PumaPay

A PullPayment Protocol

White Paper - draft v1.6

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Abstract

Retailers and service providers are struggling with inefficient and costly payment mechanisms, which have not kept pace with global commerce. Nothing – credit cards, alternative payments, virtual coins, or blockchain technology – has yet adapted to today's various processing needs in order to provide an optimized solution for payment processing. PumaPay's **PullPayment** protocol (the "Protocol") under development, is intended to solve this problem by utilizing a new architecture of contract called "PullContract," which enable new billing methodologies over the blockchain. The Protocol will promote more frequent use of cryptocurrency in online and offline markets and significantly increase the total volume of payments transacted with cryptocurrencies.

The Protocol will be a comprehensive solution which offers robust payment mechanisms far more credible, efficient, flexible, cost-effective, and scalable than current implementations. Unlike today's payment methods, which include credit cards and virtual coins like Bitcoin, the Protocol is being designed from the ground up specifically to overcome existing online payment problems and offer a set of tools developed to facilitate onboarding processes for both merchants and customers. In addition, the Protocol will increase economic efficiency, reduce friction, and minimize risks by removing intermediaries such as credit card companies, charging excessive fees.

The Protocol will be a free, open-source project built around a customizable chain of contracts that govern transaction behavior. It can be set as a simple single transaction, a complex transaction that includes, among others, recurring payments, pay-per-use payments, split payments, restricted payments, exchange rate corrections or a combination of the above. Businesses may use the Protocol's payment mechanism as is or modify and/or create new ones to fit their needs.

The solutions offered by PumaPay Protocol will create business opportunities for external third party companies that can build additional services on top of the Protocol and contribute to the PumaPay ecosystem. These companies include, but are not limited to, credit network companies, insurance network companies, escrow service providers, code verification companies and others.

The PumaPay Protocol will be promoted through partnerships with businesses that have significant turnovers, by encouraging them to adopt the PumaPay ecosystem from the onset. Through our Launch Partners, the protocol will plug into industries with tens of thousands of daily customers throughout numerous markets. PumaPay brings an incredible amount of users into the crypto space by connecting the blockchain to the real world. Through this economic strategy, PumaPay will grow its network and improve its functionality.

Table of Contents

Motivation

To date, the dominant payment method for online as well as offline purchases has been payment cards (credit cards, debit cards, prepaid cards, etc.). The problem is that payment cards were developed in the 1950's before the existence of personal computers and the internet. They were originally designed for offline transactions where the customer approved a transaction by manually signing a receipt. Payment cards were not designed to deal with our modern, fast-paced, global economy. Their popularity is mostly due to a lack of acceptable alternatives for electronic payments. Payment card usage perpetuates an anachronistic system which suffers heavily from infrastructural inefficiencies.

The structure of the payment cards ecosystem is very complex and consists of many participants: Credit Card Associations (Visa, MasterCard, AmEx), Issuing Banks, Acquiring Banks, Processors and Payment Gateways to name a few. The market is oligopolistic and the incumbent players each controll their networks, dictating the rules and the costs. This centralistic structure leads to inefficiencies. Similar to many other centralized systems, the intermediaries in the payment ecosystem use their power to increase the spread between the value they extract and the value they add. The merchants that depend on card acceptance for their existence have to comply with an endless list of rules dictated by the owners of these networks. Moreover, they are also subject to a complex fee structure that ranges from 3%-15% of their gross receipts, (depending on the settings) and to add insult to injury, they are also exposed to the risks associated with fraudulent activity and chargebacks.

The introduction of Bitcoin as an electronic cash system in 2009 was the first step towards a modern online payment solution. Bitcoin was originally designed to address trust issues and to optimize security; but at the expense of scalability, speed, and cost. As a result, Bitcoin in its current construct is unable to offer flexible processing solutions for most of the current online billing methodologies. None of the cryptocurrencies that were introduced over the past few years has provided a comprehensive payment solution that allows crypto holders to utilize their cryptocurrencies as a means of payment. Cryptocurrencies are far too underdeveloped to compete at scale with payment cards, they suffer from poor acceptance by merchants mostly due to their complexity of usage and they do not support transactions that are more sophisticated than a simple 'push' transaction.

There is a real need for a payment infrastructure that is built to serve merchants, not exploit them. A system that is built from the ground up for the digital era and that is as scalable, flexible and accessible as payment cards, absent their inherent flaws and disadvantages. Blockchain technology offers a great opportunity to create such a system for the benefit of merchants and consumers alike.

PumaPay Protocol is an attempt to design such an infrastructure.

Payment Cards

Payment cards include several types of cards which run on global scheme networks such as Visa, MasterCard or American Express. They include Credit Cards, Debit Cards, Pre-Paid Cards, and Charge Cards. Payment services such as PayPal and Stripe and digital wallets such as Apple Wallet or Google Wallet are also built around payment cards.

Payment cards accommodate over **77% of global commerce**[1]. Of over 257 billion cards transactions worldwide, Visa cards alone generated 54% worldwide in 2016.

Ecosystem structure

Every time a consumer swipes, taps, or dips his card, payment data is sent through a complex web of stakeholders — each of whom extracts a fee for helping to complete the transaction. These can be divided into the following broad categories:

Card networks act as a hub that routes transactions between issuers and acquirers and establishes rules that others involved in payment card processing must obey. They also set interchange fees (paid to the issuer), ensure compliance with rules and regulations they set, and resolve disputes with network members.

[1] Worldpay Global Payment Report November 2015

Acquiring banks give merchants access to systems necessary to accept card payments. They provide access to payment terminals, processing services, and a bank account into which settled funds can be deposited.

Issuing bank has its logo present on a customer's debit or credit card, and either holds the deposits or extends the credit associated with the account.

Processors are primarily responsible for securely transmitting data, in addition to providing various degrees of back-office support.

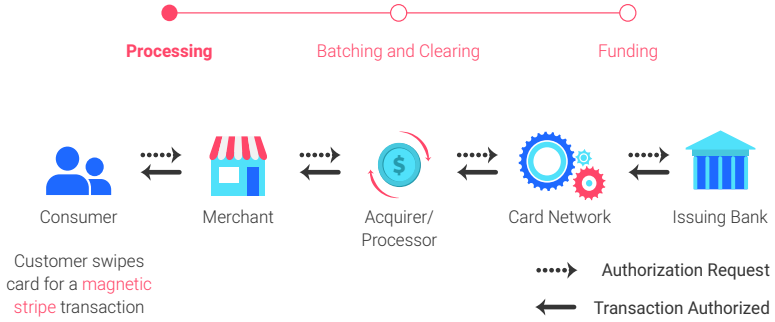
Payment Gateways act in a similar capacity as online payment terminals and front-end processors. Gateways, such as Stripe, act as the portal through which e-commerce merchants connect to acquirers. Additionally, gateways offer services like analytics and reporting for merchants.

ISOs and Merchant Service Providers (MSPs) are entities that sell payment processing services to merchants on behalf of acquirers and processors.

Anatomy of a Payment Card Transaction[2]

There are three stages of payment card processing and each player outlined above is involved in one of them. We shall demonstrate the complicated structure of the payment card ecosystem using a simple example of a customer making a 100 USD purchase:

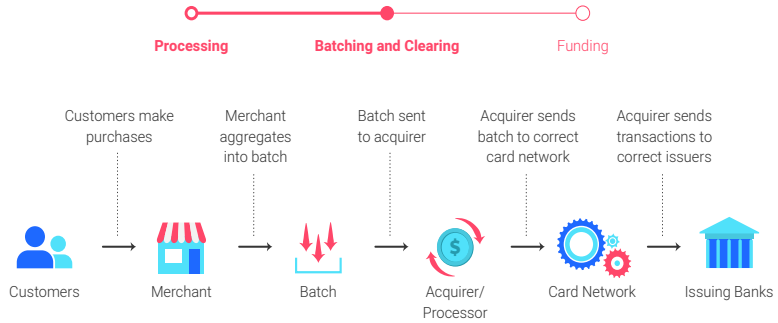
Authorization



Example: A consumer decides to make a 100 USD purchase and swipes her card to begin the transaction. The payment terminal reads the card and sends its information to the acquiring bank. The acquiring bank requests authorization for the transaction from the card network, which in turn communicates with the cardholder's issuing bank to make sure there are sufficient funds available to cover the transaction. It also checks that the card isn't stolen and that there are no other red flags that would interfere with the transaction.

Once the issuing bank ensures the transaction can take place, it shares an authorization code with the card network, which passes it on to the acquiring bank. After the acquirer sends the code back to the merchant, authorization is complete. All this takes place in seconds, while the next stages are prolonged.

Batching and Clearing

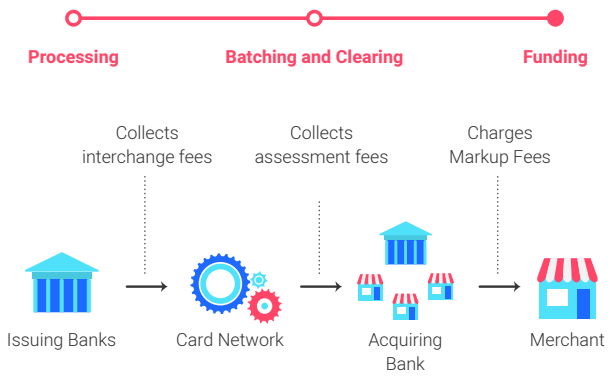


The transaction might appear to be over from the customer's perspective after authorization is complete. After all, she's on her way out of the store with her purchase in hand. But much more must happen before the transaction is complete. First, for the merchant to receive the customer's money, each of the day's transactions must be combined into a so-called "batch" and cleared.

At the end of the day, the batch containing all the day's transactions is passed to the acquirer. When the acquirer receives the batch, it requests payments on behalf of the merchant by sharing the day's transaction history with the relevant card networks. They divvy up the transactions by issuer and request funds from the appropriate banks.

[2] The payments ecosystem report, BI Intelligence, August 2017

Funding



Only when the issuing bank receives a request for funds does money start to change hands. The issuing bank passes the requested amount to the acquiring bank through the card network, after deducting an interchange fee. The card network also deducts an additional fee as an assessment fee, and passes the remaining funds to the acquirer to complete the process. In this last stage, the acquirer subtracts what's known as a "Markup fee" and deposits the remainder in the merchant's account. This process can take days and sometimes even weeks to complete.

Notes:

- There are other types of transactions such as closed loop transactions, debit card transactions, etc. but the basic mechanics illustrated above are enough for the understanding of the complexity of the transaction.
- Transactions can be settled in real time as well, not in batches. This approach has the advantage of being faster, but it also carries more risk and is costlier for merchants. It's usually used by e-commerce providers and merchants with a high volume of transactions.

Fees

Accepting payment cards comes with a price and merchants are subject to a complex fee structure. There are nearly 300 different fees and they can be broadly divided into 3 categories:

- Transactional fees - These are the fees the card-issuing banks and the credit card associations charge for each transaction, and they represent the largest expense merchants pay. This category includes Interchange fees which consist of a percentage of each transaction accompanied by a flat per transaction fee (for example 2.1% + 0.1 USD) and Assessment fees charged by the credit card association and calculated as a percentage of the total transaction volume per month.
- Flat Fees - In addition to transactional fees, merchants also pay various flat fees. These include Terminal Fees, Payment Gateway Fees, PCI Fees, Annual Fees, Monthly Fees, Monthly Minimum Fees, Statement Fees, Network Fees etc.
- Incidental Fees - These fees are not fixed and are charged only per incident: AVS (address verification), VAF (voice authorization fee), Retrieval Request Fee, Chargeback Fee, Batch Fee, NSF Fee and more.

Continuing our example of a customer paying 100 USD using a payment card, let's now look at its costs. Fees are collected by the various parties along the way as they transfer the funds from the customers' account to the merchants:

Fee		Example	Fee of 100 USD transaction
Interchange Fees	The issuing bank charges the Interchange Fee which is usually a percent of the sale amount + a fixed transaction fee	2.25% + 0.1 USD	$2.25+$0.1=$2.35
Assessment Fee	The credit card network collects their assessment fee, which is also a percent of the sale + fixed transaction fee	0.2% + 0.02 USD	$0.2+$0.02=$0.22
Markup Fees	The payment processor, Gateway and merchant bank take their share as well. Some of it may be nominated as a percent of the transaction , some of it as a flat fee and some may be a combination of both	0.27% + 0.11 USD	$0.27+$0.11=$0.38
Total		**2.72% + 0.23 USD**	**$2.72+$0.23=$2.95**

To keep things simple, we did not take into account indirect fees such as monthly fees, account maintenance fees, incidental fees etc. Nonetheless, these fees may be substantial.

The merchant in our example pays a total of 2.95% of its gross earnings for all the parties involved in processing the payment. This may not seem too painful at first

glance but remember this 2.95% is from the gross revenue. Consider our merchant has a net profit margin of 7.5%, such that from every 100 USD of sales it takes home 7.5 USD. Suddenly the payment industry's 2.95 USD chunk of the sales becomes 40% of profits! Ouch!

PumaPay Protocol will offer merchants the advantages of payment cards, without the associated costs, risks and hurdles.

Risks

Payment card processing exposes merchants to various risks and fraud attempts. Most fraud prevention features are designed for card-present environments. Visa, for example, has deployed a number of anti-fraud measures designed to make card reproduction extremely difficult, including holograms and embossed security characters on the face of the card. Moreover, the signature and magnetic strip on the back of the card are designed to verify the card-holders' identity. Merchants are usually not liable for fraud when card-present transactions are properly authenticated.

Online platforms, however, typically facilitate card-not-present (CNP) transactions (card payments made without physically swiping a card). Unfortunately, card-not-present transactions are highly susceptible to fraud and abuse, for which merchants and payment facilitators are not protected.

Online merchants and e-commerce sites, especially smaller merchants, are exposed to a rising wave of card-not present (CNP) fraud. A 2017 Javelin Strategy and Research study found that, in the US, this fraud category's losses rose 40% from 2015 to 2016. Losses are expected to mount further - a Juniper Research study found that, over the next five years, retailers are on track to lose 71 billion USD in CNP fraud losses globally.

US merchants surveyed by American Express in 2017 said they spent just over 30% of their IT budgets on payment security. Still, many merchants are not equipped to hold off the CNP fraud wave. While established e-commerce providers like Amazon, Walmart, and Target have ample budgets earmarked for security, smaller players are finding their dollars stretched too thin to justify further security spending.

Card-not-present fraud may originate from various weaknesses and incompatibility of payment cards to the digital age such as merchant identity theft, customer identity theft or friendly fraud, but they all pose one major risk for the merchant: Chargebacks.

Chargebacks

When a cardholder disputes a charge with their bank (the issuing bank), banks usually reverses the payment and refund the cardholder. This is called a chargeback. Payment facilitators recover the chargeback funds from the acquiring bank of the merchants who generated them, and the acquirer recovers them from the merchant.

Since chargebacks may be received weeks or even months after the original transaction took place, it is sometimes difficult to recover the funds from the merchant. To protect themselves, acquirers may be very conservative in their underwriting: they will implement special policies such as reserves or holdbacks to mitigate loss and may sometime require personal guarantees from business owners whom they will hold personally liable for the business's financial obligations.

Card networks (Visa, MasterCard, etc.) set standards for chargebacks ratios. For example, Visa does not allow merchants to exceed a threshold of 1% chargebacks out of all transactions in any given month. Exceeding this threshold will result in fines. Crossing the threshold several months consecutively may lead to account termination by the network and inability of the merchant to process payment cards in the future.

In order to minimize chargeback risks, merchants may deploy various tools and tactics, some offered by payment processors or other 3rd parties. While these may help reduce chargebacks, they come with the inevitable cost of lost sales for false-positive errors.

Conclusion

Payment cards processing is an elementary requirement for merchants. However, due to the centralized structure of the payment processing ecosystem, merchants are subject to inefficiencies, exorbitant fees and substantial risks.

PumaPay PullPayment protocol was designed from the ground up in order to facilitate a robust, scalable and flexible payment system that will overcome these hurdles.

The PumaPay Vision

Blockchain technology holds a great promise for changing the payments industry. The problems described in the previous section can be addressed by a blockchain based payment protocol that enables the flexibility and scalability of payment cards over a decentralized platform. Such a protocol will facilitate transactions between the customer and the merchant, eliminating all the intermediaries along the way, saving substantial amounts for both merchants and customers, increasing overall efficiency and reducing risks. Adoption of such a protocol by merchants will eventually lead to increased use of cryptocurrencies for daily transactions.

There are currently many hurdles purchasing items with cryptocurrency if holders do not convert to fiat currency first. With the mass adoption of a cryptocurrency payment protocol like PumaPay, crypto-holders would be able to transact directly with merchants without having to go through an extra layer of banking. By promoting the protocol to high transaction volume industries and by providing a powerful and flexible PullPayment protocol, PumaPay hopes to become the base layer for cryptocurrency payments throughout the world.

The PumaPay Protocol will contain both on-chain and off-chain components. The functionality of PumaPay Protocol will be present in the on-chain components, while the off-chain components are designed to make the user interaction with the Protocol as seamless and user-friendly as possible.

PumaPay PullPayment Protocol

Cryptocurrencies were designed for direct transfer of value between two parties, without having to go through intermediaries (P2P) and allow only one simple, primitive type of transaction – 'push'. While this may be enough as a POC for cryptocurrencies, it is definitely not enough in order to make them a widely used means of payment as it does not address the requirements of modern commerce.

At the heart of our protocol will be a unique architecture of PullPayment smart contracts that inverse the mechanics of common cryptocurrencies transactions: instead of having side A 'send' or 'push' tokens to side B, it allows side B to connect to side A's address via a PullContract and 'pull' funds into its account. This is of course subject to predefined terms and prior acceptance of the transaction by side A.

PumaPay PullPayment Protocol was designed from the ground up specifically to address this issue and to facilitate flexibility in transaction mechanics. The innovative PullPayment architecture will open the door to a whole universe of payment mechanisms that are very common in our daily lives, both online and offline, but to date are either impossible or practically unfeasible over the blockchain such as recurring payments, direct debit, pay-per-use, etc. In fact, the protocol will be so powerful and flexible, that it will enable any merchant to design their own transactions and implement their own business logic.

PumaPay Token Economy

For a cryptocurrency to be successful over time, it needs to be a core aspect of the ecosystem it represents. The PumaPay ecosystem will be built entirely around the functionality of the PumaPay Token. We will promote the adoption of the PumaPay Token both online and offline with a special focus on e-commerce and online service providers. We will initially focus on digital content creators. Our goal is to make PumaPay the de facto standard for modern payments by achieving adoption backed by a powerful token economy.

In order to achieve this goal, we have carefully crafted a strategy that rests on four pillars:

1. Early Adopters
2. Launch Partners
3. PumaPay Pride
4. Third Parties Extension Services and Products

Early Adopters

The First pillar of the PumaPay strategy promotes the adoption of the Protocol by merchants that have already agreed to implement the protocol once released, referred to as “Early Adopters”.

Early Adopters are prominent businesses from various industries that have already committed to the PumaPay Protocol by signing an agreement or a Letter of Intent. These merchants represent a significant volume of processing that could be done within our ecosystem.

The Early Adopters will benefit from easy integration and receive support from PumaPay when integrating the Protocol. In order to encourage the usage of the PumaPay Token by Early Adopters specifically, we will incentivize them by rewarding them with PumaPay Tokens.

Early Adopters are likely to distribute PumaPay Tokens to their customers in order to encourage them to make payments using the token, which results in cost savings for the merchant, and an advantage to consumers.

Launch Partners

Whereas the Early Adopters commitment is to integrate the Protocol when released and enable customers to pay with PumaPay Tokens, the launch partners will work closely with us to create a basis for decentralizing entire industries through widespread adoption of PumaPay Token. This will initially be done on a wallet-to-wallet basis, independent of the Protocol.

We have carefully chosen launch partners who have the ability to realize PumaPay’s potential in the field of personal skills marketplaces. These marketplaces will enable anyone to empower, monetize services, and shatter unequitable revenue allocation models that exist currently. The launch partners will not only use the PumaPay Token, but will also create a prolific marketplace where content creators and service providers are rewarded a much higher revenue share than the status quo. By accepting this challenge and creating a disruptive market, we expect an immense shift of users, content providers and service providers toward these new platforms capturing a large proportion of numerous industries. With a large user base, we will create an incredibly healthy token economy.

Launch Partners may decide to Airdrop PumaPay Tokens to their customers to incentivize usage. Each Launch Partner represents a different approach of skills and content sharing marketplaces. Here are some of our Launch Partners as an example:

I. ImLive.com

ImLive.com serves the adult entertainment industry and through its leading platform, any approved service providers can offer private live shows and charge customers on a pay-per-minute basis. ImLive has agreed to create its own platform where PumaPay Token is the only means of payment and service providers keep a lion share of their revenue (instead of ~ 32% today). Moreover, as our Protocol will enable P2P payments they will receive their earnings directly, immediately, and risk-free. By creating this disruptive activity in the adult livestream industry, combined with substantial media promotion, we believe that natural business dynamics will lead the new ImLive's platform to a leading position in the industry. Therefore, we expect a huge shift of customers joining the new platform, which is destined to earn a significant chunk of the adult webcam industry's yearly 2.5B USD - 3B USD estimated income.

ImLive is a marketplace where nearly 50,000 service providers serve more than 50 million registered customers. Over 15,000 new members join ImLive's network of sites every single day. The ImLive affiliate network is one of the largest in its industry and consists of thousands of traffic providers. On top of that, thousands of websites use ImLive technology either as white-label platforms or by using its API.

Launched more than fifteen years ago, ImLive is one of the pioneers of livestream platforms on the web. It is highly reputable and well positioned in the adult entertainment industry and will play a crucial role in demonstrating the advantages and potential of PumaPay, thereby encouraging more businesses to adopt PumaPay and become part of its ecosystem. The adult entertainment industry, which has a market size of tens of billions of dollars, will most likely be among the first to adopt the Protocol, given its inherent advantages and ImLive's reputation.

We expect the newly ImLive based disruptive livestream platform to be fully functioning by Q4 2018.

The ImLive platform presents a technology that is a key factor for penetrating other skill based marketplaces and facilitating the integration of the Protocol. It can be easily adapted to serve other vertical markets such as private teachers, psychologists, personal-trainers, coaches, and dieticians - thus enabling the PumaPay token and protocol to serve billions of dollars' worth of transactions.

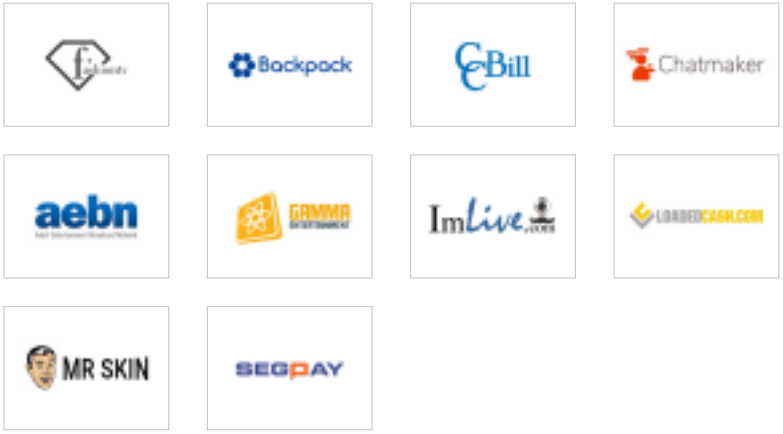
II. ChatMaker

Chatmaker is a feature-filled messenger app designed to facilitate communication between its users by enabling its users to discover new and interesting contacts across the world. As a horizontal system, Chatmaker is suitable for a wide range of users with various specializations. Each user can express a talent, create content, and offer it to other users in exchange for other content, free or for a certain amount of PMA Tokens. For example, a sleep advisor can offer video lessons, a yoga trainer may broadcast live yoga lessons, a dietitian may offer diet menus, a mystic may share knowledge - just to name a few.

Chatmaker for Business offers a platform for businesses that wish to connect with customers directly through ChatMaker's messenger app. Any business can directly target its audience by sending messages to their Chatmaker chat. Businesses can get information on their customers upon their approval, including their location, behavior, interests, and send them relevant offers.

Selected Launch Partners & Early Adopters

Here is a selected list of companies that have committed to the PumaPay vision as Early Adopters or Launch Partners:

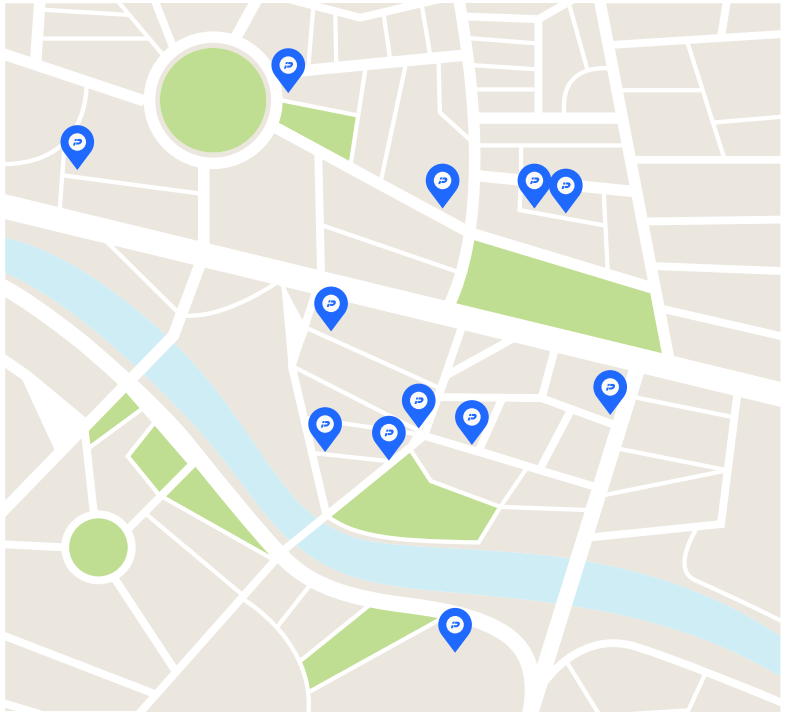


PumaPay Pride

As part of the supporting systems that will be developed in order to promote the adoption of the PumaPay Token, we will incorporate an application as part of our wallet in which only businesses that have chosen to process with the PumaPay Token will appear.

PumaPay Pride is a hub (connection point for businesses and customers), on which, users can search for businesses that have integrated the PumaPay protocol and businesses will increase their exposure to PumaPay users and customers. The Protocol will benefit businesses that adopt the PumaPay Token by driving potential customers to their platforms and having an advantage over their competitors.

We expect the quick and significant adoption of the Protocol not only by our Early Adopters - but also by their direct competitors - ending with entire industries adopting the protocol and integrating with it.

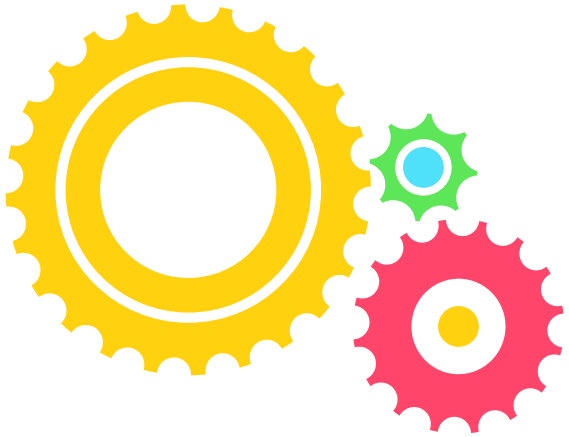


3rd Party Extension Services

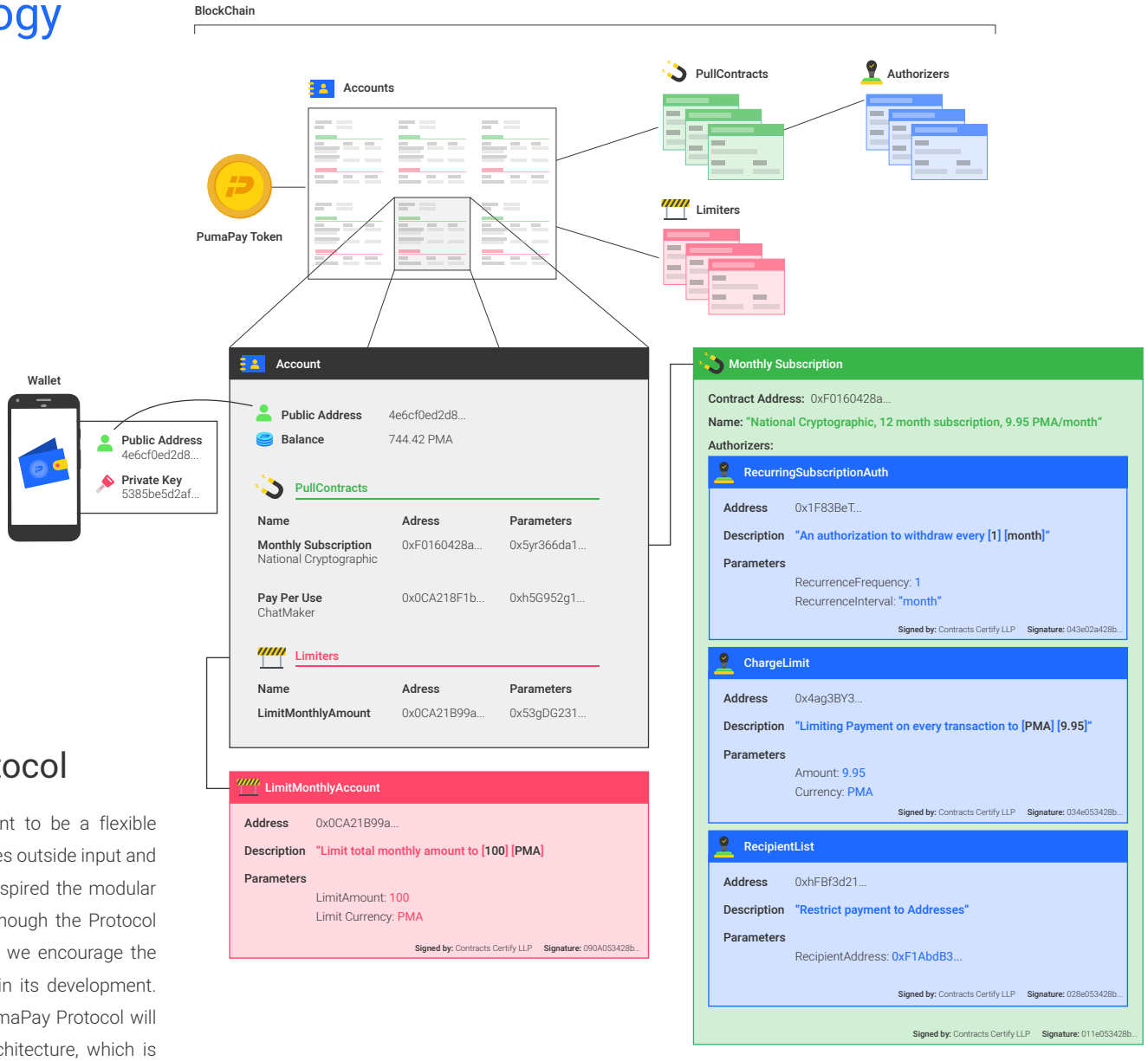
PumaPay will give 3rd party service providers the opportunity to build complementary services on top of the Protocol, thereby expanding our services and contributing to the growth of the PumaPay ecosystem.

For example, a customer or merchant could:

- Acquire the services of a third party Zero-knowledge proofs' company in order to protect their privacy and anonymity.
- Ask for loans or payment by installment via a credit network company.
- Engage with an arbitration company to solve commercial disputes while Tokens are held temporarily on the contract when using a delayed payment or restricted payment.
- Engage with a code verification company that verifies all contracts are certified and enable low fees.
- Give users advanced management capabilities including reminders and notifications regarding expected transactions, restricted transactions and any other useful information that can protect the user. Reminders will be sent to the user when they are visiting the wallet or via push notifications and emails.



The Technology



PumaPay PullPayment Protocol

The PumaPay Protocol is meant to be a flexible payment protocol that encourages outside input and development. This motivation inspired the modular architecture of the Protocol. Although the Protocol will come with built-in modules, we encourage the involvement of the community in its development. The core functionality of the PumaPay Protocol will be contained in its on-chain architecture, which is designed to be flexible and evolve with the needs of the community.

Platform Components

On-chain Components

PumaPay will initially be introduced on the Ethereum network, but intends to utilize other networks to develop its token on in the future. The PumaPay solution will be composed of several unique smart contract components that come together to create the flexible PullPayment protocol.

PumaPay Token Contract

The PumaPay Token Contract will be the smart contract that mediates and stores the ownership of PumaPay Tokens among accounts. It is a modified version of the ERC223 token contract that adds flexibility to its payment and transfer protocol.

The PumaPay Token Contract will be the ledger used by PumaPay to keep track of the balances associated with each address, as well as keeping track of PullContracts and Limiters associated with the Accounts. This is done by mapping all of the addresses to another mapping of their respective PullContracts. Also, it will include a mapping between these PullContracts with their respective Limiters. It is important to note that the Token Contract will be managing:

- Approvals of PullContracts
- Adding Limiters to Accounts
- Executing PullContracts

PumaPay Token (PMA)

The tokens will be the basis for the Protocol's ecosystem. The PumaPay Token will be available for use with launch partners from the first day of issuance.

The PumaPayToken is the payment mechanism for merchants adopting PumaPay Protocol. It will initially be built using the ERC223 standard interface but will extend the money transfer process so that advanced payment methods can be utilized. The PumaPay Token will differ from current cryptocurrencies because it will allow comprehensive all-in-one billing mechanisms to be implemented in a simple and flexible way.

Account

The Account will be implemented as a public address that is used to track the balance of PumaPay Token, PullContracts and Limiters associated with that address. The balance, PullContracts and Limiters are found on the Token Contract described above.

Authorizers

Authorizers will operate as modular components that set up a condition to determine whether a PullContract should be able to "pull" or request money from an account. One simple example of an Authorizer would be a condition that states a PullRequest can only be executed if it has been at least 30 days since the last one. It is important to note that authorizers can be chained together in PullContracts to make PullContract development easier for merchants, and to allow the easy reuse of code.

PullContracts

PullContracts will be smart contracts that represent a payment relationship between Accounts and facilitate the transfer of tokens between them. PullContracts are designed with flexibility and can be implemented to allow many different payment mechanisms and features. These contracts allow merchants to develop their own billing methodologies through the Contract, present them to the user, authenticate transactions before execution, and transmit it for execution on the blockchain.

While PullContracts can be created with original code, they can be built modularly from a pre-existing set of Authorizers. This enables the chaining together of different functionalities into one contract. Authorizers can be vetted and are less likely to include security issues in their implementation. PullContracts can be created and deployed with a variety of parameters. Any deployment of a PullContract will include a hash of these parameters and these will be checked when a pull request is made to ensure the hash of the pre-defined parameters matches that of the pull request.

Limiters

The Limiter is an on-chain component that an account user can add in order to set various quantitative limitations on that Account.

Off-chain Components

There are several off-chain components to help with adoption and usability of the PumaPay Protocol and ensure that there is an excellent user interface and an outlet for developers to build on the PumaPay Protocol. This section covers anything that is not going to be on the blockchain.

PumaPay Wallet

A dashboard into the Account used to view Account details as well as to connect/disconnect PullContracts and other contracts. The wallet is the holder of the user's private key as through it the user executes actions on the blockchain.

The PumaPay Wallet will facilitate payment interactions between Accounts. These interactions consist of PullRequests, submitting PullContracts, approving PullContracts, showing pending and previous transactions, and displaying the account's balance. We are developing two versions of the Wallet.

- A mobile application. We will first develop an Android app followed by a version for iOS. See our development roadmap for more details.
- Chrome-based application, something conceptually akin to Metamask.

PumaPay SDK and API

The PumaPay Protocol SDK (Software Development Kit) is an off-chain set of tools aimed at facilitating and expanding the Protocol adoption by merchants. The PumaPay SDK is meant to provide developers the tools they need to fully leverage the Protocol. It will also provide any interested third party with the ability to build additional business solutions based on the Protocol's abilities (such as insurance, code review, credit, billing services, product delivery, etc.).

The PumaPay SDK will contain many different components and features including:

1. Utilities and code samples for merchants to interact with the blockchain
2. A repository of pre-signed and pre-vetted Authorizers to be used in PullContracts
3. Data Transparency and easy access - Providing transparency by seeing the results of transactions to enable the creation of complementary products and services to receive raw data, enabling them to create aggregated reports related to transaction volume per period and/or product.

Implementation Considerations

As with all platforms and protocols, there are implementation considerations for the PumaPay Protocol. It is important to note that not all of the implementation and security considerations that are mentioned will be dealt with by the Protocol itself, as the Protocol is meant to be as open as possible. Nevertheless, it is important to recognize the limitations and considerations to be accounted for.

Fees due to having too many Limiters do not impact customer

There is nothing that prevents a customer from putting up an unreasonable amount of Limiters for a single Wallet because the merchant is paying the fees to send the PullRequest. This could be fixed by plug-ins that limit the number of Limiters or that charge customers for a portion of the fees of the transaction.

Lack of Flexibility with the Implementation of PumaPay Protocol

It is to be noted that because the implementation of the PumaPay Protocol will rest on the Token Contract, making changes could be made difficult. PumaPay deals with

a portion of this issue by creating massive flexibility in PullContracts and in Limiters. This flexibility in these contracts is designed to reduce the technical strain on the Token Contract and to place the evolution of the Protocol alongside the evolution of the PullContracts and Limiters.

Contract Certification

The billing contracts linked to the Protocol will appear in the wallet and will be assigned a trust score based on multiple criteria such as the entity certifying the contract, the amounts, the authorizers used, the number of users subscribed and a trust score of the merchant, if available. The wallet will use simple signaling to express the trust score to the user such as:

- **Green: trust >=75**
- **Yellow: 45 >= trust > 75**
- **Red: trust < 45**

Potentially the wallet could be configured to block all transactions below a certain trust score.

PumaPay On-chain

PumaPay will be introduced on the Ethereum network, which is the current standard for decentralized software platforms for distributed applications. However, PumaPay has the capability to migrate to a next-generation distributed contract network to meet performance, scale and increased on-chain confidentiality requirements. Potential dependencies for scaling the PumaPay Protocol are listed below:

Orbs

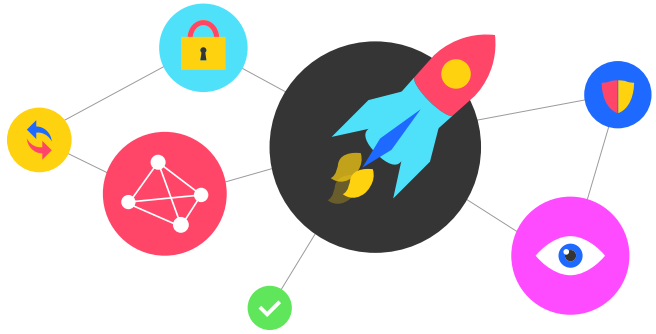
A good potential path toward scalability is through the Orbs, a blockchain designed with consumer applications in mind. Orbs offers a highly scalable decentralized ledger at minuscule per-transaction costs, and guaranteed SLA.

EOS

EOS is a proposed blockchain implementation based on fast Delegated Proof-of-Stake consensus and a high-performance smart contract engine (VM). EOS provides high transaction volumes without transaction fees.

Stage of Development

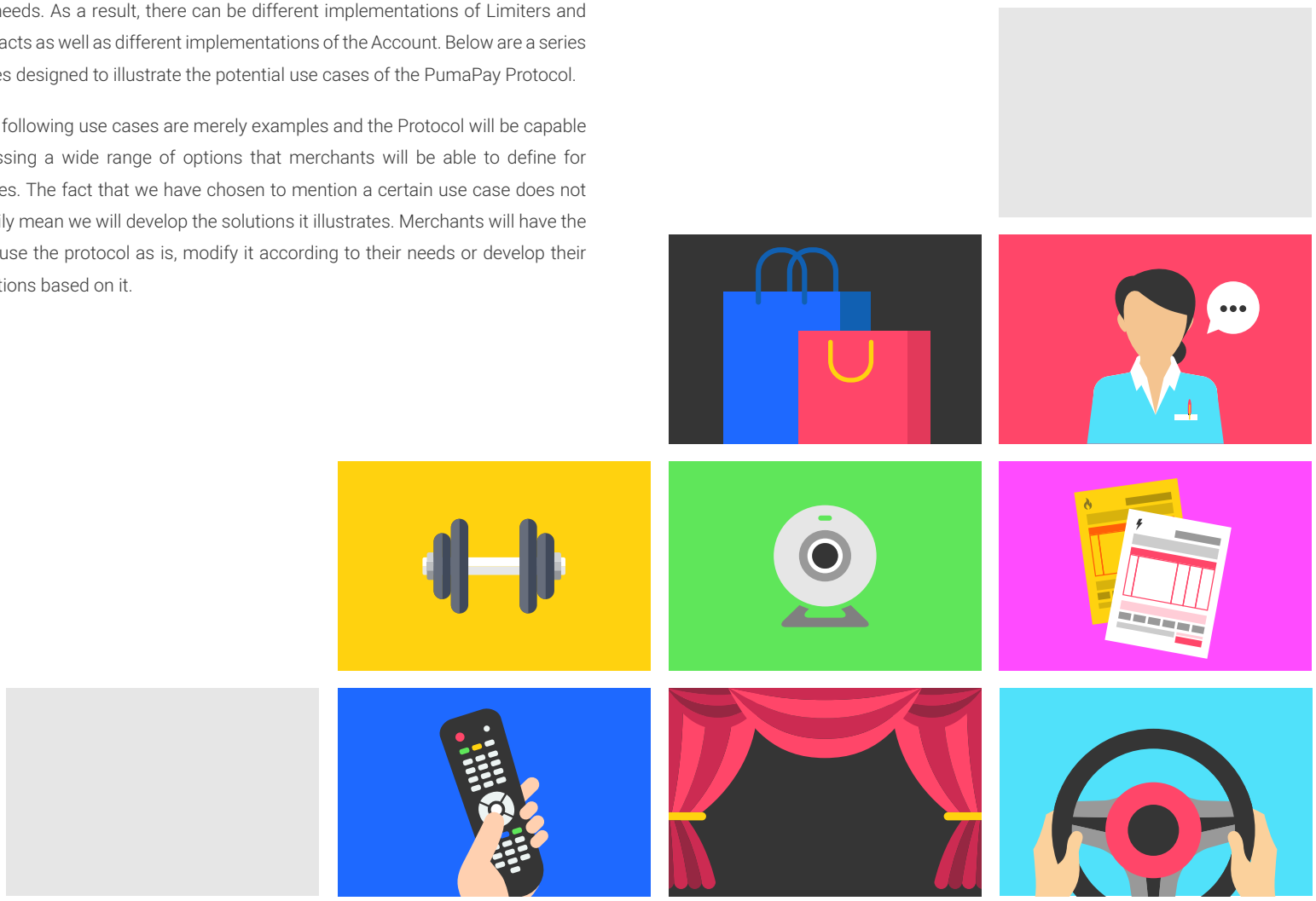
The PumaPay PullPayment Protocol and its underlying technology, which are presented in this White Paper, capture our vision and have not been fully developed yet. The company will update the PumaPay community about stages of development on an ongoing basis. We do have a prototype Smart Contract that outlines the architecture, but we plan on improving upon the design and going through a thorough security audit before publishing anything on the blockchain. The entire project can be found on the company's Github repository: https://github.com/pumapayio



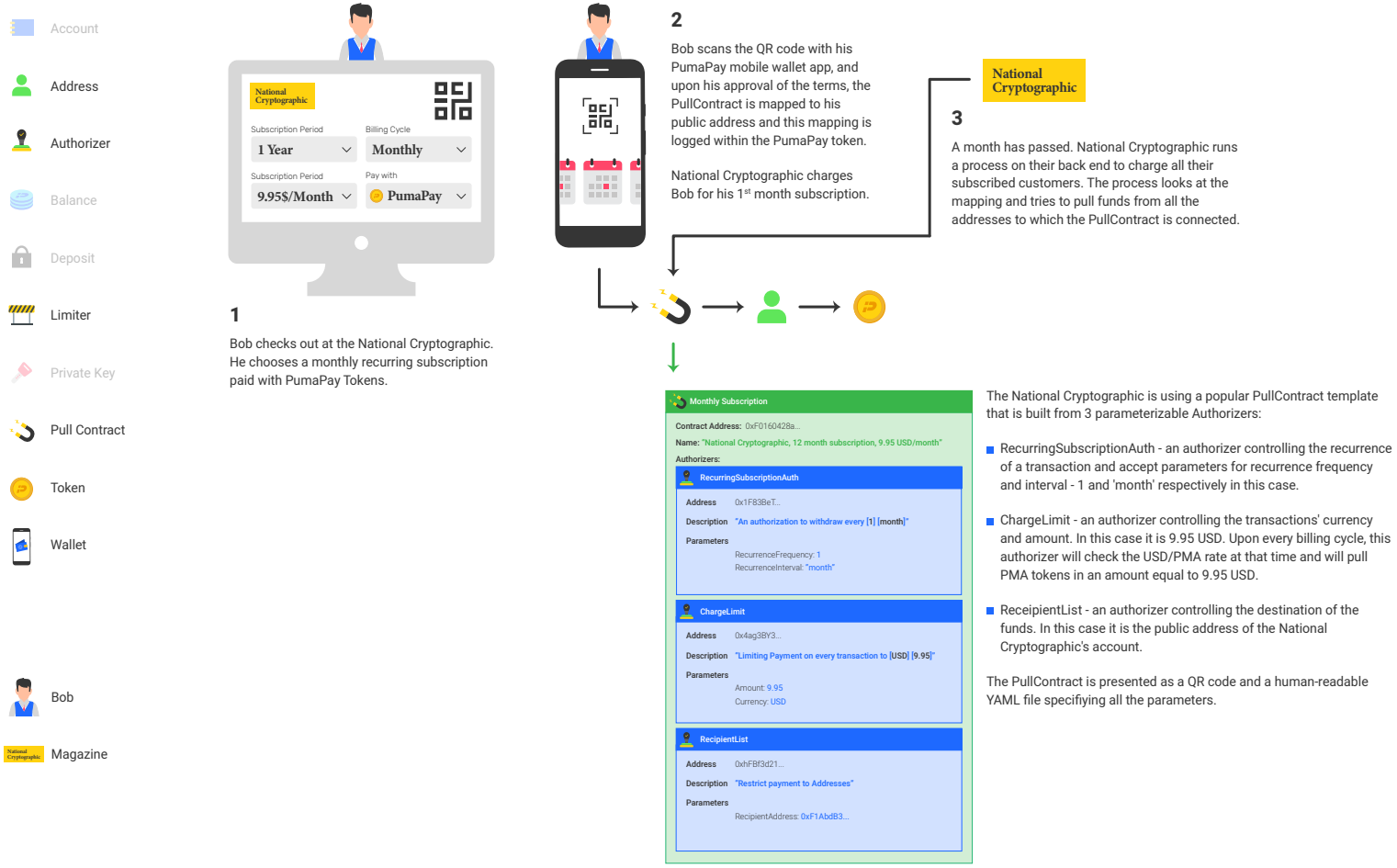
PumaPay PullPayment Protocol Use Cases

One of the cornerstones of the PumaPay Protocol will be its flexibility. The Protocol is being intentionally developed as a modular implementation to enable merchants and customers the ability to use a wide variety of billing mechanisms to meet their specific needs. As a result, there can be different implementations of Limiters and PullContracts as well as different implementations of the Account. Below are a series of features designed to illustrate the potential use cases of the PumaPay Protocol.

Note: the following use cases are merely examples and the Protocol will be capable of addressing a wide range of options that merchants will be able to define for themselves. The fact that we have chosen to mention a certain use case does not necessarily mean we will develop the solutions it illustrates. Merchants will have the ability to use the protocol as is, modify it according to their needs or develop their own solutions based on it.



Recurring Payments Based on Time



The National Cryptographic is using a popular PullContract template that is built from 3 parameterizable Authorizers:

- RecurringSubscriptionAuth - an authorizer controlling the recurrence of a transaction and accept parameters for recurrence frequency and interval - 1 and 'month' respectively in this case.
- ChargeLimit - an authorizer controlling the transactions' currency and amount. In this case it is 9.95 USD. Upon every billing cycle, this authorizer will check the USD/PMA rate at that time and will pull PMA tokens in an amount equal to 9.95 USD.
- ReceipientList - an authorizer controlling the destination of the funds. In this case it is the public address of the National Cryptographic's account.

The PullContract is presented as a QR code and a human-readable YAML file specifiying all the parameters.

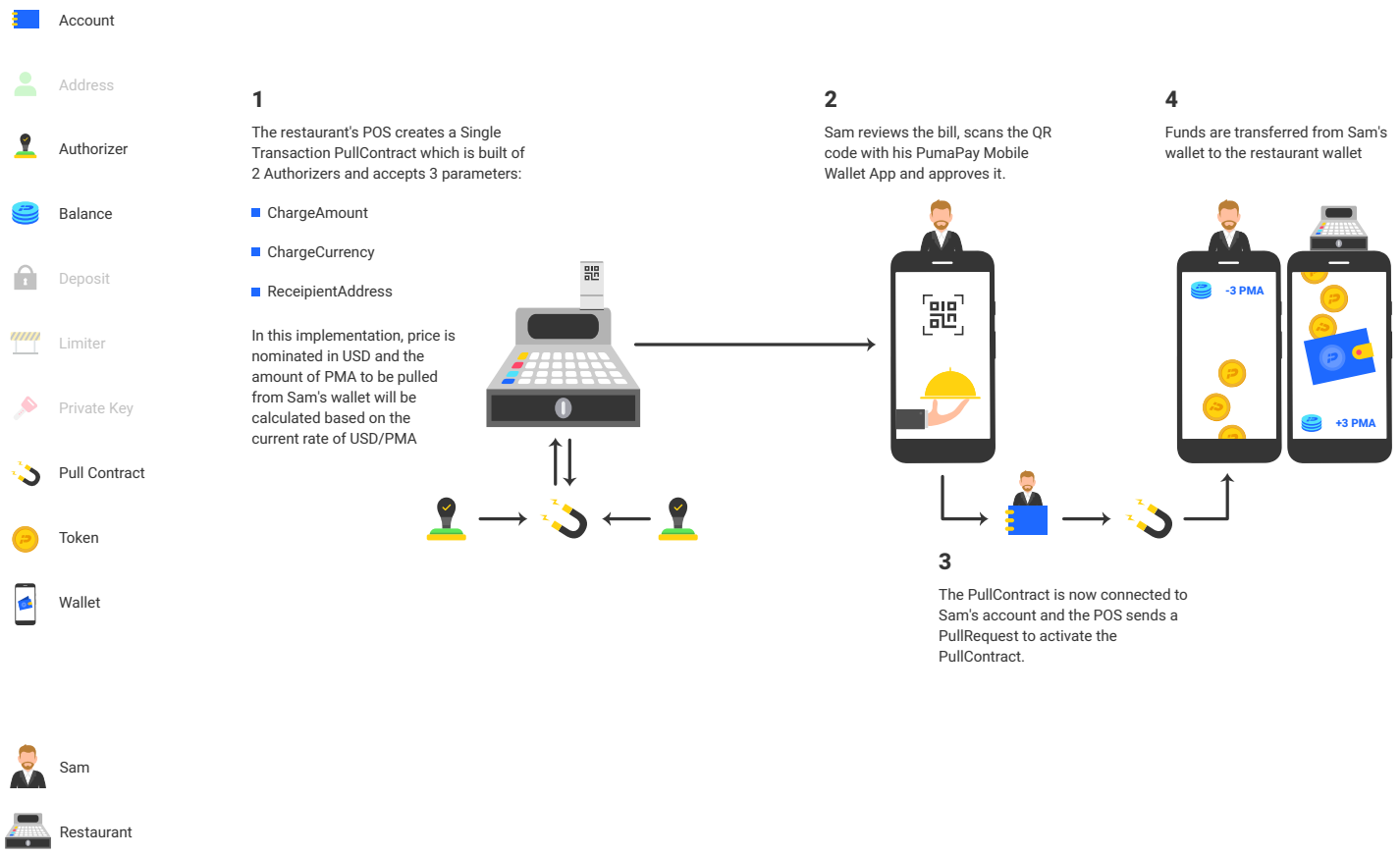
Use Case: A Magazine Subscription

Bob has a passion for cryptography and security. As such he wants a subscription to National Cryptographic, the world's leading journal on everything security and blockchain. Since the National Cryptographic website uses PumaPay, Bob can easily subscribe.

First Bob can look at the subscription and use his PumaPay wallet to scan the QR code given to him at check out. After scanning the QR code, a YAML file will be displayed on his wallet explaining the terms of the PullContract and any of the details regarding the PullContract.

Once Bob accepts, the PullContract is committed to the Blockchain, Bob is subscribed to National Cryptographic, and National Cryptographic is permitted to make PullRequests from Bob's account every month.

Single Payment - Offline



Use Case: Dinner Out

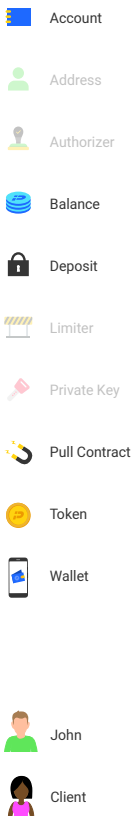
Lily and Sam are going to go out on a date. Beforehand, Sam checks the PumaPay Pride restaurants online to see a list of nearby restaurants that accept PumaPay.

Lily and Sam decide on a nice Ethiopian restaurant right around the corner from Lily's apartment. After they have eaten their delicious meal, the waiter brings the check. They both decide that Sam will pay for dinner this time using PumaPay. The bill includes a QR code and Sam opens his phone and scans the code into his PumaPay wallet.

After scanning the QR code, the wallet displays an overview of the transaction. When Sam approves the transaction the PullContract is written to the blockchain and the restaurant (through the SDK components implemented in its POS system) submits a PullRequest to Sam's account.

This is only one case, but the possibilities are endless for what can be done with the PumaPay Protocol and several more are elaborated below. It is worth noting that the pull methodology behind PumaPay is much more innovative than the normal push methodology of cryptocurrencies because in this pull example the restaurant is paying for the transaction processing fee - not the customer, which is a huge advantage.

Instant Pay Per Use



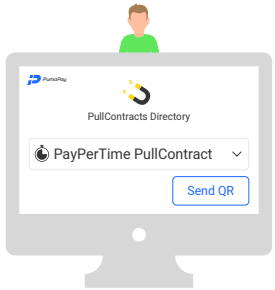
1

John chooses a PayPerTime PullContract from PumaPay PullContracts Directory and populates it with the following parameters:

- BaseTimeUnit: **minute**
- PricePerUnit: **1.5**
- PriceCurrency: **PMA**
- InitialDepositUnit: **minute**
- InitialDepositAmount: **5**
- ChargeCycleTimeUnit: **seconds**
- ChargeCycleInterval: **15**

This PullContract works with a state channel that allows the customer to cryptographically sign certificates confirming the real-time utilization of the service. Once the session has ended, the service provider uses these signed certificates to authorize payment.

To ensure payment, a deposit is withdrawn into the PullContract from which reconciliation is performed at the end of the session. Remaining amount is returned to the user.



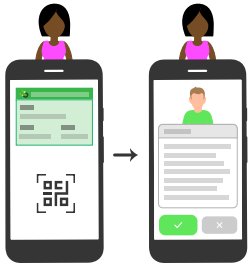
2

The customer scans the QR code and sees the following summary on her wallet app:

*"Consultancy session with **John the Dietitian**. Cost: **1.5 PMA /Minute**. Time is calculated at **15 seconds** intervals. Your account will be charged every **5 minutes** in advance. Any unused funds will be returned at the end of the session"*

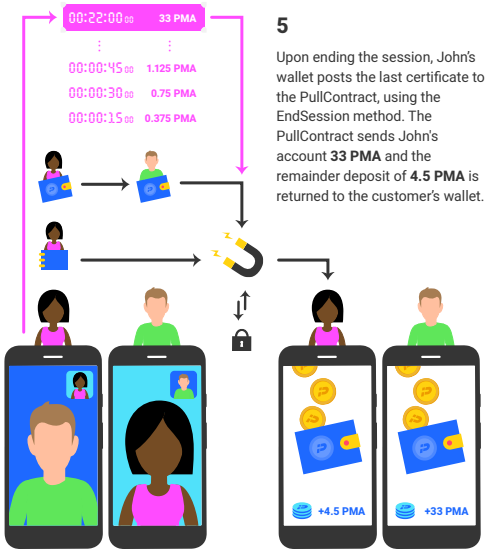
3

The customer accepts the transaction and the PullContract pulls **7.5 PMA** from her account as a deposit. A P2P state channel is now open between John and the customer.



4

Now John is speaking with his customer. Their wallets communicate with each other as well, through the state-channel (see below*)



5

Upon ending the session, John's wallet posts the last certificate to the PullContract, using the EndSession method. The PullContract sends John's account **33 PMA** and the remainder deposit of **4.5 PMA** is returned to the customer's wallet.

***State-Channel (Offchain)**

Every 15 seconds the customer's wallet signs a certificate for additional **0.375 PMA** and delivers it to John's application (Offchain). The receipts are incrementing, so the first receipt is for 15 seconds, the next is for 30 seconds and so forth.

Every time the amount on the receipt equals the deposited amount (every 5 minutes), the PullContract automatically Pulls **7.5 PMA** from the customer's account as a deposit for the next 5 minutes.

The session lasts for a total of 22 minutes. So a total of 5x7.5=**37.5** were deposited by the customer to the PullContract.

The customer's wallet signed a receipt of 0.375 PMA every 15 seconds, so there were 22x4=**88** charges of **0.375** each. The last receipt shows a total amount of 88x0.375=**33 PMA**.

Use Case: Expert Advice

John is a dietitian and gives live consultancy services over the Internet. He enables his service with PumaPay.

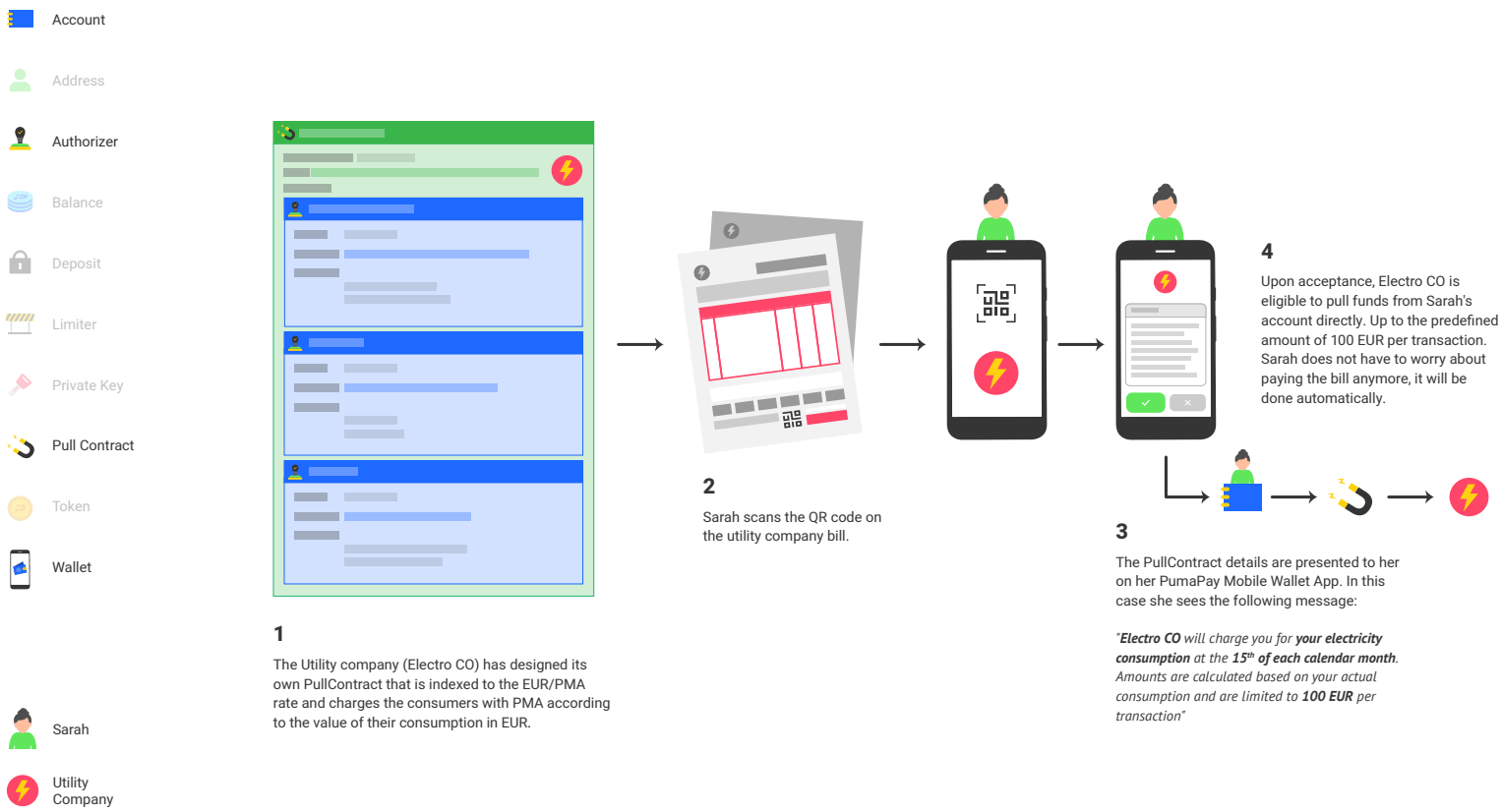
Prior to session commencement, a predetermined deposit amount of PumaPay Tokens will be captured via a PullContract that John sends to his customer using a QR code.

After the customer accepts the PullContract, John can start the session.

Throughout the session and upon use, the PullContract keeps note of minutes used; using a state channel protocol, the platform shall confirm every 15 seconds that the session is still active and the customer has enough PumaPay Tokens.

When the session ends, the smart contract transfers the portion consumed from the captured amount to the merchant and any surplus is automatically released to the customer.

Recurring Payments Based on Time with a Variable Amount



Use Case: Electric Bills

Sarah has just gotten her first home and now she has to pay bills. She looks at her electricity bill and sees that her utility company has integrated PumaPay. She goes to the website and plugs-in her account details. When she selects a payment method, she chooses PumaPay.

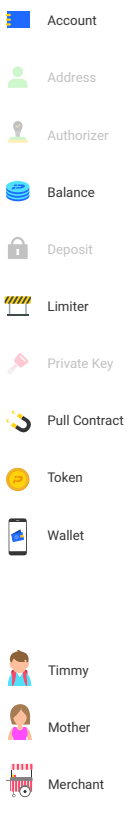
Upon doing this, a PullContract is created by the utility company's web-app using the PumaPay SDK.

A QR code that links to the PullContract is generated and displayed to Sarah.

Sarah can scan this QR code and get the details of the contract, which states that it can withdraw a variable amount from her account monthly with this amount being dependent on her electricity consumption.

Sarah accepts the PullContract, it is stored on the Token Contract and Sarah is connected to the power grid.

Restricted Payment



Approved

1

At the POS of the grocery store, a QR code is presented. This QR code represents a PullContract for a single transactions. Timmy scans the QR code using his PumaPay mobile wallet.

2

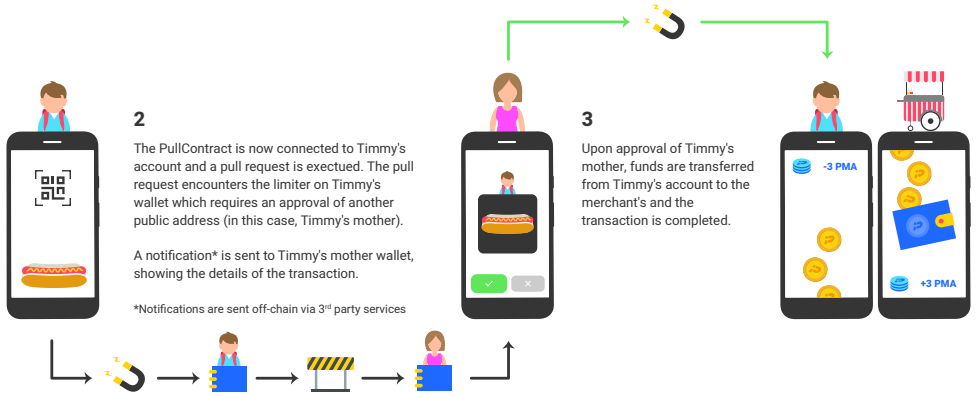
The PullContract is now connected to Timmy's account and a pull request is exectued. The pull request encounters the limiter on Timmy's wallet which requires an approval of another public address (in this case, Timmy's mother).

A notification* is sent to Timmy's mother wallet, showing the details of the transaction.

*Notifications are sent off-chain via 3rd party services

3

Upon approval of Timmy's mother, funds are transferred from Timmy's account to the merchant's and the transaction is completed.



Denied

1

At the POS of the grocery store, a QR code is presented. This QR code represents a PullContract for a single transactions. Timmy scans the QR code using his PumaPay mobile wallet.

2

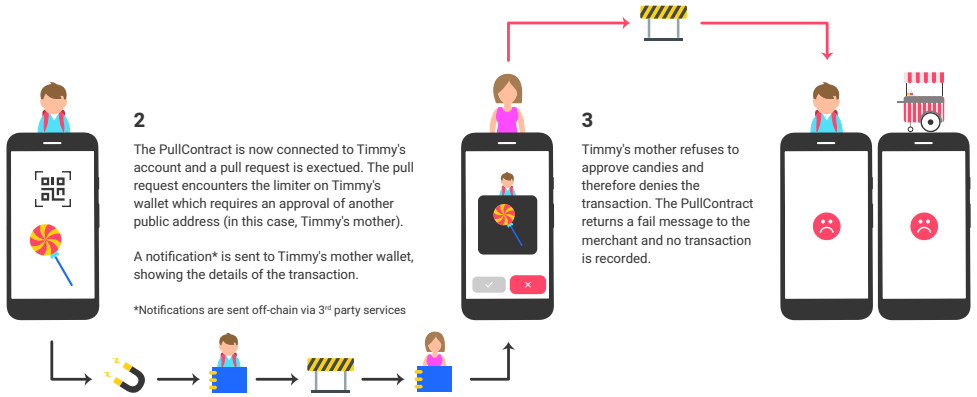
The PullContract is now connected to Timmy's account and a pull request is exectued. The pull request encounters the limiter on Timmy's wallet which requires an approval of another public address (in this case, Timmy's mother).

A notification* is sent to Timmy's mother wallet, showing the details of the transaction.

*Notifications are sent off-chain via 3rd party services

3

Timmy's mother refuses to approve candies and therefore denies the transaction. The PullContract returns a fail message to the merchant and no transaction is recorded.



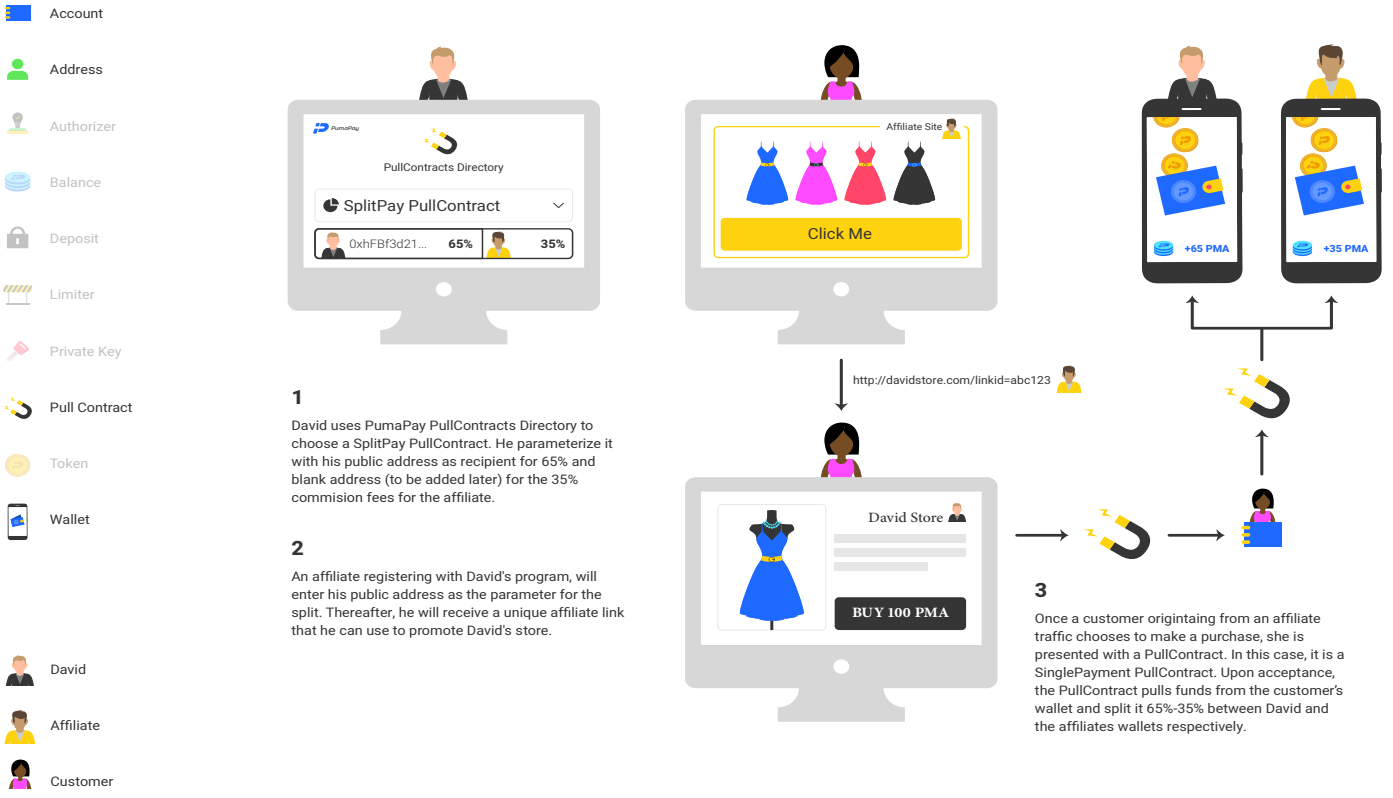
Use Case: My First Wallet

Timmy is a young boy that is starting elementary school and his Mom wants to give him money for lunch, but she doesn't want him to spend it on sweets. Through the use of 3rd party Limiters, PumaPay could allow his mother to oversee his connected wallet activity and ensure that Timmy's money is spent responsibly. Every time Timmy tries to make a purchase, his request shall be submitted to his mother's wallet and will be approved if the transaction fits certain predetermined parameters set by his Mom, or disapproved if it does not. When Timmy attempts to make a purchase, he will get a frowny face if the payment is not approved, or a smiley face if it is approved. In this use case, Timmy's mom chose to approve transactions manually for every purchase through the use of 3rd party messaging service to her device. This real-time messaging is not part of the protocol and is done off-chain. Alternatively, Timmy's mom could have chosen to set parameters for automatic approval or rejection of transactions (for example, based on product category), effectively and efficiently enforcing parental control on Timmy's purchases even when his mom is not available.

It is important to note that this is a simple use case and additional limitations can be placed to constrain the velocity of transactions, business type, and much more.

Additionally, there can be numerous other implementations but these two elaborate both an active and passive restriction by Timmy's Mom at the point of purchase.

Shared Payments



1

David uses PumaPay PullContracts Directory to choose a SplitPay PullContract. He parameterize it with his public address as recipient for 65% and blank address (to be added later) for the 35% commision fees for the affiliate.

2

An affiliate registering with David's program, will enter his public address as the parameter for the split. Thereafter, he will receive a unique affiliate link that he can use to promote David's store.

3

Once a customer origintaing from an affiliate traffic chooses to make a purchase, she is presented with a PullContract. In this case, it is a SinglePayment PullContract. Upon acceptance, the PullContract pulls funds from the customer's wallet and split it 65%-35% between David and the affiliates wallets respectively.

Use Case: Affiliate Marketing for Dummies

David has a moderately successful online store, and he wishes to expand. He knows the power of affiliate marketing and wants to utilize it. Since he does not have the resources to build a reputable affiliate network, it will be very hard for affiliates to trust that he will pay them commission, and do so in a timely manner. If he submits his offer to an existing affiliate network, it will cost him unnecessary intermediary fees. With PumaPay, David can create a PullContract to charge his customers and chain it to a Split Payment contract that will automatically split the revenues from each purchase between his account and the affiliates. This ensures that both the affiliate and David will immediately get their share of every purchase without any risk, thus solving the trust issue.

The PumaPay Token

The PumaPay token (symbol **PMA**) is the facilitator of the protocol's unique PullPayment functionality. It is the only means of value transfer between parties over the protocol and can be converted to from any other cryptocurrency or fiat.

The token will initially be developed as an ERC223 compatible token over the public Ethereum blockchain (PMA V1.0). This will facilitate the TGE as well as the initial usage of the token as a means of payment on our Launch Partners platforms from day one.

Within six months after the TGE, we will introduce the final version of the token (PMA V2.0) which will be developed over a next generation blockchain (ORBS or EOS) and will be aligned with all the functionally of the PumaPay Protocol.

Upon launch of the PumaPay Protocol and PMA V2.0, holders of the PMA token will be able to convert their V1.0 token to V2.0 by sending it to a special smart contract that will return PMA V2.0 tokens. Details of the exact conversion mechanism and ratio will be announced in the future.

The final and total supply of tokens will be issued in the TGE and there will be no future addition to this amount.

Token Generation Event

In order to facilitate the development of our Protocol and PMA Token and to encourage adoption, we will conduct a Token Generation Event. PumaPay Tokens will be available for purchase on our sale site https://ico.PumaPay.io commencing March 22nd, 2018 at 12:00:00 am (UTC) and for a period of 7 days. The PumaPay Token will be sold at a fixed price denominated in ETH and the total number of tokens will depend on the quantity of PumaPay Tokens sold such that the total amount of tokens sold during the TGE will comprise 20% (Twenty Percent) of the total PumaPay Tokens generated.

Our TGE will be soft-capped at 20K ETH (Twenty Thousand Ether) and hard-capped at 150M USD (One Hundred and Fifty Million US Dollars). If the soft cap threshold isn't met, the PumaPay Project shall be canceled and the raised amount will be returned to the contributors.

Bonuses

During the TGE, we will offer a special 5% (Five Percent) bonus to a person/entity who contributed at least 6 ETH (Six Ether).

Pricing Program

During the TGE, we will initiate the following special pricing program for contributors:

Duration from TGE Start	PMA/ETH Ratio
First 24 Hours	50,000
2nd Day	40,000
3rd Day	30,000
4th Day and onwards	25,000

Token Allocation

The allocation of total PumaPay Tokens generated will be as follows:

20% of the total number of PumaPay Tokens will be allocated to public contributors during the TGE (including pre-sold tokens)

~20%* of the total number of PumaPay Tokens will be allocated to Launch Partners and Early Adopters

~35%* of the total number of PumaPay Tokens will be allocated to Decentralized Vision Ltd., to be used for the development of the Protocol and PMA Token, future strategic plans for ecosystem creation and as a reserve for the company

~15% of the total number of PumaPay Tokens will be allocated to advisors who supported, promoted and raised funds during the TGE, professional fees, bounties and bonuses

10% of the total number of PumaPay Tokens will be allocated to the founders and team and will be gradually vested over a 12-month period

*If a certain allocation category exceeds its above threshold (%) of total PumaPay Tokens, the surplus will be taken from the company's share of allocated PumaPay Tokens and vice versa.

Use of proceeds

The proceeds of the TGE will be used for the development of our technology, integration with launch partners and early adopters, protocol adoption, and to cover all of the TGE associated costs. 3% of the proceeds will be kept as a liquidity pool.

Protocol Implementation	**40%**
Development and operational costs	**27%**
Advisors, consultants and TGE costs	**20%**
Founders & Team	**10%**
Liquidity	**3%**

Roadmap

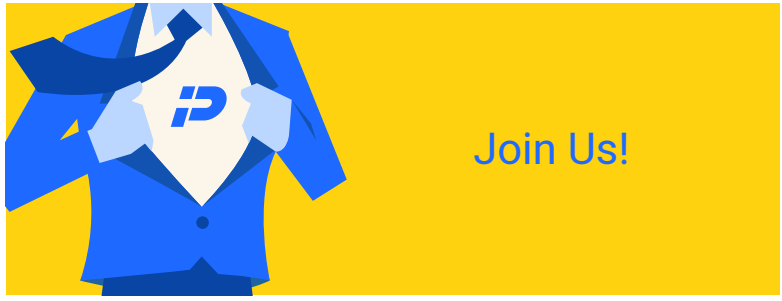
The execution of our strategic plans depends on the level of contribution. 40% of the proceeds shall be devoted to strategic partnerships and protocol adoption. The larger the total contribution, the better we will be positioned in order to have the PumaPay Protocol implemented and adopted as a standard means of payment.

Below are three possible scenarios for our roadmap, given the level of contribution we will achieve:

Level of contribution	Strategic Milestones
20K ETH - 50K ETH	Executing our strategic partnership with our launch partners ImLive and ChatMaker. Executing our strategy for disrupting online services marketplaces.
50K ETH - 80K ETH	Penetration and disruption of online ecommerce platforms
80K ETH+	At this level we will be able to set our focus offline as well and harness merchants and other offline entities to adopt the protocol.

Soft Cap: 20K ETH | Hard Cap: 150M USD

In case we do not reach the softcap, contributions will be returned to contributors.



Development Roadmap

Q2 2018

- PumaPay TGE
- PMA Token V1.0
- Integration with ImLive

Q3 2018

- Testing next gen. blockchain
- Integration with ChatMaker

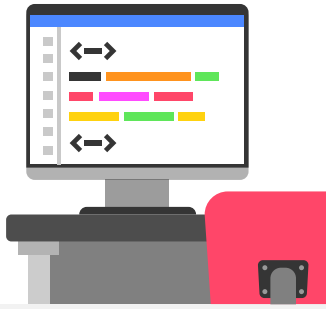
Q4 2018 - Q1 2019

- PMA Token V2.0
- Android Wallet
- SDK I (NodeJS)
- Integration with ImLive White-Label
- Integration with Early Adopters
- Chrome Wallet
- iOS Wallet
- Integration V2.0 with ChatMaker
- SDK II (Java, Python, ...)

Notes

V1.0 - Simple ERC223 token

V2.0 - Fully capable token on next-generation blockchain.



Team

Advisors

Dovi Frances

Dovi Frances is a financial services entrepreneur and a technology investor. He is the founder and general partner of SGVC, a venture capital firm based in Los Angeles, California.

Since its inception, SGVC has built a name for itself by making early investments into some of Silicon Valley's most prominent FinTech companies. Today it is a major backer and stakeholder in Addepar, Tipalti, HomeLight, SunBit, TripActions and Next Insurance. Frances currently serves on the board of directors of Tipalti, SunBit, HomeLight, and Covercy. He is also an advisor to Addepar, PumaPay and is a member of the Advisory Council of Leumi Bank U.S. Frances graduated from Ben Gurion University in 2005 with a bachelor degree in Business Administration and he graduated from UCLA Anderson in 2008 with a Masters in Business Administration in Finance and Marketing.

Muly Litvak

Muly Litvak is a musician, art collector and entrepreneur. He is the co-founder and owner of an investment company that invests in high-tech, start-ups and real estate development worldwide.

Litvak is the founder of high-profile ventures that have a significant impact on the online adult entertainment industry, specializing in the matchmaking and live-streaming sectors. He is a visionary who always tries to stay one step ahead.

"We live in exciting, historic times. The Blockchain era has tremendous potential and promises to change the economic order. In a very short time, it is going to disrupt many sectors and decentralize them, giving the power to the people. Those who make use of the decentralized platforms will have the opportunity to reap benefits that were previously limited to centralized companies and organizations".

Prof. George M. Giaglis

Professor Giaglis the Director of the Institute For the Future (IFF) at the University of Nicosia, Cyprus. He has been working on digital currencies and blockchain applications since 2012.

George is one of the first academics to research and teach on blockchain, having: designed the curriculum of the world's first full academic degree on blockchain (MSc in Digital Currency at the University of Nicosia); led the development of blockchain credentialing technology that has resulted in the first ever publishing of academic certificates on the blockchain; taught on the disruptive innovation potential of blockchain; organized a number of prominent blockchain conferences and events. In his career, he has published more than 150 peer-reviewed papers in leading scientific journals and conferences and serves in the editorial board of seven academic journals, including Ledger.

Team

Advisors

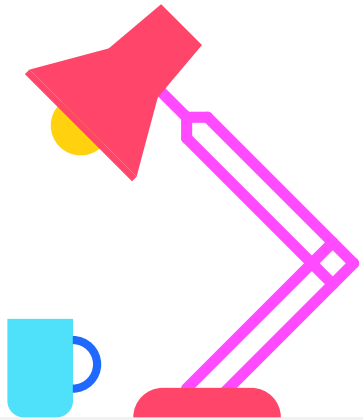
Uriel Peled

Uriel is a co-founder of Orbs and CoinTree. Orbs develops next-generation Blockchain as a service infrastructure. CoinTree is a world-leading ICO consulting and products development company. Formerly Uriel co-founded Visualead, a AR/VR mobile startup acquired by Alibaba. Uriel holds a BSc summa cum laude in Electrical Engineering from the Technion.

Daniel Sijes

Originally from the Netherlands, Daniel brings over 10 years of experience in the online payment space. Daniel worked for leading companies like Global Collect, eMerchantPay, and Mastercard where he gained insight and expertise in a variety of challenges related to both local and global payment processing.

He used his acquired knowledge to develop his own solutions and start multiple successful online payment ventures. Daniel is the cofounder of Payment Partner, a global consultancy company specializing in e-payments solutions for online businesses.



Team Members

Yoav Dror

CEO

Founder and CEO. MBA. Over 20 years of experience at executive level in various online companies. Strategic planner and executor in highly dynamic business environment. Highly analytical and advocate of data-oriented management. An entrepreneurial character with a proven record of accomplishment of setting up new business ventures. Blockchain enthusiast.

Giorgos Kourtellos

Chief Blockchain Architect

Giorgos combines the technical mindset of his engineering background along with professional experience in IT industry to design and deliver complex solutions. As a Blockchain engineer who was working in the Blockchain team at IBM Client Innovation Center Benelux for the past years, he was involved and contributed in multiple pilots and proof of concepts for the energy and finance industry.

Pantelis Foulis

CFO

Pantelis C. Fouli is a Chartered Certified Accountant (ACCA).

Every position he has undertaken these past 23 years has been with the same vigor to stop at nothing until the task at hand is completed.

He has served in various roles in the profession and Industry with a proven record of accomplishment.

He is also an ACCA advocate and mentors aspiring accountants in his spare time.

Milenko Strika

Head of Product

Entrepreneur, product manager/ owner with high knowledge of mobile and web UI/UX, branding, marketing, market analysis and research. Worked on different innovative solutions for E-Commerce, Banking, Forex and Telecommunication that helped shape and drive products with creative ideas.

Team Members

Gleb Chernov

VP Business Development

An accomplished and high achieving Fintech professional with specialist skills in sales, account management and operations management. Combines a broad technical skill set with strong business acumen to deliver outstanding results. Skilfully identifies and pursues key opportunities that impact positively on commercial/financial goal while upholding customer satisfaction.

Dr. Viacheslav Roganov

Smart Contracts Developer

Holds an MS degree from Taras Shevchenko National University of Kyiv (2005) and PhD from Subbotin Institute of Geophysics (2015). Viacheslav has diverse experience of software development including HPC/geophysical simulation software (MPI, OpenMP, CUDA, OpenCL), fullstack web development (including NodeJS and React), Virtual/Mixed Reality (Hololens/Unity, React VR) and Bockchain Ethereum based applications.

Yevhen Nazarenko

Smart Contracts Developer

MS degree in computer science in 2007. He is the author of scientific papers on the 2D approximation of irregular data and acceleration of seismic processing on cluster computers. Yevhen is responsible for the development of 3D graphics and computing modules in geophysical software packages “Tesseral 2D”, “Tesseral Pro” and “GeoPoisk” (C++, OpenGL). He also has extended experience in microcontroller programming and fullstack web development (focusing on back-end, non-SQL databases and cloud technologies) and recently moved to Blockchain/ Smart Contracts development.

Stella Evagorou

Developer

Stella Evagorou completed her studies in Leicester, UK where she obtained a bachelor degree in Computing and a Master’s degree in web application and services. During and after her studies, Stella was involved in various development projects and has recently moved to the field of blockchain and smart contracts.

Sofia Mashovets

Online Marketing Manager

Sofia is a digital marketing and communications professional with an over decade’s experience working on global projects in multiple industries, including eCommerce, sales, online education, mobile apps and forex. Holding degrees in Political Science and Journalism, Sofia is a strong communicator who is passionate about getting the point across and engaging with the audience in the way that’s most most accessible to them, leveraging the digital tools and the power of the Internet.

Team Members

Dana Ungureanu

Content Writer

Holding a Master's Degree in the Translation of the Modern English Poetic Text, Dana's passion for writing, story-telling and marketing combined with a genuine interest in financial technology has guided her along a career path in this direction. With an extensive experience in content creation for different industries, including Forex, travel&tour, health care, IT applications in medicine, as well as translation, radio presentation and event promotion, Dana followed her lifelong dream of "helping tell the story behind a brand and adding another brick to its wall of fame. Why not the blockchain? Working in the financial industry for quite some time has opened my eyes to cryptocurrencies and the blockchain. There is definitely a great economic potential in cryptos that we yet have to discover, if only we weren't so stuck in our ways still."

Constantinos Eracleus

Developer

Constantinos Eracleous started at a young age to show interest in coding and computer science his interest quickly developed to a passion in his teen years. He has since studied Computer Science at the European University of Cyprus. During his studies Constantinos got involved with various projects including a small open source Inventory System and a reservations website. After finishing his studies he began his involvement with cryptocurrency.

Mat Stone

Cyber Security

Mat Stone is an IT professional who works with technology to solve problems. Mat believes there is always a way of making things better, stronger and more secure. From an early age, Mat has been using computers and the internet to learn about the world and help others. In 2002, Mat moved into the world of servers, data and security. Focusing more on how people actually work allowed Mat to build more human-friendly and secure systems.

Athina Chatziadamou

Legal Associate

Athina Chatziadamou is an experienced lawyer specializing in the fields of corporate law, commercial and general litigation and financial services law.

She obtained her bachelor degree in Law from the University of Leicester and also holds a Master's degree from the University of Surrey in International Commercial Law.

She is currently a member of the Cyprus Bar Association since 2013.

Risk Factors

The following are the risk factors in relation to PumaPay business in general and PMA Token Sale event in particular:

Token Sale Risks

- There is no prior market for Tokens and the Token Sale may not result in an active or liquid market for the Tokens.
- Future sales of the Tokens could materially and adversely affect the market price of Tokens.
- Negative publicity may materially and adversely affect the price of the Tokens.
- There is no assurance of any success of the Company's business platform or any future Token functionality.
- The market price of the Tokens may fluctuate following the Token Sale.
- The private keys to the escrow wallet may be compromised and the cryptocurrencies may not be able to be disbursed.
- The Token may be significantly influenced by cryptocurrencies market trends and Token value may be severely depreciated due to non-PMA related events in the cryptocurrencies markets.
- The use of the Tokens may come under the scrutiny of governmental institutions.
- The ownership of Tokens may fall under new and unpredicted taxation laws that will erode Tokens benefits.
- There may be unanticipated risks arising from the Tokens.
- Applicable laws and regulations may limit the utility, functionality, the accessibility and transferability of the Tokens.
- Crowd sales have been known to come under malicious attacks from hackers and/or other parties resulting in the theft of tokens. Such events may inflict massive losses on buyers and the company.

Company Related Risks

- The Company may be materially and adversely affected if it fails to effectively manage its operations as its business develops and evolves which would have a direct impact on its ability to maintain or operate the Company's business platform and/or develop structure and/or license any future Token functionality.
- The Company may experience system failures, unplanned interruptions in its network or services, hardware or software defects, security breaches or other causes that could adversely affect the Company's infrastructure network, and/or the Company's business platform.
- The Company may in the future be dependent in part on the location and data center facilities of third parties.
- General global market and economic conditions may have an adverse impact on the Company's operating performance, results of operations and/or cash flows.
- The Company or the Tokens may be affected by newly implemented regulations.
- The Company may not be able to pay any anticipated rewards in the future

https://pumapay.io/docs/legal-considerations-risks-disclaimer.pdf

Resources

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