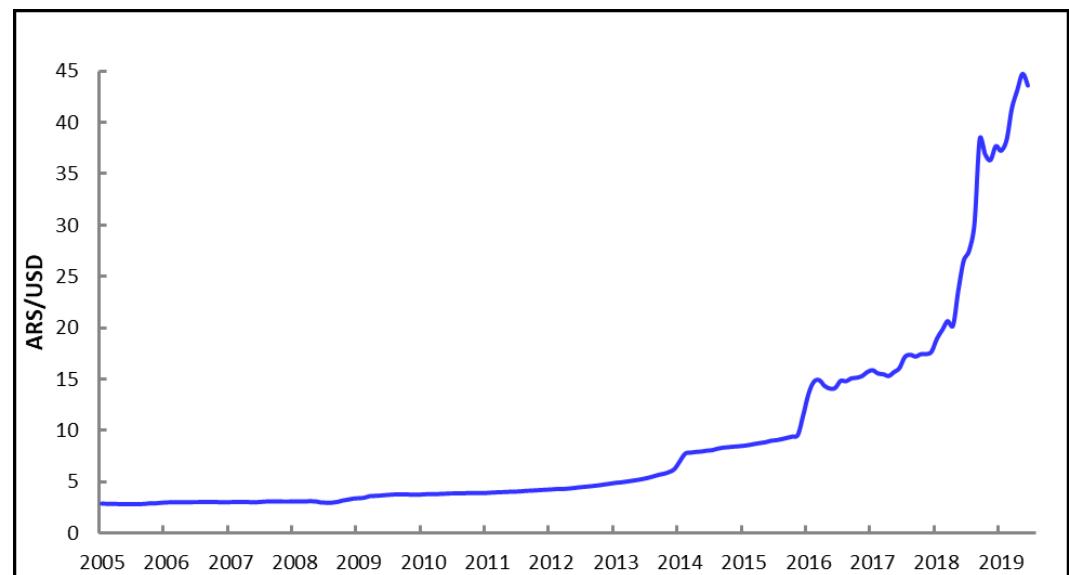
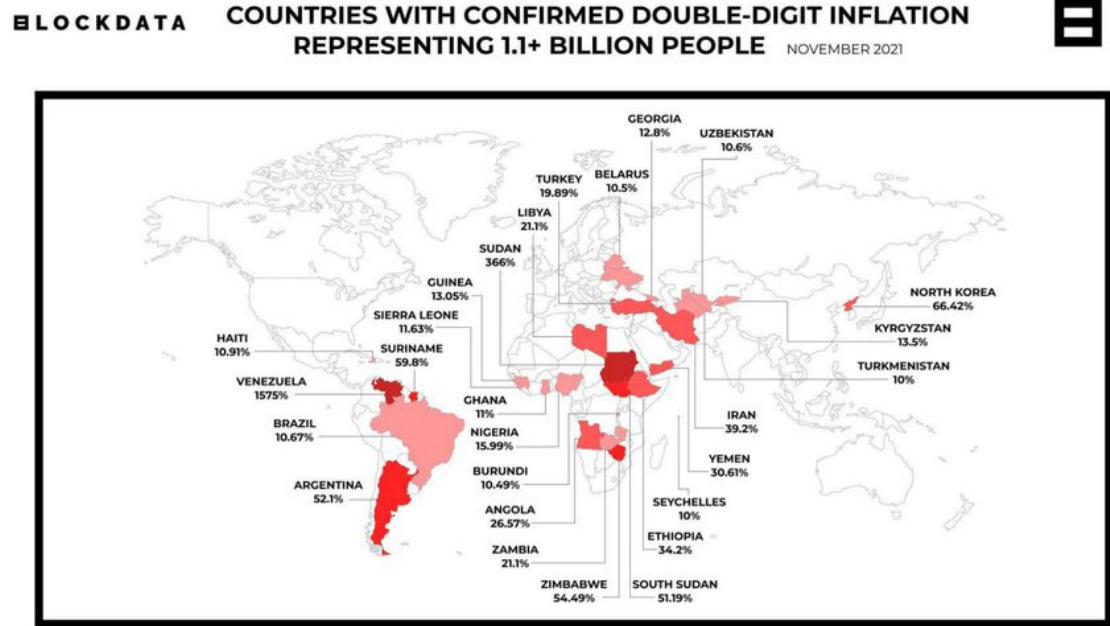
- 2009	???
SSL / TLS - 1996	1998
HTTP - 1990	1995
TCP/IP - 1974	1984
Ethernet - 1974	1979

The Internet's protocol layers and their dominant distributors through time (M. Benetti: TRANSFORMACIÓN DIGITAL BLOCKCHAIN Y LA ECONOMÍA DIGITAL, 2021)

# TARGET AUDIENCE

The target audience are citizens of countries whose currencies fail their people to preserve their purchasing power. The first launch of the project will be in Argentina for these reasons:

- In less than 50 years, Argentina goes from top 10 strongest economy of the world to the second-worst economy in the Latin America region, after Venezuela. The argentinean peso has various changes of dropping zeros. Since the financial crisis in 2001, the peso keeps losing about 45% its value each year.
- Argentina has young demographics. Despite economic crisis, the country still has good education and healthcare facilities that attract immigrants from neighbour countries in Latin America. Young people are generally tech-savvy, well-educated, and like their parents, self-preserved in their economic daily life.
- If the project succeeds in Argentina, it could gain competitive advantage in spreading across Latin America countries that share the same language and similar culture. El Salvador as the pioneer in adopting bitcoin as legal tender has caught attention in the region.
- The Constitution is similar to European democracy. New laws cannot be easily enforced against people's wish. This prevents the risk of an outright ban like in China.



FRED Database, Federal Reserve Bank of St. Louis

# USER RESEARCH

I manage to interview four Argentine, one in person (44) and other three online (22-24, 64). My impression is that they're all very well-aware of the difficulty in saving budgets with a debased currency. They're already or willing to try out new forms of money. My concern is, however, that my selection of interviewees is rather biased, since three of them live in the same town, and all of them are involved in the class "Blockchain and the Digital Economy" of the Digital Transformation course at San Rafael Universidad Tecnológica Nacional. They also expressed very strong opinion that, I am not sure, represents the majority of people.

**Affinity maps** method is then used to group the interviewees' opinions in four main categories and to summarize the key insights.

- 1 Understand users' spending habits in an economic environment of debased currency.
- 2 Pinpoint users' behaviours in using mobile apps for payment.
- 3 Identify users' perception about cryptocurrencies or other alternative forms of money
- 4 Gather information about users' social connection relating their usage of payment apps.

## RESEARCH GOALS

1 **Spending habits:** Users only keep local currency for small daily purchase, but use USD, cryptocurrencies, or purchasing goods that retain value longer.

2 **Payment mobile app:** Mercado Pago is dominant for online payment in the market. Older people still prefers using physical cash and don't understand yet cryptocurrencies. Lemon Cash seems to start getting attention.



3 **Perception about cryptocurrencies:** Users inform themselves and search for more education about alternative forms of money. The possibility of using these as payment is, however, uncertain, as long as the peso still exists.

4 **Social connection:** Argentinean culture is very social and family-bonded. If they find a way of savings or useful payment app, their family is likely the first one they share with.

## KEY INSIGHTS

## PROBLEM STATEMENT

"Users need a way to preserve their purchasing power using a better form of money rather than their local debased currency. They also need to be able to send money to each other fast and with low fee."

"We will know this to be true when we see users use PlutoPay as an application to manage their savings in bitcoin and use the integrated Lightning Network for other money transfer without having to convert back to the local currency."

# USER STORIES

## ONBOARDING

**As a** new user who first heard about Bitcoin, **I want to** skim through the instructions **so that I can** have an overview of most important information.

## SECURITY

**As a** person who is concerned about phone thef and cyber security, **I want to** set up a biometrics and/or PIN **so that only I can** access the payment app and my fund.

## BUY BITCOIN

**As a** saver, **I want to** convert my debased currency into bitcoin **so that I can** preserve my purchasing power in a long term.

## SETTINGS

**As a** traveller, **I want to** see the payment in local currency and use the app in my native language **so that I can** relate to the local prices better and also feel most confident using the app in my mother tongue.

## PUSH NOTIFICATIONS

**As a** merchant, **I want to** receive immediate notifications while handling payment with my customers **so that I can** assure if the transactions get through.

## TRANSFER

**As a** shopper, **I want to** transfer my fund from my savings to my spending **so that I won't** lose opportunities for purchasing goods at discount.

## SEND

**As an** immigrant, **I want to** send money with low fee to my family back home **so that** they can receive it in a short time.

## RECEIVE

**As a** content creator, **I want to** add a QR code of my public bitcoin address **so that I can** get paid for my streaming content internationally without any payment complication.

# PERSONAS



## DIEGO MARTINEZ

AGE	22
JOB	student, part-time job as assistant in a warehouse
LOCATION	Córdoba, Argentina
FAMILY	lives with his parents and siblings.

*"I saw my parents and grandparents struggle to keep up with life. I want a change for my generation."*

*"There're so many cool things happening now in the tech world with this thing called Bitcoin and crypto. I want to be part of it."*

### ABOUT

Diego is in his 3<sup>rd</sup> year at National University of Córdoba, Argentina. He likes his studying major System Engineering. His hobbies are computer games and skating.

All his friends and family live in the same town. His grandparents live only a couple of blocks away.

### GOALS & NEEDS

- want to upgrade his computer and buy some new gears for playing.
- want to start a YouTube channel showing his crew's skating tricks, or gaming techniques.
- extra income because the part-time job pays little, and he doesn't want to ask his parents for pocket money

### MOTIVATION

- feeling cool, being cool.
- update latest trends in Tech
- being able to self-sustain and help his family when he finishes studying.

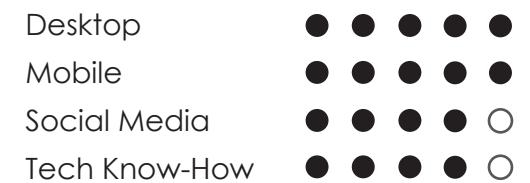
### EVERYDAY ACTIVITIES

- attend university's class
- play online games with his friends.
- extra studying time
- skating with his crew
- visit his grandparents and play with the dogs.
- surfing internet, checking cool stuffs in YouTube and TikTok

### FRUSTRATION

- Imported electronics in Argentina are very expensive because of tax.
- He also wants to try out other cool things but doesn't have enough money.
- His friends can't stop talking about this bitcoin and crypto thing but he hasn't understood it fully yet.

### DEVICE & INTERNET USAGE

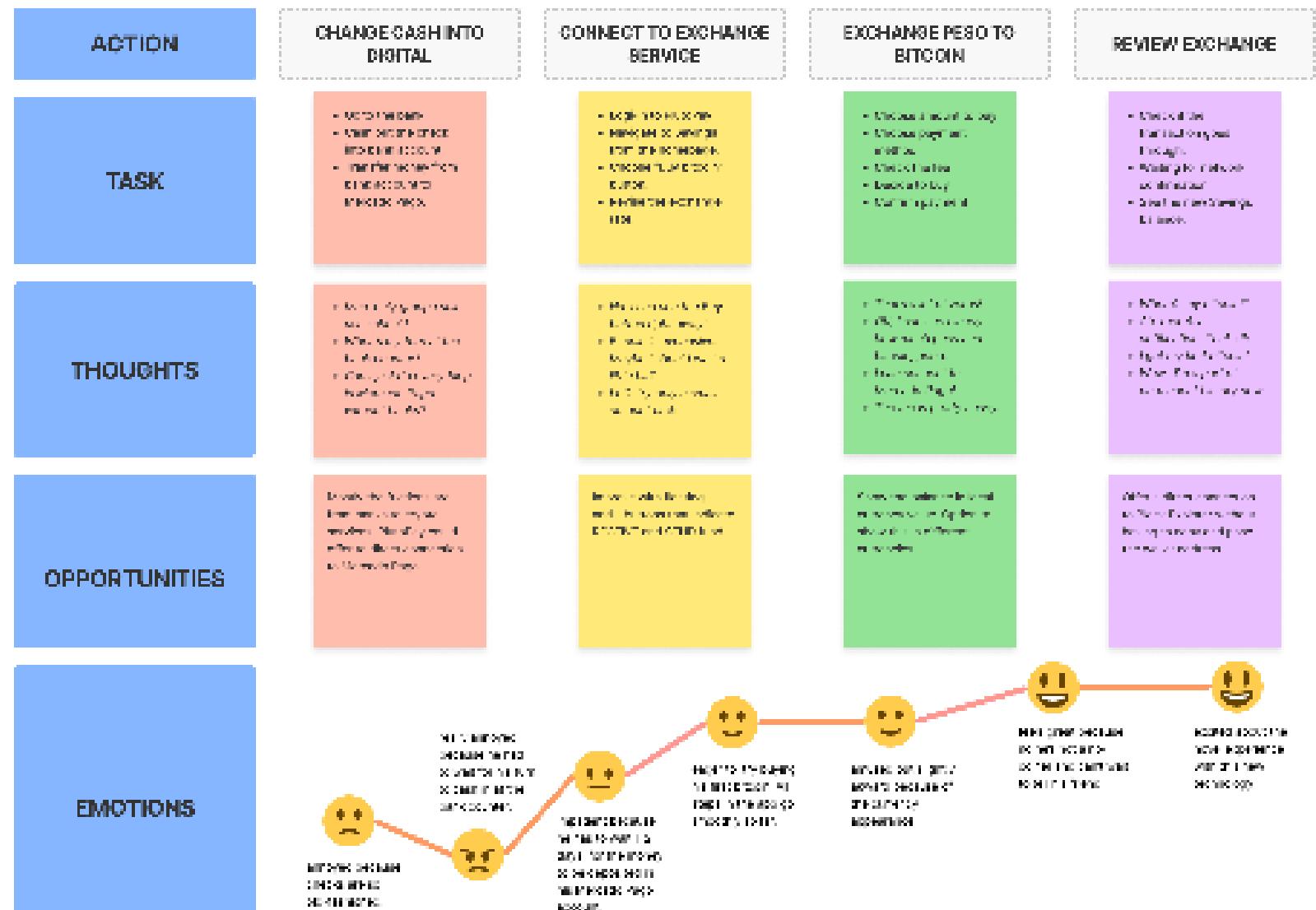


## SCENARIO

Diego already did his research about Bitcoin and created his savings account in PlutoPay. He wants now to buy his first bitcoin with the check he received from his grandfather Luis as a birthday gift.

## GOAL & EXPECTATION

Buy his first bitcoin and get familiar with bitcoin transaction.





## LUIS MARTINEZ

**AGE** 70

**JOB** pensioner

**LOCATION** Córdoba, Argentina

**FAMILY** lives with his wife.  
He has 3 children and 6 grandchildren. All live in the neighborhoods.

*"Apart from the house, I hope I can have some savings left for my family."*

*"My old friends and I prefer certain ways for things in life. We often talk about the old days. But our opinions don't matter. We'll be gone soon. It's the generation of my grandchildren that should take over the future of this country."*

### ABOUT

Luis enjoys his retired life. He has some back problem, but still feels spiritually young and curious. He likes drinking yerba mate and talking with his pensioner friends and his grandchildren, especially with his eldest grandson Diego. During weekends and holidays they often gather together at his place, having asado (Argentinean barbecue) and watching football.

### GOALS & NEEDS

- wants to extend his house so more family members can fit in.
- wants to give his grandchildren support and care. He wrote them checks as birthday gifts from his saving account.

### MOTIVATION

- good life for his family
- being surrounded by young people makes him feel young.
- everyday is a new opportunity to learn new things.

### EVERYDAY ACTIVITIES

- drinks mate with his friends.
- reads newspapers
- plays chess with Diego during his visit.
- takes his dogs for a walk

### FRUSTRATION

- his pension from the army is considered the best pension in Argentina, and they're careful with spending. Yet each month he can see their budget can buy less things because they got more expensive.
- still trying out his new mobile phone to see how it works. He can WhatsApp in the family group but doesn't know much about other buttons. He often needs to ask Diego.

### DEVICE & INTERNET USAGE

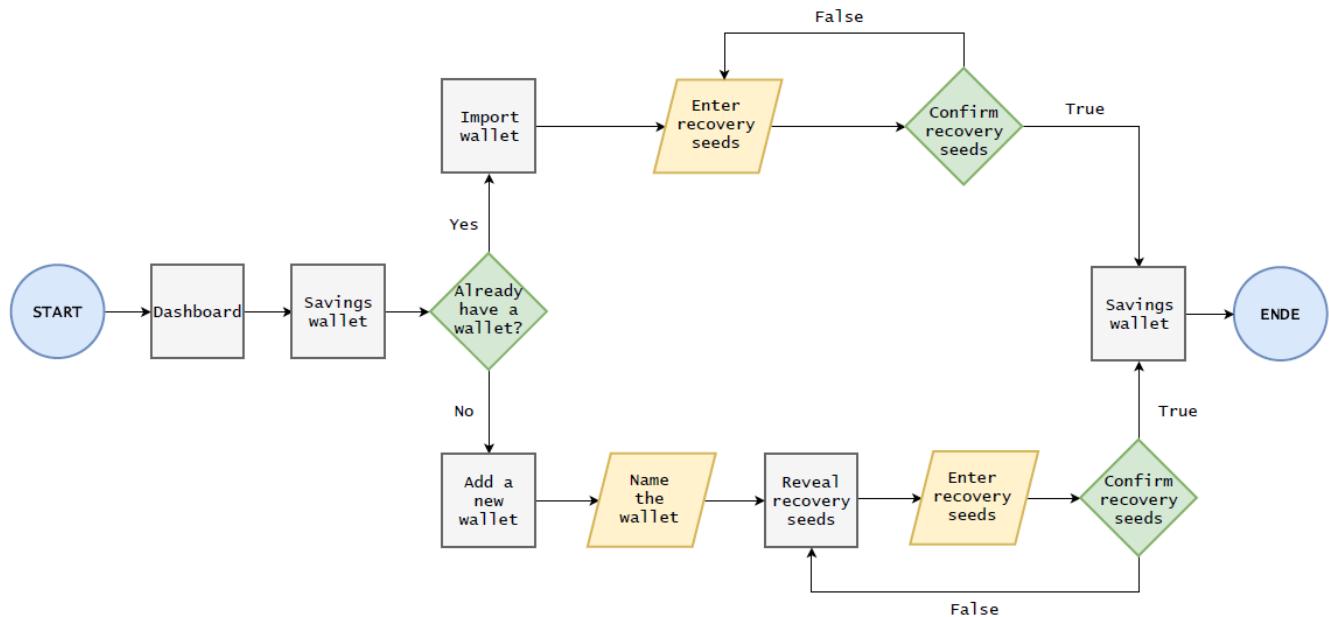
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## SCENARIO

Luis is already convinced by Diego, his eldest grandson to create a savings account with PlutoPay. He does not understand this digital money, but he trusts Diego. He knows his grandson is competent in new technology and can help him to take care of his finance. Besides, what else could he do with the peso?

## GOAL & EXPECTATION

Set up a savings account in bitcoin.



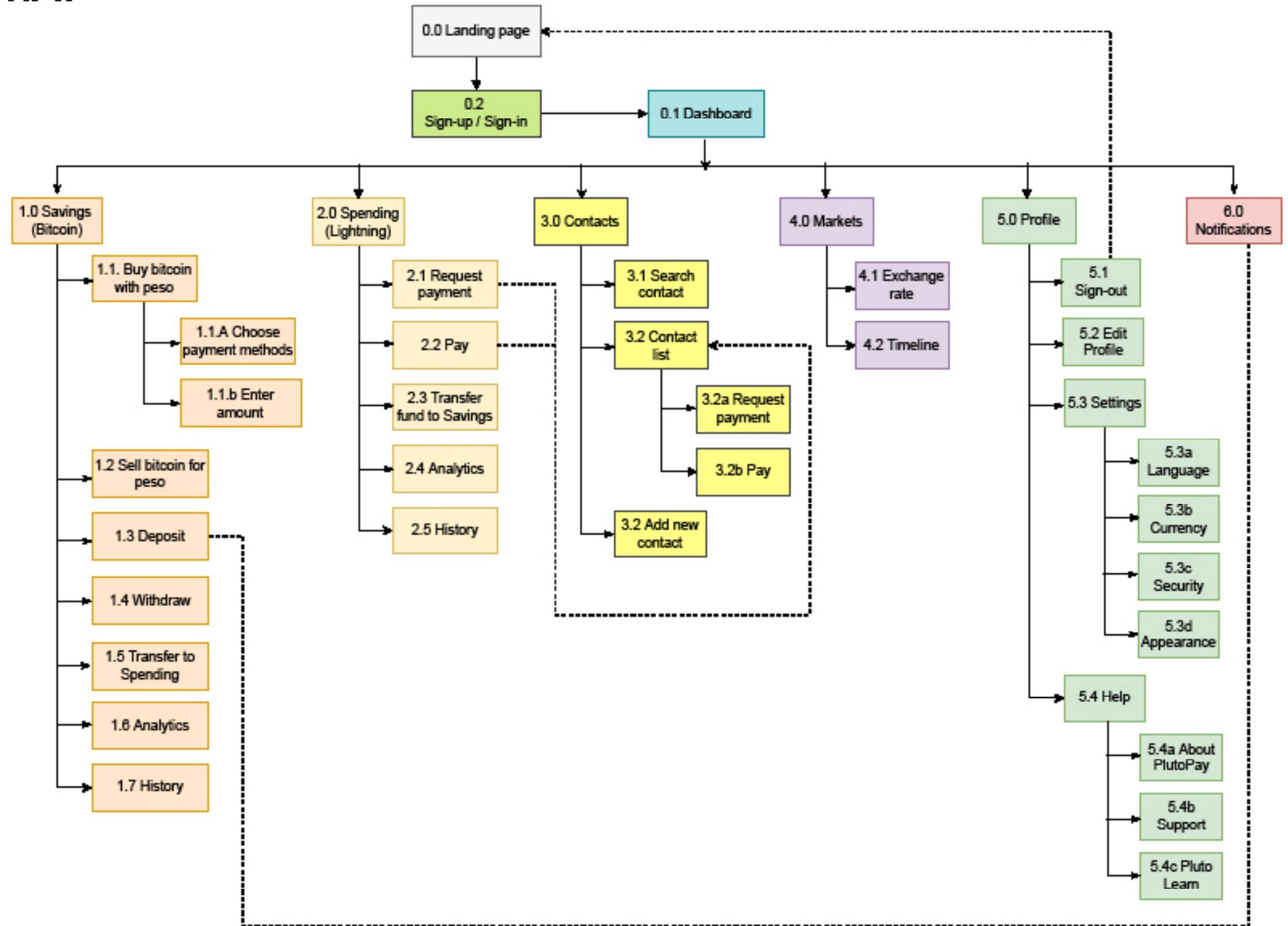
<i>It doesn't ask for his ID like banks?</i>	<i>I don't understand anything at all!</i>	<i>I want to save money so it'll be in <b>Savings</b>, right?</i>		<i>What exactly is bitcoin ?</i>	<i>What is SAT?</i>	<i>What is Lightning?</i>		<i>Set up PIN</i>	<i>Why are there seed phrase and PIN?</i>	<i>Is it really safe?</i>
Login email to confirm signup	Information about Bitcoin and Lightning network	see 2 tabs: <b>Savings</b> and <b>Spending</b>		Options to create a new or restore an account.	See the bitcoin  symbol again			See options: PIN or biometrics	Write down seed phrase on a piece of paper	Secure the paper in his vault.
Sign-up PlutoPay with email	Onboarding intro	Navigate from the Homepage		Click the <b>Savings</b>	Click <b>Set up a new savings account</b>	It requires to set up security.		Start setting up security	See the generated seed phrase	Double-check the seeds and confirm.

## SIGN-UP/SIGN-IN/ONBOARDING

## SET UP A NEW SAVINGS ACCOUNT

## SET UP SECURITY

# SITEMAP



# USABILITY TESTING RESULTS

The Usability Testing is conducted on 5 main features:

- Create a PlutoPay account
- Create a new Savings account
- Convert peso to bitcoin
- Transfer fund from Savings to Spending
- Request payment in Spending account

Methods used:

- Moderated testing, in-person
- Moderated testing, remote
- Guerrilla Testing
- Hallway Testing

MOBILE USABILITY TEST	Mobile	P1	P2	P3	P4	Desktop	P5	P6	TOTAL	POSSIBLE SOLUTIONS & NEXT STEPS
Errors - Record and prioritize most critical errors based on your error classification.										
Got confused between "Send" and "Transfer". Chose "Send" where "Transfer" is expected.			Orange					Blue	3	Clearer description: Transfer between Savings and Spending.
Didn't understand the Dashboard button.									1	Description for each navigation button.
Got confused because both accounts have "Send" and "Receiver".			Orange		Green				2	Use "Deposit" and "Withdraw" for Savings account.
Overread the "T" symbol while searching for more explanation.		Red	Orange	Yellow	Green				4	Important information as a pop-up screens.
Searched for the "Deposit peso" function first but found none.		Red		Yellow	Green				4	Introduce new function: "Deposit peso"
Observations - What are people Doing, Thinking, and Feeling? Use active verbs.										
Tried to swipe the Onboarding screens.		Red	Orange	Yellow				Blue	5	Swipe interaction for mobile version or use arrow icons.
Tried to tap all buttons out of habit or curiosity				Yellow	Green				2	Complete functionality design.
Searched for "Back" button		Red	Orange				Cyan		3	Integrate "Back" button.
Non-crypto users took longer time to learn most tasks.										
Positive Observations - Any positive observations? Record them here.										
I have to enter ALL the words? Can I just drag and drop them? It would be much faster. I might notice minor spelling mistakes.			Red						1	Design remains but add a warning message to emphasize how important this task is.
To convert peso to bitcoin, I need to have peso first. How can I fund my account with peso?			Red				Cyan		2	Introduce new function: "Deposit peso"
Transfer sounds like I'm transferring to the guy of business, not to my own account.									1	Clearer description: Transfer between Savings and Spending.
This doesn't work in reality. Bank transfer takes at least 5 hours. What would happen to the exchange rate?			Red						1	Introduce new function: "Deposit peso". When peso is deposited, users can exchange it with real time exchange.
I'm skeptical when I don't know the app yet and already have to create a PIN.			Orange						1	Remove PIN from Onboarding process.
It'd be better if you explain the information more clearly. The PIN icon is not so obvious.			Orange		Green				2	Important information as a pop-up screens.
It's not intuitive. If I don't read the instructions, I wouldn't know what to do.							Blue		1	Important information as a pop-up screens.
PIN is meaningless. Apps that relate to money require 2F-Authenticator or Biometrics.						Cyan			1	Introduce 3 options for security: PIN, 2F-Authenticator, Biometrics.
It's too basic. This type of financial product should be much more sophisticated.				Yellow					1	The app is designed to be most simple for beginners.
I'd like to use a name instead of just email.					Green				1	Introduce user name. It'll seem more friendly.
I wonder why I just entered my password when I still need a PIN?							Blue		1	Introduce 3 options for security: PIN, 2F-Authenticator, Biometrics.
There should be a warning or reminder about the secret key. If you lose it then you lose your money.						Cyan			1	Important information as a pop-up screens.
I don't like that I have to choose the payment method before the exchange amount.				Green					1	Swap the steps: Enter exchange amount first.
I already chose to convert peso to bitcoin. Why do I need to choose what to exchange again?				Green					1	Currencies are shown as reference, not as choice. Design more understandable UI.
There are "Transfers" in both accounts. It's confusing.						Cyan			1	Clearer description: Transfer between Savings and Spending.
Positive Observations - Any positive observations? Record them here.										
But well done. It's not easy to design app for this type of product.		Red							1	Design style remains.
The design is clean and clear. The buttons are clearly described.			Orange						1	Design style remains.
If it's necessary to write down all the words, and it's only once then I should do it.							Blue		1	Design remains but add a warning message to emphasize how important this task is.
I like the round shape of the buttons and clear layout.				Green					1	Design style remains.
It looks elegant.							Blue		1	Design style remains.

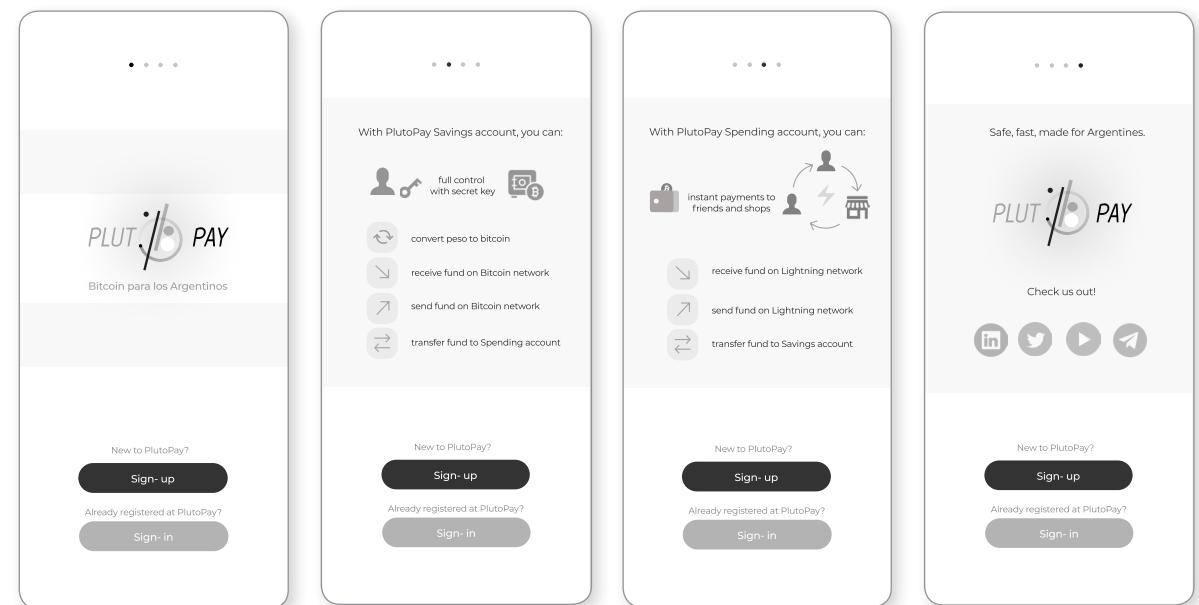
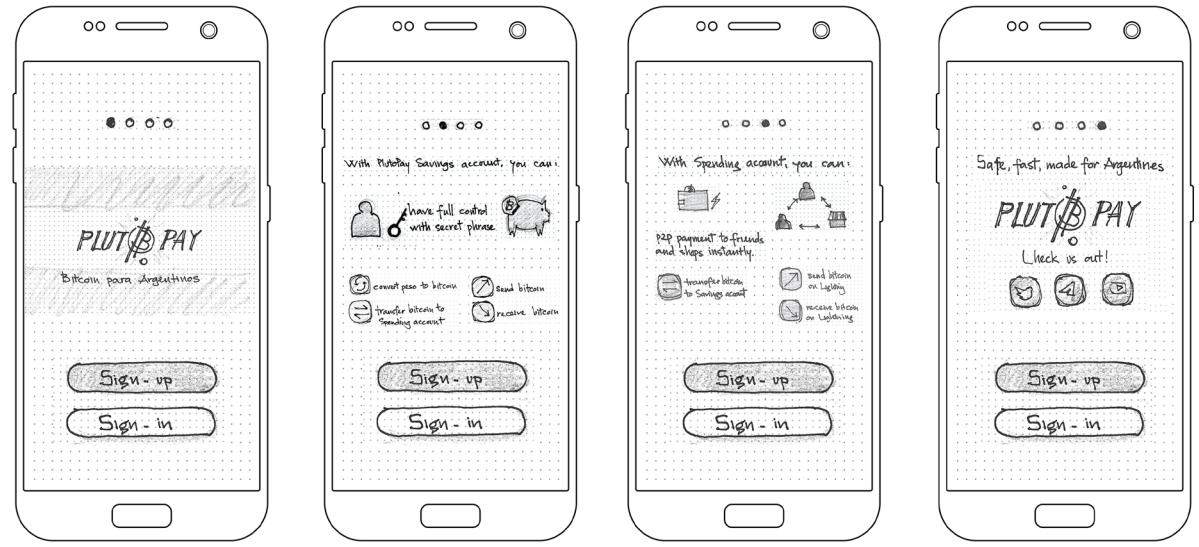
# ITERATIVE DESIGN

Onboarding is the part that I spent most time trying different design iterations. It needs to give sufficient information to new users, yet shouldn't be toooo long. I settled from the early draft that 4 screens are not too many, not too few.

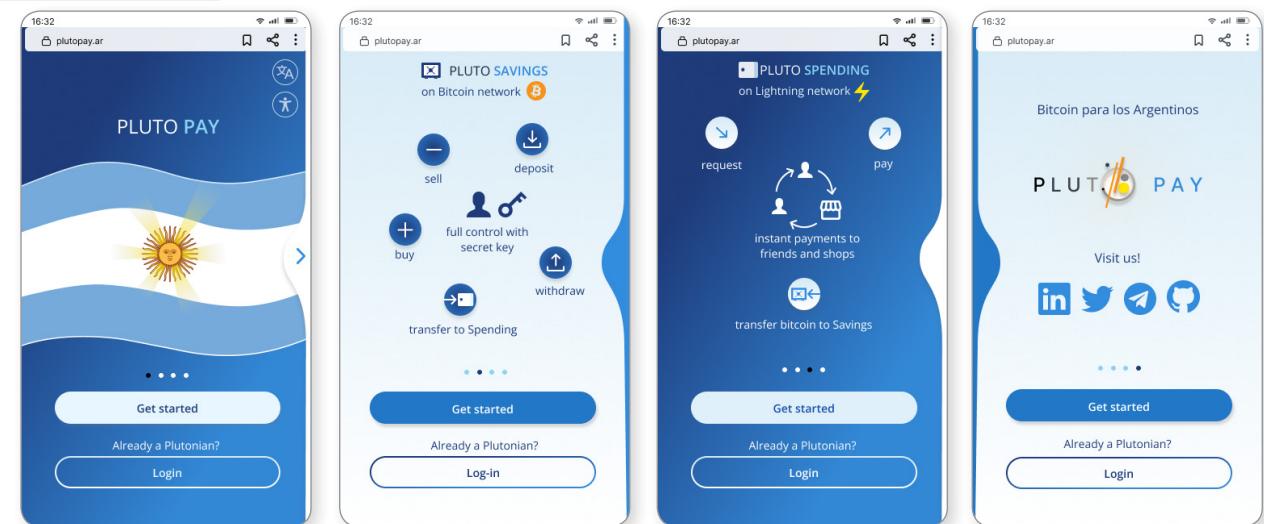
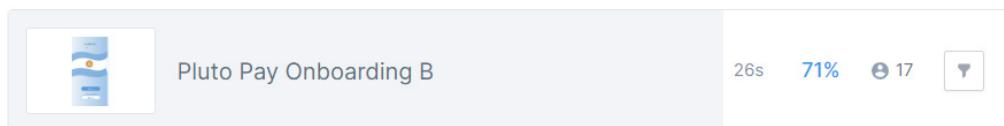
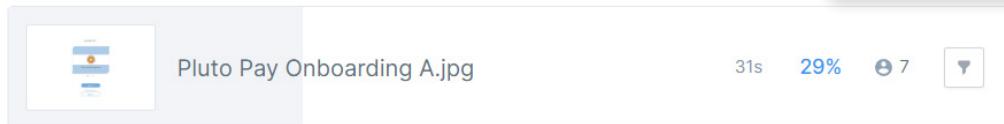
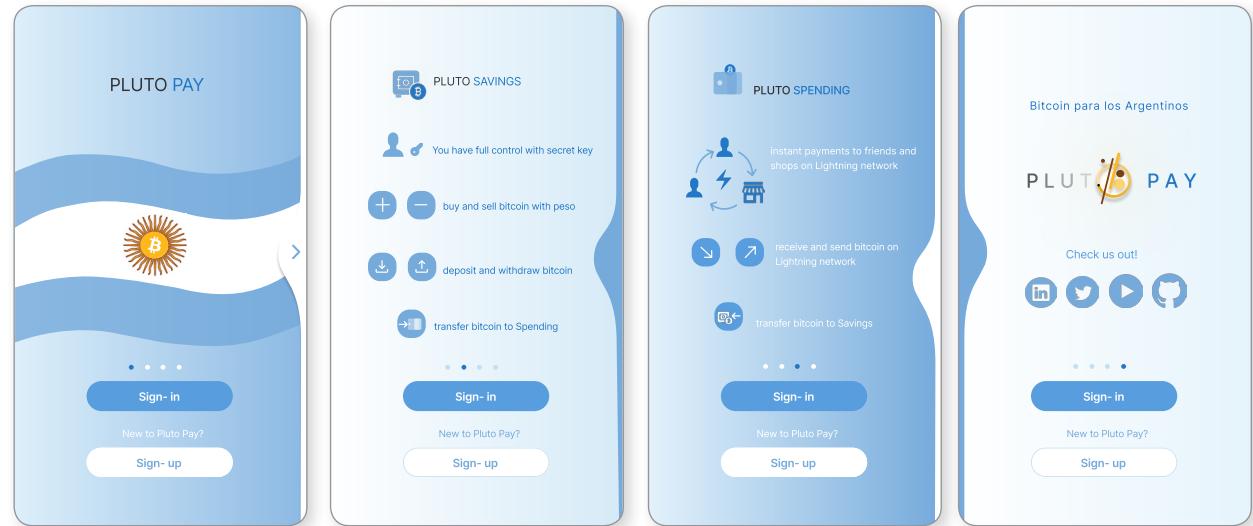
I use the argentinean flag as a background image to create familiarity and build local trust. Financial system varies in different countries, there is no one-size-fit-all. But similar design could be quickly adapted for later development in neighbour countries.

From low to mid-fidelity level, the content of the onboarding screens is relatively consistent. The elements are just shuffled around to be best readable and ready for the Usability Testing.

## ONBOARDING



From the Usability Testing I noticed not all participants went through all the onboarding screens. They tried swiping their way through the screens but didn't stop to read for long. There was no swipe effect in the mid-fidelity level wireframes, so I compensated it with more intuitive design. The Preference Testing result also shows that people expect more fancy shape rather than just a straight, flat flag background.

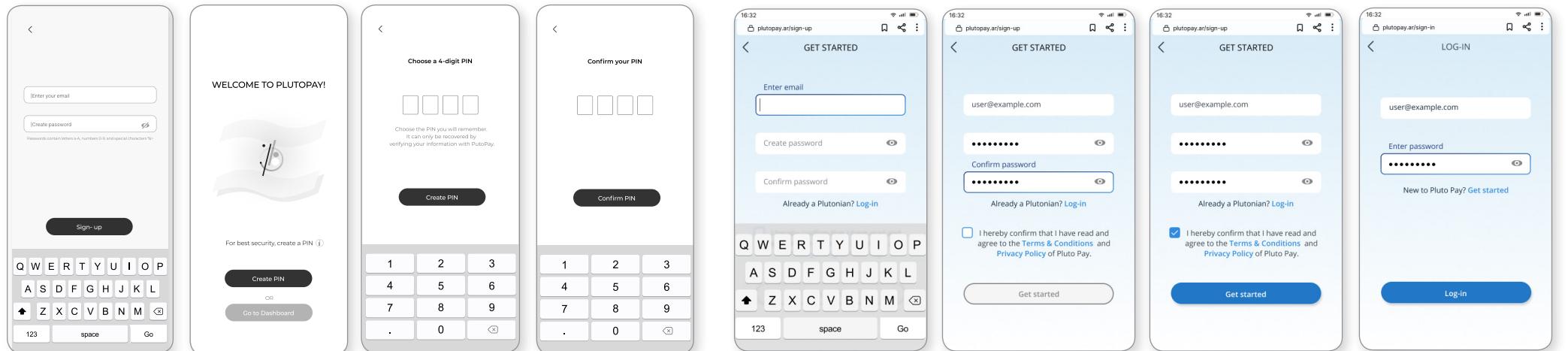
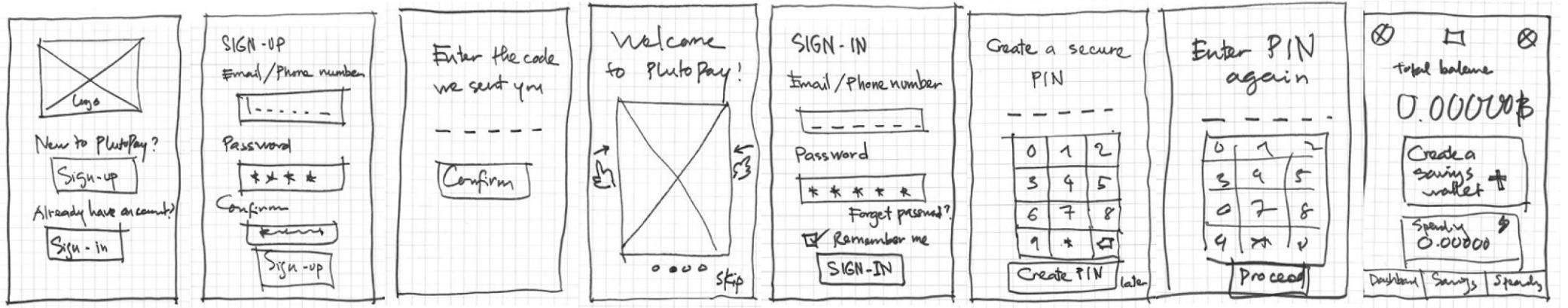


In the high-fidelity screens, I kept tweaking the design to make it more engaging and readable. I also added some small animation to aid the emotion design. The idea is to make it like opening first pages of a book. Sign-up and Sign-in buttons are kept available in every page.

## ONBOARDING

I start with rather complicated Sign-up/Sign-in process. In my opinion a financial app requires high caution from the beginning, hence the code and PIN. The mid-fidelity screens try to simplify the Sign-up by removing the confirmation code to make as less pain points as possible. I still insist in introducing the PIN in this step, but make it optional.

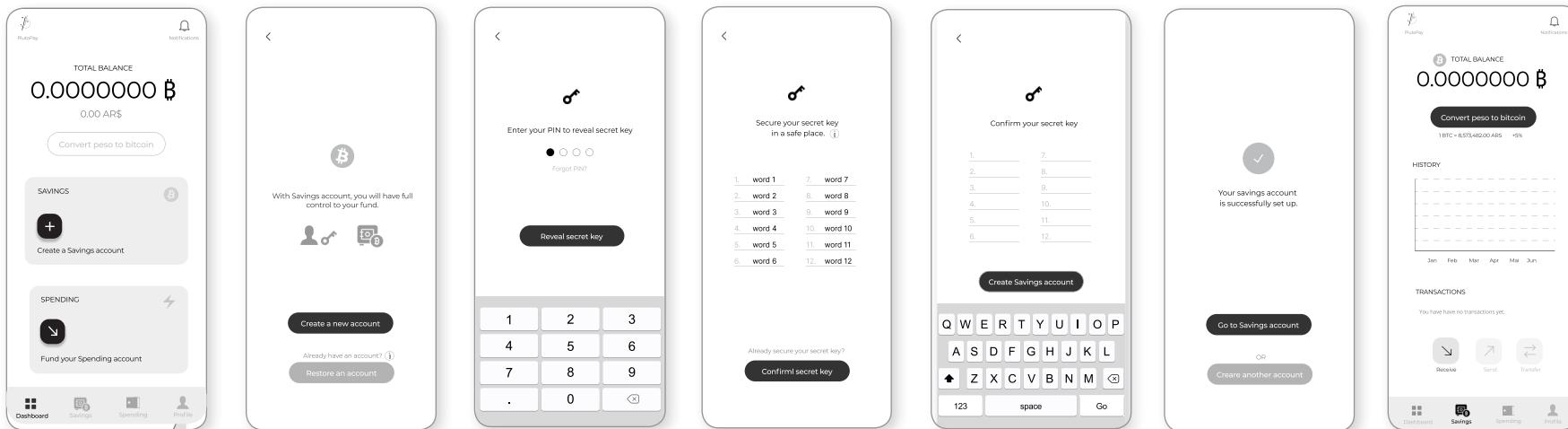
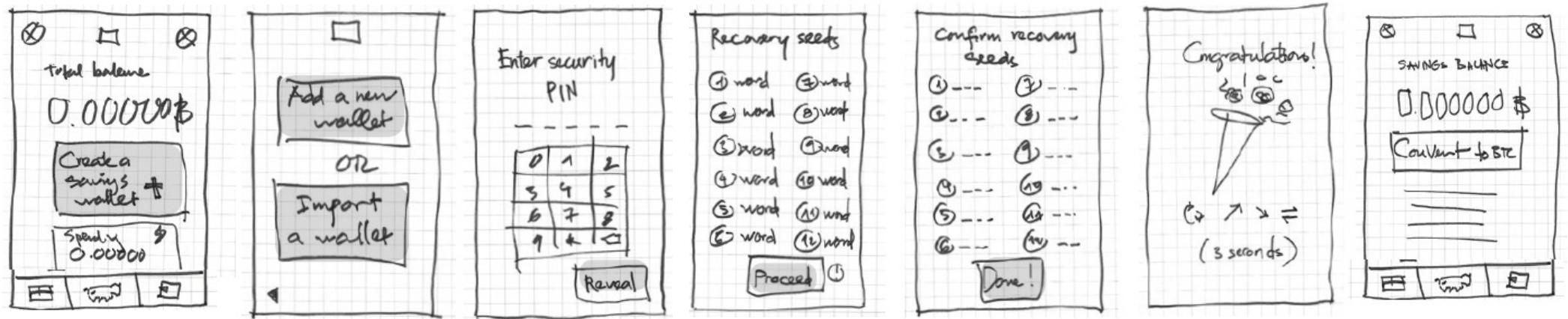
The Usability Testing revealed that creating PIN right after signing up is unusual. I remove this step and make the Sign-up/Sign-in process simple and painless. I also pay attention to the wording: "Get started" instead of "Sign-up", "Log-in" instead of "Sign-in" after asking people's opinion. Some told me "signing" indicates serious action and they prefer other choices.



**SIGN-UP / SIGN-IN**

The flow of creating a self-custodied wallet is probably the most challenging to people who are not familiar with the self-custody concept. This process has to include the security barrier as it contains the most important information. I counted no less than 7 screens for this. In the begining I used commonly known terms like "Wallet", "recovery seeds", yet these terms are not exactly industry-standardized.

In the mid-fidelity level that I used for the Usability Testing, I decide to use "Savings account" instead of "wallet" because the app is designed for new users transitting from the legacy finance system. "Secret key" instead of "recovery seeds" or "seed phrase" is my own twist. I want to emphasize the secretness in these words, and the "key" in the common saying "Not your key, not your coin" in the Bitcoin community. Not all people know what a key really is.

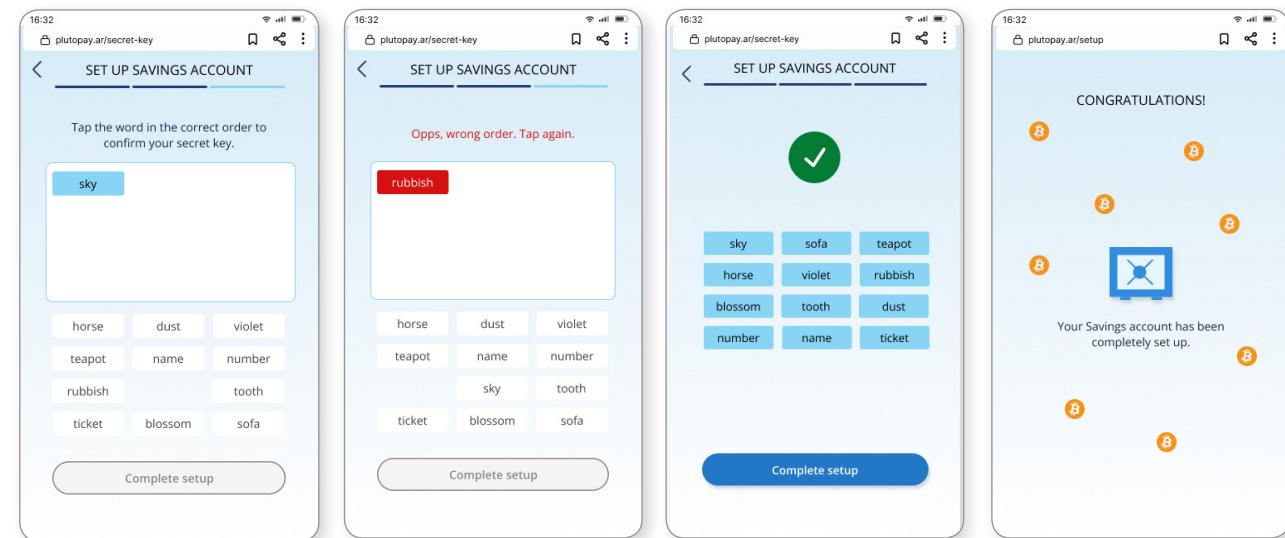
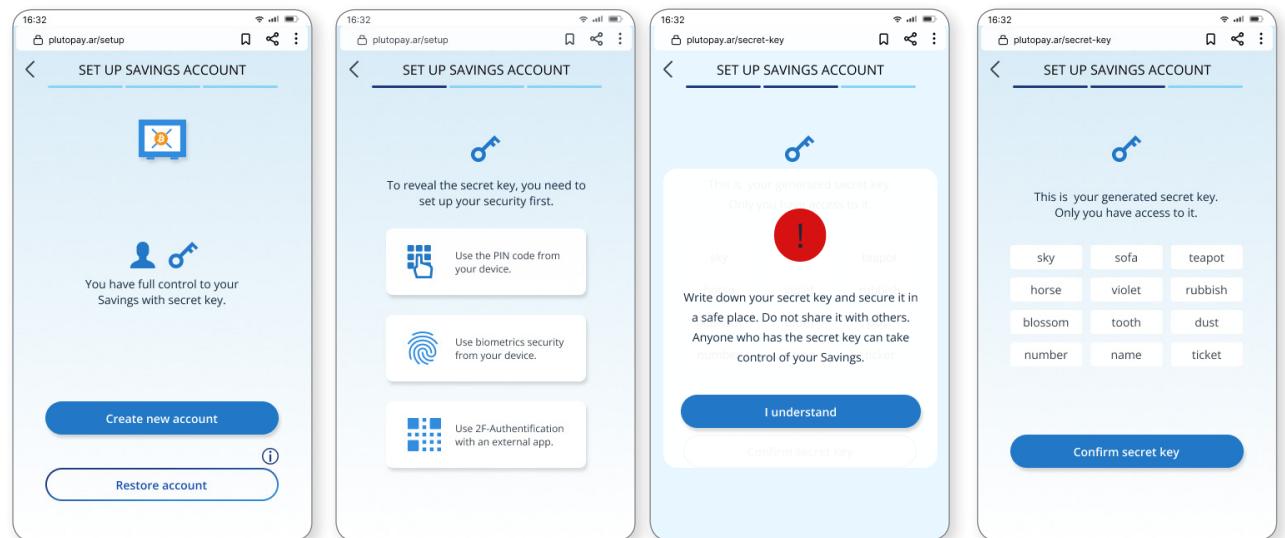


**CREATE A SAVINGS ACCOUNT**

The result from the Usability Testing shows a general interest in self-custody from the non-Bitcoin users. However, they wished to see more explanation and indicators. For the Bitcoin users this task is trivial. One expressed the impatience that he would have to type all the key's words again and there might be misspell that causes frustration. Some are concerned that PIN is not secure enough.

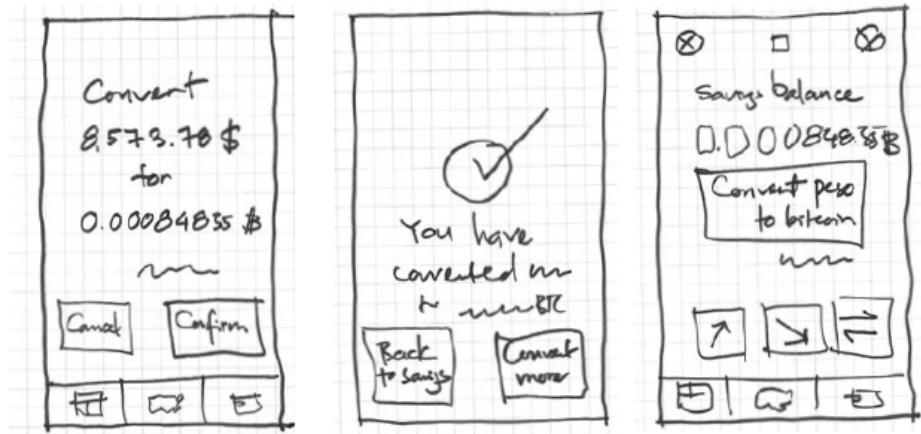
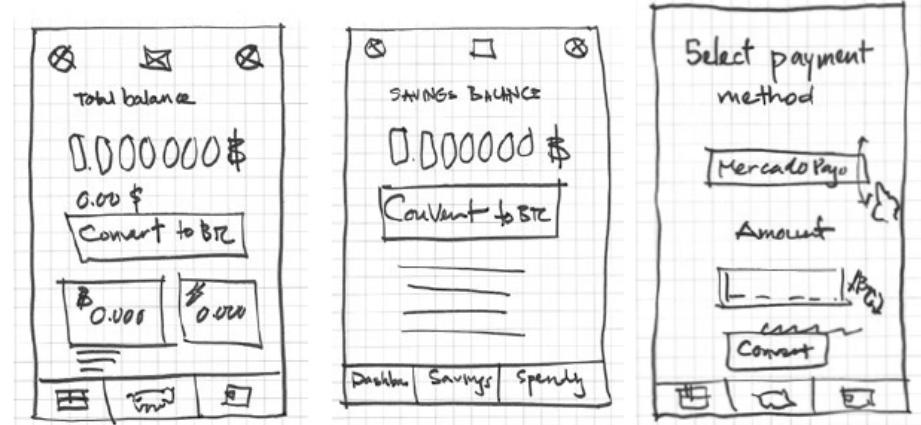
The high-fidelity level design results in even more screens and changes based on the feedbacks:

- Introduce more options to set up the app security. Users can choose one of these options and change later in the security settings.
- Add a progress bar with step indicator
- Add an unavoidable warning because it is the most important information.
- Replace the typing with a tap-and-drop method to avoid frustration in misspelling. I came up with this arrangement after learning about spatial cognition. Arranging the words in a 3x4 grid gives more chances to remember the word order rather than tying them with a number. This also aligns with the practice of designing the UX to enhance users' learnability and memorability.



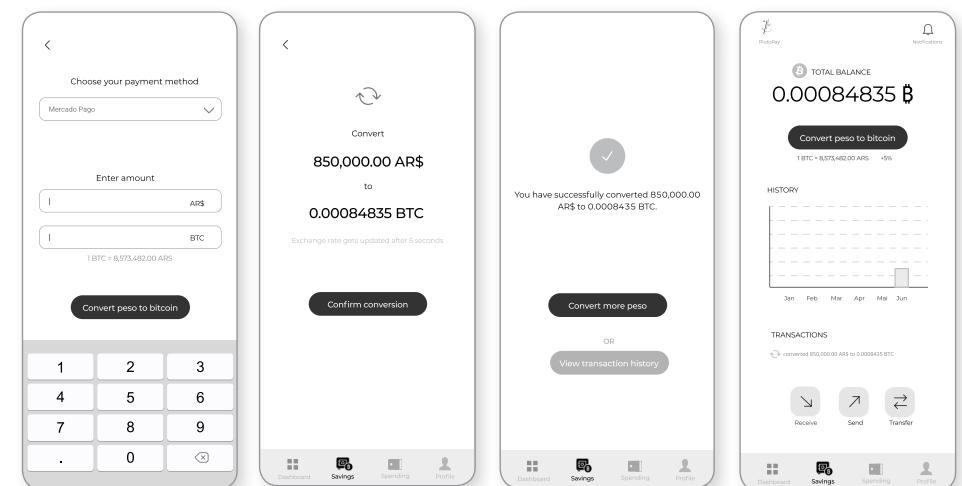
**CREATE A SAVINGS ACCOUNT**

The whole purpose of the app is to escape from a devaluing currency (peso) by converting them to a better asset that retains the purchasing power (bitcoin). My original idea is to make "Convert peso to bitcoin" the major feature. It had a separate button right beneath the Total balance in the Dashboard and Savings' balance to be accessed as easy as possible.



In the mid-fidelity level design I still tried to make the conversion compact by arranging them in just one screen. The feedbacks from the Usability Testing didn't support this. Apparently the testers prefer to choose the amount to convert before selecting payment methods, and want to see this amount through the process. When the conversion is finished, I wasn't sure what they'd want to go next.

**BUY BITCOIN WITH PESO**

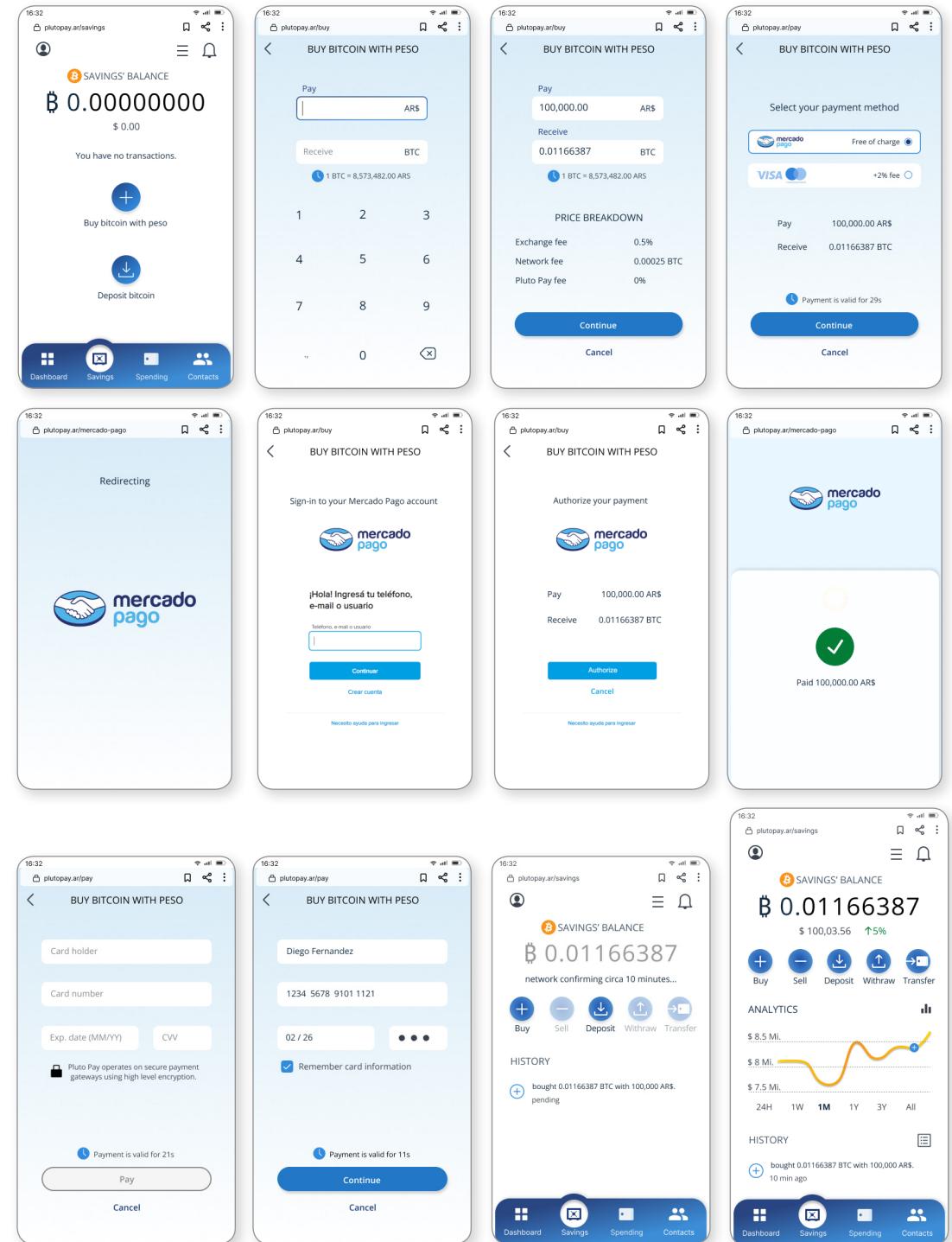


One fundamental mistake I learn from the Usability Testing is you can only convert peso to bitcoin if you already have peso. Since PlutoPay is an application provider without money transmitting license, it delegates this task to financial institutions that have the privileges to handle a sovereign currency. For that reason I change the feature into "Buy bitcoin with peso". Since "convert" means both way, I need to add the option to "Sell bitcoin for peso" here.

Mercado Pago is the dominant digital wallet provider in Argentina and South America. I try to imitate here how the payment could be redirected and proceed by Mercado Pago. I also try out different exchange apps with similar functions and realize the exchange process is much more complicated than my primitive mid-fidelity screens. So for this feature I break down and optimize all steps as necessary as possible.

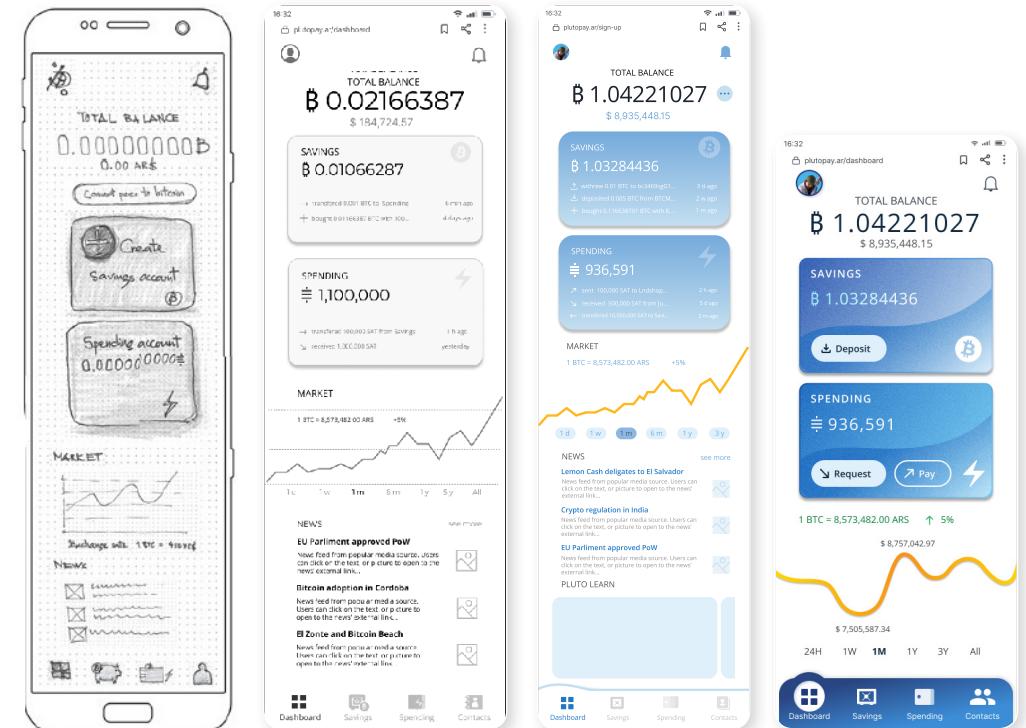
After a quick survey about how people expect to see after finishing buying bitcoin, I see the tendency that they want to see the result of their transaction, i.e., bitcoin appears in their account. I make the "successful" confirmation as a pop-up screen and automatically navigate to the Savings' page. The final settlement in Bitcoin transactions takes about 10 minutes, hence the "on progress" screen.

## BUY BITCOIN WITH PESO



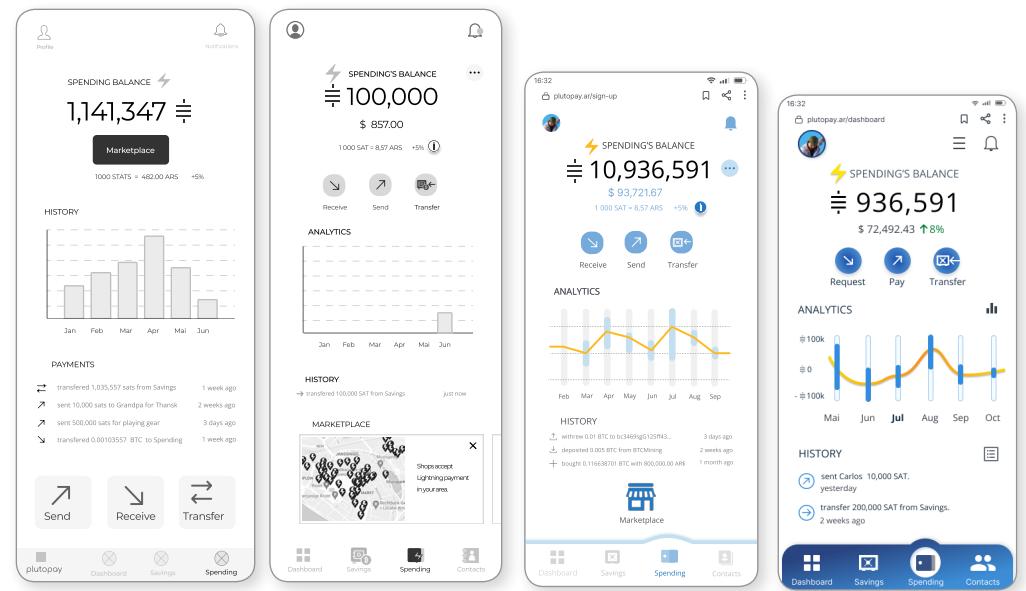
The dashboard was first packed with information. The most important elements are the two cards that show an overview of the two accounts. I revise my User journey maps again and conclude that users don't need all additional features. The final design chose a minimal approach, only shows what's necessary. The cards are styled resembling a physical debit/credit cards for a familiar touch.

## DASHBOARD



The layout of Spending tab is designed similarly to Savings for better navigation. At first I thought integrating Marketplace inside the app will make shopping makes easier, since this feature is already available in some other competitive apps. However, the state of the Lightning network is still in an early phase. An implementation of a real marketplace inside the app using bitcoin only is not yet promising. I decided to drop this feature to focus more on other main functions.

## SPENDING ACCOUNT



# DESIGN SYSTEM

Design System using components and styles in Figma makes the UI work much faster and efficient. I can also measure the color contrast and make adjustment systematically.

Figma component with variants is my favourite tool. It can create various visual and animation effect for UI elements and save screens for the prototype.

The image displays a collection of Figma prototypes and style guides:

- Color palette:** A grid of color swatches with names like "Blue slate", "Dark slate", "Light slate", "Medium slate", "Light blue", "Dark blue", "Light orange", and "Yellow".
- Secret key:** A screen showing a 12-word mnemonic phrase: "secret key", "seed phrase", "is a simplified", "version of the", "cryptology", "encoding", "secret words", "are arranged", "in a", "symmetrical", "order to", "make it more", "simple to", "memorize", "and", "secure.", "The words", "can be", "tapped in", "the correct", "order. This", "eliminates", "the potential", "frustration", "using the", "traditional", "keyboard", "method."
- UI States:** A series of rounded rectangular buttons demonstrating different states:
  - Filled button
  - Hovered button
  - Pressed button
  - Outlined button
  - Hovered outlined button
  - Pressed outlined button
  - Greyed-out
- Icons:** A grid of small icons representing actions like "Buy", "Sell", "Deposit", "Withdraw", "Transfer", "Request", "Pay", etc.
- Buttons:** A row of three buttons labeled "Deposit", "Request", and "Pay".
- Header:** A header bar with tabs for "Dashboard", "Savings", "Spending", and "Contacts".
- Text Variants:** A section showing text sizes and styles:
  - H0 HEADING 0 | Regular | 40 pt.
  - H1 HEADING 1 | Regular | 24 pt.
  - H2 HEADING 2 | Regular | 20 pt.
  - H3 HEADER 3 | Regular | 16 pt.
  - P1 Paragraph | Regular | 14 pt.
  - P2 Paragraph | Regular | 12 pt.
  - Bitcoin address | Regular | 12 pt.
- Action Icons:** A grid of icons for actions like "Add", "Edit", "Delete", "Search", "Print", "Transfer", etc.
- Indicators:** A grid of icons for indicators like "Active", "Inactive", "Selected", "Unselected", etc.
- Feedback:** A section showing feedback messages:
  - "Paid 100,000.00 ARS"
  - "Payment is invalid."
  - "! Make sure you are withdrawing to the correct Bitcoin address. The transaction can't be reversed."
  - "Opps, wrong order. Tap again."

# CONCLUSION

The required delivery of this project is a mockup version of the app. I did more than just mockup screens but a complete prototype in both english and spanish. Both versions are still in use for further User Testing.

The topic I chose is extremely complex, and the product is very technical. It required a lot of reading, research, and understanding about the emerging blockchain technology. But more importantly, the real challenge was to establish a trust connect to the target users. I really enjoy doing User Research, Usability Testing and Iterative Design.

My complete work can be found in the appendix. In the references I also list out all the information source and reading material that I needed to come to final design.

# APPENDIX

[USER RESEARCH \(TRANSCRIPT & ANALYSIS\)](#)

[USER TESTING \(TEST PLAN & REPORT\)](#)

[PROTOTYPE, ENGLISH](#)

[PROTOTYPE, SPANISH](#)

[UNMODERATED TESTING, ENGLISH](#)

[UNMODERATED TESTING, SPANISH](#)

[UX HISTORY OF BITCOIN](#)

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