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BIOMETRIC PAYMENT SYSTEMS

ICO WHITEPAPER

Revised on: **November 2023**

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ABSTRACT

Digital payments is a flourishing segment expected to reach $ 7.41 billion in 2024. At the same time, almost two billion people worldwide remain unbanked presenting an enormous opportunity for expansion.

The rapid growth of cashless payments outlines the need for cyber-security to meet new threats. **Biometric authentication** presents the ultimate solution to this emerging challenge. More than two-thirds of Europeans want to use biometrics as a method of payment authentication for convenience and security.

In parallel, **blockchain technology** is disrupting many markets and is forecast to grow to 4.30 billion U.S. dollars by 2024.

Now, imagine the explosive combination of digital payments, biometric authentication, and blockchain technology: **Biometric Payment Systems**, or **B.P.S**
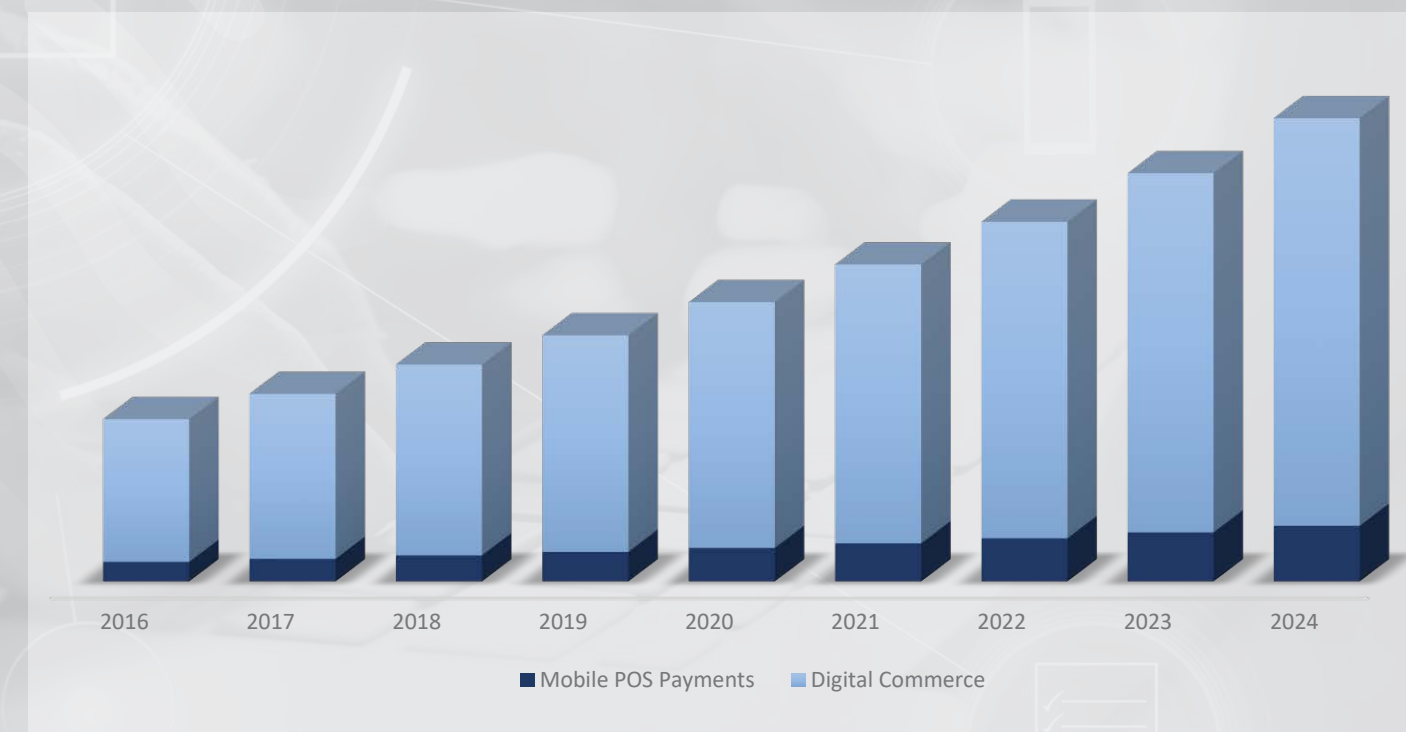
B.P.S leverages blockchain, biometrics and artificial intelligence to offer a revolutionary decentralized payment system to users worldwide. Users will get rewarded for participating in B.P.S, and rewarded activities will fuel the growth of the platform.

To support its development B.P.S is introducing the B.P.S.T token and launches an interesting Initial Coin Offering (ICO) campaign. Here is all the info you need to know to be part of this amazing project:

DIGITAL PAYMENTS:

A BOOMING SEGMENT

Two billion people worldwide do not have a bank account or access to a financial institution via a mobile phone, or any other device.i Digitising payments is a powerful solution to encourage economic participation.

Digital payment is a segment that is flourishing. Its total transaction value amounts to $ 5.26 billion in 2018 and is expected to show an annual growth rate (CAGR 2018-2024) of 13.5% resulting in the total amount of **$ 11,24 billion in 2024**.[ii]

2016   2017   2018   2019   2020   2021   2022   2023   2024

■ Mobile POS Payments   ■ Digital Commerce

The market's largest segment is the Digital Commerce segment with a total transaction value of $ 4,87 billion in 2021.

From a global comparison perspective it is shown that the highest cumulated transaction value is reached in China ($ 2,04 billion in 2018).

The number of users is expected to amount to 5,14 billion by 2024.


Mobile POS Payments   Digital Commerce
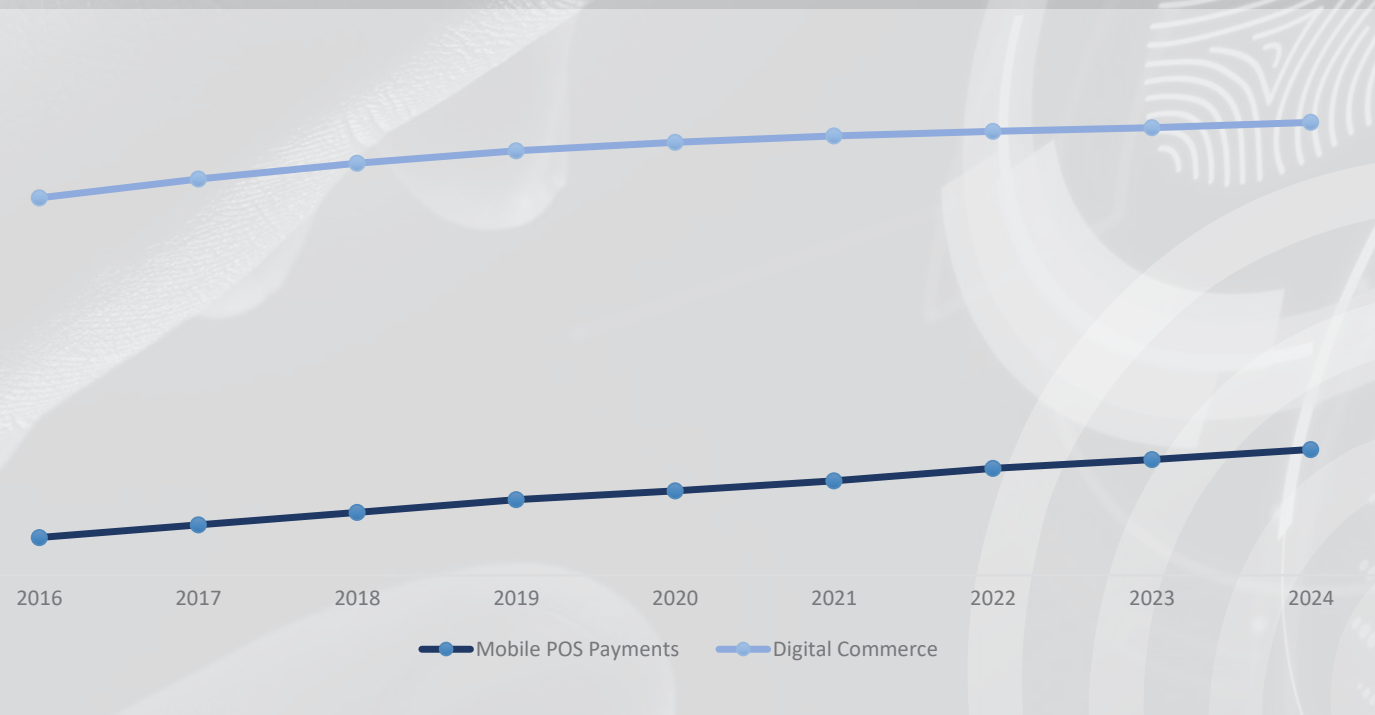
Despite the increased adoption of digital payments, cash remains in the mainstream, especially for low-value transactions.

This year's World Payments Report (WPR) states that mobility, connected homes, entertainment, and media are expected to boost non-cash transactions in the future, as will alternate channels, including contactless, wearables, and augmented reality.[iii]

SECURITY IS A KEY ISSUE

The unprecedented push for cashless payments has enabled the growth of several FinTech and digital payments platforms alike. However, while e-wallets have gained traction and the utility of credit cards and net-banking has increased, the need for cybersecurity has also received mainstream attention.

In the case of offline thefts, the damages are subject to the amount of cash the person is carrying at that point in time. However, in digital transactions, the damages can be huge and oftentimes, irrevocable.[iv]

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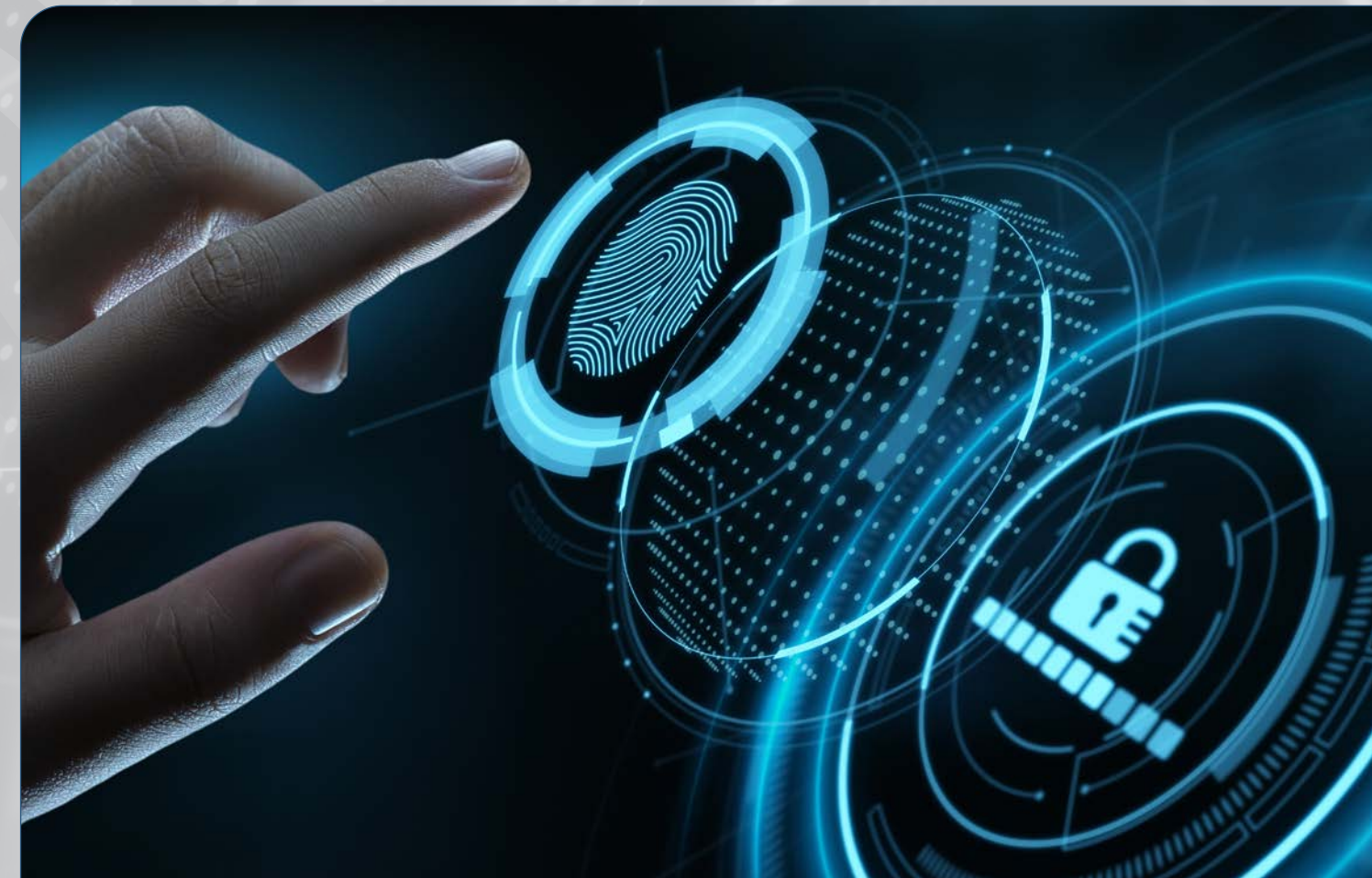
BLOCKCHAIN TECHNOLOGY:

IT DISRUPTS THE MARKET

Blockchain technology is taking the market by storm disrupting the way many markets work. And digital payments make no exception.

In 2017, the global blockchain technology market was predicted to reach 339.5 million U.S. dollars in size and is forecast to grow to 4.3 billion U.S. dollars by 2024.[vi]

Increasing demand for this technology across financial services, consumer or industrial products, technology, media and telecom, healthcare, transportation, and public sectors is largely responsible for market growth.

The market is expected to exhibit significant growth owing to abundant benefits provided by this technology, such as:

- ■ **Eliminating need for any financial institution to authenticate transactions**

- ■ **Eliminating reconciliation**

- ■ **Reducing duplicative record-keeping**

- ■ **Facilitating faster settlement**

- ■ **Minimising error rates**

This technology allows access to databases from everywhere, thereby allowing multiple institutions to use it simultaneously to bring different systems nearer and help improve efficiency.

Major growth drivers include growing interest of the Banking, Financial Services, and Insurance (BFSI) sector and increasing merchants accepting cryptocurrencies.[vii]

BIOMETRIC AUTHENTICATION

B.P.S:
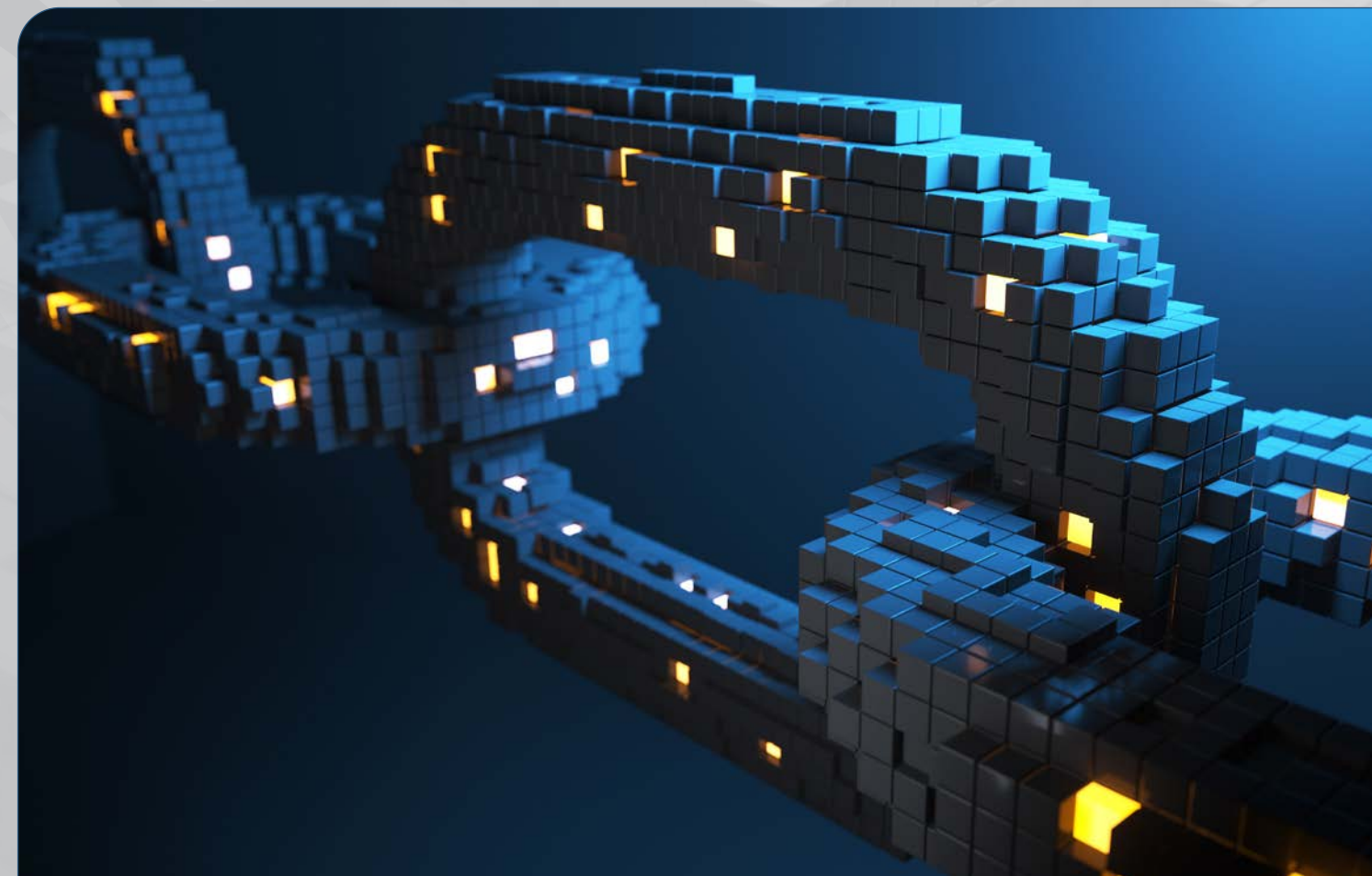
THE ULTIMATE COMBINATION

An ultra-effective way to enhance security in digital payments is through **biometric authentication**.

Biometric authentication is used in computer science as a form of identification and access control. Biometric authentication is simply the process of verifying your identity using your measurements or other unique characteristics of your body, then log in you in a service, an app, or a device.

Biometric authentication works by comparing two sets of data:

- ■ **The first one is preset by the owner of the device**

- ■ **The second one belongs to a device visitor**

If the two data are identical, the device knows that "visitor" and "owner" are one and the same, and gives access to the person.

Biometric authentication is gaining widespread popularity in recent years due to the advances in sensor technologies as well as improvements in the matching algorithms that make the systems both secure and cost-effective.

According to a Visa survey, more than two-thirds of Europeans want to use biometrics as a method of payment authentication, with convenience and security the main reason for its popularity.[viii]

Now, imagine the explosive combination of digital payments, blockchain technology, cryptocurrencies, and biometric authentication: **Biometric Payment Systems**, or **B.P.S**

a. How it works

We leverage blockchain, biometrics and artificial intelligence to offer a revolutionary decentralized payment system to users all over the world. Regardless of their background, location or income, B.P.S offers an easy, fast payment system to anyone in the world, helping increase the financial inclusion and social integration, while empowering the local economies to generate wealth.

B.P.S aspires to offer fast and secure payment processing in both cryptocurrencies and fiat money. Imagine that wherever you are, you can have full control of your money at your fingertips. In addition to a full spectrum of important features, B.P.S plans to implement a unique referral rewards program for B.P.S token purchasers and referrers, carefully configured to meet the needs of the digital asset economy.

b. SmartWallet

Through B.P.S SmartWallet, anyone can quickly and easily create an account, with no ID document required to open a basic wallet.

Users can sign up with their finger or get referred by someone who is fully verified in the system to get access to their own basic B.P.S account.

B.P.S SmartWallet allows users to control their own money from anywhere, as long as they have a mobile device - smartphone.

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Purpose of the SmartWallet

All-in-one service:
Provides wallet functionalities such as transfers, payments, cash in/out, as well as other peer-to-peer transactions using smart contracts

Security:
All data is encrypted in the app before being sent to the network

Privacy:
Data presented in the app is cleaned from any form of personal information identifying patterns

Simplicity:
Simple User Interface that is intuitive and clean and provides a fast experience for any user.

Key elements of App Development Phase

Mobile UX design:
Users do not need to interact with complicated wallets as B.P.S provides a simple to use cross-platform mobile and web app with seamless U.I. and U.X.

Service Backend:
REST API, B.P.S engine optimization, and U.I. connectivity are developed.

■ A SideChain support functionality is developed to allow users to inspect the blocks, transactions, and account balances of any sidechain. This will provide a consistent, transparent and easy to access viewpoint of each transaction to every user.

■ REST API will offer a secure, encrypted connection from the mobile application to the backend and database. It will provide an abstract, secure layer between the user interface and the database.

■ REST API will process all requests from the ultimate user interface, keep a real connection, and sync interaction with the blockchain smart contracts.

■ REST API will have the functionality to make transactions into fiat payment networks and get webhooks for internal payment confirmations.

Database:
We plan to use the open-source, document-oriented database program, MongoDB, to handle the authentication, network isolation, and encryption. It is a fully elastic and natively "blockchain" structure supportive solution.

Mongo is built to scale and is highly available by default. Role-based access controls enhance the data security, while the optimized dashboards highlight key historical metrics.

MongoDB Atlas has been independently audited and confirmed to meet the privacy and compliance standards. In addition to Mongo, B.P.S will deploy PostgreSQL, a powerful, opensource, fully ACID compliant object-relational database system.

Backed by over 15 years of active development, PostgreSQL's proven architecture has earned a strong reputation for its reliability, data integrity, and performance.

c. Fingerprint Authentication

Fingerprint authentication presents a great opportunity to mainstream the identification and authentication due to the advantages it offers compared to traditional methods.

Why did we choose Fingerprint authentication?

One of the most developed biometrics
Fingerprint biometrics has been a favourite method of identification among researchers, developers, and consumers alike. No other biometrics received the level of attention that was paid to fingerprinting.

The fingertip, being a small area to scan added to this popularity as small fingerprint scanners, even on a smartphone, could do this job. People don't have to pose a specific posture to get their fingertips scanned, unlike other biometric solutions.

No two fingers are the same
Fingerprints are formed by patterns made of dermal ridges. Dermal ridges are shaped during the fetal development due to friction and many other factors in the womb. No two fingers having the same ridge pattern has ever been recorded in the history of fingerprinting. Even twins don't share the same ridge patterns nor are it is shared by two fingers of the same person.

Also, it can't be lost or duplicated unless heist cut off the user's finger. To prevent any misuse, we apply additional security measures.

Does not change with age
Fingerprints are ageless. Dermal ridges are formed before the birth and stay even after the death. The quality of remaining unchanged throughout the person's life makes the fingerprints a noble biometric characteristic and a good reason we chose fingerprint as authentication.

Extremely quick
Thanks to the simplicity of the fingertip verification, people are granted or denied access in a matter of seconds, saving precious time of users as well as the authorities. There are no "doubtable cases" with fingerprint authentication, they will say yes or no, eliminating the shortcoming of human nature to doubt.

How does the Fingerprint authentication work in SmartWallet?
The SmartWallet protects the user privacy by keeping users' fingerprint patterns carefully encrypted and contained within the secure hardware on their mobile device. This guards against malicious acts, ensuring that users can safely use their fingerprint, even in untrusted applications.

When the user opens up the B.P.S SmartWallet, it creates an asymmetric key pair, it sends it to our backend server and prompts the user to touch their fingerprint.

The backend will use the public key to verify the feature transactions that are authorized by the user.

When a user activates their fingerprint reader to purchase an item, they're unlocking a hardware-backed cryptographic vault.

After the successful authentication, the signed piece of data with the transaction information will be sent to the backend. The backend will verify the signed data using the public key enrolled the first time.

d. Multi-factor Authentication

A serious concern is what happens when a heist cut off the user's finger or uses a dead user's finger. Unlike passwords, fingerprints are unchangeable. Once a thief has a finger, it can be used anywhere.

The user cannot change their fingerprint as they would with their traditional passwords. And when it's compromised, it's compromised forever.

Biometrics in combination with other advanced authentication measures provides a powerful combination to achieve really strong security.

MFA (multi-factor authentication) makes it extremely difficult for a hacker to infiltrate customer accounts.

We will combine the biometric recognition, especially the fingerprint, with the traditional multi-factor authentication including pin, SMS, security questions in order to provide an absolutely secure platform.

e. The B.P.S Referral System: Boosts the Growth

We believe that giving people additional opportunities to earn by engaging with the platform will incentivise the client participation, retention, and enthusiasm. It also ensures more liquidity within the engine, which keeps spreads low and generates higher overall volumes.

We intend for users to get rewarded for participation in B.P.S, and for the scope of rewarded activities to grow and change as the platform develops. During the launch of the B.P.S platform users will get rewarded for simply signing up to B.P.S and creating a wallet, using the exchange for the first time, referring friends to the platform, and completing the user feedback forms designed to help the team improve the platform.

Here is a detailed explanation of how B.P.S's unique referral system is working:

The system is based on a two level referral system that rewards users that refer other users, up to two levels.

For example, if one wallet transfers an amount (which we consider 100%) to another wallet then the receiving wallet receives 99%.

- 0,6% goes to a Global Treasury

- 0,1% goes to the user that referred the sender

- 0,1% goes the user that referred the first referral of the sender

- 0,1% goes to the user that referred the receiver

- 0,1% goes to the user that referred the referral of the receiver

Access to the wallet is granted via buying B.P.S tokens (BPST) on the ICO dashboard/website or by referring someone.

In the customer's account or dashboard, the customer will always see their referrals, references, and gains.

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f. B.P.S Token (BPST)

Our aim is to enable the use of B.P.S Token in the B.P.S system by spending it on merchants that support us, or private buyer/seller transactions. You can also sell the token in supported exchanges/privately in near future, or hold it for future use. The key difference in our platform is the promising business model behind it.

The B.P.S system will be a payment system that enables you to use token and spend it independently alongside a system that grows in synergy with the token.

g. Atomic Swaps

Generally, cryptocurrency exchanges are at least "semi-centralized," given that assets are often held by the exchange on behalf of their client base. The move towards a fully decentralized exchange mechanism has begun, and B.P.S plans to take a proactive approach to this technology. The B.P.S team sees technology like Solana, Polkadot and Cosmos approaching and understands that atomic swaps and cross chain communication will be extremely significant going forward.

B.P.S intends to offer atomic swap-like 'peer-2-peer secure exchanges' using time locked smart contracts where no third party intervention is needed to complete the transaction. The smart contract will act as a form of timed escrow, ensuring that both parties are protected in the event that one party defaults on the transaction.

It is intended that this exchange mechanism will carry fees that will be almost zero from our side, as it will be considered an added service for clients who are trading smaller volumes and those that do not require immediate execution.

INITIAL COIN OFFERING (ICO):
A NOT-TO-BE MISSED OPPORTUNITY

To support its development B.P.S is launching a promising Initial Coin Offering (ICO) campaign. Here are its characteristics:

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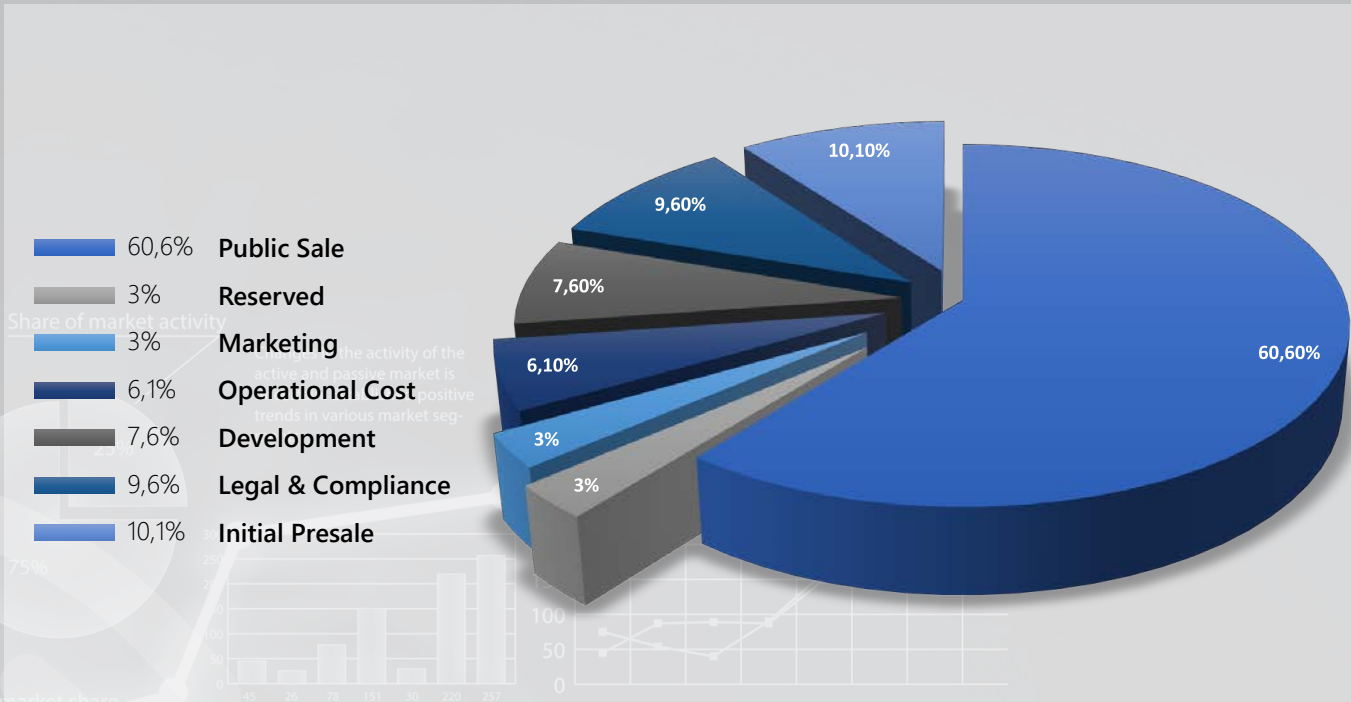
a. Total Supply

- Total supply: 150,000,000

- 33% of tokens will be reserved for founders, early investors, development, and marketing.

- Our initial presale will be free of commissions, and the presale will be for 25.000.000 tokens out of the 100.000.000.

- 75,000,000 tokens will be sold on public sale/ICO.

Fixed Token Value

We aim to provide contributors an advantage coming in earlier than late. In this purpose, we set fixed token price for the presale reservation of the first 25.000.000, B.P.S Token at 1 euro.

In the public sale/ICO we will provide 25.000.000 B.P.S Token at 2 euros reservation price, 25.000.000 B.P.S Token at 3 euros reservation price and 25.000.000 B.P.S Token at 5 euros reservation price.

b. Token Distribution

60,6%	Public Sale	
3%	Reserved	
3%	Marketing	
6,1%	Operational Cost	
7,6%	Development	
9,6%	Legal & Compliance	
10,1%	Initial Presale	

c. Funds Allocation

- 41% - Development
- 27% - Marketing & Sales
- 16% - Operations
- 11% - Legal
- 5% - Bonus & Reserves

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d. Referral & Bounty System

A 3 tier referral system will be applied to incentivise contributors who invite friends from their contacts or social channels.

The initial user will get:

30% of the token amount for direct recommendations, 10% of the token amount from 2nd tier indirect referrals and 5% of the token amount from 3rd tier inindirect referrals.

30%
1st tier

10%
2nd tier

5%
3rd tier

ROADMAP:

The idea came in 2017 when the founder was with his girlfriend at the beach and wanted to go swimming in the sea. They were asking themselves where to leave the money to be safe?

How cool would it be to take a drink at a swimming bar in the sea, but how to pay? Thinking that you always have a fingerprint with you and in combination with a pin code, it would be absolutely safe and not possible to copy, steal or fraud.

This idea was then expanded to what is now the B.P.S - Biometric Payment Systems project.

**PROJECT IDEA
2017**

**CONCEPT AND MVP
MARCH 2018**

Outlined the project concept and defined the Minimum Viable Product that can be launched in BETA.

**WHITEPAPER CONCEPT AND WRITING
DECEMBER 2018**

Technical writing and design of the Whitepaper.

**SMART CONTRACT DEVELOPMENT FOR
TOKEN CREATION AND CROWDSALE
JUNE 2019**

The ERC20 token creation and launch of the token distribution contract.

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ICO DASHBOARD DESIGN AND DEVELOPMENT
SEPTEMBER 2019

1. Design,

2. Authentication (two factor enabled),

3. Virtual wallet that manages balances,

4. Deposit funds in multiple currencies,

5. Purchase tokens in dashboard,

6. Credit tokens in exchange of their funds,

7. All UI components that interact users and REST API.

COIN SYSTEM DEVELOPMENT
FEBRUARY 2021

1. REST API as a controller:

   • Integration with smart contract,

   • Sync UI with DB,

   • Integration with 3rd party providers (CoinPayment, Bitgo, CoinBase),

   • Mobile endpoints that serves requests from mobile apps,

2. Daemons:

   • Sync real time crypto data,

   • Transaction, balance sync,

   • Contract data sync into DB,

   • More daemons will be needed in the future for use cases.

SMARTWALLET UI&UX AND DEVELOPMENT
FEBRUARY 2022

1. The design of the B.P.S SmartWallet,

2. Two factor authentication,

3. New account,

4. Send/receive crypto,

5. Withdraw.

FIAT CURRENCY SUPPORT AND DIRECT TRANSFER
MAY 2022

1. Coinpayment integration,

2. Stripe integration.

MARKETING
AUGUST 2022

1. Social media,

2. Linkedin,

3. Forums.

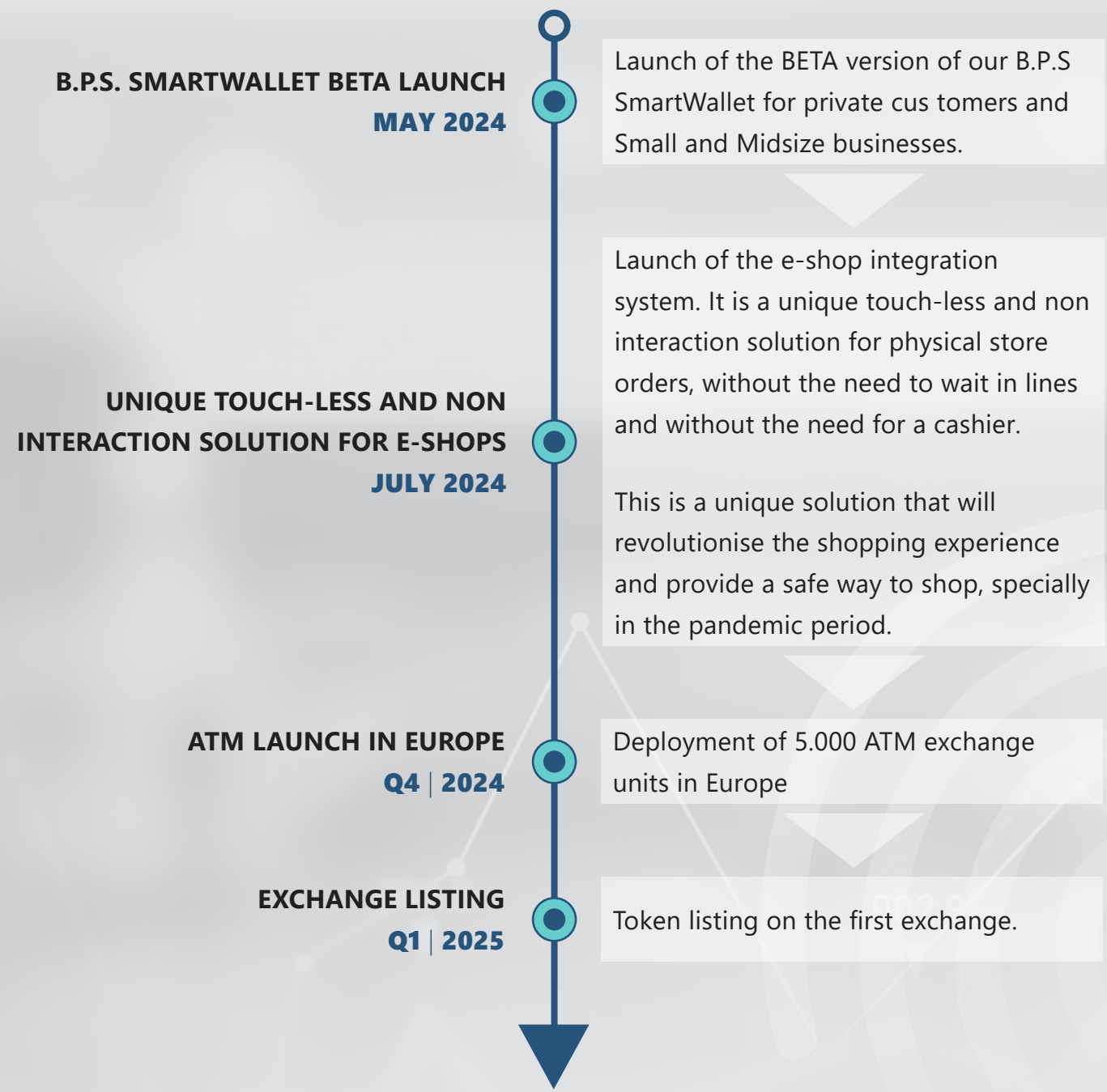**START TOKEN SALE**
NOVEMBER 2023

Launch of the B.P.S token presale for reservations in our newly designed ICO community dashboard. Integrating card and bank payments in the ICO dashboard. Tokens can now be purchased with the use of fiat currency and cryptocurrencies.

GOLD COIN PROJECT START
FEBRUARY 2024

Beginning of the Gold token project, outlined in our whitepaper.

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B.P.S. SMARTWALLET BETA LAUNCH
MAY 2024

Launch of the BETA version of our B.P.S SmartWallet for private cus tomers and Small and Midsize businesses.

UNIQUE TOUCH-LESS AND NON INTERACTION SOLUTION FOR E-SHOPS
JULY 2024

Launch of the e-shop integration system. It is a unique touch-less and non interaction solution for physical store orders, without the need to wait in lines and without the need for a cashier.

This is a unique solution that will revolutionise the shopping experience and provide a safe way to shop, specially in the pandemic period.

ATM LAUNCH IN EUROPE
Q4 | 2024

Deployment of 5.000 ATM exchange units in Europe

EXCHANGE LISTING
Q1 | 2025

Token listing on the first exchange.

THE TEAM:

Oliver Boesch
Founder

Igor Milos
Main developer

Ligia C
Marketing

Vlad Alexander
Advisor and partner

Margaret M
Finances

Emilia V
UI developer

ADVISORS:

Tibi B
Technical advisor and auditing

Dorin T
Legal Advisor

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