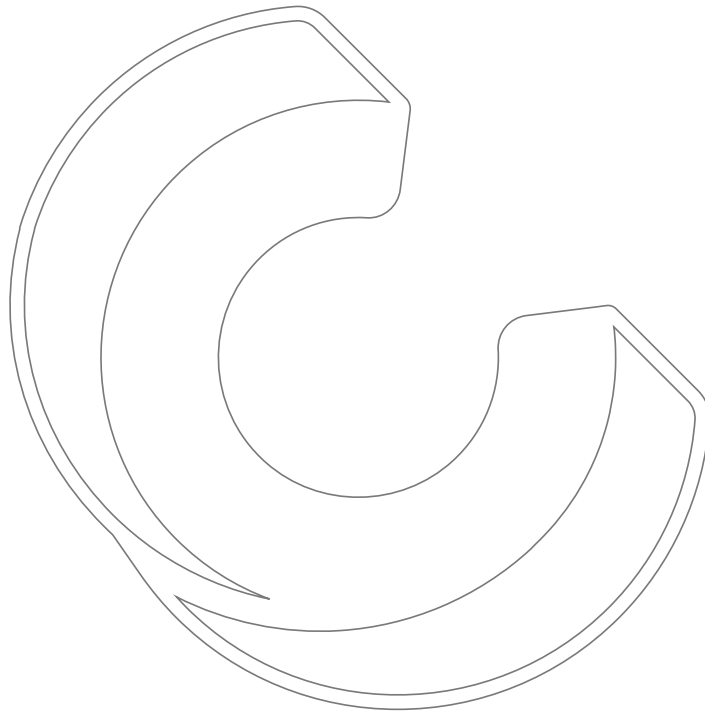




THE **MANIFESTO**

We are going to  
reinvent the way you  
use your money.



---

*The art of economics consists in looking not merely at the immediate but at the longer effects of any act or policy; it consists in tracing the consequences of that policy not merely for one group but for all groups.*

Henry Hazlitt

# TABLE OF CONTENTS

WHAT YOU ARE GOING TO SEE.....	6
THE MARKET WE ARE FOCUSING IN .....	7
THE PROBLEMS WE ARE WILLING TO SOLVE.....	10
INTRODUCING CAPITAL.....	12
PROJECT CONCEPT .....	14
OUR VISION .....	16
OUR MISSION .....	17
OUR MOTIVATION .....	18
CAPITAL'S ECOSYSTEM .....	19
WHAT HAS ALREADY .....	21
BEEN DONE? .....	21
MONEY TRANSFERRING .....	22
INSTANT EXCHANGE .....	23
CAPCODE .....	23
MULTICURRENCY ACCOUNTS .....	23
FIAT DEPOSITS.....	23
CRYPTO-CURRENCIES DEPOSITS .....	23
CURRENCY EXCHANGE .....	24
INVESTING .....	24
CAPPAY.....	25
WHY ANOTHER PAYMENT GATEWAY?.....	26
PRESENTING CAPPAY .....	28
MERCHANT PLUGINS .....	28
CHECKOUT PROCESS .....	28
FUTURE GOALS .....	29
CAPSHOP.....	30
B2B ESCROW .....	31
CONTRACTS REGISTERED ON THE BLOCKCHAIN .....	32
PHYSICAL CARDS.....	32
SMS BANKING .....	32
SECURITY.....	33
VIRTUAL CARDS .....	33
NFC PAYMENTS .....	34
POS MACHINES .....	34
CREDIT CARDS PAYMENT GATEWAY .....	34
ATM MACHINES .....	34
CAPLOAN .....	36

THE ONLINE LOAN INDUSTRY .....	37
CAPLOAN STAGE 1 .....	38
DEFAULTING .....	38
PLEDGE DEPRECIATION .....	38
CAPLOAN STAGE 2 .....	39
THE RISK CONSTANT.....	39
<b>THE IMTP PROTOCOL .....</b>	<b>40</b>
WHY DO WE NEED A.....	41
MONEY TRANSFER PROTOCOL?.....	41
HOW ARE WE GOING TO ACHIEVE THIS? .....	42
LIQUIDITY .....	42
TECHNOLOGY .....	43
WHAT'S IMTP?.....	43
POS MACHINES .....	43
ATM MACHINES .....	44
VENDING MACHINES.....	44
CRYPTO-EXCHANGE TO BANK TRANSFER .....	44
INTERBANK AND INTERNATIONAL BANKING.....	45
IMTP GIVES ACCESS TO THE EASE OF MANAGING CRYPTO-CURRENCIES.....	45
<b>CAPITUAL'S INFRASTRUCTURE .....</b>	<b>46</b>
DATA STORAGE.....	48
CORE-BANKING .....	48
CAPSCRIPT: BECAUSE TYPE MATTERS .....	49
WHY IS STATIC VARIABLE TYPING A GOOD THING?.....	49
OPEN SOURCE MATTERS, TOO .....	49
WHAT YOU SEE IS AS BEAUTIFUL AS WHAT YOU DON'T SEE.....	50
INFORMATION SECURITY .....	50
<b>AVAILABILITY .....</b>	<b>51</b>
IS MOBILE IMPORTANT?.....	52
OUR CHANNELS.....	52
WHERE WILL WE BE?.....	52
<b>IPFS-BASED PUBLIC AUDIT SYSTEM.....</b>	<b>53</b>
ONE TRANSACTION, ONE PUBLIC RECEIPT .....	54
PERMANENT ADDRESS.....	54
FOLDER STRUCTURE .....	55
RECEIPT.....	55
TOKEN HOLDERS' REPORT .....	55
<b>THE CAPITUAL TOKEN .....</b>	<b>57</b>
WHAT'S A TOKEN?.....	58
HOW CAN TOKENS MAKE PROFIT? .....	58
THE INITIAL TOKEN SALE.....	58
TOKENS DISTRIBUTION.....	59
SELLING .....	59
CAPFUND.....	59
TEAM & ADVISORS .....	59
AIRDROP .....	59
FUNDS DISTRIBUTION .....	59
MARKETING.....	59
DEVELOPMENT.....	59
LEGAL.....	59
LIQUIDITY .....	59

THE VOTING SYSTEM .....	60
FROM IDEA TO CAPITAL FEATURE .....	61
<b>BUSINESS MODEL .....</b>	<b>63</b>
LICENSES & REGULAMENTATIONS .....	65
DOCUMENTOSCOPY & PROOF-OF-LIFE.....	65
COMPLIANCE.....	66
<b>GROWTH POTENTIAL.....</b>	<b>67</b>
USERS BASE .....	68
FIRST QUARTER .....	68
SECOND QUARTER.....	68
DEVICES.....	69
CAPCARD.....	69
WHERE DO USERS COME FROM? .....	69
VOLUME .....	71
<b>PROJECT ROADMAP .....</b>	<b>73</b>
<b>COMPETITION.....</b>	<b>75</b>
MULTIPLE FIELDS, MULTIPLE COMPETITORS .....	76
EXCHANGE .....	77
CARD.....	77
PAYMENTS GATEWAY.....	78
MULTICURRENCY .....	78
REFERENCES .....	79
CONTENT ATTRIBUTIONS.....	81

040 ENG  
100 1 Capitul Ltd  
246 Capitul  
260 © 2019  
300 XVII, 81 p.  
504 Includes bibliographical references (p. 79-81)  
520 We are going to reinvent the way you use your money  
533 Electronic Reproduction  
856 <https://capitul.io/whitepaper.pdf>

Publisher's Cataloging-in-Publication data  
Capitul Ltd  
Capitul : We Are Going to Reinvent The Way You Use Your Money / The Capitul Team  
81 p.  
1. Computers — Others. 2. Internet — Others. 3. Finances — Others.  
23 22 21 20 19 / 12 11 10 9 8 7 6 5



# WHAT YOU ARE GOING TO SEE

**W**ith the advent of the huge civilizations, human beings started looking for ways to represent their earnings and being able to easily transfer and keep their balances.

It's known that bank operations started with the Phoenicians. However, the banking operations gained true importance after the middle age, with the growth of the commerce, when *exchangists* were paid to calculate the conversion rate between products and gold.

Another huge advance for bank operations happened when bankers found out that people didn't use to withdraw every fund they deposited and there would always be money for circulation. This discover allowed banks to offer loans and get profit from rates.

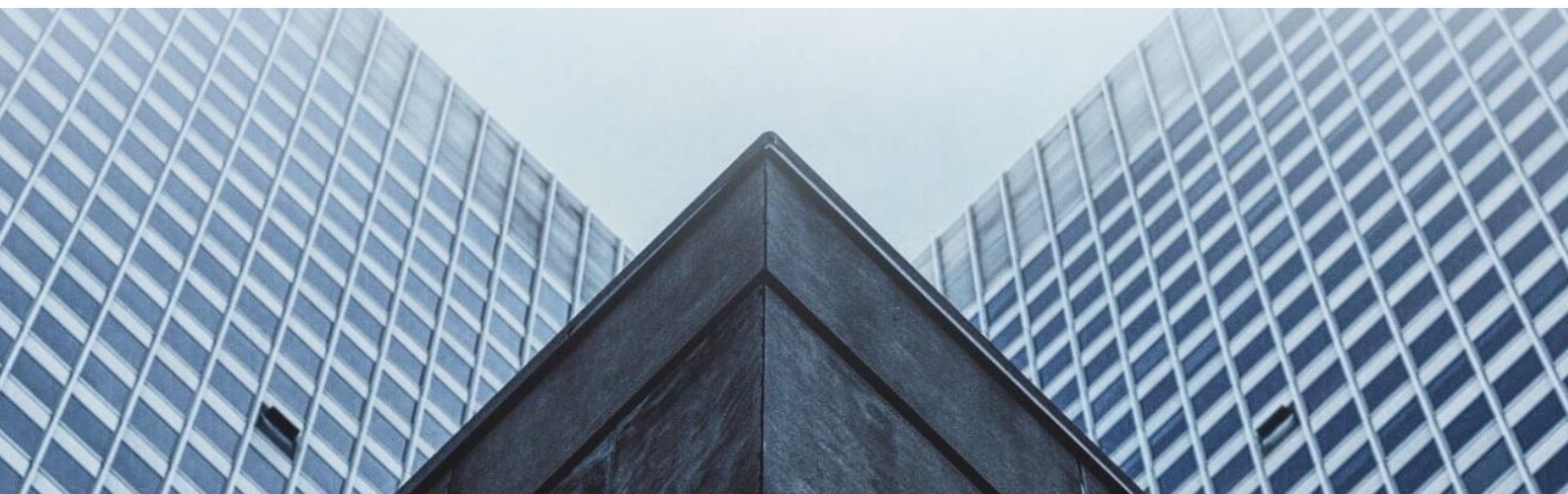
Straight from it, the world watched the development of a new industry that still lasts nowadays and presents itself as one of the world's most lucrative business of the world.

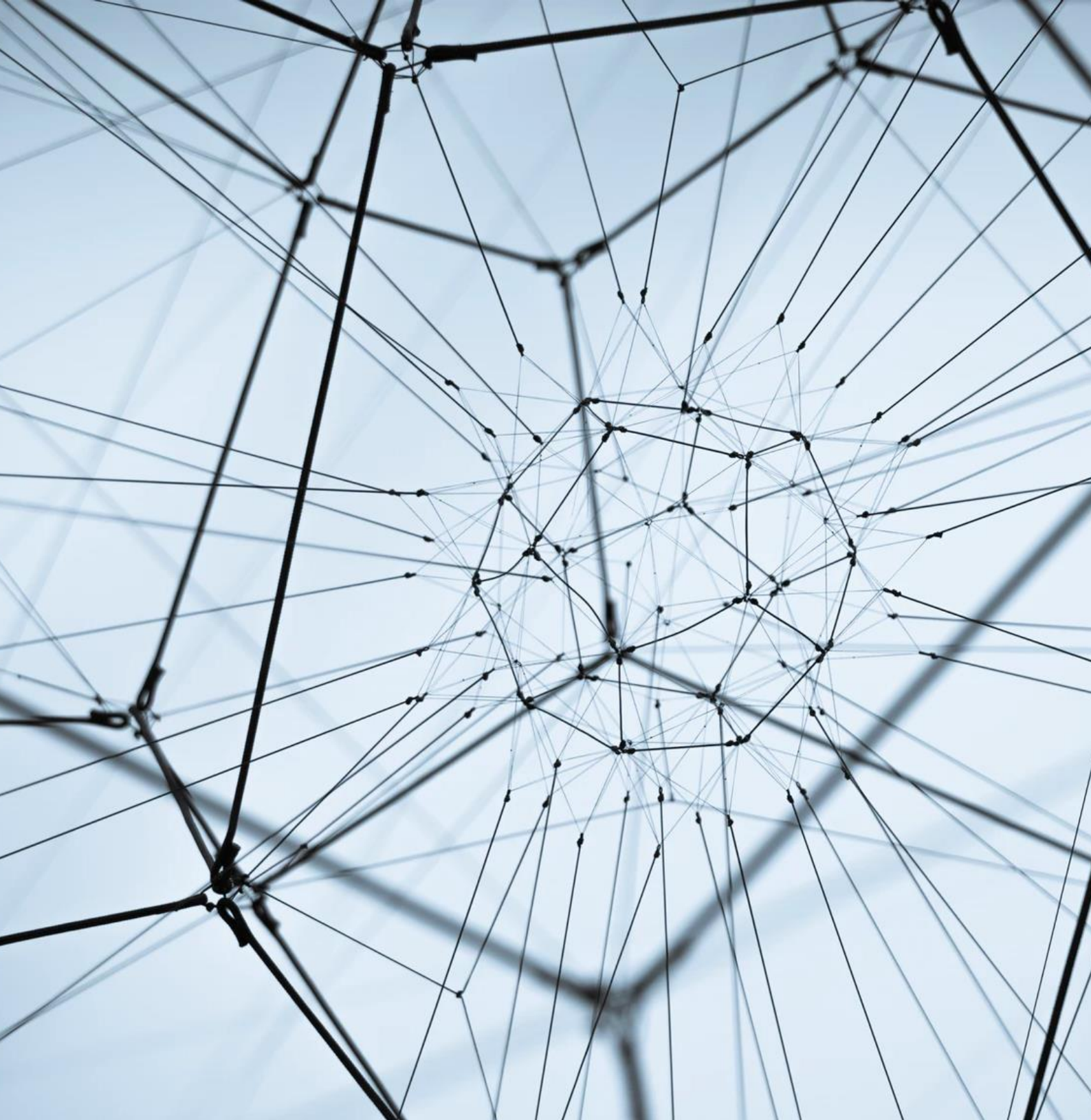
It's clear that, since then, banking operations as well as the whole economics system had been improved. However, an unpredictable improvement happened with a movement started back in 2009, after an article published by

Satoshi Nakamoto, where he described how a peer-to-peer payment system could work. This article was the basis for the development of Bitcoin, by the same author, and the then Blockchain technology, which is used nowadays in several areas - not only economics.

An increasing amount of already existing banks acknowledge the importance of Bitcoin. At the same step rate, investors who also were able to see how Blockchain technology can represent huge changes are focusing in developing banking solutions based on it. Interesting projects that bring together banking operations and Blockchain-powered features such as smart contracts and, surely, crypto-currencies, are appearing trying to make such technologies easier to use and more accessible.

No one of these projects could, however, be as complete, accessible and easy to use as what this document describes - a really innovative way to popularize blockchain, giving enough tools for beginners and advanced users, and a complete environment where anyone can make profits and save earnings with safety and keeping the sure of having direct access to their assets anywhere and anytime.





# THE MARKET WE ARE FOCUSING IN

And why it's an  
interesting bet.



The Blockchain boom that started after 2009 is comparable to the WWW boom in the late 90's. As of Dec 2017, it transacted more than US\$ 600 billions, from which about half was transacted in Bitcoin exclusively.(Cryptolization, 2018)

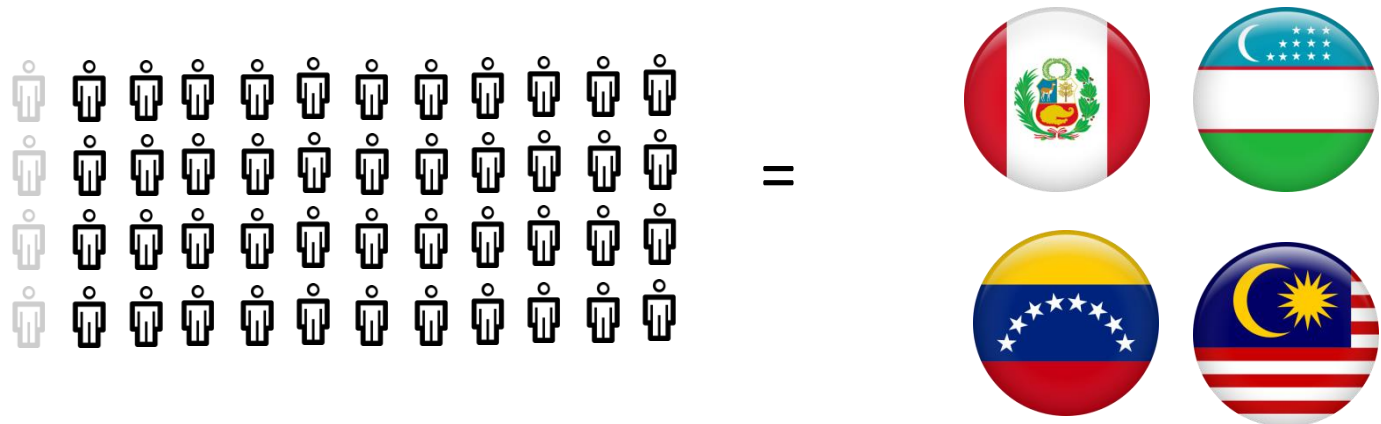
Bitcoin has gained the media every time more and reached several peaks on its price. While poorly educated journalists keep stating that it's a bubble and government agencies in some countries fear it, the truth is that Bitcoin, the well-said main crypto-currency as of now, is solid enough to grant at least 12,000 transactions per hour, or 99 BTC sent in the same period; and reliable: the 100 richest bitcoin wallets store, together, US\$ 19 billions.(Coin Dance, 2018)

After Bitcoin's considerable success, other crypto-currencies started appearing, promising to innovate in different

ways. It's possible to mention, for instance, Ethereum, which adopted the blockchain technology to innovate on the distributed computing area, and other projects that innovate on the development organization. Turns out we are watching an unavoidable evolution.

Several smart contract-based tokens ICO had been started as a crowdfunding method, allowing projects to be developed with funds managed by early investors, who get profits after the project launch once it achieves success.

Bitcoin and Blockchain technology still find limitations to reach everyone: Its 80,000 tweets containing the word bitcoin sent every day (Coin Dance, 2018) contrasts with the crypto-currencies' estimated users base:



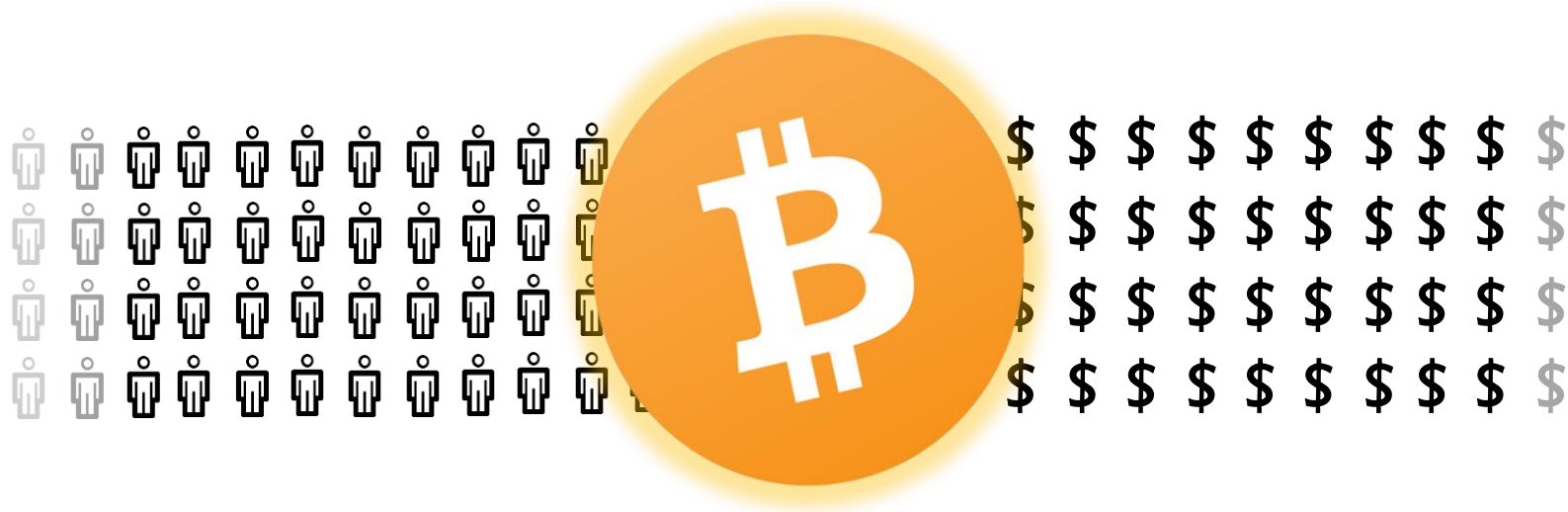
Researchers estimate that about **32M users** know about bitcoin (Lielacher, 2019)

...which is equal to the population of countries like Peru, Uzbekistan, Venezuela and Malaysia. (Worldometers)





But recent projections point to a blissful future for Bitcoin and crypto-currencies (Hileman, et al., 2017).



By 2020, Bitcoin will have about **100 million users.**

At the same year, Bitcoin market cap will be about **5 trillion USD.**

As it's possible to see, crypto-currencies market, as a whole, shows expectations of growing in an exponential basis. These expectations are proved every day, which makes it simple to see crypto-currencies as a prosperous and

advanced market.

What's missing for a technology that could unite the whole world to reach a bigger user base? This is what we asked ourselves. And this is what Capital came for.





## THE PROBLEMS WE ARE WILLING TO SOLVE

And how we will  
achieve it.

When globalization became impressive and cultures started mixing, multinational companies made the world's economy more homogeneous. By increasing global market dynamics, quickly we had the need of transferring amounts to different parts of the world in a quick way. A battle of giants decided that the U.S. Dollar and few other currencies must be used as main references for the exchange of most of fiat currencies. Yet, abroad banking still has issues: it's usually a delayed and bureaucratic process.

After the coming of crypto-currencies that started in 2009, the economics environment has gained an allied which allowed faster and cheaper exchanging and transferring. The relevance of crypto-currencies for the economics is comparable to the airplane's relevance for transports. Finally, bureaucratic barriers are nulled and international money transferring is easy and instant. This is evolution.

In order to get these benefits, however, buying and selling crypto-currencies that may or may not be offered in the same price on both points are still needed processes.

It's important to note that crypto-currencies aren't used only for sending values: it's also an important investing asset. And for the crypto-currencies investor users, Capital offers the ease of ensuring that one user's crypto-currency amounts can be quickly converted into fiat currencies (and the else) at any time, on the platform. It's an easy way to stop losses once the asset price starts dropping.

It's needed to give people and business an automated way that simplifies the

main intended user of crypto-currencies (money sending), and to give investors an easy way to keep their amounts in face of a price drop. Capital, nonetheless, offers even more.

We are talking about a platform that will innovate completely the way people use money. Capital will also offer virtual and physical prepaid international credit cards and support NFC contactless payments in supporting smartphones. Users will be able to control their cards through the app and spend their virtual assets anywhere.

Capital will embrace every area it's going to act on in a competitive way: on hand-picked locations, we are going to place ATM machines that allow users to withdraw their assets and non-users to buy and sell crypto-currencies.

We will also work as payment gateway, offering integration plugins for popular web-shopping platforms, allowing users to pay online orders with their assets and non-users to pay with crypto-currencies.

We believe that making it easy for e-commerces to accept crypto-currencies is a door-opener for great opportunities and a key to a meaningful fraud decrease.

Our fight against fraud can also be seen on our business-to-business (B2B) platform: a reliable escrow system that grants users their money back if they are victim of a scam, as well as lock users' funds, granting the receiving to the receiving part.

As you can see, we are bringing crypto-currencies' eases to every user, registered or not on our platform.







Your Money,  
Reinvented.

12

## INTRODUCING CAPITAL

Find out why it's so  
innovative and promising.

When we started working on Capital, back in middle 2016, we studied the markets we are focusing in, finding services that promised to do what (or part of) we were willing to offer.

During the development phase, we never stopped using these solutions, which allowed us to realize and understand the entire market flow. As part of the mass of users, we felt in our skins the lack of every feature requested by users.

As users of many of these services, we found ourselves able to find issues on the way these services were being offered as well as possible improvements points.

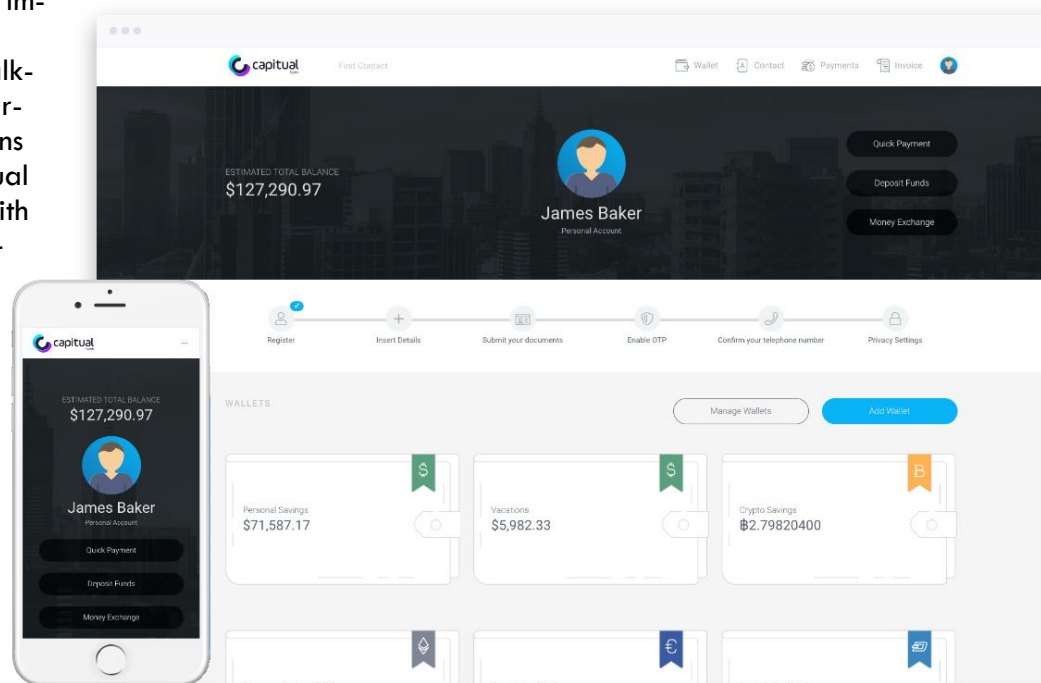
It's known that we are talking about a very new market where only few options are still available. Capital aggressively competes with several services by offering what many of them offer from just one platform.

Because competition causes the growth of a market, Capital was

born from the need of having many online assets-related services directly from one solution. We focus in offering each service with excellence, keeping ease of use as our trademark.

Capital is a company in constant growth and evolution. It brings the best of two worlds to every client, promoting the easy access to crypto-currencies on the market and financial freedom for everyone.

Please consider every page of this document as an invite to be part of an inevitable evolution, which obviously you'll not want to be out of.



Your Money,  
Reinvented.

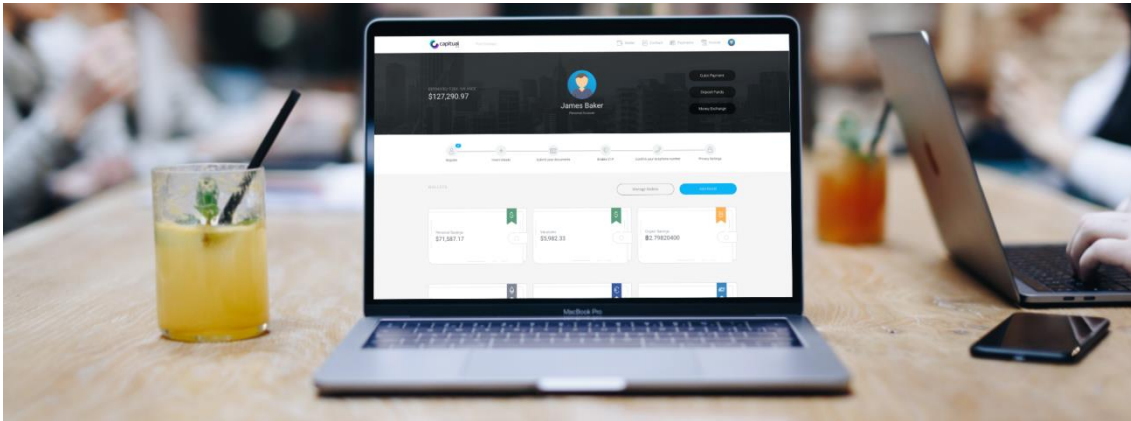




## PROJECT CONCEPT

What makes Capital  
unique?





An impressive amount of Capital features are already offered by other companies. We are sure, however, of the uniqueness of Capital elements in two points: excellence and ease of use.

Capital also differs on a very important characteristic, from users' point of view: we are the only company that is going to offer such amount of services from the same platform, directly to our users.

We have got the mission to be a banking services provider that works worldwide and supports crypto-currencies. This is not an easy task since our target users already have their favorite banking solutions and it's needed to convince them that Capital will give them lot more advantages than what they already use.

Of course, Capital has plenty of advantages if compared to existing crypto-banking solutions. But what users

are going to ask for is a bank that is present where they are.

Capital will use a physical agencies' model that is being adopted by newest online banks around the world: no agencies at all. This model has proven to be better, since the user is able to track errors by himself and get online help through tickets and live chat when needed.

Making Capital easy and accessible to the public is the key for a potential growth on our users' base, which will allow us to bring the benefits of crypto-currencies to as many users as we can, reaching not only traditional banking users but also people who live in remote places, with slow internet connection, who have no access to good quality financial solutions. These are all going to be achieved by our banking technology.

Marketing actions will often hit the key of the ease of use and why Capital is far better than your banking solution.



# OUR VISION

**Crypto-currencies and lamps  
are our friends.**

This sentence ironies some institutions' views of crypto-currencies: they often preferred to criminalize it.

This sentence puts in equality two technologies that changed the world in different ways: crypto-currencies, by Satoshi Nakamoto, and lamps, by Thomas Edson. We are basically asking: institutions that nowadays are against crypto-currencies would also be against lamps if it just got invented?

We don't think so.



# OUR MISSION

**Offering simple solutions for advanced users and advanced solutions for simple users.**

Our mission is always offering more than the user expects. Simple users will have access to advanced features, and advanced users will be presented to an ease of use that they never seen before that simplifies everything they know about crypto-currencies.

Being always a step further from what the user expects is Capital's mission for lifetime.





# OUR MOTIVATION

**Crypto-currencies are simple and so they should be kept.**

It's not true that crypto-currencies should be considered a complicated technology given that they represent new technologies. Nakamoto's 2009 article that created bitcoin explains how simple the blockchain is. Basically, blockchain takes as truth an information that is present on every node running on the network.

Our users mustn't be I.T. specialists to work with Capital. They also don't need to understand everything about investing. Our platform offers what they need from single clicks and takes out every complicated part.

Capital will bring Crypto-currencies to the rest of us.





## CAPITUAL'S ECOSYSTEM

Understand Capital  
from its core.

What we are presenting on this document is much more than a money transferring website and even more than a crypto assets wallet. We are presenting the evolution of the entire banking system. In the following chapters you will read more about every feature and also know more about our future implementations.







## WHAT HAS ALREADY BEEN DONE?

Much of what you read here is already ready for use!



The advantage of being part of the evolution with Capital is that you're not going to buy an exclusive set of promises. Very much of what you'll get is already working, and you'll instantly be part of it – and earning its profits through the dividends, of course.

## MONEY TRANSFERRING

Users are given different ways to transfer amounts.

### Internal Transfer

A user can, at any time and if there is enough balance, instantiate transfers from one wallet to another. The destination wallet may or may not belong to the same user. The funds are available instantly.

### Payment Requests

Users are able to send payment requests to any email address, that may or may not belong to registered users. An invoice is sent to the referred email and a link to payment is added. The page on the link gives the option of

signing in to pay with Capital funds or pay instantly with a supported cryptocurrency.

### Bulk Payments

Users can also send a defined amount to multiple wallets at once, if there is enough balance.

This is more a helpful tool mainly for companies that must pay their customers, since internally it calls multiple internal transfers for each wallet.

### Recurring Payments

When sending a payment, users can set an interval for the payment to repeat, which can be:

- Every N days
- On the Nth day of each month

Recurring payments can be listed and disabled at any time.



## INSTANT EXCHANGE

If the origin and receiving wallet aren't set to use the same currency (e.g. an amount is sent from a Bitcoin Capital wallet to a Dollar wallet), then the amount is automatically converted before reaching the destination wallet.

This is extremely useful, for example, for sellers who would like to start accepting Bitcoin but want to protect themselves from market fluctuations.

Instant exchanges happen on any type of transfer, which includes CapPay payments (next chapter).



## CAPCODE

With some similarity to physical bank checks, CapCodes e-vouchers are random alphanumeric codes that gives access to amounts held from the origin wallet.

Anyone can redeem a CapCode as well as just check its validity. The voucher originator can track by who and when the amount was redeemed.

## MULTICURRENCY ACCOUNTS

Our users can keep funds on multiple wallets on their accounts. While it's not applied a limit on how many wallets a user is able to get, users can create and discard empty wallets and define a currency for each wallet.

Once registered, users will be able to



keep their funds on different cryptocurrencies, such as Bitcoin, Litecoin and Dash, plus fiat currencies, such as: US Dollar, Euro and Brazilian Real.

Other currencies, such as Bitcoin Cash, Decred, Monero, fiat currencies or ERC-20 tokens, can be added based on token holders' preference.

## FIAT DEPOSITS

Capital holds bank accounts in several countries where identified transfers must be sent to, in order to deposit fiat money onto a wallet. The bank account is presented depending on the currency the user wishes to deposit.

We will also provide an IBAN code for each account. It will allow automatic deposit identification with no human interaction.

## CRYPTO-CURRENCIES DEPOSITS

As an alternative and to achieve faster deposits, users can also add funds onto their wallets through Crypto-currency deposits.

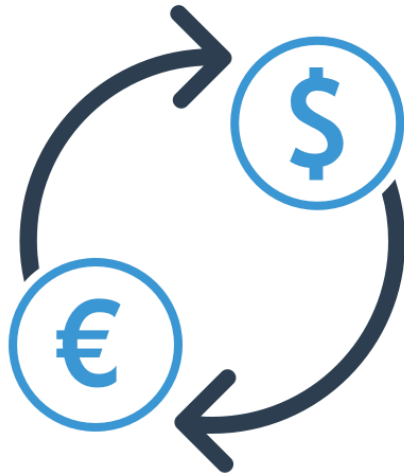
An important thing to note is that, to avoid double-spend attacks, funds will only be available after the network to confirm the transaction.

Since our target is integrating crypto and banking industries, we will offer incentives to users who make deposits using crypto-currencies, and work with token holders to define new crypto-currencies to be supported by Capital platform.





## CURRENCY EXCHANGE



Users can, at any time and wish, move all or part of their assets in a wallet to another wallet. If the wallets store different currencies, a conversion is done. Note that this can happen even if the wallets are from different owners. This feature allows an automatic conversion if the user does not have funds in the currency that had been selected by the destination wallet owner.

### Investing

Since we ensure the exchange between any currency, users can make use of this feature to invest in fiat and crypto-currencies.

The exchange is always granted and the user portfolio grows up as his assets' prices increases. Also, once prices start dropping, users can sell their crypto-assets instantly and reduce the exposition to risk and losses.

This makes possible for any user to use Capital as a portfolio manager and main gateway for Buying and Selling crypto-currencies.





A Payment  
at the top

CAPITUAL'S ECOSYSTEM ▶

25

**CAPPAY**



# WHY ANOTHER PAYMENT GATEWAY?

Online payment services aren't something new. Thanks to these services, we are able to buy digital and physical assets, receiving them right at home.

Perhaps without them, e-commerce industry wouldn't be as strong as it is now. According to a Statista research, in Asia Pacific only, this market is expected to transact US\$ 2,3 trillion by 2019 (Statista, 2016).

Most of this amount is due to China, where 70% of internet users use e-commerces (Amoros, 2018) – and this statistic is similar in the United States (Statista, 2018). A recent analysis published by the Department of Agriculture and Agri-Food of the Government of Canada showed that China is by far the largest e-commerce market in the world, registering an annual growth of 51.2% from 2012 to 2016, and representing 32% of the entire world's e-commerce market, followed by the United States, which represents 25% of it. (Agriculture and Agri-Food Canada, 2017)

The same research found out that one of the reasons for Chinese dominance over e-commerce market stands on the variety of payment options offered by online sellers (Long, 2017). Online payment gateways are included on e-commerce' accepted payment options and

gain popularity due to its improved security and convenience.

Taking into consideration the portion of Chinese e-commerce market that runs on mobile, it is estimated that 75% of the sales (over US\$ 1 trillion) is done through tablets and, mostly, smartphones. (Statista, 2016)

The e-commerce growth as well as mobile preference could also be registered world-widely: PayPal™, a payment gateway that operates in 180 countries, has registered a 27% growth on its payments volume from 2016 to 2017. (Statista, 2018) Over ¼ of this volume has been transacted from mobile devices. (Statista, 2018)

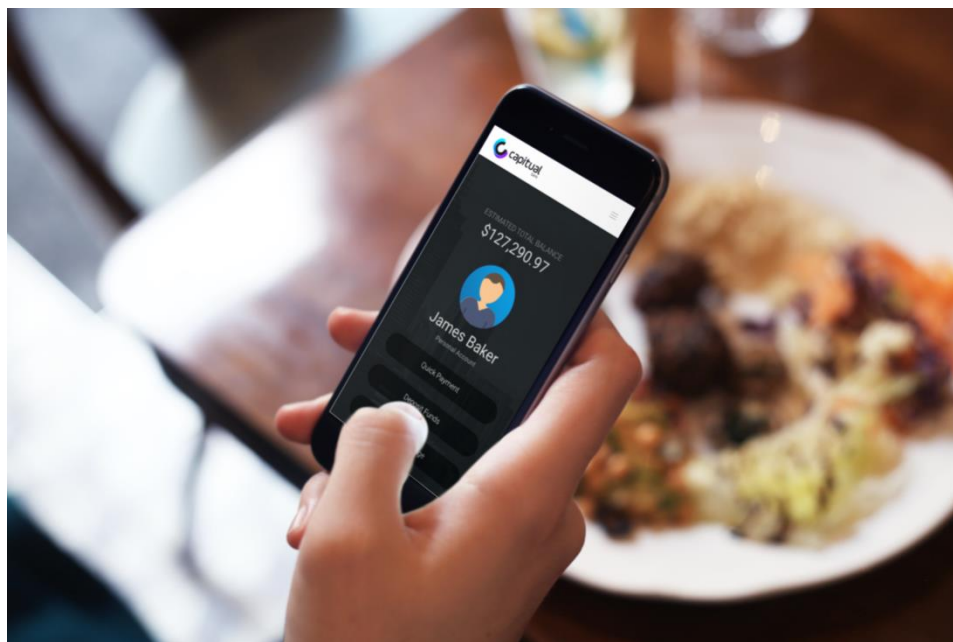




A 2014 survey by Statista regarding the future of mobile payments systems usage revealed that 45% of the respondents preferred to pay their expenses by simply scanning a QR Code with their smartphones, making it the favorite payment method, followed by NFC contactless payments. And mobile payments niche is impressive, as this industry is going to see revenue of more than 1 trillion in 2019. (Statista, 2016)

During middle 2017's Global E-commerce Summit, hosted in Barcelona by E-commerce Europe, the transformation power of crypto-currencies over online market was clear. Blockchain technology and crypto-currencies were considered the future of electronic payments, ensuring to e-commerce owners instant payments and lower costs for processing. It showed that entrepreneurs already see blockchain as a replacement for nowadays' procedures involved on records and identity management and transaction processing. (Ecommerce Europe, 2017)

With CapPay, we expect to speed up the reaching of crypto-currencies to multiple market sectors. By developing integration plugins for major e-commerce platforms and offering a safe and intuitive mobile application, we'll be able to bring crypto-currencies benefits to anyone who needs an easy and totally safe payment option.



# PRESENTING CAPPAY

CapPay is an interesting Capital feature that allows orders in e-commerce websites to be paid with Capital funds or crypto-currencies, through the **Smart Checkout** system.

A user does not need to be registered and/or logged on in order to use CapPay. In this case, only the instant crypto-currencies option will be shown.

It works for e-commerce, through integrations with popular platforms allowing the user to pay orders using crypto-currencies or Capital funds.

It also works for physical stores, through a mobile application that simplifies the process of receiving payments in crypto-currencies from anyone or in Capital funds. It's important to mention that the CapPay application is separated from the Capital mobile application and only allows receiving funds. This way it's safe to leave mobile handsets logged on CapPay constantly, as no funds can be transferred out of the account through the application.

## MERCHANT PLUGINS

Capital will work with the open-source community by offering plugins to integrate CapPay services with the most used e-commerce solutions, such as OpenCart, xCart and WooCommerce.

These plugins will work based on CapPay's API, which is also documented and is available to anyone who wants to help in developing plugins for other platforms or integrating his own custom platform with CapPay.

Also, donation buttons can be easily created and added to any webpage. A donation button accepts any amount and, similarly to the payment button, offers the option to callback any URL once a payment is done.

## CHECKOUT PROCESS

### 1. Buying

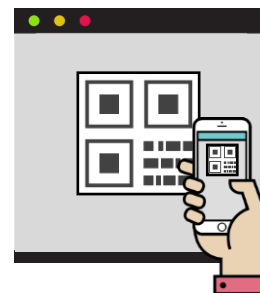
In an integrated e-commerce website, users will select their desired products and proceed to checkout.

### 2. Payment

In order to check out, they are able to pay with any supported crypto-currencies wallet, Capital login or Capital mobile application.

### 3. Confirmation

The website owner receives these funds on his Capital account, in the preferred currency, no matter which currency the user paid with.







## FUTURE GOALS

What are we planning to develop?



*By joining Capital project, you'll be part of an already running service, but which is also promising. There's more evolution to come. Here are the services we plan to offer soon.*

## CAPSHOP

Among the benefits that were brought by the web advent is the possibility of buying assets from different places and, in case of physical goods, having it mailed straight to home.

The internet advent has obviously added convenience to several procedures that were already part of the market daily routine. But it opened a wide range of easing possibilities. One of them has shown up when someone realized that, instead of having to download each one of their favorite retailers' applications or access their websites in order to be able to order their products, it would be more convenient if one application could unite different sellers of several categories of products.

Some of the advantages are a broader product range and better competition. Also, economy could heat up by allowing local sellers to spread their limits (Lemma, 2017). This kind of e-commerce had been developed and is now available under the name "marketplace".

As these stores attracted the consumers' attention, department stores started declining and even multi-brand retailers started to be replaced by these platforms. (Kestenbaum, 2017)

The idea of having these actual "online malls" has seemingly worked: eBay, a marketplace that works across 25 countries (Haselden, 2015), registers 175 million buyers (Smith, 2018) and 25 million

sellers. (Ramasamy, 2018) The platform transacted US\$ 88.4 billion in 2017 (Statista, 2018) and has 1 billion listings available. (Haselden, 2017)

eBay is also considered one of the fastest-growing internet companies. Its net revenue has doubled every year from 2008 to 2013, and its audience stretches over most of the world. (Statista, 2018)

In China – which market is dominated by Alibaba (Statista, 2018) – and the United States – the two biggest e-commerce markets of the world –, most of the online orders happen through marketplaces rather than individual stores (Ramasamy, 2018). And this is also an environment where mobile devices dominate: 81% of the online orders transactions made on the 2<sup>nd</sup> quarter of 2017 have been made from smartphones. (Fung Business Intelligence, 2017)

Although most of the available marketplaces do not include crypto-currencies as a payment method, a few sellers do so, confirming the order outside the platforms. (Godin, 2017)

This sums up an additional fraud possibility as the marketplace is unable to offer escrow for crypto-currencies payments.

Aware of this market need, we are proposing an interesting Capital feature which allows users to maintain marketplaces where they can announce and sell their products and services for the public.



Any user can acquire these announced products, however only registered users are able to pay with Capital funds. Non-registered users can check out with crypto-currencies only. Furthermore, buyers are given the option to give feedback on the order, qualifying both the seller and the product or service.

For avoiding scam trials, an escrow system is also included. If a dispute is opened, a judge from the Capital team analyzes both the sides impersonally and impartially, eventually deciding in favor of one of the parts.

Users stores can be customized: colors and pictures can be selected, to make each store unique.

## B2B ESCROW

With the advent of the internet, fraudsters created new scheme possibilities with reduced costs and wider audience. Baker (2002) adds that the unregulated nature of the early internet, associated with the growth of e-commerce, have facilitated fraudulent acts.

Phishing is considered by Inteco (2007) the most practiced internet fraud type. Although the concept of phishing is too wide, known ways are by selling products or services that are never being to be sent or executed. Nonetheless, the money is never sent back to the victim. (Dinca, 2016)

Internet has surely opened new business possibilities by making it easier to sell and buy to and from different locations. The phishing risk is, however, responsible

for annual losses. United Kingdom-based online retailers registered £ 189.4 millions of losses with online frauds – a growth of 20%, if compared to the previous year. The research that revealed this worrying statistic, published in the United Kingdom, also registered a growth of 15% in frauds against abroad sellers. (Financial Fraud Action UK Ltd., 2017)

An efficient way to prevent frauds in online business is adding a middle agent who holds the amount until the negotiation is finished. That's what Capital B2B Escrow stands for.

For companies that need a reliable escrow service, Capital will offer a solution that also works on the platform, granting online business to be safer and avoiding scam trials.

Any amount can be held on an escrow transaction that is sent targeting one destination user's wallet. The destination user is notified that the escrow process started, but the funds are only added onto the destination user's wallet once the sender verifies it.

Cancelling an escrow process, however, cannot as simple as verifying it: once the sender tries to cancel an escrow process, a dispute is started. A judge from Capital team will listen both the parties, understand the transaction and, after checking documents and other needed information depending on the case, decide whether the escrow process must really be cancelled (and the funds goes back to the sender) or if its cancellation was invalid (and the funds goes to the destination wallet).

It's important to note that the escrow judge will be completely transparent on his decisions and will judge each escrow



dispute impartially and impersonally, free of any vicious.

### Contracts registered on the blockchain

In Capital B2B Escrow, in order to ensure that no information can be modified arbitrary, every B2B negotiation is registered on Ethereum blockchain, in the form of a smart contract issued by Capital to register such data.

The smart contract stores the negotiation status (which is originally pending and can only be set to done or cancelled once), amount and the parts involved.

The data can be modified through Capital Escrow interface. The content is then kept for the sake of the history on the blockchain.



## PHYSICAL CARDS

A physical prepaid credit card will also be issued to users.

The card is completely managed through the mobile application and any wallet can be selected to deduct the funds spent through the card.

The reason to issue these cards as prepaid credit instead of debit is that the former is more suitable than the latter in

some situations, since likely most of online stores do only accept credit cards.

## SMS BANKING

It's no doubt that the World Wide Web has changed the way people communicate, creating new possibilities and making nearer different people and culture. The globalization received new opportunities to grow.

While internet access gained popularity, telephony systems walked at its side. Internet has given us goodies such as VoIP and messengers, and obviously, payment methods.

When internet users moved to their mobile devices (Gibbs, 2016), internet entrepreneurs realized their users' intentions and moved together. This way, payments services created what we know as mobile money.

A huge part of the world watched all this evolution from outside, without being able to join it. Country's infrastructure, net neutrality questions (Global Net Neutrality Coalition, 2018) and affordability have limited internet access for several potential users. According to the World Economic Forum, about half of the world's population does not have internet access. (Luxton, 2016)

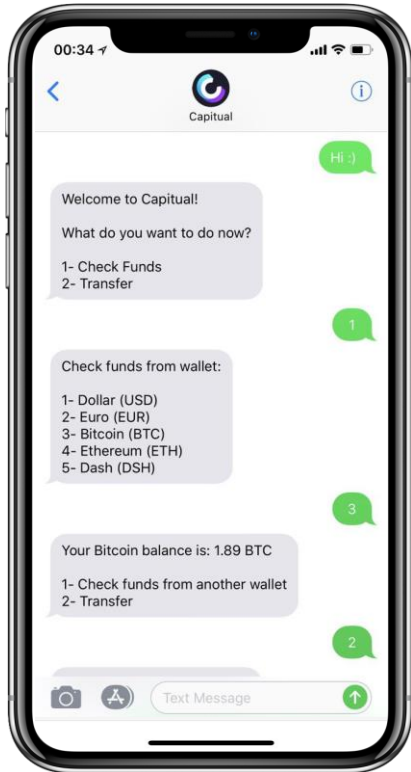
Some entrepreneurs have seen on this public a great opportunity to offer simple payment methods with what it's more affordable, such as SMS plans (Vodafone, 2018). These services are commonly offered by phone service providers and, most recently, by banks, and have been successful, with extremely high acceptance rate.

The social paper of these services is also considered utmost important, as they





help on heating markets and reducing poverty. Users can pay orders and bills through SMS menus. (Monks, 2017) A way to transfer and receive crypto-currencies through SMS – and finally bring crypto-currencies' technology to un-reached populations – was yet to come. And here it is.



We want to offer ways to manage accounts through SMS. Confirmed phone numbers will be able to receive SMS once payments are done, as well as evaluate some actions:

**Request payments:** users can send invoices to any email address, even to non-registered users

**View balance:** users can receive the balances of any wallet of their own

**Send payments:** users are given possibility to make transfers between Capital accounts as well as sending amounts to any supported crypto-currency wallet, also from SMS.

### Security

We are aware of SMS limitations and security concerns involved on allowing permanent transactions through the service.

Our market research revealed that SMS payments providers rely on a PIN code that is sent previously to the user.

We've developed an additional step of authentication, which consists on sending to the user, previously, a password formed with three random syllables.

Once the user tries to make a transaction, one of the three syllables is requested. Three groups with three random syllables are then sent to the user. The requested syllable is present in only one of these groups. The user must point which group contains it in order to continue.

Additional steps, such as PIN codes or alphanumeric passwords, can also be added if needed.

## VIRTUAL CARDS

Users are given multi-currency virtual prepaid credit cards related to their accounts.

A virtual credit card consists in a prepaid card that is not issued physically. They can only be used online or through typed-order available in some POS machines.

It's possible to select which wallet and currency must the virtual credit card orders be deducted from.



Users can access their virtual credit card information in a password-protected area on their account settings.

## NFC PAYMENTS

By using CapCard or Capital smartphones application (in supporting devices), it will also be possible to order anything in physical stores with POS machines supporting contactless NFC payments, simply by hovering the phone on the machine.

The POS machines understands the NFC as a virtual credit card that works by deducting the order value from a user-selected wallet.

## POS MACHINES

Capital is also going to offer point-of-sale machines for business. With these machines, any physical store owner will be able to accept supported crypto-currencies from his clients, or even Capital funds from his clients who are registered to Capital Bank.

Each machine is set to a Capital account, so the POS machine owner is able to define which wallet must the orders funds be sent to.

Crypto-currencies transactions (from non-registered users) occur by generating a wallet and showing up its address and QR-Code on the screen. Thus, buyers will be able to send amounts to the wallet with their favorite crypto-assets wallet application.

At the same time, Capital transactions will also occur by showing up the Capital account wallet address and QR-Code. This way, registered users can pay their orders by reading the QR-

Code with their smartphones, using Capital application, and finalize the checkout process with their funds.

## CREDIT CARDS PAYMENT GATEWAY

CapPay is already a competitive payment gateway by accepting crypto-currencies at zero fees, and by practicing currency exchange at low fees.

Yet, it's planned to add credit cards support into CapPay. This way, it's highly possible that, in several cases, CapPay is the only payment gateway used in e-commerce.

However, since simply acquiring payment processing services from already existing gateways and re-selling it would cause CapPay to be a lot more expensive, since it would be needed to charge the gateway's processing fees from the gateway to the client, it would not make any sense to launch such product. Therefore, it's needed to implement each card brand's API to be able to process payments at low level and avoid additional fees.

## ATM MACHINES

Bitcoin ATM amount has doubled in recent years. An average of 5 new machines were installed each day last year. However, 76.1% of these machines are installed in the United States and 18.8% in European countries. The remaining 5.1% are divided by other countries the whole globe. (Amoros, 2018)

Among countries that have ATM machines, the statistical mode is 1 equip



ment for the whole country (Coin ATM Radar, 2018).



We believe we can serve different publics by adding WebKit and IMTP-powered ATM Machines that allow fiat withdraw and deposit as well as crypto-currencies selling and buying, starting on specified locations of huge public such as airports and malls and receiving CapToken holders' suggestions, that will be applied through votes.

An important thing to note is that, with the public API or IMTP, anyone is allowed to create Capital-powered ATM machines that support fiat and crypto-currencies. But we found it interesting to maintain a few official ones, on places decided by CapToken holders, through voting.

Below, we have listed a few places where ATM machines could be positioned. These locations as well as additional locations are subject to CapTokens' voting.







FUTURE GOALS ▶

36

## CAPLOAN

Secure online money loan  
made easy

# THE ONLINE LOAN INDUSTRY

Loans industry has registered exponential growth throughout history. It jumped from about US\$ 800 billion in January 2008 to US\$ 1,4 trillion in January 2018. It's going to be a durable industry. (Voices, 2016)

In online matters, however, the registered growth was not as impressive as showed by commercial banks' loan operations.

China is considered the world's largest loan industry. Among the more than 800 physical or online lending platforms, the most popular online lending platform was responsible for less than 10% of the market, whereas each platform's average market share didn't reach 1%. (Wang, et al., 2015)



(FRED, 2018)

Despite its size, Chinese loan industry is still considered to be at an infancy stage. An immature market means

higher risks and a huge need of market research and planning. Startups that tried to join this industry have mostly failed due to the lack of research and development strategies. Online fintechs were unable to get the public to effectively understand how online loans work.

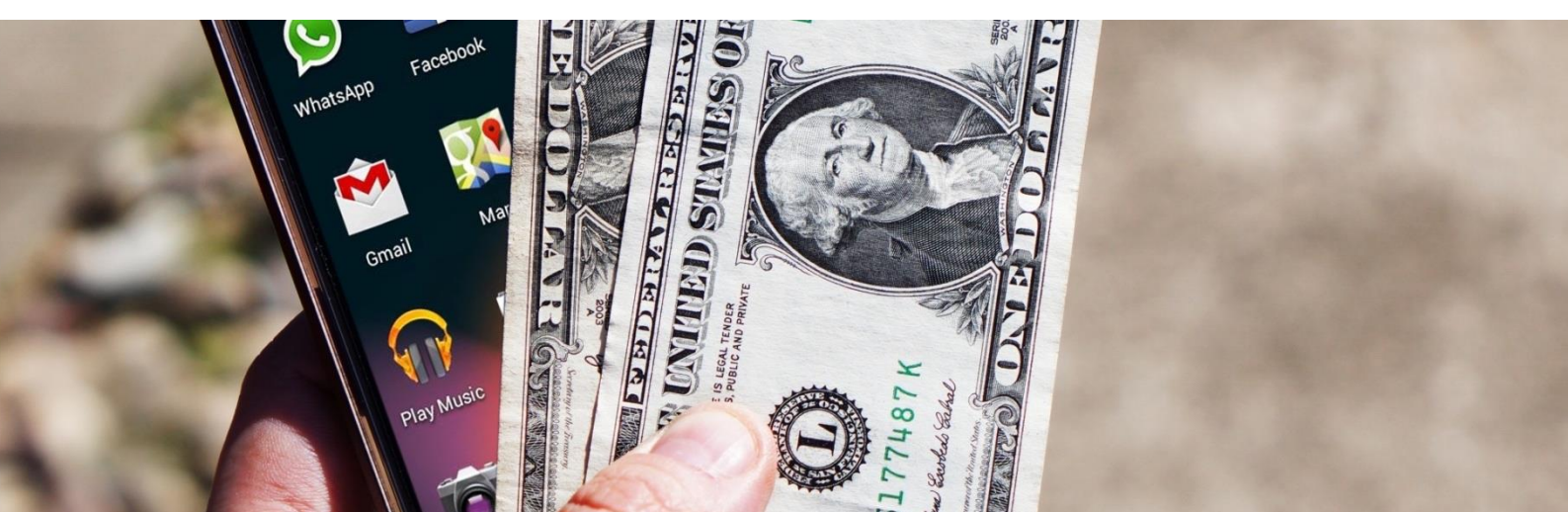
It's ingenious to assume that entrepreneurs who undertake this kind of business failed due to the lack of expertise. What, then, went wrong?

Wang, et al. (2015) states that these new players' fault was putting major efforts to make new clients and grant a good position in the market, exclusively, abstaining efforts for research and development.

While this market is still on an early state, few companies have made investments and moved the industry forwards, therefore online loans didn't get enough critical mass so far. Thus, the public still lacks to be educated about how it works, actually.

\* \* \*

Capital believes on the potential social power of crypto-currencies and is, therefore, developing a loan platform with automated risk and limit calculations, which will be explained on the next pages.





# CAPLOAN STAGE 1

CapLoan will, initially, offer crypto-assets-backed loans, which grants a safe operation for both Capital and the customer. While this process is better explained on the publication "[CapLoan: A Riskless Loan Method](#)", the basic concepts are explained on the present document.

Users who are interested in CapLoan services are required to deposit, in crypto-currencies, an amount equal to twice the required value. The sent crypto-assets are, then, stored safely, as the customer's Capital account receives, in fiat, the loan amount. Instantly, the user is able to transfer, exchange, convert, pay or withdraw the funds, like any other values on his wallets.

A payment draft is calculated and presented to the user. It lists every payment date and the amount that must be deducted. A reasonable rate is applied.

In order to pay, the customer is required to leave, at the date of the payment, the value that must be deducted. The deduction is, then, automatic. If, however, the amount is not available on the user's wallet, the system understands that the loan operation was cancelled. Otherwise, once all installments are paid, the crypto-asset pledge is made available for the user to withdraw.

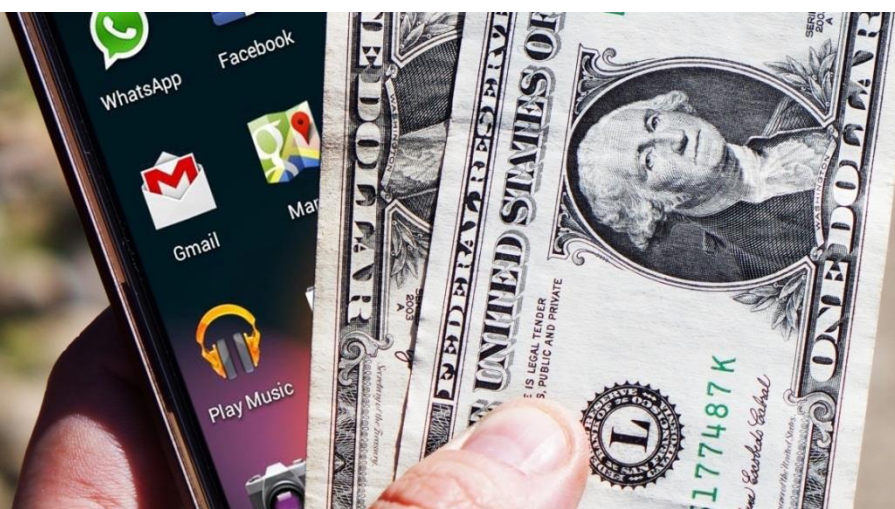
## DEFAULTING

Lack of installments payment are expected, and indicates that the loan accord has been voided. Once an installment is left unpaid, the pledge deposit, in crypto-assets, is liquidated. The sum of all the remaining installments are deducted from the pledge, as the remaining funds on the pledge (if any) are then left available for withdraw.

## PLEDGE DEPRECIATION

It might also happen that the pledge currency gets depreciated. In order to avoid it to get lower than the loan amount (as it would make it more interesting to the user not to pay any installment anymore, while the platform could register loss), the pledge value will be constantly checked. Once it is detected that the pledge amount is worth 101.1% (plus interests) of the loan amount, the pledge is automatically liquidated and the entire loan is paid.

Thus, the platform does not register loss and the customer would also be benefited, as it would work like a "stop-limit" trigger, and losses could be controlled.





# CAPLOAN STAGE 2

Capital will be able to offer loans directly to users, based on a risk volume.

Loans can be asked by any registered user with some account history and confirmed documents. These are deposited directly to the user account, in a wallet selected by the user, after a risk analysis.

The risk analysis will obey a per-country formula based on the Capital's risk calculation model.

The risks involved in a CapLoan operation is given as:

$$R = k (1 - F_p + F_p) \sum_0^D \frac{D_f}{1 + D_f}$$

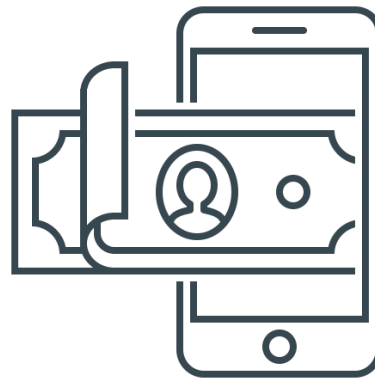
Where:

- R: process risk score (the lower the score, the higher the risk)
- k: risk constant (explained on the next page)
- $F_p$ : amount borrowed that still pending to be paid
- $F_p$ : amount borrowed and paid
- D: account age, in days
- $D_f$ : One day's positive additions
- $D_f$ : One day's negative additions

makes use of a  $k$  constant named "risk constant".

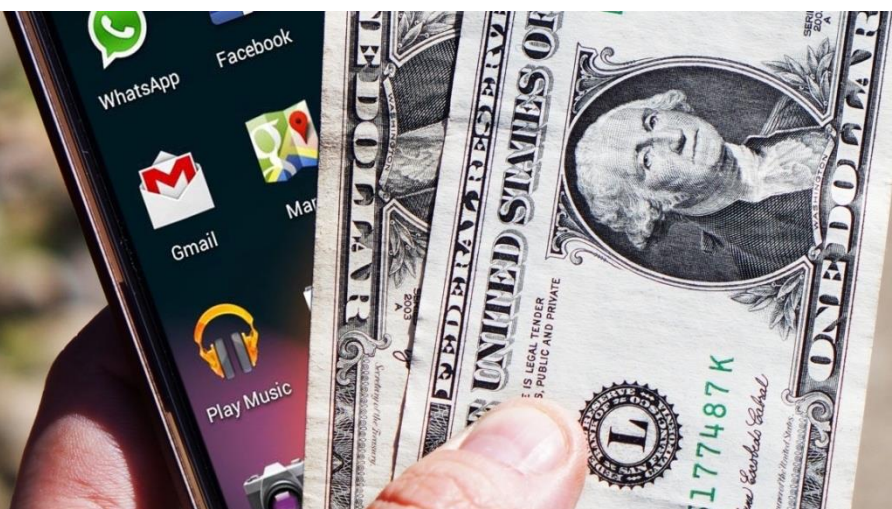
This is a per-user value that is calculated in a defined interval, taking into consideration geolocation data, user profile details, average user volume, average transacted volume and several variables that may be used. This is a constantly changing model and it's geolocation-based. Efforts will be applied daily on developing a risk calculation model that is near to free of faults.

To grant an always improving model, the risk constant calculation process will also contain an artificially intelligent machine learning model, based on the default rate, to avoid possible frauds.



## THE RISK CONSTANT

Capital's Risk Calculation Model







## THE IMTP PROTOCOL

The protocol that powers  
Capital and is available  
to everyone



# WHY DO WE NEED A MONEY TRANSFER PROTOCOL?

Once we lend (deposit) funds to a Bank Institution, we're able to, easily, move the lent funds between different accounts. This feature allowed us to make payments and transfer funds to any individual or company which is also owner of a bank account.

Sometimes it may happen that the two sides of a banking transaction aren't registered on the same institutions. In this case, an interbank transaction takes place, usually through the country's national reserve or central bank.

However, if the two sides are located in different countries, services like Swift are given the task to register and execute the transaction, allowing funds to be moved worldwide. You can read more about how it works with the post "[How does interbank transactions and abroad banking work?](#)", in Capital Blog.

Besides all this freedom and ease, it does not sit the ease to integrate crypto-currencies into banking transactions; we are still unable to send crypto-currencies to our bank contacts.

It's known that crypto-currencies' transactions are done very easily, quickly and that the security involved on this process is higher than any banking

model. It's also known that crypto-currencies represent a huge evolution of the financial system, allowing funds to be carried anywhere whereas math protects the ownership of every coin. We asked ourselves why bank institutions, POS machines maintainers and payment gateways did not realize the importance of crypto-currencies for the economics environment, or even why crypto-currencies aren't easily spent, despite their high security level as well as how quickly a crypto-currency payment is done.

*We want to bring crypto-currencies to everyone.*

Although this sentence had been used by several projects, that granted that they'll provide accessibility and allow standard daily transactions to be made through the blockchain, no project so far presented us a really promising project that is able to open as many possibilities as IMTP does.

In fact, our focus is bringing crypto-currencies to the physical world. This protocol enables ATM machines where users instantly exchange fiat and crypto-currencies. It also enables P.O.S. machines and payment gateways that allow crypto-currency-based payments and





protect the seller from price variations. Internet of Things gets finally access to, both, fiat and crypto-currencies at the same time, and enables advanced vending machines, ticket selling automatic machines, automatized restaurant cash-outs and whatever else creative developers can think of, once they handle IMTP. Furthermore, it gives banks and fi-

nancial institutions a faster way to manage international transfers, and crypto assets exchanges to have a closer integration with banks and provide instant deposits onto users' accounts. IMTP is built to be simple so that any network-enabled device, from abroad systems to complete servers, are able to implement it.

## HOW ARE WE GOING TO ACHIEVE THIS?

We believe the answers to the points presented on the previous chapter consists in giving access to two points: liquidity and technology. Without them, an absolute usage of crypto-currencies may delay more than most of us are able to testify.

Once these two points are brought to every layer of the market, we expect to see a higher usage of crypto-currencies not only by investors and I.T.-related people, but also in standard restaurants and popular shops.

However, more important than stating what we need to provide is stating how we are going to provide this.

### LIQUIDITY

It's well known that Bitcoin and other crypto-currencies often see their prices raising and dropping. It happens due to natural market speculation and cannot be avoided. Our researches showed that what physical commerce owners

mostly fear about bitcoin is its price drop right when these funds are needed.

Stores, service providers, restaurants and gas stations make use of fiat money and fear crypto-currencies due to the nature of the variable price, which is not compatible with their recurring debits with suppliers and taxes. It's needed to provide a way to convert instantly crypto-currencies to the currency that the store administrator wants, does not matter its nature.

These companies hold bank accounts where they receive funds from their clients as well as pay employees and suppliers. Their bank does not allow them to receive crypto-currencies. In order to lower the risks involved with crypto-currencies processing, they would need a service that could receive crypto-currencies and keep it on the currency that they need in an automatic way, without having to look for buyers in exchanges.



## TECHNOLOGY

Bitcoin is proved ease to manage. But what physical commerce owners who already started accepting bitcoin are given is usually nothing more than a wallet software installed on a computer or smartphone, and the entire process is done manually - this often also includes seeking exchanges to sell their coins.

Not all merchants are able to make use of a crypto-currencies wallet and an exchange. An even smaller portion of them is able to teach this process to their employees, keeping it still safe.

On what applies to credit or debit card payment processing, merchants disposes of P.O.S. machines that makes the entire process of banking transfers from different bank institutions as easy as typing a 4 to 6 digits password.

Being more practical than bank transfers, it's interesting how crypto-currency P.O.S. machines weren't able to become popular. Perhaps a large-scale project is needed behind it, providing this technology, in order for it to work and cause positive changes for the usufruct of the society.

## WHAT'S IMTP?

IMTP (InterMonetary Transfer Protocol) is a public protocol specification to provide interbank transactions support, with open support to crypto-currencies. As in this case the protocol host, Capital, provides support to different fiat and crypto-currencies, they all are integrated on Capital's IMTP server instance.

It works through a constant socket from any TCP/IP-enabled machine with internet access to the instance where the IMTP server is located - in our case, on Capital servers.

IMTP is meant to be simple and not network spending. It was thought keeping in mind Internet of Things and embedded systems. This means that nearly any low processing machine will be able to implement it, and low conditions networks

will not slow down the process enough to make it impossible to use.

You can refer to our paper "[IMTP Specification](#)" and [Capital Developers](#) for technical details regarding security and implementation procedures. Next, we will present a few use cases. The actions are presented as hexadecimal codes that are referenced on that document.

## POS MACHINES

IMTP powers everything inside Capital. Even the web interface makes use of a web API which simply sends commands to a public Capital's IMTP server. Since it's included on the future plans for Capital to emit debit cards, place ATM machines in specified locations and offer POS machines, these will





surely work with IMTP.

POS machines will use the "Create Crypto Deposit" (0x44) or "Create Capital Deposit" actions to produce wallet addresses that will be used in transfers between sellers and buyers at stores, and listen for the Received event (0x72) in order to detect once the order had been paid.

Debit cards, since they always belong to registered Capital users, will store user authentication keys and the POS machines which accept them will be able to use the "Transfer" (0x54) action to pay orders. It's safe since OTP is still required and must be entered by the user on the POS machine.

## ATM MACHINES

ATM machines, for registered users, will allow physical money withdraw by using the "Transfer" (0x54) method, together with the user's OTP code, to transfer the withdrew funds to a system-controlled account (owned by the ATM machine maintainer, which may or may not be Capital).

An important thing to note is that IMTP allows not only Capital to provide these tools, but also anyone to develop and maintain them using Capital, getting profits from their users for offering these services.

## VENDING MACHINES

Under a most common environment, vending machines in airports and universities will be able to accept crypto-currencies and Capital supported currencies during orders.

This is done through the "Create Crypto Deposit" (0x44) or "Create Capital Deposit" methods. Since the funds are kept

in a Capital account set by the vending machine maintainer, they are safe.

This way it's possible to sell, automated, from snacks to airplane tickets, with a high security level and great multicurrency acceptance.

**Automatic Supply Buyer:** On the same way, IoT-connected freezers and kitchen suppliers' keepers can be developed to detect once provisions are ending and automatically buy from IoT-enabled stores.

IMTP comes in hand to supply the need of a protocol that is completely thought for IoT usage and can be used in this case for completing orders.

## CRYPTO-EXCHANGE TO BANK TRANSFER

Transfers between users of different institutions are usually done through a gateway that may be provided by the government's Central Bank or by private companies. IMTP offers this kind of connection and integrates with crypto-currencies.

Banks and other financial institutions that make use of Capital's IMTP can receive instant transfers, even internationally, through crypto-currencies or supported fiat-backed tokens. It allows, for example, instant transfers between financial institutions and crypto-assets exchanges. Even faster than most of crypto-currencies' transactions.





## INTERBANK AND INTER-NATIONAL BANKING

Similar to transfers between financial institutions and crypto-assets exchanges, two financial institutions can also use Capital's IMTP as a gateway to provide interbank or international transfers,

through fiat-backed tokens. The biggest advantages in using Capital's IMTP as gateway is that any transaction is instant and currency exchanges are automatic. Institutions are allowed, however, to execute the currency exchange on their own, applying their own rates

and fees, and transferring the already converted amount through IMTP to the destination institution.

It's important to note that IMTP is an open specification. This means that anyone can implement it as server or client, and nothing is exclusive for Capital.



## IMTP GIVES ACCESS TO THE EASE OF MANAGING CRYPTO-CURRENCIES

IMTP's main target is allowing crypto-currencies to be managed just like any currency, as they were created for, and at every layer of daily economics activities.

The Protocol also provides essential technology for Internet of Things developers, giving new projects an easy and safe way to receive and send payments, with or without human interaction. IMTP with Capital solves issues pointed

as causes for the lack of crypto-currency usage in urban routine. Therefore, we believe it has enough potential to popularize crypto-currencies among different communities and build the path for a considerable evolution on money's management.





# CAPITUAL'S INFRASTRUCTURE

We are proud to present  
Capitaul on its core.



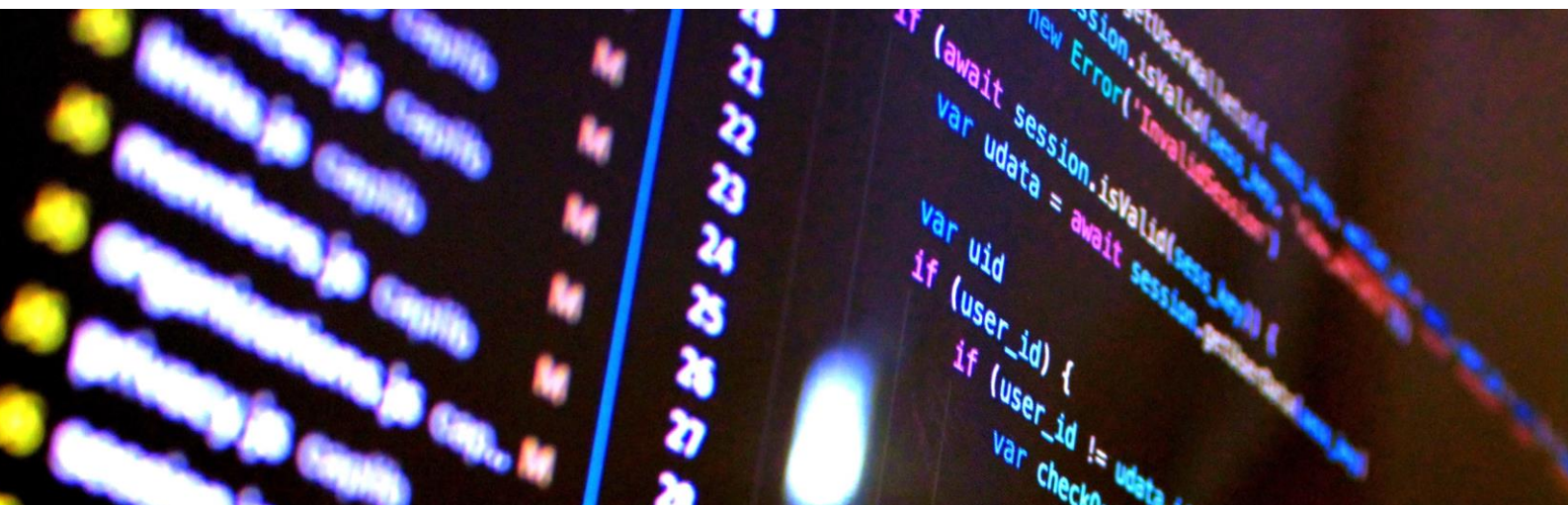
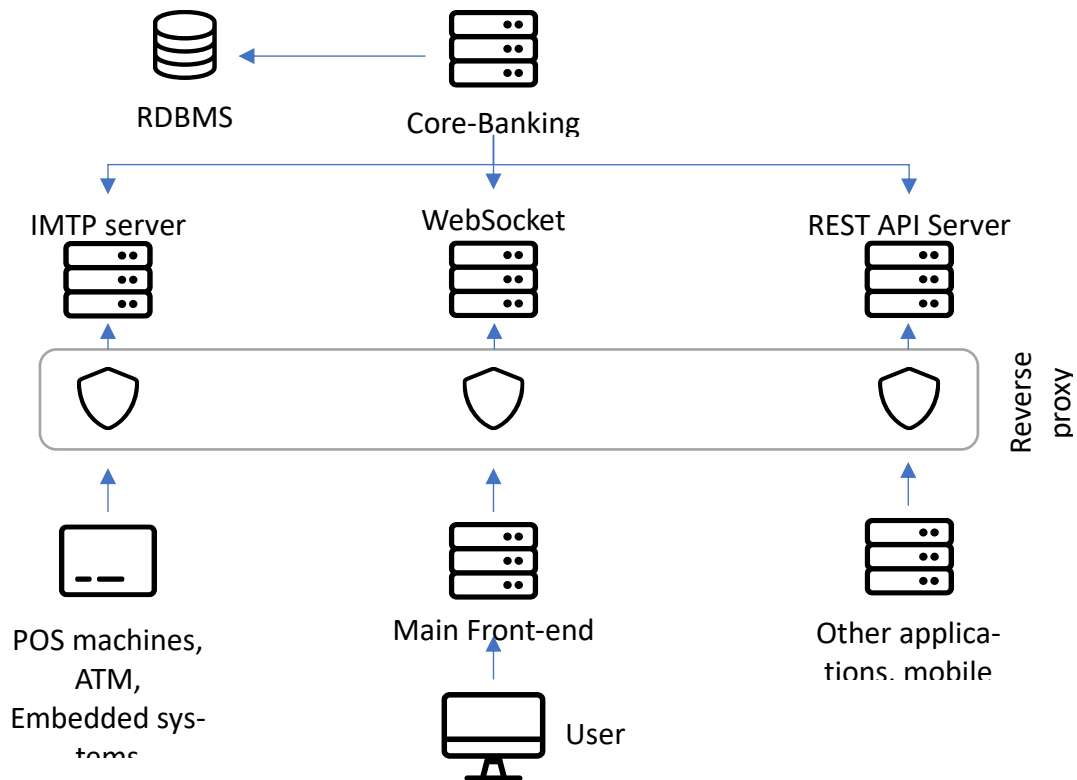
Capital is an already-running project. Therefore, it's essential to know how it is structured internally, the network topology as well as the technologies that have been chosen during the development steps and maintenance period of the entire Capital ecosystem.

This article provides this information about the *de facto* used technologies. It's important to mention that an extensive research has been done on banking platforms and their adopted technologies and methods. We have tested different free and commercial core banking systems, checking each them on their details, their limitations and, giving a special focus on the latter, what causes it.

The infrastructure behind Capital has

been planned with reliability and information security being kept in mind. The core-banking system is inaccessible directly. In counterpart, three different communication channels are available, allowing mobile, desktop and web applications, as well as robots, ATM and POS machines and other embedded systems, to send requests inside Capital core-banking. These channels are: IMTP, a WebSockets server and a REST API.

While these three channels (named *interfaces*) are already available, the core-banking system does not depend on them to stay running. The adopted modular back-end development also makes possible for interfaces to be modified and/or added as needed.





## DATA STORAGE

Capitulum's main RDBMS is powered by MySQL. It stores every information about users' accounts, profile details, wallets and transactions. The tables use two storage engines, depending on the changing rate of the data stored on it: InnoDB for data that changes on a higher rate and MyISAM for more permanent data.

Our development team knows that [floats are evil](#). Therefore, every number on our RDBMS is stored as string and calculated using methods based on BigDecimal library, which allows us to store and make calculations with a huge number of digits.

In our tests, MySQL has proven to offer the best cost/benefit of several database engines that were tested. It is used by giant websites and services such as Facebook, Twitter, GitHub, YouTube, Netflix, Spotify and Uber (MySQL, 2018). We have been careful in making the choices based on tests that we have done ourselves with stable technologies, avoiding hypes and short movements. Furthermore, we use two different storages for quick-access data, such as generated tokens and verifications codes. They are both key-value based, although they can be namespaced. One of them is backed by SQLite RDBMS, whereas the second one, used for even more temporary data that is less accessed (such as session information) are stored on the file system (as encrypted files). Additionally, Redis is used as message broker between different nodes of our interfaces.

## CORE-BANKING

Here's where magic happens. Our core-banking is responsible for every action that refers to user's actions. It manages accounts, settings, contacts, e-vouchers and invoices, wallets and transactions. The core-banking daemon runs ceaselessly security routines as well as processing scheduled transactions, checking for expired invoices and running tasks that are needed for Capitulum system to work flawlessly.

It is also able to support seamless scales up, using Redis to communicate in real time with every node and ensure every node is synced with the latest information received by the core-banking software. It allows Capitulum to work from different physical servers, geographically separated, with the same data.

Capitulum Core-Banking system runs on NodeJS, a Javascript framework based on Chrome's V8 engine. It's used by companies like Netflix, Trello, PayPal (they have recently moved their entire codebase from Java to NodeJS), LinkedIn, Uber, Medium and Ebay (Chrzanowska, 2017). PayPal engineers have reported that rebuilding their entire backend with NodeJS was "twice as fast with fewer people", had "33% fewer lines of code" and "40% fewer files". They were also able to serve double more pages per second with 35% reduced response time (Harrell, 2013). Since we need scalability ease, we found Amazon EC2 servers to fit our backend hosting needs. It is used by (not surprisingly) Amazon.com, as well as Alexa, EasyTaxi and Netflix (Amazon Web Services, 2018).



## CAPSCRIPT: BECAUSE TYPE MATTERS

Capitulum Core-Banking is an innovative software developed from scratch at Capitulum, making use of a Javascript subset that is ahead of its time, named CapScript. Please refer to our paper "[CapScript: Strongly Typed ECMAScript Subset for Capitulum](#)" to understand what has lead us to keep our code base in a different, non-standard programming language.

CapScript is a strongly-typed Javascript subset that gets transpiled to native Javascript before deployment to the server through a Babel preset made by Capitulum team. The transpilation ports every CapScript improvement to native Javascript.

This preset bundles hand-picked public Babel plugins as well as plugins developed by Capitulum team. Mentionable CapScript improvements over raw Javascript are the support to newest ES6 features (thus the entire codebase is already written making use of these features) and variable typing.

Although writing a new language from scratch is hardly a good idea, keeping a subset from an already stable and largely supported programming language such as Javascript allows us to make our chosen language to work on the way we need. When it comes to Capitulum, the modifications we've made on Javascript language allow us to deploy a safer and more stable codebase.

## WHY IS STATIC VARIABLE TYPING A GOOD THING?

Natively, Javascript variables can be

assigned and re-assigned in any type. It is sometimes the cause for problems, since the language tends to convert variable types during comparisons (a value like "null" or "false", for example, can be converted to zero if compared to another number).

CapScript allows the developers to set variable types and avoid types mismatch during assignments, comparisons and operations, in other to avoid this kind of issue. This also means that Capitulum backend code is reliable and does not get tasks done through unexpected interpreter behaviors.

CapScript had been always ahead of its time, by supporting newest Javascript features that are either getting support as ES6 reaches platforms or are just proposals.

## OPEN SOURCE MATTERS, TOO

Capitulum team helps and keeps several open-source projects. We keep a dedicated Open Source page (<https://open-source.capitulum.com>) which tracks the projects we are working on or keeping. Some of the open source projects that had been started by Capitulum team includes:

**Producify:** a static website generator tool. It's used by Capitulum team to produce our static websites (such as "Open Source", "CapPay documentation" and others).

**i18n:** a node-i18n fork that allows custom formats, such as YAML and NEON. It's used by Capitulum backend to send emails and SMS messages.

**gammu-sms-menu:** a NodeJS library to create interactive SMS menus and





applications. It will be used by Capital to power SMS Banking. You can view other projects at [Open Source at Capital](#).

## WHAT YOU SEE IS AS BEAUTIFUL AS WHAT YOU DON'T SEE

Since Capital frontend uses the very same channels (interfaces) to Capital core-banking that are offered to any developer interested in develop applications that makes use of Capital features (and it is highly documented on [Capital Developers](#)), one of the advantages we've acquired is that our front-end codebase could be entirely static.

Our frontend is developed using React, a frontend framework created by Facebook used by companies like Alipay, Bit.ly, Bitbucket, eBay, Netflix, Twitter, Uber, Yahoo and Whatsapp (Facebook, 2018). It preaches component-based designing and is what makes Capital website so fluid, without the need of constant pages loading on each click. Adopting a non-changing frontend (actually the changes are only performed on the user browser, and the server is only responsible to send template files) also allows us to host our frontend on services that focus on serving static files, which makes Capital frontend easier to be served by different hosts in a Content Delivery Network, giving users a reduced response time. We found out Amazon S3 to fit our static hosting needs.

## INFORMATION SECURITY

Security is never neglected while working at Capital. Our back-end coding follows security standards and market

recommendations, such as ISO-27001:2005 and ISO-27002:2005. The communication between our core-banking and our RDBMS is entirely abstracted, and in special situations where direct queries seemed needed, type casting and/or checking as well as prepared statements had been used.

Aside from security routines ensuring that nothing is modified on the codebase, as well as well-configured firewall and antivirus software (IPTables and ClamAV, respectively, on the server level, plus additional offered by the hosting service provider), we also use reverse proxy services that allows us to detect and prevent distributed denial-of-service attacks. These services protect our servers' actual IP addresses, that are never revealed, and receive the entire network traffic, guiding it to our servers.

It also helps our static hosting, since it provides a CDN that serves assets from a huge network of servers. By detecting where the user is located, it's possible to determine the nearest server, granting a faster network traffic due to reduced geographical distance between the user and the server.

For this protection, we use services offered by Cloudflare, which is also trusted by companies like Bitfinex, DigitalOcean and Zendesk. (Cloudflare, 2018)







# AVAILABILITY

Capital will be wherever users are



## IS MOBILE IMPORTANT?

Smartphones market do exist since the early 90's, when Blackberry (formerly Research in Motion) was getting popular in business. In 2000, Microsoft, who was already the owner of the ranking of most used operating system on personal computers and companies, joined this market launching Windows Mobile, also focused in business users.

In 2007, Apple launched their first iPhone, changing completely how common people accessed internet, checked their emails and talked to their relatives. On the same year, Google announced Android, with the support of 30 companies as of the time of the announcement. (Arthur, 2012)

Things changed since then. Computer-based browsing started decreasing,

while mobile browsing analytics increased. Finally, in November 2016, it was announced a research that showed that, for the first time on internet's era, the majority of internet services users are now mobile users (Statcounter, 2016). This fact was an eyes-opener for website developers and owners around the world: for the first time, having a website layout which adapts itself to any screen is needed, and not just recommended. (Chaffey, 2018)

As soon as mobile platforms became popular (StatCounter, 2018), several developers have put their efforts on mobile application development. Quickly, many companies realized the relevance of allowing users to access their services through mobile applications.

## OUR CHANNELS

At Capital, we are aware of this need and therefore, our services are already available on multiple environments.



### Responsive website

We provide an intuitive responsive website that adapts to any screen, where the account can be fully managed.



### Mobile applications

Two applications are also available for Android and iOS users: Capital Mobile and CapPay.



### SMS Banking

It's also possible to check funds and request transfers through SMS.



### POS Machines

Through our IMTP Protocol, it's easy to develop POS machines that accept both crypto-currencies from anyone and Capital funds from registered users.



### ATM Machines

Anyone can develop ATM machines that withdraw and deposit crypto-currencies using our public IMTP Protocol and Capital services. It's also planned to maintain official machines in specified locations.

## WHERE WILL WE BE?

It's also planned to expand Capital to the following platforms.





## IPFS-BASED PUBLIC AUDIT SYSTEM

A reliable system to register transactions and reports.



Capitul makes use of a reporting model that allows any individual or organization to perform financial audits on its movements and funds.

It uses IPFS, the InterPlanetary File System, to store every transaction receipt and financial recurring reports. All this information will be indexed on a public IPFS folder.

It's important to state that Capitul will allow audits at any time without the need of pre-request or permission requirement.

Every information will be separated by type and date, split into folders on Capitul's public IPFS index (named as Capitul Public Registry).

## ONE TRANSACTION, ONE PUBLIC RECEIPT

On Capitul, transactions between accounts will be registered as a plain text receipt on the public IPFS folder. Its full URL, on a Capitul IPFS node, is instantly given to the user. Receipts are promised never to be modified.

Wallet addresses are always public. Therefore, Capitul receipts stored on IPFS will only show wallet addresses when referring to the funds origin and destination. It's up to the wallet owner to set the wallet's privacy preferences, in

order to enable or disable transactions listing or personal details visibility.

For users who need a higher privacy level, Capitul offers several privacy settings that may hide completely the wallet information and transactions from the public. Note that the IPFS receipts do not hold any data that could relate any wallet or transaction to any individual or corporation.

## PERMANENT ADDRESS

Since IPFS names itself "the Permanent Web", it's expected to be impossible to modify once uploaded files and folders. IPFS calculates a file content hash to use as address and it grants that no content can be modified on the network.

We need a way, however, to have a kind of address that is granted to belong to Capitul service, and every new report and transaction is available through this address. Therefore, we will make use of IPNS, a feature of IPFS that allows using a fixed address and being able to publish contents using that address as a reference one, which will not be changed. (Benet, 2014)

IPNS allows users to take an IPFS address that they can believe it's really published by Capitul.











## THE CAPITAL TOKEN

Learn about Capital blockchain-based assets that gives you dividends and voice



## WHAT'S A TOKEN?

CapToken (CPB) is an ERC-20 token based on Ethereum Smart Contract network. It works in a similar way to crypto-currencies and can be negotiated, transferred, bought, sold and even have units destroyed. CapToken, specially, will also work as Capital shares, whereas the more tokens you own, the more Capital shares you get. Since these tokens work on Ethereum blockchain, it's not possible to recover lost tokens due to a forgotten password or crashed drive, unauthorized access or malware action on the user's computer. Capital Team is **not** able to move tokens in behalf of any user nor get any user's password. Users must care about the tokens storage security, keeping backups of keys, passwords and seeds. The information about CapToken ownerships is stored on the unchangeable Ethereum blockchain and funds can only be moved by their owners. It is impossible to generate or mine additional CapTokens. However, it's possible to permanently burn CapTokens.

## HOW CAN TOKENS MAKE PROFIT?

Promising tokens often are negotiated in higher prices after some time. CapToken represents the ownership of part of Capital, a promising and growing up

company. This way, the greater Capital services get, the higher are the token prices.

However, CapTokens also bring an additional feature that can make its value to grow quickly: it's highly profitable. It happens because since, if you own CapTokens, you own part of Capital, you also get part of Capital profits every quarter, based on how many CapTokens you get. **30% of all Capital profits are paid to CapToken holders.**

Every quarter, Capital publishes analytics reports for CapToken holders, publishing user base growth, incomes, funds movements statistics and expectations for the next days.

Token holders set on their profile settings their Ethereum addresses and select the wallets where they want to receive their funds. After the report publishing, it's time to pay the respective funds, based on the selected profiles. The funds are automatically sent during the Friday for every token holder, based on how many CapTokens they have, directly to their Capital accounts.



## THE INITIAL TOKEN SALE

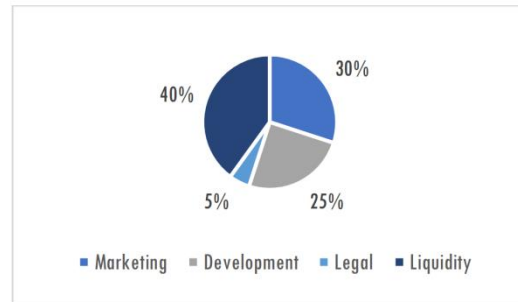
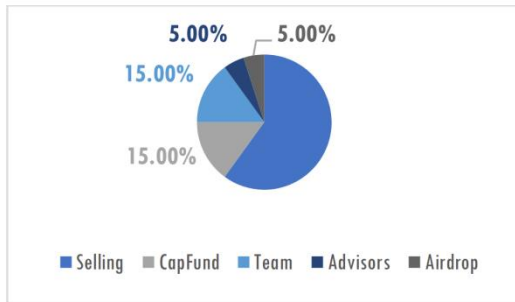
CapTokens will be sold on partners exchanges that can be found at Capital IEO HotSite ([www.capital.io](http://www.capital.io)) and also by the HotSite itself (powered by CapPay). The **hard cap** is US\$ 51 million.

Each token has a price of US\$ 1. The available trading pairs with CapToken (CPB) are: Bitcoin (BTC), Ethereum (ETH),





LaToken (LA) and Tether (USDT).  
 The token sale starts in 1<sup>st</sup> June 2019  
 and ends in 31<sup>th</sup> December 2019.



## TOKENS DISTRIBUTION

The total of emitted tokens is CPB 85M, from which:

### Selling

These are the funds destined to the public initial offering (IEO).

### CapFund

This amount will be kept in CapTokens. This meant that it is also going to receive dividends. The dividends are then stored, but the total amount is kept visible for CapToken holders. CapFund's dividends will be used to develop new features (out of the IEO goals), as well as investing in projects that get accepted by CapToken holders on the voting dashboard.

### Team & Advisors

These funds will be kept by the team and by advisors, as an incentive for Capital growth.

### Airdrop

These funds will be used in airdrop campaigns as well as referral system.

## FUNDS DISTRIBUTION

From the total raised amount, the funds allocation will happen as follow:

### Marketing

These funds will be used for making Capital user base grow. Marketing campaigns involves not only online marketing, such as banners and links in social networks, but also for disclosing Capital in crypto-related events and talks.

### Development

These costs involve the development of the IEO goals. Not only human resources costs are calculated, but also costs with machinery and hardware needed for making every goal possible.

### Legal

These funds will be used to pay Capital's legal team costs. It involves the licenses that are needed to operate world-wide, as well as compliance requirements.

### Liquidity

Funds to grant that Capital will support the growth. These funds will be split into the supported currencies to support currency exchange operations by users.





## THE VOTING SYSTEM

How can CapToken holders participate on Capital's organization?





As CapToken holders are part of Capital staff, their opinions are obviously taken into consideration in a democratic way: through a voting system.

CapToken Holders have access to a special area which makes available an open forum-like portal where they can discuss new Capital implementations and ideas. Anyone can suggest new features. Elected moderators will follow the discussion flow and take the most commented ideas to organize a voting, where every CapToken holder can vote one time per held token (this way, the more held CapTokens, the more votes one user has rights to). To avoid frauds, the votes calculation will only be done once at a predefined deadline, through a network snapshot (so we can avoid, for example, multiple votes using the same tokens).

Finally, the most well-rated ideas will be analyzed by the development team and the implementation will be studied.

## FROM IDEA TO CAPITAL FEATURE

### Submitting an Idea

1



As already stated, any token holder is able to send a new idea (on the token holders area,

named "Project"), no matter how many tokens the user holds.

When submitting a new project, users are instructed to show off their project and the reason it's interesting through a market research. Also, they are instructed to give as many details as

possible about the way they imagined the project.

### Community Reaction

2



After a new project is submitted, a six months deadline is pre-set to close the voting season on that project.

Other token holders can subscribe, comment and vote on the project, positive or negatively. The votes are weighted to the number of tokens held by the voting user.

Once the deadline is reached, the system takes a snapshot of the tokens network and calculate the votes of each user, based on their held tokens.

A project is given as accepted if at least 50%+1 of the valid votes were positive.

### Technical Overview

3



After the project is approved, the elected advisors and staff technically analyze the project, in order to find

possible issues that must be discussed, needed funding from Capital's cash, third-party services providers and estimated deadline.

This information is met on a report that is given back to the token holders' analysis.

### Report Analysis

4



Once the information about the project is sent on a report, a new voting season is opened.

With every needed detail, the token holders



adopt a position, contrary or supporting the project, and do vote again.

The same per-token vote weight is applied. However, the deadline for a report to be analyzed is 3 months.

### Project Result

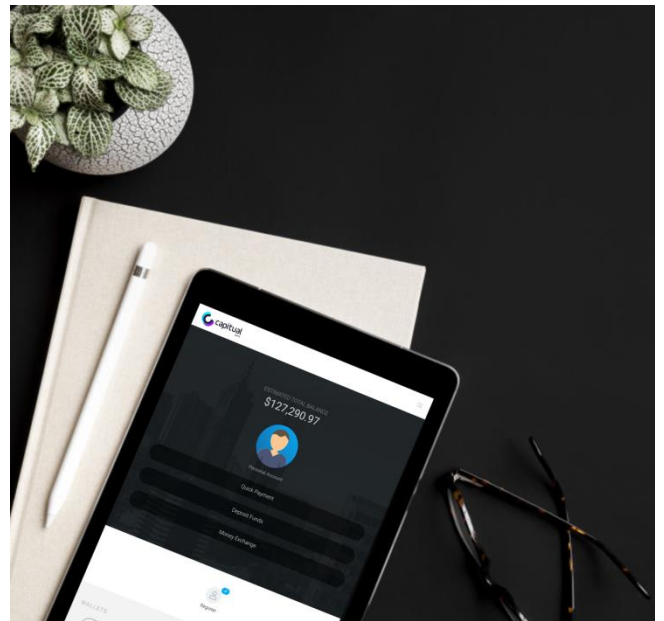
5



the report.

If the project is approved by token holders, the job starts, according to the roadmap and requisites that were registered on

If, however, the project is not approved, it is archived. If a similar idea occurs, a new project must be created.







## **BUSINESS MODEL**

How we are going to  
achieve our goals

Since we want to invite you to be part of the evolution, it's worthy, after presenting our features, to show off how Capital will make profit over each one.

Capital's fees and rates aren't abusive. They are dynamic, can be changed at any time depending on which moment the platform lives in, and allows the service to grow and offer more possibilities to our users.

We have two types of fee-based revenues sources:

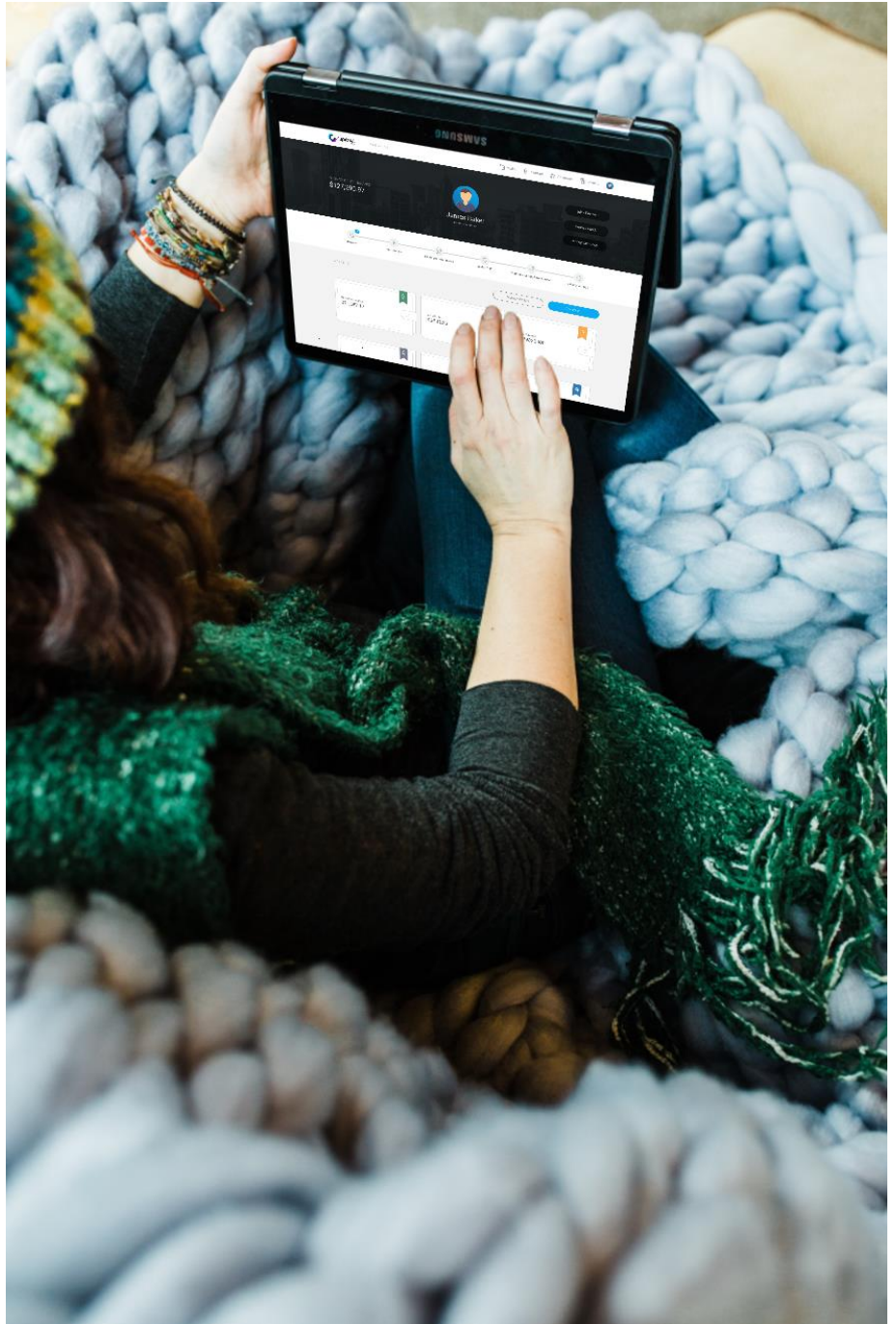
**Direct fee:** a fixed amount that is paid on a determined operation.

**Relational fee:** a percentage applied over the amount for a determined operation.

#### **Our-own-price Policy**

Another revenue source is found on the currency exchange: since we apply our own buying and selling prices, we will have the security of selling out our crypto-currencies volumes on a similar or better price that we acquired them.

Our prices will be taken from pre-selected sources, applying a non-abusive agio to grant the certainty of the exchange.





# LICENSES & REGULAMENTATIONS



Capital operates as a group of companies. The



main one – Capital Ltd. – is registered in Malta and is approved by Malta Financial Services Authority. We are also registered in Estonia, where we hold a crypto-exchange and a crypto-wallet license. This license allows us to store customer funds as well as process currency exchanges.

For a number of operations, it's needed to rely on partnerships with third-party financial institutions.

It's planned to apply for an Electronic Money Institution license, which will allow Capital to operate several banking operations without having to rely on external parties. IBAN codes for each user wallet could be generated directly by Capital.

## DOCUMENTOSCOPY & PROOF-OF-LIFE



We've developed a software that automatically performs *documentoscopy* in user's supplied documents.

Through a few steps, it requires the user to prove his identity by executing the following tasks:

**Personal Documents:** It's needed to upload an official document with a face picture. If the document has a MRZ (Machine Readable Zone, such as passports, some ID cards and some driver licenses), the data is automatically extracted and must be confirmed by the user. Through Levenshtein Distance and tolerance, it checks if the supplied text matches the text in the document and calculates if the text in the document is readable.

For documents without MRZ, since there is no template standard, information is not extracted and human verification is required. However, the user is warned about this required time and has the option of switching to another document of his posses that brings a MRZ, such as his passport.

**Webcam Picture & Proof-of-Life:** After it, the user is required to give access to his webcam or frontal camera. His face





is recognized and checked against the face in the document (with a substantial tolerance). Then the user is asked to perform a few unpredictable actions such as looking into random directions, opening mouth or speaking a sentence. These movements are detected in real time and prove that we are indeed serving a real person, and not a fake webcam video. At last step, the user is told to take a personal picture. The system checks if the face present on the picture also belongs to the user who completed the proof-of-life and sent the documents.

As a security measure, although the software unlocks the user's account, every document is checked by humans at the team. If the team understands that a user is trying to bypass the security measure, the account will be locked and a new verification will be required. Results of eventual bypassing trials will be used to improve the recognition system, in order to avoid the same fraud in the future and save time.

This software is ready for use and already in production environment. You can test it by confirming your Capital account clicking on the link supplied on your dashboard.

## COMPLIANCE

We have a legal team that checks, constantly, if compliance requirements are being followed. Based on users' or entities' origin, history and limits, our team checks transactions and might request, from users, additional information when needed.



Our team is aware of legal obligations and work with central banks, anti-money laundering agencies and governments of the countries where Capital users are from. It's important to note that users involved in any of our [Prohibited Businesses and Uses](#) will be permanently banned.

Users have initial limits defined and available for querying. These limits are based on the users' origin and respective KYC-AML laws and may involve data from third-parties, if available. However once these limits are over-passed and a compliance exception is opened, as soon as the exception is closed with the needed information being sent by the user, the limits are increased and a compliance exception will not be triggered again by the same value.

Unregistered users have a fixed lifetime limit of US\$ 9,999.99 in transfers and exchange in the platform, and cannot deposit or withdraw fiat currencies. In order to remove this limit, it's required to confirm the account.

Please refer to [our KYC/AML Policy](#) for further information.







## GROWTH POTENTIAL

Which impact will  
Capital cause?

# USERS BASE

## FIRST QUARTER

Our marketing campaigns and server resources are allocated to watch for an assisted growth at the earlier months. This way we'll be able to understand our public, provide first-class support and no service interruptions. During the first month, we expect to receive about fifteen thousand single users. This is not hard to accomplish if we direct our marketing campaigns to specified target audiences.

We do know that in this public will coexist both users and investors. It's also the period we'll start to actively discuss on the token holders' area and on Slack, in order to get improvement ways as well as future projects ideas.

Most of our public will not be token holders, but users who found out Capital as a way to ease money transfers and investing, as well as e-commerce owners looking for a way to allow

15k

Users  
in 1  
month



crypto-currencies' payments on their virtual stores, without losing funds if the price drops.

The team will also follow this public up through analytics tools and support tickets, mainly to know about improvements that could make procedures and interfaces easier to understand and more intuitive.

## SECOND QUARTER

At the end of the third month, our audience is expected to be composed by general users, who uses Capital mostly for saving, investing and paying online bills, as well as token holders, e-commerce owners who are already using CapToken integration plugins on their virtual stores, crypto enthusiasts who need a safe way to grantedly convert their assets onto fiat currencies when they face a price drop as well as developers, who want to integrate wallet applications with Capital, for currency trading or assets saving. Capital

40k

Users  
in 3  
months



Team will give this public special attention as these projects, once getting to the mass, represent opportunities to reach new potential users.

## DEVICES

An interesting point about Capital is that most of the provided services are accessible to non-registered users, such as crypto-currencies payments through CapPay (online or physically) or even currency trading through third-parties' services that make use of IMTP or the provided API to have Capital as a liquidity source for the funds.

According to [StatCounter](#), on the last year, mobile platforms have kept stable advantage over desktop platforms. Our team knows it and therefore our web interface is responsive, which means that it's able to adapt to any screen size or resolution, giving users of any platform the best experience.

For occasional users, a responsive webpage design is enough to grant a good portable experience. However, a good portion of our public will access Capital daily. This public includes crypto-currencies investors and CapPay sellers, and require a better simplified

mobile experience. This is why we are going to release two different mobile applications, targeted at popular platforms such as Android

and iOS. While one of these applications bring the full Capital experience, the second one only allows receiving funds through CapPay, meant to be used safely at physical stores.

73%

Of the users accessing the mobile application in the first 3 months

With mobile platforms being practical, Capital applications following native standards are offering a responsive portal for those who doesn't want to install the application. We believe in a permanent majority of mobile platforms users on our users' base.

## CAPCARD

Once the cards emission becomes available, it's expected that Capital will emit, on three months, 28 thousand virtual cards. These cards are used both in online orders as well as NFC contactless payments.

28,000  
virtual cards issued

13,000  
physical cards issued

At the same time, 13 thousand physical cards are expected to be emitted and used by Capital registered users, mostly at physical stores.

## WHERE DO USERS COME FROM?

Our marketing campaigns will respect a project developed to reach audience that may find Capital useful on routine activities, mainly. At first glance, most of our users' base have origin on direct advertising on related websites, social network and adverts platforms. It's important to mention that not only paid social network advertising is counted, but also users who result from social media engagement, i.e. those who found Capital out through a Medium blog post, retweets or Facebook shared content.





Users can also get interested in Capital through media coverage and through search engines. Capital pages are SEO-optimized but search engines' advantage is being able to find backlinks also in forums and blogs.

56% Returning Users

It's needed to keep in mind that, in a website which will allow non-registered

users to be able to experience some of the services, returning users might also be non-registered. A possible example would be users who often make online orders and pay them using crypto-currencies. These are, grouped with our active users' base, included on the estimate that tells we're going to serve 56% of users who already know Capital. It's our job to check how many of them aren't registered and present them to the benefits of being a registered Capital user.



# VOLUME

Estimating the fiat x crypto-currency volume ratio that will be kept on Capital is not a simple task. We have researched crypto-currencies price history, giving special focus to the price rises and drops.

It's expected that, during a price rise, users tend to keep their assets as crypto-currencies. The opposite is also expected: during a price drop, users tend to convert their assets back to fiat currencies, so they can stop losses and even get more assets when the price goes lower. This happens at crypto-assets exchanges and will happen on Capital as well, mainly due to the way the trading task is made easy.

In order to estimate the volume ratio, we have also studied the bitcoin influence on the crypto-currencies that are supported by Capital. To grant a safe operation, we found it needed to calculate an expected ratio, meant to represent one period's estimate. By pondering every year's volume, this expectation will get more accurate as the service is ran.

We have taken into consideration that one feature that differentiates Capital from payment services available on the web is related to crypto-currencies acceptance. While it's known that a huge

portion of our users is going to use Capital to keep their crypto-assets savings, it's also known that, for specified publics, such as e-commerce owners who have integrated their services with CapPay, keeping funds in fiat currencies may look more interesting.

For users who use Capital only for paying one or a few products or services and tend not to access it daily, keeping most of the funds in fiat assets may also look safer, since their funds are floating amount.

We have developed simulated environments to estimate the crypto X fiat ratio on nearly any situation, whether facing a price rise or a drop. Using Gaussian model, centered at 0 and with a maximum height of 1, we start with:

$$f(x) = e^{-\frac{x^2}{2c^2}}$$

As width, we use the inversor of the average daily price variation of twice the period of the studied variation, pondered on the kept user's volume of each crypto-currency on the platform. In our model, the period ( $t$ ) is given in days (24 hours).

$$C = \frac{1}{2\mu_x} ; \mu_x = \frac{\Delta}{t} ; x = \Delta$$



It gives us:

$$f(x) = e^{-\frac{x^2}{2(\frac{1}{2\mu_x})^2}}$$

Let's call the result as  $I$ , meaning it's our price variation influence over the way users keep their portfolio.

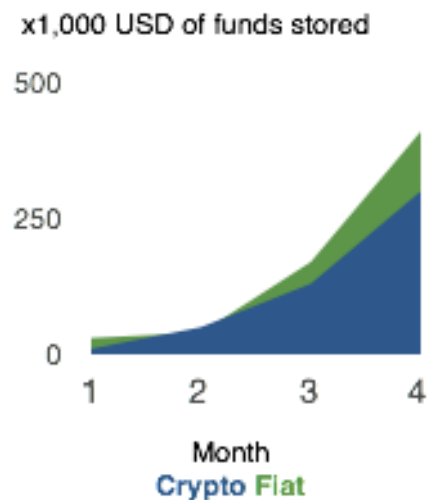
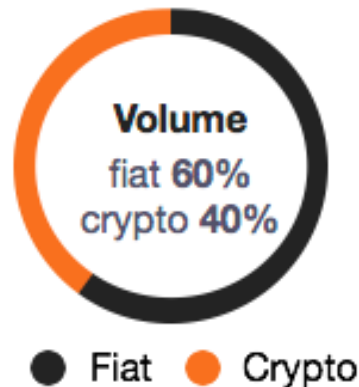
$$I = e^{-(\Delta\mu\Delta)^2}$$

The product of  $I$  and 0.004 in case of a non-negative variation ( $\Delta \geq 0$ ), or -0.001 in case of a negative variation ( $\Delta < 0$ ) represent the positive or negative value for each 1% of variation, from the basis point of 0.4, of probability an user has to keep their assets as crypto-currencies. Eventually, this model allows us to predict how much of crypto-currencies or fiat currencies will be on the platform in any scenario, whether it's a price rise or drop.

The 0.4 basis point may look simply as an arbitrary constant. Actually, it was calculated from previous crypto history data and through a correlation coefficient between bitcoin and other supported crypto-currencies. Obviously, third-party data has been used. Therefore, it's planned to have this basis more accurate every time, as data is registered.

These calculation models grants Capital secure investments and a safe growing.

### Crypto X Fiat







## PROJECT ROADMAP

When will the future features be available?

## Roadmap

# 2019

2nd Quarter  
**IEO Starts**

3rd Quarter  
**SMS Banking**

4th Quarter  
**Physical Card**

Ready for emitting

**Virtual Card**

Ready for generating

**IEO Ends**

1st Quarter  
**Voting Dashboard**

CapToken Holders Dashboard

**EMI License**

Application

2nd Quarter  
**CapLoan Stage 1**

Crypto-backed Loans

**POS Stage 1**

CapPay's POS machines issued for merchants to accept Capital and cryptos

3rd Quarter  
**ATM Machines**

First ATM machines delivered

**B2B Escrow**

4th Quarter  
**CapLoan Stage 2**

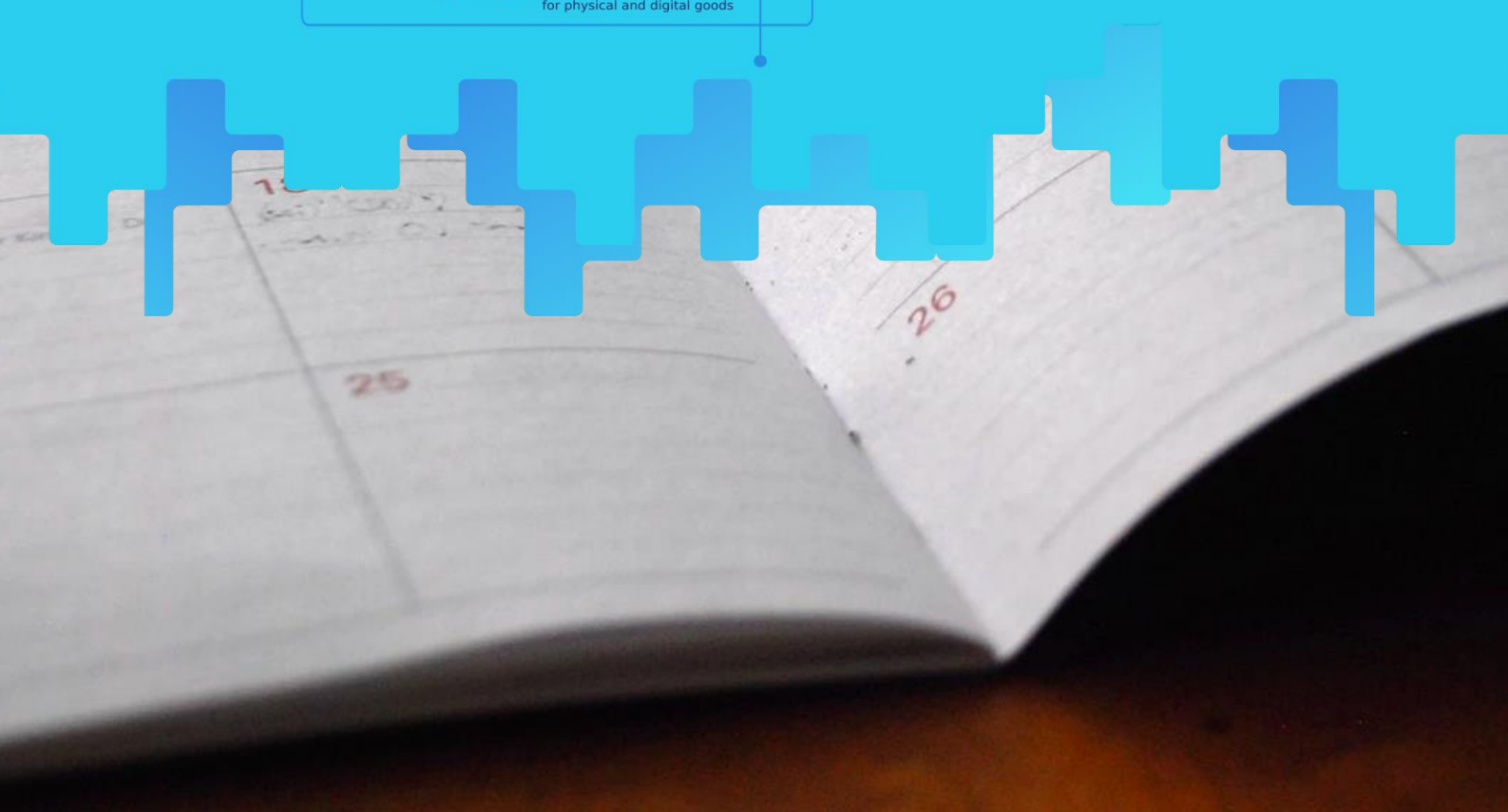
**POS Stage 2**

CapPay's POS machines will start supporting credit cards

**CapShop**

Escrow-integrated custom personal webstore for physical and digital goods

# 2020







## COMPETITION

What similar projects do exist?



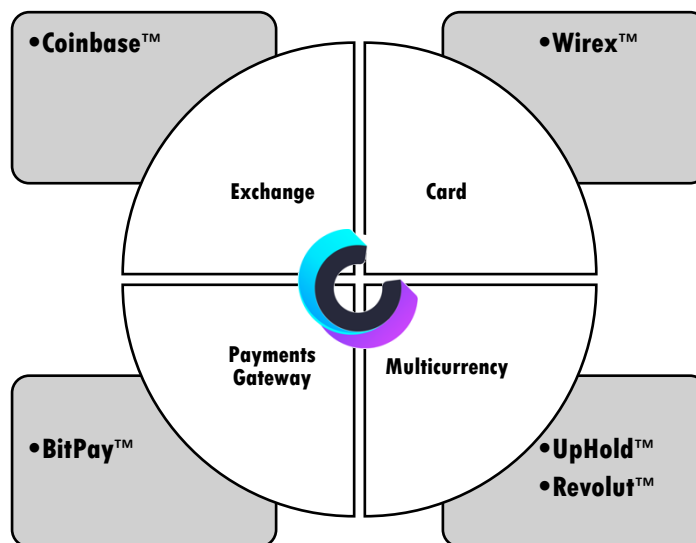
# MULTIPLE FIELDS, MULTIPLE COMPETITORS

For acting with a considerably large range of features, among already launched and yet to launch tools, Capital faces competitors in different fields. It has been said previously that Capital aims on offering multiple services related with online payments for crypto and fiat currencies, from a single platform. This is the fact behind the reason why Capital needs multiple competition strategies, but is also a general advantage offered by Capital over the competition.

For a better understanding, we've separated five main areas where Capital acts, and selected the current main player in each area, studying how the competitors' services are offered, as well as its differences from Capital services.

The data used on this article is updated as of 1<sup>st</sup> May 2019.





## Exchange

The exchange feature which allows converting funds between crypto and fiat currencies can be exploited to offer ease of use for receiving payments in a set of currencies but keeping the received value in one specified currency.

Not so surprisingly, one of the crypto market's most traditional exchanges, Coinbase, could be considered a competitor for Capital's currency exchange service.

Coinbase offers exchanges of crypto-currencies and fiat currencies and a developers' API. Since it's an assets exchange, the objected procedure tends to differ from Capital's implementation, as Capital aims not only advanced users who want a practical tool for performing instantaneous exchanges, but also enthusiasts and beginners, by consciously not offering advanced measurement and analysis tools that could prevent non-advanced users from a first contact with crypto-currencies. This is

also Capital's mission, as presented on the Project Concept chapter of this document.

## Card

Capital is currently targeting efforts on providing users with a prepaid credit card that can be used to spend platform funds on physical and online stores.

Wirex is a consolidated prepaid card issuer on the crypto market, allowing users to top-up their cards with crypto-currencies. As a holder of a FCA-issued e-money license in Europe, Wirex fights for being able to fully provide their services to users in areas where such license is not considered (such as non-European Union areas). This requires following local financial laws and dealing with anti-money laundering regimentation in every jurisdiction.

Capital's efforts are currently focused on creating a prepaid credit card that fully works on the areas where the plat-

form services are currently being offered (European Union, Latin America and Asia).

Furthermore, merchants find an interesting advantage while using CapCard and having their stores (online or physical) receiving payments through CapPay: funds received from their sales are easily spendable through the card, making it extremely practical to renew their inventory and invest in marketing.

## Payments Gateway

Crypto-market has exploited the payments gateway sector enough to have a few players currently working and being adopted by several online retailers and service providers.

BitPay is a company with important contributions for the crypto market, keeping applications like Bitcore and Copay Wallet. They accept payments both in Bitcoin and Bitcoin Cash, with a locked exchange rate. Once the payment is made, it instantly converts the funds to one of the supported fiat currencies and deposits it into the customer's bank account. The company charges 1% as a transaction fee and the exchange rate is calculated over exchanges that provide the liquidity required.

CapPay does not charge a transaction fee. The factor which allows us to avoid charging such fee is a larger tool set, which prevents the gateway from being the only source of incomes for Capital.

In the current stage, CapPay payments can be performed by non-Capital users through Bitcoin, Litecoin and Dash, and

by Capital users through fiat currencies as well.

## Multicurrency

Capital's accounts are able to hold an unlimited number of wallets, each wallet holding one specified currency. The funds on these wallets can be moved from one wallet to another, performing currency exchanges.

Mentionable services providing similar tools are Revolut and Uphold.

While Revolut does offer crypto-currencies as an investment product, it is made clear that they do not support deposits or withdrawals using crypto-currencies. Although it's possible to transfer crypto-currencies funds to another Revolut user, it is not possible to top-up a Revolut account or transferring crypto-currencies outside Revolut.

Uphold accounts are also multiwallet-based, but not all supported currencies can be transferred from or to an Uphold account through bank transfers.

Uphold adopts an exchange rate calculation model that sums up different percentages charged, depending on the origin and destination currencies, plus an additional Price Protection Fee.

Capital users are able to transfer funds from and to their accounts using both fiat and crypto-currencies. Its system is integrated with the supported crypto-currencies' blockchains in order to provide automatic deposit recognition as well as transferring to wallets outside Capital. There is no fee charged for currencies exchange, and the exchange rates are always available at the address <https://exchange.capital.com>.





# REFERENCES

- Agriculture and Agri-Food Canada. (2017). *E-Grocery Market in China*. Retrieved from [https://publications.gc.ca/collections/collect ion\\_2017/aac-aafc/A74-3-95-2017-eng.pdf](https://publications.gc.ca/collections/collect ion_2017/aac-aafc/A74-3-95-2017-eng.pdf)
- Amazon Web Services. (2018). *Case Studies*. Retrieved from Amazon Web Services, Inc.: <https://aws.amazon.com/en/solutions/case-studies/all/>
- Amoros, R. (2018, 01 24). *Mapping Out the World's Bitcoin ATMs*. Retrieved from <https://howmuch.net/articles/bitcoin-atm-around-the-world>
- Arthur, C. (2012, 01 24). *The History of Smartphones: Timeline*. Retrieved from The Guardian: <https://www.theguardian.com/technology/2012/jan/24/smartphones-timeline>
- Baker, R. (2002). *Crime, Fraud and Deceit on the Internet: Is There Hyperreality in Cyberspace?* (1 ed., Vol. 13). Dartmouth: Department of Accounting, University of Massachusetts.
- Benet, J. (2014, 07 24). *IPFS - Content Addressed, Versioned, P2P File System*. Retrieved from IPFS at Github: <https://github.com/ipfs/ipfs/raw/master/p apers/ipfs-cap2pfs/ipfs-p2p-file-system.pdf>
- Chaffey, D. (2018, 01 30). *Mobile Marketing Statistics. 2018*. Retrieved from Smart Insights: <https://www.smartinsights.com/mobile-marketing/mobile-marketing-analytics/mobile-marketing-statistics/>
- Chrzanowska, N. (2017, 03 17). *Top 10 Companies That Used Node.js in Production*. Retrieved from Netguru: <https://www.netguru.co/blog/top-companies-used-nodejs-production>
- Cloudflare. (2018). *Customer Case Studies*. Retrieved from <https://www.cloudflare.com/case-studies/>
- Coin ATM Radar. (2018). *Bitcoin ATMs by Country*. Retrieved from <https://coinatmradar.com/countries/>
- Coin Dance. (2018). *Bitcoin Statistics*. Retrieved from <https://coin.dance/stats>
- Cryptolization. (2018). *Crypto-currency market cap analysis*. Retrieved from <https://cryptolization.com>
- Dinca, C. (2016). *Frauds En Internet*. Universitat Jaume I.
- Ecommerce Europe. (2017, 06 20). *The Future of e-Payments Is In Crypto-currencies and Blockchain*. Retrieved from <https://www.ecommerce-europe.eu/news-item/future-e-payments-crypto-currencies-blockchain-ecommerce-europe-policy-arena/>
- Facebook. (2018, 01 19). *Sites Using React*. Retrieved from React at Github: <https://github.com/facebook/react/wiki/Sites-Using-React>
- Financial Fraud Action UK Ltd. (2017). *Fraud: The Facts 2017*. Retrieved from [https://www.financialfraudaction.org.uk/fraudfacts17/assets/fraud\\_the\\_facts.pdf](https://www.financialfraudaction.org.uk/fraudfacts17/assets/fraud_the_facts.pdf)
- FRED. (2018, 02 9). *Consumer Loans at All Commercial Banks*. Retrieved from <https://fred.stlouisfed.org/series/CONSUMER>
- Fung Business Intelligence. (2017, 11). *China Retail & E-Commerce*. Retrieved from [https://www.fbicgroup.com/sites/default/files/CREQ\\_04.pdf](https://www.fbicgroup.com/sites/default/files/CREQ_04.pdf)
- Gibbs, S. (2016, 11 02). *Mobile Web Browsing Overtakes Desktop for the First Time*. Retrieved from The Guardian: <https://www.theguardian.com/technology/2016/nov/02/mobile-web-browsing-desktop-smartphones-tablets>
- Global Net Neutrality Coalition. (2018). <https://www.thisisnetneutrality.org/>. Retrieved from Status of Net Neutrality Around the World.
- Godin, M. (2017, 12 21). *The Complete Guide to Bitcoin and ECommerce*. Retrieved from CrazyLister: <https://crazylisters.com/blog/ebay-bitcoin-ecommerce/>
- Harrell, J. (2013, 11 22). *NodeJS at PayPal*. Retrieved from PayPal Engineering Blog:

<https://www.paypal-engineering.com/2013/11/22/node-js-at-paypal/>

Haselden, J. (2015, 09 2). *Infographic: A Comparison of eBay vs Amazon Selling*. Retrieved from NChannel: <https://www.nchannel.com/blog/ebay-vs-amazon-selling-comparison/>

Haselden, J. (2017, 10 18). *Top 11 Other Sites Like eBay: eBay Selling Alternatives 2017*. Retrieved from NChannel: <https://www.nchannel.com/blog/other-sites-like-ebay-alternatives/>

Hileman, D., & Rauchs, M. (2017). *Global Crypto-currency Benchmarking Study*.

Inteco. (2007, 10). *A study of users and public and private organisations affected by the fraudulent practice known as phishing*.

Kestenbaum, R. (2017, 04 26). *What Are Online Marketplaces And What Is Their Future?* Retrieved from Forbes: <https://www.forbes.com/sites/richardkestenbaum/2017/04/26/what-are-online-marketplaces-and-what-is-their-future/>

Lemma, A. F. (2017, 12). *E-Commerce: The Implications of Current TWO Negotiations for Economic Transformation in Developing Countries*. Retrieved from Supporting Economic Transformation (SET): <https://set.odi.org/wp-content/uploads/2017/12/SET-TWO-Negotiations-E-Commerce.pdf>

Lielacher, A. (2019, 02 11). *How Many People Use Bitcoin in 2019?* Retrieved 04 26, 2019, from Bitcoin Market Journal: <https://www.bitcoinmarketjournal.com/how-many-people-use-bitcoin/>

Long, D. (2017, 07 05). *China's Ecommerce Market to Pass \$1.1tn in 2017*. Retrieved from The Drum: <https://www.thedrum.com/news/2017/07/05/china-s-ecommerce-market-pass-11tn-2017>

Luxton, E. (2016, 05 11). *4 Billion People Still Don't Have Internet Access*. Retrieved from World Economic Forum: <https://www.weforum.org/agenda/2016/05/4-billion-people-still-don-t-have-internet-access-here-s-how-to-connect-them/>

Monks, K. (2017, 02 21). *M-Pesa: Kenya's Mobile Success Story Turns 10*. Retrieved from Cable News Network (CNN): <https://edition.cnn.com/2017/02/21/africa/mpesa-10th-anniversary/index.html>

MySQL. (2018). *MySQL Customers*. Retrieved from <https://www.mysql.com/customers/>

Ramasamy, A. (2018, 01 21). *How Big Is the Global e-Commerce Market?* Retrieved from Hackernoon: <https://hackernoon.com/how-big-is-the-global-e-commerce-market-93920e61f687>

Smith, C. (2018, 08 18). *70 Amazing EBay Statistics and Facts*. Retrieved from DMR Business Statistics: <https://expandedramblings.com/index.php/ebay-stats/>

StatCounter. (2018). *Desktop vs Mobile vs Tablet Market Share Worldwide*. Retrieved from StatCounter Global Stats: <https://gs.statcounter.com/platform-market-share/desktop-mobile-tablet>

Statcounter. (2016, 11 1). *Mobile and Tablet Internet Usage Exceeds Desktop for the First Time Worldwide*. Retrieved from <https://gs.statcounter.com/press/mobile-and-tablet-internet-usage-exceeds-desktop-for-first-time-worldwide>

Statista. (2018). *Alibaba Group*. Retrieved from <https://www.statista.com/topics/2187/alibaba-group/>

Statista. (2016, 02). *Asia Pacific Retail e-Commerce Sales 2019*. Retrieved from <https://www.statista.com/statistics/533860/retail-e-commerce-revenue-asia-pacific/>

Statista. (2018). *C2C E-Commerce*. Retrieved from <https://www.statista.com/markets/413/topic/983/c2c-e-commerce/>

Statista. (2018). *EBay*. Retrieved from <https://www.statista.com/topics/2181/ebay/>

Statista. (2018). *Key Figures of E-Commerce*. Retrieved from <https://www.statista.com/markets/413/topic/544/key-figures-of-e-commerce/>

Statista. (2018, 01). *PayPal's Annual Mobile Payment Volume from 2018 to 2017*. Retrieved from <https://www.statista.com/statistics/277819/paypals-annual-mobile-payment-volume/>

Statista. (2018). *PayPal's Total Payment Volume from 1st quarter 2014 to 4th quarter 2017*. Retrieved from <https://www.statista.com/statistics/277841/paypals-total-payment-volume/>

Statista. (2016, 02). *Total revenue of global mobile payment market from 2015 to 2019*. Retrieved from <https://www.statista.com/statistics/226530/mobile-payment-transaction-volume-forecast/>

Vodafone. (2018). *M-Pesa*. Retrieved from <https://www.vodafone.com/content/index/what/m-pesa.html>

Voices, V. (2016, 03 10). *The Short History And Long Future Of The Online Lending Industry*. (F. Magazine, Ed.) Retrieved from Forbes: <https://www.forbes.com/sites/valleyvoices/2016/03/10/the-short-history-and-long-future-of-the-online-lending-industry/>

Wang, J. G., Xu, H., & Ma, J. (2015). *Financing the Underfinanced: Online Lending in China*. Springer Berlin Heidelberg.

Worldometers. (n.d.). *Countries in the world by population (2019)*. Retrieved 04 26, 2019

## CONTENT ATTRIBUTIONS

We would like to thank the following authors for their design or photographic work that has been indispensable to perfectly illustrate our ideas on this document:

"Montreal Buildings" Tomasso, Patrick.  
 "Rectangular office windows" Zeller, Samuel.  
 "Black wire art piece" Bout, William.  
 "Smiling woman with a phone" RawPixel™.  
 "Design Thinking" Perkins, Patrick.  
 "The Showdown" Marton, ShirleyNiv.  
 "Coding Computer Data" Ku, Kevin.  
 "Tattooed Woman with Laptop" Cagle, Brooke.  
 "Man archery bow and arrow" Spratt, Annie.  
 "Phone and Money" Kris - The Digital Way  
 "Technology, Servers, Server" Oliver, Edgar.  
 "Computer, Working, Office, Business" Nguyen, Nam.  
 "Application Money" Loufre/Penpusher.  
 "Checking stock market prices" Iven, William.  
 "Thought, Idea, Innovation" Vesalainen, Tero.  
 "Fountain pen and a notebook" Burden, Aaron.  
 "Hot air balloon" Burden, Aaron.  
 "Agenda" Rothermel, Eric.  
 "Starting line on a track" Augustus, Austris.  
 "Country flag" (4) Courey, Milinda.  
 "Bitcoin Logo" bitboy.  
 "Users" and "Mobile" Jumsoft™.  
 "Globe" Arostegui, Elizabeth.  
 "Browser" Piotrowski, Mateusz.  
 "Qrcode" Barseghyan, Garik.  
 "Iphone" Pineda, Katrina.

"Rocket" Abderraouf, Omara.  
 "iPhone X Frame" Lucario, Mario.  
 "IPFS Logo" IPFS Team.  
 "Credit Card Machine" Creative Corp.  
 "ATM" Justicon.  
 "Folder" Bruce, Daniel.  
 "Mobile, money, smartphone" Tardon, Mariano.  
 "Web Design and Development 3" ProSymbols.  
 "SEO & Web Icon Set" Reen, Laura.

We have put our best efforts in order to find out the authors of each used graphical work. If you find any erroneous attribution please get in touch to us.

We extend our thanks to FontAwesome and Ionicons authors for some of the icons and flags used on this document.

Some of the illustrations present on this document as well as Capital logo are Copyrighted © works of Capital Ltd.

iOS, iMessage and Stocks interfaces are Copyright © Apple Inc.

Typography: Twentieth Century by Sol Hess.

**Version: 1.0.0**

**You can find the latest version of this document at:**  
<https://capital.io/whitepaper.pdf>