

# TOSC

## WHITE PAPER

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## Table of content

### PART 1. Outline

1. Specification .....	4
2. Development background .....	5

### PART 2. Payment system outline

1. Payment flow .....	8
2. Payment system composition .....	9
3. Off Line payment process .....	10

### PART 3. Payment system example

1. Restaurant .....	12
2. Online stores .....	13

### PART 4. Payment expansion plan

1. How to attract users/customers .....	14
2. How to expand partnership with stores .....	14



## Greeting

### Preface

We deeply appreciate our supporters who have waited for the release of TOSC and the whitepaper. The presentation of this whitepaper was purposely delayed although the development of TOSC was completed. The delay was inevitable because we needed to ensure the security of our principle - establishing a commercial payment system by utilizing digital currency for the first time in history. Further explanation about this principle will be introduced further in the text.

We could not make a public announcement before the official registration of the patent for our BM(Business Method) - establishing a payment system that allows customers to buy products or exchange services in real-time on a blockchain-based digital currency – was completed. But now, we have officially registered the patent for our BM and we are very happy to present this paper. The product is ready and everyone that bought TOSC is able to use it on our platform.

Please, visit our site <http://www.tosblock.com> to download the necessary APP for usage.

Once again, we truly thank our supporters for their patience and support.

As mentioned in our technical paper, anyone can participate in the mining of TOSC. Please refer to the technical process of TOSC in our Technical Paper.

**The first TOSC exchange will be open in May. 2018 in Singapore.  
Users can pay TOSC for transaction fees or other service fees.**



## Business Outline

### 1. Specification

Features	 BitCoin	 Ethereum	 TOS Coin
Core feature	Financial Transactions	Smart Contracts	Payment Transaction
Coin limit	21M	-	2.1B
Decision Making Process	Non-systematic	Non-systematic	Non-systematic
Consensus Algorithm	Proof of work	Proof of work	Proof of work
Algorithm	Sha256	Ethash	Ethash
Mean block time	10 min	15 sec	15 sec <i>4 sec for payment</i>
Transaction Speed	7tx/sec	25tx/sec	25tx/sec <i>1000tx/sec for payment</i>
Creation date	2009	2013	2017

[Figure 1] T.OS specification compared with Bitcoin, Ethereum

Figure 1 shows the specification of T.OS, compared to Bitcoin and Ethereum. (Figure 1). (TOSC swapped to Ether token in march,2019)

#### A large amount of TOSC with mining limit

The 3 coins listed above all take POW as a mining type. The amount of minable TOSC is limited at 2.1 billion, larger than that of Bitcoin which is 21 million. The limit of the minable amount of TOSC is higher because it needs to be spent for developing and operating essential elements of the coin as a means of payment, for business purposes such as customer promotion and for reserve in case of risk compensation. Detailed information about the use of coin will be described in the following chapter 'Development background.



## Business Outline

### Fast data processing in real time

TOSP's performance is 120 times greater than Bitcoin both in terms of mean block time and transaction speed. (Mean block time is the average time per block creation. The shorter the mean block time is, the faster the transaction is authorized. Transaction speed is the number of handled transaction per second. The larger the transaction speed is, the faster the transaction is handled.) In other words, TOSC is developed to be used as a means of payment in real payment system that requires fast data processing in real-time.

Both mean block time and transaction speed show two different types of data. Both of them show TOSC data in the upper part and TOSP (Payable TOSC) coin data in the lower part which will be explained later.

TOSC payment system applies TOSP (Payable TOSC) coin in a separate manner in a private blockchain system which is linked to TOSC, in order to facilitate transaction and authorization process at the touchpoint of the payment system.

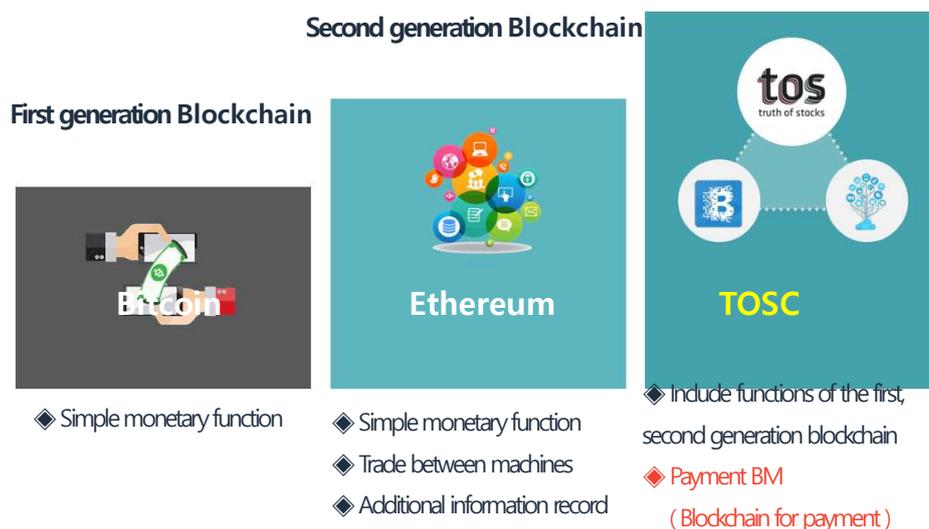
This TOSP coin is the core factor that makes TOSC a best suited digital currency for future payment systems. It will be explained in detail in the following chapter 'Development background'.

## 2. Development background

### Existing digital currencies failing to become a means of payment

As shown in Figure 1, Bitcoin is the first digital currency that was launched in 2009. 4 years later, the 2<sup>nd</sup> generation digital currency Ethereum was launched applying the concept of IoT (Internet of Things) and business contract, by putting not only data but other functions in the block chain. 4 years later, a 3<sup>rd</sup> generation digital currency 'TOSC' that can be used in real life like an actual currency has emerged.

#### Third generation Blockchain





## *Business Outline*

For the last 8 years, however, a variety of digital currencies have emerged but they have failed to play a role as an actual currency. In order for a digital currency to function like an actual currency, it must be used as a means of payment in commercial transaction, making it available for customers to purchase or exchange a product or a service as they do using a credit card or a debit card. If the value of a digital currency is only recognized in digital coin exchanges and not valued as a means of payment in the market, it cannot be called as a currency.

A currency that cannot become a means of payment in real life is no longer current and cannot be deemed as a currency. The same applies to salt, for example. We no longer call salt as a 'currency', although it was paid to soldiers as wages in ancient Rome.

There was a news report that some countries in Northern Europe are planning to use Bitcoin as a means of payment. However, Bitcoin is not an attractive means of payment since it must go through 6 POW (proof of work) in order for the transaction to be fully authorized. Each block would take 10 minutes, taking up a huge amount of time in total. This means that when you buy a cup of coffee and pay for it using Bitcoin, you have to wait for transaction authorization after drinking the coffee, and even after the cup you used is washed clean.

Then, why the numerous alternative coins that overcame weaknesses of Bitcoin cannot be used as a means of payment?

What is also required to be accepted as a means of payment is 'Value Stability'.

The transaction speed of Ethereum is 3 times faster, and its average block creation time is 40 times faster than Bitcoin. Then, why can't Ethereum be used as a means of payment in real life?

Let's look at an example of a simple payment.

When customers pay with ETH (Ethereum) at a store, the owner of the store would want to sell all ETHs earned during the day to the exchange, for daily calculation. The value of ETH, however, drops to less than \$200 per unit at the selling point, compared to \$300 per unit at its peak business hours. Then, the owner of the store would not be able to secure operation capital for the next day, and would no longer want to deal with digital currencies. Of course, the opposite can happen and the owner may get a marginal profit when the price of the digital currency soars at the selling point compared to the purchasing point. But still, a means of payment that fluctuates easily is not attractive to business owners.



## *Business Outline*

### **TOS payment system through private coin with unchangeable values**

TOS may face volatility if it is introduced in the market (exchange), just as existing digital currencies. That is why the TOS payment system has adopted the TOSP (Payable TOS) coin, a private coin with unchangeable value in the whole payment process of “payment → settlement → purchase → exchange (selling)”. By adopting TOSP, the value of TOSC will be maintained at the same level at the selling and purchasing point.

TOSP coin is only used in the internal process of TOSC payment system, not traded in exchanges. Thus, TOSP coin is free from volatility that may occur in transactions. Customers can purchase TOSP coin to use TOSC payment system only in designated TOSC exchanges and business owners can convert TOSP to TOSC or to cash only in designated TOSC exchanges.

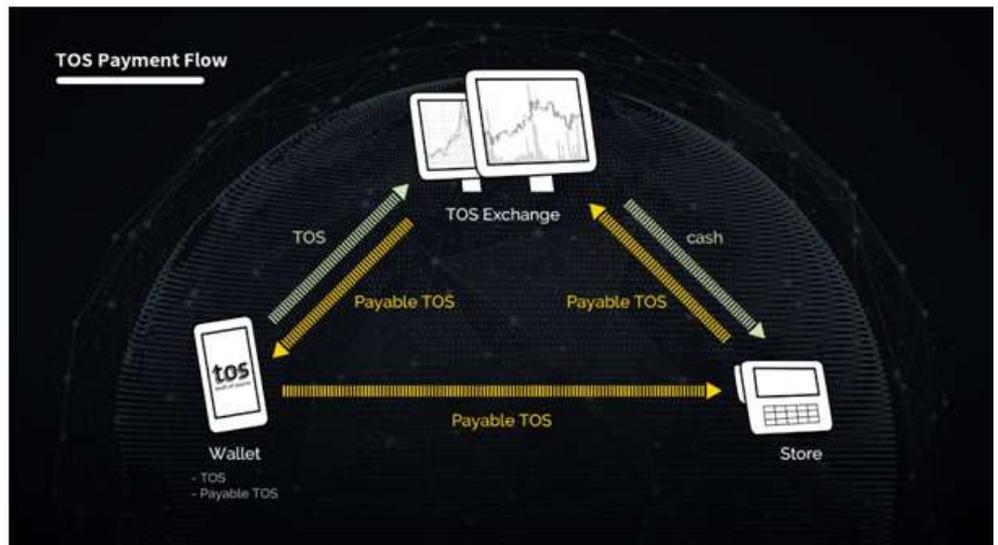
***Bold Italic*** part of the ‘figure 1’ shows mean block time and transaction speed of TOSP coin. As shown in the table, TOSP is an optimized private coin and a fast and stable means of payment. TOSP is not traded in the market so there is no risk of being exposed to hackers. Thus, using TOSP coin in commercial transactions will be safe both for customers and business owners.

Technical instructions and diagrams shown in the next chapter describe TOS payment system more in detail.

# Payment system outline

*TOS Payment System*

## 1. Payment flow



TOSC payment system consists of TOSC wallet, a store and TOSC exchange. Users can convert TOSC in their TOSC wallet to TOSP which then can be used in commercial transaction. Then, the TOSP will be sent to the user's wallet. Users can choose how much TOSC they want to convert. Then the TOSC will be sent to TOSC exchange and will be converted to TOSP based on the market price at the point

The price of TOSP is fixed. For example, 1 TOSP equals to \$1 in the U.S., and 1 TOSP equals to ¥1 in Japan. However, the price of TOSC is not fixed and can be traded in all countries in the world.

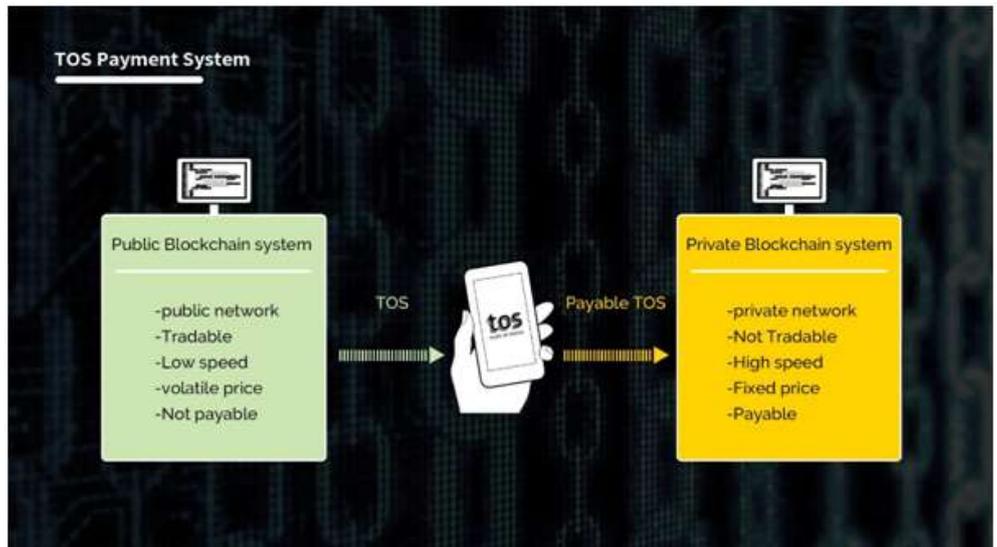
While trading TOSC is available everywhere in the world, trading TOSP is only available in a TOSP exchange of a certain country. This means that you can use TOSP issued in the U.S only in the U.S TOSP exchange. The price of TOSC fluctuates based on the market price so the price of TOSP will be the same as the TOSC price in the market at the point of change. For example, if a user converts 1 TOSC to TOSP when the price of 1 TOSC in the U.S market is \$15.5, then the user will receive 15.5 TOSP

If a user pays with TOSP in a store, then the TOSP that the user needs to pay is sent to the wallet of the store and the payment is completed. When the store calculates its revenue, it simply needs to send TOSP to the TOSP exchange and convert it to cash.

# Payment system outline

*TOSC Payment System*

## 2. Payment system composition



TOSC payment system consists of public block-chain, and private block-chain. TOSCs flow in the public block-chain system. The ledger is disclosed and TOSCs can be traded in exchanges. The price of TOSC may fluctuate in exchanges. The transaction speed is relatively slow and cannot be used for real payment system.

Payable TOSP coins flow in the private block-chain. TOSP has fast transaction speed and a fixed value. Thus, it can be used for real payment system. Unlike TOSC, TOSP is not traded in exchanges and only can be converted to cash. TOSP is not minable because individuals cannot join the network and the ledger is not disclosed.

Public block-chain is decentralized, minable through POW and the ledger is disclosed. It takes 1 minute for a single block to be created, and its transaction speed is from 1 minute to 5 minutes (may take longer based on the network circumstances). In contrast, private block-chain is centralized, not minable and the ledger is not disclosed. It takes 1 second for a single block to be created, and its transaction speed is from 2 to 5 seconds (may take longer based on the network circumstance).

TOSC payment system has strengths in terms of payment process, since it utilizes transparency and openness of public blockchain while applying fast speed of private blockchain.

# Payment system outline

*TOSC Payment System*

## 3. Off Line payment process

### NFC QR Code Panel

If it is difficult for stores to operate the system with a console, they can use a panel that displays NFC module or QR code stickers.

NFC module and QR code have wallet address of the store. Users can find out the wallet address by scanning NFC or QR code and send the payable amount.

Stores may have trouble immediately checking whether customers paid the amount of coins they ought to pay.



### Smartphone or Tablet PC



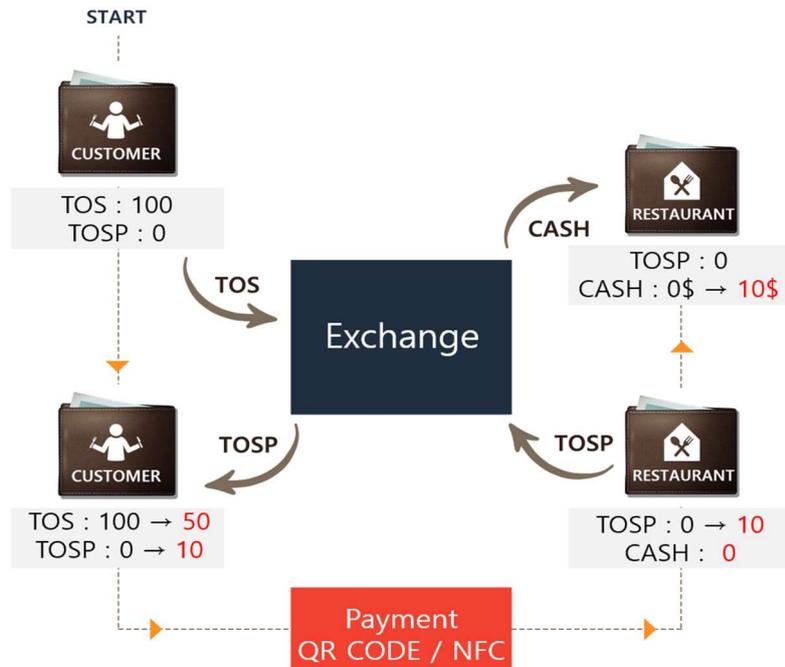
Applications for smartphones or tablet PCs are provided. The applications provide functions for creating QR code that displays wallet address of the store and the payable amount of coins. Stores will be able to use this payment system with their smartphones.

**TOSC wallet applications for Windows, Android and iOS are ready and users can download those apps on TOSC website: [www.tosblock.com](http://www.tosblock.com) !**

# Payment system example

## TOS Payment Example

### 1. Restaurant



Users can convert a certain amount of TOSC in their wallet to TOSP. The price of TOSP will be set based on the TOSC price in the market. (1 TOSC is assumed to be \$0.2 in the example.)

TOSC will be converted to TOSP in 5 to 10 minutes. Then the user can pay with TOSP through QR code or smartphones in the store. The value of 1 TOSP is fixed at \$1. (The value of TOSP differs by country but is the same within a country.)

If a customer needs to pay for a \$10 meal, then he or she can pay 10 TOSP to the restaurant. Then the restaurant can convert the 10 TOSP into \$10 in TOSP exchanges.

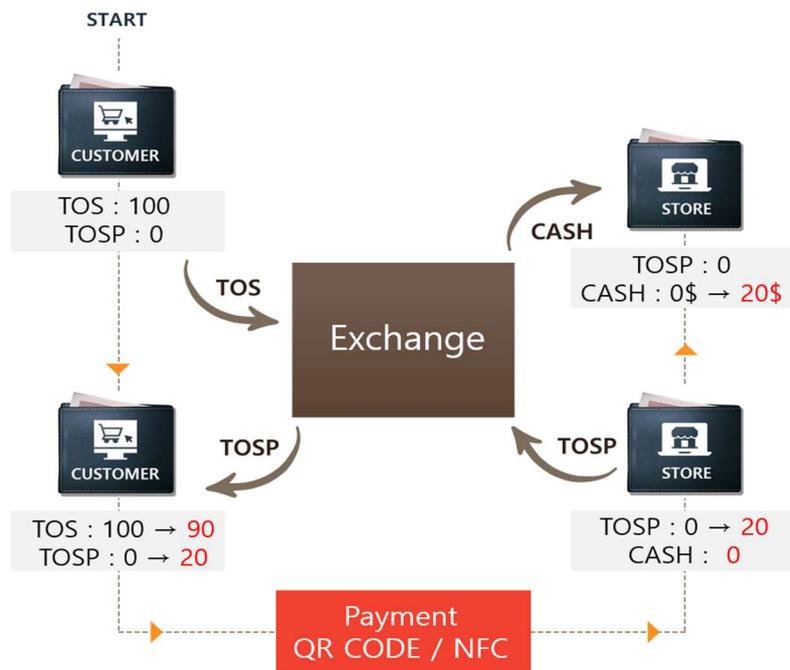
Conversion from TOSP to cash is available in exchanges located in each country and the exchange rate is 1:1. (0.1% ~ 1% commission may occur in this process, based on the exchange policies.)

Stores can use QR code or NFC for payment. They can also use their own smartphone or tablet PC with TOSC application. After a customer pays his/her meal with TOSP, store owners can check the payment within 5 seconds on their smartphones or tablet PCs.

# Payment system example

## TOS Payment Example

### 2. Online stores



Users can convert the payable amount of TOS to TOSP based on the market price of TOS. (1 TOS is assumed to be \$2 in the example.)

When users want to purchase products online, they need to check the payment wallet address on the online payment page. Then they can send the payable amount of TOSP from their wallet to the payment wallet address. The value of 1 TOSP is fixed at \$1. (The value of TOSP differs by country but is the same within a country.)

If a user needs to pay \$20 for a product, he or she can pay 20 TOSP to the online store. The online store can use QR code to display its wallet address. After receiving the TOSP, the store can convert 20 TOSP to \$20 in TOSP exchanges.

Conversion from TOSP to cash is available in exchanges located in each country and the exchange rate is 1:1. (0.1% ~ 1% commission may occur in this process, based on the exchange policies.)

Once a customer pays with TOSP and the payable amount of TOSP is sent to the online store, then the store can check the payment through API (Application Programming Interface) provided by TOSP exchanges within 5 seconds. Online stores must add the API to the payment system for automatic payment.



## Payment expansion plan

### 1. How to attract users/customers

#### **Provide TOSP for those who register for TOSC payment member.**

If a user registers to be a TOSC payment member during a promotion period, a small amount of TOSP is provided.

For example, for new members who completed user authentication during a promotion period in Japan, 100 TOSP is provided.

(The amount of TOSP is only an example and it may differ by country depending on expected costs.)

As explained above, users can use the TOSP they received as cash.

#### **Provide discount when users make payment with TOSP**

Users can get a discount during a promotion period. If a user needs to pay 100 TOSP, then at the point of payment, only 90 TOSP is paid from the user's wallet and the TOSP exchange pays the rest 10 TOSP to the store. Thus, the store can receive 100 TOSP.

Promotions may be held in the early stage of opening of the payment system and the promotion period may differ by exchange.

(The scale of support also may differ by country depending on expected costs.)

### 2. How to expand partnership with stores

#### **Provide discount or exemption of commission in a certain period.**

In general, credit card companies impose 1.5~5% for payment commission. However, TOS payment system is available 24 hours with less than 1% of commission.

Exchanges may provide discount or exemption of commission in order to attract more partners. When or how to hold these events may differ by country depending on expected costs.