

# Cash Telex Ecosystem

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**Abstract**—Cryptocurrencies in the current state are suffering from several drawbacks and issues related to absence of stability, scalability and most importantly security. Several algorithms and techniques were recently introduced aimed at addressing those issues. Unfortunately, those attempts met with one solid drawback from cryptocurrencies giant Bitcoin price volatility. This instability of the main markets pair resulted into the almost daily market volatility. This is expected specifically, when measurements are against an unstable metric. As a result, you will always end up with volatile unstable value which is here considered as price of the currency. The main reason for this instability and extreme volatility is absence of structured backing system which is supposed to be in a form of assets. Assets backing for any currency is an important element in order to allow stable value, and preservation of capital. This paper addresses those issues and introduces a new Proof of Wealth (PoWL) to solve the above problems. We present Cash Telex Ecosystem to demonstrate the use of Proof of Wealth (PoWL) algorithm. The solution requires several components to work together in order to achieve the desired scalability, stability and a secure environment. The described solution guarantees to maximize the investors' wealth and preserve the initial investment capital and ultimately provide a reliable payment solution.

**Index Terms**—Cash Telex, Block-Chain, CTLX, Proof of Wealth (PoWL), Ledger, Decenteralized, Dynamic Diversified Assets, Exchange

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## 1 INTRODUCTION

The emergence of Bitcoin marked a beginning of yet another revolution and its first creator was a man named Satoshi Nakamoto [1]. Nakamoto's goal was to create a digital currency. His discovery later was followed by a storm of good and bad examples of utilizing the same idea. The adoption of Bitcoin and its rise was influenced by the idea of decentralization, the idea of Bitcoin as it was introduced was as "A purely peer-to-peer version of electronic cash that would allow online payments to be sent directly from one party to another without going through a financial institution. [1] Bitcoin itself was a solution to prevent double-spending.

Bitcoin as it exists today suffers from serious volatility problems. This bitcoin volatility is driven by market manipulation or fear or greed. This is due to the unstructured backing system in place. As for Bitcoin itself, it was great idea, but at the end of the day no one wants to own something has no value.

This very successful Block-Chain [2] idea needs to have a strong structure to have consumers trust. Block-chain as concept should be used as an assets representation mechanism due to its features and secure nature.

It allows the most important requirements for future financial system from all perspectives to come to reality taking care of Confidentiality, Integrity and Availability.

If every SAT of Bitcoin was represented by a dynamic value of Gold or Diamond or Real Estate linked to the market, what would be that price of Bitcoin today?

## 2 ASSETS REPRESENTATIONS AND BLOCK-CHAIN

Several existing studies [3] [4] [5] [6] on assets managements presented efficient solutions on managing assets and assets growths methods. However, those studies did not address the effects on block-chain based trading and free markets exchanges as it exists today. This is due to the fact that block-chain as it is still in its infancy and many are still skeptical about the technology while others lack thrknowledge of what Block-Chain is, and what the technology is capable of accomplishing.

The emergence of cryptocurrencies and its associated trading platforms (exchanges, exchangers, digital wallets exchangers. etc.) created a new and unprecedented form of free trading in an international arena. This form of unrestricted accessibility introduces a new challenge to an already complex trading of stocks and assets growth formulas and methods. One of the important challenges is extreme new unpredictability of growth which is driven by several factors. This paper will discuss this in more detail in the solution section.

This paper intrdoces a solution to the challenges currently faced by the block-chain community. In section three, the paper introduces the Cash Telex solution. The underlying Dynamic Diversified Assets used are explained. The formula used to link the physical assets and the ecosystem is presented. Profit sharing and dividends used by ecosystem is highlited. The fourth section explains the interaction between the components of the Cash Telex Ecosystem. Our new Proof of Wealth (PoWL) algorithm explained in addition to Telex Exchange Comparison are presented. The Cash Telex financial services together with the proposed Digital Market Cap are discussed in section six.

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### 3 CASH TELEX ECOSYSTEM SOLUTION

The design of CashteleX as the first ever asset backed block-chain opened a new dimension to solve issues related to unscalable, volatile and unstable cryptocurrencies trade and applications. Most of the presented solutions are structured to solve complex problems by, either presenting across chain solutions, or by designing a new cryptocurrency on the top of the exiting block-chain with an aim of improving its functionality. Others went back to redesign algorithms used to produce their coins and keeping the structure which is the cause of the latency, unscalability, volatility and instability untouched.

To solve the issues related to network latency, scalability, volatility and instability, the solution must address several design issues related to the entire block-chain, in addition to methods of trading, and a new mechanism is required to guarantee the stable and unbreakable link between the real value and the traded digits on the network. Cash Telex address the above issues and problems from two perspectives.

The first perspective is by using technologies which will allow and turn these issues and problems into features of the ecosystem by designing a block-chain, while keeping in mind the components and layers that guarantee to solve issues related to latency, scalability, volatility and instability. In Cash Telex this is accomplished by presenting components of the ecosystem from Telex Decentralized exchange to Telex block-chain, and the algorithms used to achieve the desired features. Additional desirable features in a form of privacy and safety attributes that ensures the usability for its investors.

The second perspective is by introducing assets backed mechanism and methodology that will guarantee the CTLX coin to function as tradable payment system while preserving the capital. Subsequently it will grow with logical reasons, and it will not be driven by greed or market manipulations or pump and dump scenarios currently faced in crypto communities. This is accomplished in Cash Telex Ecosystem by enforcing Dynamic Diversified Assets to give the CTLX a guaranteed demand, as well as several additional services that will guarantee that CTLX can be used for various financial services.

#### 3.1 Cash Telex Dynamic Diversified Assets

Cash Telex Dynamic Diversified Fund Solution is to back the CTLX token, and will be directly pegged to real assets (Gold, Diamond, Silver and Real Estate). The direct representation of real Assets is required to maximize and guarantee continuous achievements of targeted growth. It will also guarantee the capital preservation in addition to providing a well-structured solution which solves problems associated with extreme periods of volatility of the cryptocurrency market. Our dynamic solution of structured assets to back each CTLX will effectively work to continually adapt to the changing market prices and will

reduce volatility. This is accomplished by the following formula

#### 3.1.1 Multi assets with different -period and reinvestment

If we Consider that there are  $n + 1$  investment opportunities as described in (Dynamic optimal capital growth of diversified investment) [5].

$$G(f_{t0}, f_{t1}, \dots, f_{tn}) = \sum [p_t(\cdot) \ln(1 + f_{t0} r_{t0} + f_{t1} r_{t1} + \dots + f_{tn} r_{tn})]$$

$$= E \{ \ln [f_{t0}, f_{t1}, \dots, f_{tn} / W_0]^{1/t} \}$$

$$\left( \frac{1}{t} \right) E \{ \ln [f_{t0}, f_{t1}, \dots, f_{tn} / W_0] - (1/t) \log W_0 \}$$

The wealth of portfolio at time  $t$

$$W(f_{t0}, f_{t1}, \dots, f_{tn}) = W_0^T (x + a)^n = \sum_{t=1}^T (1 + f_i r_i)$$

In addition to that, our re-investment structure is accomplished by buying more of better performance assets at each stage of valuation of assets in the market.

The results of applying the above function will guarantee that the investor's wealth will exceed the initial value when the fraction chosen is less than the critical value (initial investment). However, in order to maximize wealth, we should choose the optimal fraction at each investment decision. Empirical results with real financial data show the feasible allocation set, which means that capital growth portfolio does not risk ruin, either in short run or in the long run. If we want much higher growth rate, the greater fraction will be accepted.

In our scenario the expected outcomes of investor's wealth will exceed the initial values in the short, as well as the long run. The outcome will show significantly stable results, and subsequently we expect high positive values of investors wealth. The reasons for that is our assets are based on diversified assets which are naturally known to preserve capital. This makes all of the above assumptions to be in the positive regardless of market situation. Fig.1. shows the relationship between growth and the fraction.

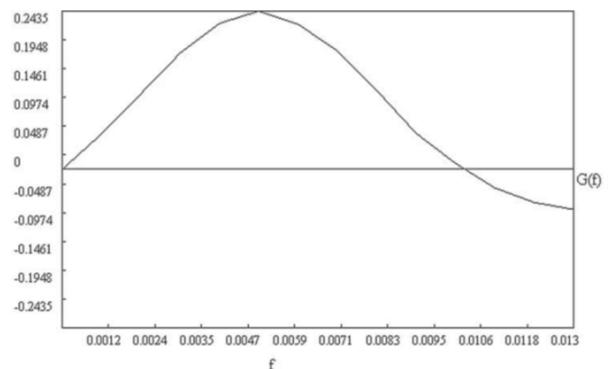


Fig. 1. Relationship between growth and fraction.

### 3.1.2 PROFIT SHARING AND DIVIDENDS

Profits are shared with investors at the pre-agreed rate which is assumed to be at 80% to be distributed to the investors and contributors at the end of every valuation of assets in Cash Telex ecosystem. The distribution will be in a form of dividends.

## 4 CASH TELEX ECOSYSTEMS

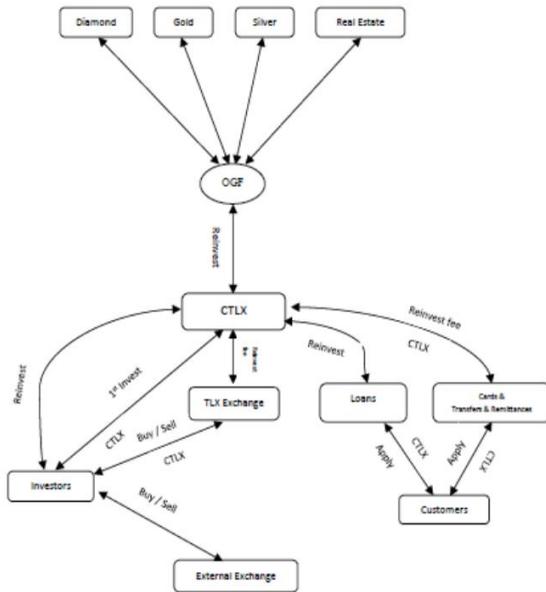


Fig. 3. Cash Telex Ecosystem

### 4.1 Assets Backed

Cash Telex Ecosystem illustrated in Figure 2 is totally assets backed. Those assets are directly pegged to CTLX value in a form of representation. At any time, the price provided by telex exchange is based on the value stated by Optimal Growth Function (OGF) [5]. OGF will continue to perform based on the received fund from several ecosystem components. The interaction of the components will ensure the continuous increment of the value of CTLX.

#### 4.1.1 Gold, Diamond, Silver and Real Estate

The Cash telex initial purchase of assets from the fund collected during the ICO will provide a foundation and it will continue to reinvest those funds from the collected fee from Loans, exchange transactions and Debit Cards fees issued to customers. All of these services will be in a form of CTLX and that will give guaranteed from the demands for CTLX coins. Every quarter there will be an audit for the total amount of all Assets that exist in the entire Cash Telex Ecosystem and this evaluation will reflect on a new initial capital of CTLX which will not allow the price to ever go below this new capital value.

Additionally, based on our extreme understanding of these assets the purchasing of the assets will be either from direct miners of those precious stones, and Cash Telex intends to be involved in the mining operations, or in cooperating with existing active mining parties in a form of shares of the mining facilities.

### 4.2 DECENTRALIZED EXCHANGE

The current concept of decentralized exchange (DEX), provides an infrastructure that allows different traders to exchange two different coins or tokens directly on-chain. Achieving this in the current implementations of decentralized exchanges associated with several drawbacks resulted from the technologies and the inherited latency from the block-chain execution. This is currently known as the scaling problem. Other implementations tuned to hybrid mix of centralized and decentralized implementation to resolve these issues. The traders slowly learning that depositing funds directly to centralized exchange wallet is a great risk, for this reason, and others, the future of trading on the block-chain is definitely with the decentralized solutions.

At the time of this writing there are a few well known decentralized platforms which are different in their implementations. The following table summarizes and highlights some of these differences.

Attribute	IDEX	EtherDexs and 0x	Oasis
Concept	Off-chain trade matching with on-chain settlement enforced by smart contracts and arbiter	Off-chain orderbook hosting with on-chain settlement and matching determined by miners	Orderbook on the blockchain with matching determined by miners
Trustless	Yes	Yes	Yes
Trade speed	Real-time	Slow - Filling orders is limited by block time	Slowest - Placing and filling orders are both limited by block time
Orderbook update speed	Fast	Slow	Slow
Time to cancel an order	Real time	Slow - Limited by block time	Slow - Limited by block time
Automatic trade matching	Yes	No	No
Fill many orders at once	Yes	No	No
Gas cost to place limit orders	No	No	Yes
Gas cost to cancel orders	No	Yes	Yes
Gas amount per trade	High	Medium	Medium
Race conditions	No	Yes	Yes
Scaling	Moderate	No	No

Fig4. DEX Comparison.

There are numerous points related to factors affecting different scenarios of implementing decentralized exchanges, some of the important factors discussed by [7].

#### 4.2.1 Telex Decentralized Exchange (Crypto—Fiat)

Cashtelx implementation of DEX infrastructure is based on our newly designed Telex Dynamic protocol which is similar to what has been described in [8] utilizing layered infrastructure, however, we are more interested in the concept and the distribution of products infrastructure. Our strategy is based on providing faster response time to trader's orders and secure trading environments. The following represent part of what we have achieved through our initial design and implementation in Telex Decentralized Exchange. Our main differences with what was described in [8] is we integrated our Proof of Wealth (PoWL) algorithm which is discussed in the coming sections of this paper.

Attributes	Telex Decentralized Exchange
Concept	On Chain Trading
Trustless	Yes
Trade speed	Real Time
Order update speed	Fast
Time to cancel an order	Real Time
Fill many orders at once	Yes
Gas cost to place limit orders	No
Gas amount per trade	No
Race conditions	Medium
Scaling	Yes
Privacy	Yes

Fig. 4. Cash Telex Exchange Comparison

From the comparison of Telex Exchange and other exchanges, Cash Telex Exchange is clearly equipped with better features than the others in addition to privacy features inherited by utilizing our Telex Dynamic protocol integrated with (PoSS) protocol structure.

### 4.3 CASH TELEX BLOCKCHAIN

Before defining the key concepts of the Proof of Value algorithm, let us discuss the more popular Proof of Work and Proof of Stake, to have a better view on the main differences between all of them.

#### 4.3.1 PROOF-OF-WORK ALGORITHM. (PoW)

PoW algorithm [1] as it was introduced in the first paper in relation to cryptocurrency was to solve problems of determining representation in majority decision asking. If the majority were based on one-IP-address-one-vote, it could be subverted by anyone able to allocate many IPs. The idea was to have one vote per CPU. The majority decision is represented by the longest chain, which has the greatest proof-of-work effort invested in it. If a majority of CPU power is controlled by honest nodes, the honest chain will grow the fastest. PoW algorithm brought to life the first practical implementation of a secure distributed ledger system, but suffers from poor performance, and a lack of decentralization, and excessive energy consumption.

#### 4.3.2 PROOF-OF-STAKE ALGORITHM (PoS)

PoS algorithm [9] followed hybrid design of the originally introduced PoW algorithm. Its initial aim was to replace the PoW as A peer-to-peer crypto-currency design derived from Satoshi Nakamoto’s Bitcoin. Proof-of-stake replaces proof-of-work to provide most of the network security. PoS algorithm reduces energy consumption as intended to do but its not designed to work in highly distributed environment as required by DEX.

#### 4.3.3 OTHER ALGORITHMS

Other introduced algorithms such as Proof-of-Author

ity Algorithm [10], Proof-of-Reputation (PoR) [11], Proof of Value (PoV) [13] were all introduced recently with the aim of solving network latency issues, but from security perspective it suffers from issues related to network exposure and ultimately to malicious hacking.

#### 4.3.4 PROOF OF WEALTH (PoWL)ALGORITHM

In recent history of money evolution there were two major steps which resulted in what we have and where we are today. Countries used to rely on Gold as a measurement for their wealth, then came the wars and new regulations were introduced to undermine the previous Gold based wealth measurement. The new wealth measurement was in a form of enforcements of credit with what we call today a fiat money. The value of fiat money is secured by the nation’s credit, which is calculated through the nation’s productivity, economic policies, etc. Exchange rate is set by comparing each nation’s credit as described in details in [13].However, there were still challenges from unprecedented current markets and political instability, since the end of the last two great wars. The search finally has come to an end for an alternative form of wealth preservation in an ultimate form of security without the influence of geo-political interfaces and control of one or two powerful nations. This end was with the first invention of decentralized currency Bitcoin [1], which was sparked by Nakamoto Satoshi Bitcoin paper, but that currency is having a serious issue from its value point of view. What value should the currency really have without relying on a market manipulation or greed.?. this brings us to an important question of what Proof of Wealth (PoWL)Algorithm is really supposed to mean

Gold and other assets are what we used to measure wealth with before the wars, and the wars introduced regulations. How we are going back to correct the direction which could really give the ultimate fair trade and real wealth distribution of what you have under your country ground. Our proposed Prof Of Assets Algorithm is the missing key word for modern cryptocurrencies but the value must not be given based on what you do as in a case of mining but in a form of what you have that has real value. The value as always preserved in the quality and quantities of real world assets such as Oil, Gas, Gold Diamond Silver and Land. Etc. Cryptocurrencies must have a form of representations to those assets or others in order for these currencies to be used as a form of payments.

The main problem with all previously introduced algorithms is the absence of the real economy, corresponding to the value of cryptocurrencies, subsequently the value of the entire block-chain. That resulted in major failure of Cryptocurrencies in major exchanges as of the time of this writing. The failure to preserve a stable value is impossible as there is no any authority to enforce that, as it is in the situation of fiat currencies. Therefore, the only solution to this is to measure the entire block-chain wealth. The current concept of Proof of Wealth (PoWL) in practice should reflect the entire block-chain components and ecosystem

from fee to value of coins or token to the transaction fee resulting in the entire exchanges and traders. In this scenario PoWL is different from PoV as according to PoV principle, coins are delivered as rewards when a proper value is created through the rightful use of shared resources. In PoWL however, the value of all the assets involved in the block-chain should give the final wealth and that should rank all existing and future block-chains. Based on a publication introduced 113 years ago [14]. Reviving this method for block-chain technology and applying the methods described here [15] will have unprecedented positive impact for several applications. This method and first time in block-chain will even allow some form of volunteer tax system to be integrated if desired, the concentration of wealth conventionally should be computed as follows

INCOME TAX ASSESSMENTS UNDER SCHEDULE D.

	1877.	1886.	Per Cent. of Increase or Decrease.
Between £150 and £500 . . . . .	285,754	347,021	21.4 (Increase)
" 500 " 1,000 . . . . .	32,085	32,033	nil
" 1,000 " 5,000 . . . . .	19,726	19,250	2.5 (Decrease)
Over 5,000 . . . . .	3,122	3,048	2.3 (Decrease)

Fig. 5 Income tax & Individual and classification in England Year 1905

Class. (Dollars.)	Wealth of each Individual in each Class. (Dollars.)	Number of Individuals.
0 to 9 . . . . .	1, 3, 5, 7, 9	5
10 to 24 . . . . .	10, 12, 14, 16, 18	5
25 to 49 . . . . .	25, 28, 31, 34, 37	5
50 to 99 . . . . .	50, 60, 70, 80, 90	5
100 and over . . . . .	100, 110, 120, 130, 140	5

Now imagine the wealth of each specific individual doubled. The relation between the wealth of individuals has not changed, and hence the degree of concentration must be the same.\* The classification will now be as follows:—

Class. (Dollars.)	Wealth of each Individual. (Dollars.)	Number.
0 to 9 . . . . .	2, 6	2
10 to 24 . . . . .	10, 14, 18, 20, 24	5
25 to 49 . . . . .	28, 32, 36	3
50 to 99 . . . . .	50, 56, 62, 68, 74	5
100 and over . . . . .	{ 100, 120, 140, 160, 180 } { 200, 220, 240, 260, 280 }	10

We find that the movement between classes has been as follows:—

	Number.	Per Cent. of those originally in the Class from which the Movement took Place.
I to II . . . . .	3	60
II to III . . . . .	3	60
III to IV . . . . .	5	100
IV to V . . . . .	5	100

\* It has been objected that doubling incomes does not leave individuals in the same relation to each other because (owing to the law of diminishing utility) doubling a rich man's income does not add proportionately as much to his well-being as in the case of a poor man. But this does not affect the argument above, because, according to this view, doubling incomes would tend to diffuse enjoyment, not concentrate it, as Wolf's method would indicate. In the present problem no error will result from confining our attention to nominal incomes.

Fig. 6 Individual of certain Group posse wealth

Based on what has been discussed in Fig 5 and Fig 6, we will assume classification of individual traders to groups and more of these conventional wealth measurements explained [14] and [15]. In Block-Chain However, this should not be a complex process if there was no backing from real or physical assets such as Gold, Diamond or Real Estate as it will only be measured with traders or clients accounts with organized datasets and Figures in form of balances and outstandings. Those balances and outstandings will have three different scenarios to measure in order to get the overall Block-chain wealth. It has some form of complexity when the measurements are linked to the above physical assets representations. In this case the measurement will be required at least to have the following: Total number of Assets open for investments, percentage of every assets in the block-chain and the value of every asset in the block-chain. This is all at the specific point of time. The wealth projection is an issue with dynamic attributes and changing the number of traders (populations of the Block-chain). This goes together with the changing price of Gas or fees required to complete each transaction.

### 5 CASH TELEX FINANCIAL SERVICES

The financial services provided by Cash Telex are running smoothly, thanks to the underlying structure of our implemented protocol. The following are the various services provided by Cash telex ecosystem based on the structure provided above in relation to what is described interaction shown in Fig. 4.

- Transfers & Remittances
- Loans
- Debit Card

### 6 DIGITAL MARKET CAP

The current market dominance by some cryptocurrencies reporting platforms suffers from several issues such as misleading reports and other technical problems such as unreliability due to unsuitable underlying structure. Cryptocurrency market capitalization and coins such Bitcoin came to existence before designing, or having suitable infrastructure to accommodate them, or report their performance in a fair transparent methodology. Platforms such as coinmarketcap [16] are currently facing several challenges because, its initial structure and design did not put into consideration the future challenges which are currently faced at the time of its development. In addition to that, its current implementation involves human approval for listing and delisting of cryptocurrencies coins and tokens.

In this paper we introduce the first accurate reporting platform for digital market cap. This Platform is designed to give accurate digital market capitalization reports. It offers systematic listing approval based on preset conditions programmed in its contract. This implementation utilizes assets backed coins and Tokens as performance metrics against

other. This will give significantly better and accurate reporting for each cryptocurrency in addition to accurate over all cryptocurrencies market capilization.

The following table provides intial comparision between digital market cap presented in this paper and the existing coinmarketcap implementation at the time of this writing.

DigitalMarketCap.com	CoinMarketCap.com
✓ DigitalMarketCap.net will include all the coins and token and digital money (e-money)	✓ CoinMarketCap.com only focuses on Cryptocurrency
✓ DigitalMarketCap.net It offers systematic listing approval based on preset condition programmed in the smart contract (Blockchain based)	✓ CoinMarketCap.com is not Blockchain based and addition of coin is manual by human
✓ DigitalMarketCap.net better design with Assets backed coins as a reference for other coins and tokens	✓ CoinMarketCap better design with Assets backed coins as a reference for other coins and tokens

Fig. 5 Digital Market Cap Comparison

## 4 CONCLUSION

The presented Cash Telex ecosystem with Proof of Wealth (PoWL) integration could be used as solution, as a paymet system, and it will provide a stability and scalability. Providing scalable, reliable and a fast network is essential to issues faced by traders today. Telex protocol denterlization of trade and wealth represntations are currently considered the only method to avoid extreme volatility. This will enable a decenterlized structure to have fast orders, and other features which are essential for secure decenterlized trades. Future work will focus on the details and the implementation of Proof of Wealth (PoWL) and Cash Telex Ecosystem with Telex protocol.

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