

Whitepaper



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Purchasing CDDC tokens involves substantial risk and may lead to a loss of a substantial or entire amount of the money involved. Before purchasing CDDC Coins, you should carefully assess and take into account the risks, including those listed in any other documentation.

A purchaser should not purchase CDDC Coins for speculative or investment purposes. Purchasers should only purchase CDDC tokens if they fully understand the nature of the CDDC Coins and accept the risks inherent to the CDDC Coins.

Cryptographic tokens may be subject to expropriation and/or theft; hackers or other malicious groups or organizations may attempt to interfere with our system/network in various ways, including malware attacks, denial of service attacks, consensus-based attacks, Sybil attacks, smurfing, and spoofing which may result in the loss of your cryptographic tokens or the loss of your ability to access or control your cryptographic tokens. In such an event, there may be no remedy, and holders of cryptographic tokens are not guaranteed any remedy, refund, or compensation.

The regulatory status of cryptographic tokens and digital assets is currently unsettled, varies among jurisdictions and subject to significant uncertainty. It is possible that in the future, certain laws, regulations, policies or rules relating to cryptographic tokens, digital assets, blockchain technology, or blockchain applications may be implemented which directly or indirectly affect or restrict cryptographic token holders' right to acquire, own, hold, sell, convert, trade, or use cryptographic tokens.

The uncertainty in tax legislation relating to cryptographic tokens and digital assets may expose cryptographic token holders to tax consequences associated with the use or trading of cryptographic token.

Digital assets and related products and services carry significant risks. Potential purchasers should assess the nature of, and their appetite for, relevant risks independently and consult their advisers before making any decisions.

Professional Advice

You must consult a lawyer, accountant, tax professional, and/or any other professional advisors as necessary before determining whether to purchase CDDC Coins.

Caution Regarding Forward-Looking Statements

This whitepaper contains certain forward-looking statements that are based on the belief of the CDDC Foundation as well as certain assumptions made by and information available to CDDC Foundation regarding the business we operate. Forward-looking statements, by their nature, are subject to significant risks and uncertainties.

Forward-looking statements may involve estimates and assumptions and are subject to risks, uncertainties and other factors beyond our control and prediction. Accordingly, these factors could cause actual results or outcomes that differ materially from those expressed in the forward-looking statements.

Any forward-looking statement speaks only as of the date of which such statement is made, and we undertake no obligation to update any forward-looking statements to reflect events or circumstances after the date on which such statement is made or to reflect the occurrence of unanticipated events.

Executive Summary

This document lists and spells out upgrades to CDDC Coin that occurred during 2018—2019, in particular : our switch to EOSIO as the underlying technology of CDDC Blockchain Generation 2. It explains our reasoning for the blockchain migration, lays out the migration roadmap, provides the details and nuances of our implementation of EOSIO and describes our server infrastructure existing in parallel to CDDC blockchain nodes.

We prove why we decided to build an CDDC Wallet — a dedicated wallet app for CDDC Coin, which is multi-account hierarchical deterministic multi-currency wallet based on BIP44 proposal. We describe a hybrid account model, that is our innovation on top of EOSIO technology that decreases the entry barrier for new customers of our wallet.

We continue by laying out the structure of CDDC decentralized autonomous organization (DAO) that will be managing funds dedicated to the further development of wallet, CDDC blockchain, server infrastructure and new experimental projects based on CDDC platform. We created CDDC DAO to improve transparency and community participation in the oversight of the funding of the CDDC Foundation.

We further expand the non-technological section of this paper by describing the evolution of our business model and the new revenue streams for the community members of CDDC according to the completion of this migration. In the end, we briefly state our vision for the future long-term development of our overall industry and for ways to grow our product in particular.

Introduction

Problem Statement

While global online retail will add an impressive additional \$1.4 trillion in sales within the next three years [[Statista Retail 2021](#)], the market growth numbers are in steady decline since the mid-2010s [[Statista Growth 2021](#)]. This data means huge investment opportunities and rewards for startups capable of creating a technology that will somehow slow down the decline at worst or drive it back into growth at best [[Mire](#)].

On the market with a three-year growth prospective measured in trillions of US dollars, investors aren't necessarily looking for disruptors or "game-changers." They are also scanning for ventures that will help them to "cut into the pie" and walk out with their "modest several billion."

Retailers "must evolve to succeed" as McKinsey and Company put it in their research [[Noble](#)]. In the mid-2000s, the online marketplace business model came into existence with its originators: Amazon and eBay becoming the current global market leaders in mid-2010s. In 2018, experts estimated the gross merchandise volume (GMV) of Amazon at around \$250 billion, while the GMV of eBay was \$94 billion [[Geldman](#)]. JP Morgan predicts that the GMV of Amazon will surpass the total sales of Walmart — the current market leader in the US retail with particular focus on brick-and-mortar shopping by 2021 [[Franck](#)].

CDDC Solution in Brief

CDDC builds its business philosophy on the well-established concept of using blockchain and cryptocurrencies to facilitate online retail. During the recent decade, some outstanding teams already explored this concept with varying degrees of success. However, several features make CDDC stand out:

1. We have proven experience in creating and expanding blooming businesses.
2. Our team has a market vision and proven track record.
3. Consists of blockchain experts, iOS and Android mobile systems, web to app, and web interface system
4. We developed the complete framework for smooth blockchain migration.
5. We achieved simple account management and easy-to-understand fees policy.
6. We enable 5000 Transactions per second, instant transactions, and immediate block propagation.

Who Needs CDDC ?

Our primary target audience is owners of small and medium marketplaces — people who are not as big as Amazon but yet have sufficient traffic to be commission-sensitive. Therefore, these people are looking for opportunities to cut the payment processing commission for their platforms and would like to explore additional markets, like one of the crypto holders.

Our secondary target audience is advertising platforms, looking for new innovative ways to display relevant content on behalf of their publishers and for additional sources of legally obtained targeting data.

Customer type	Description	Rationales
Marketplace owner	Founders of global, regional and specialized marketplaces uniting and providing additional services to various merchants who are selling goods and services to end customers	<ul style="list-style-type: none"> (1) Enabling additional payment methods, hence getting new customers or more added value from existing customers (2) Providing merchants with a new technology advantage over competing platforms
Merchant	Producers and resellers of various goods and services who provide e-commerce order acquisition from end customers via digital channels and perform order execution by delivering the product to end customer either online or in the physical world	<ul style="list-style-type: none"> (1) The additional revenue stream from customers paying in cryptocurrency (2) Opportunity to launch targeted crypto loyalty programs (3) Access to promo and marketing budgets of the leading cryptocurrencies core teams in an early adopter's role
Advertising platforms	Businesses that help advertisers to reach their target audience on various digital platforms (including marketplaces) by providing additional computer code that displays advertisements to visitors of the marketplaces	<ul style="list-style-type: none"> (1) Getting an additional advertisement channel and targeting data from consenting customers for analysis and creating added value services to advertisers participating in these platforms
Advertisers	Organizations and individuals who are interested in providing some relevant offers to the customers who visit marketplaces and/or make purchases there	<ul style="list-style-type: none"> (1) Getting better targeting and customer predictions (2) More relevant customers from additional traffic generated by crypto payments
Solution Providers	Vendors of various IT, legal, accounting, logistics, and other services, who target all other participants of the ecosystem	<ul style="list-style-type: none"> (1) Selling solutions to additional platforms (2) Getting access to early adopter's crowd (3) Participating as added value providers in loyalty programs
End customer	People who buy goods and services online from merchants via marketplaces and consume these goods and services either digitally or in the physical world and consume advertisements for these goods and services	<ul style="list-style-type: none"> (1) Opportunity to spend their crypto on physical goods and services (2) Earning and spending rewards via the crypto loyalty program

Existing Projects that Inspire Us and Our Key Takeaways

Payments and Marketplaces

Company	Description	Key Takeaways
Monetha [MC]	Monetha is a blockchain-based platform powered by Ethereum. It allows interacting directly with any other person, organization, or service, trust and privacy. The platform features peer-to-peer transactions, transferability of reputation profiles across different platforms, and a secure payment gateway. Its functionality designed for a different type of players - from vendors to end-users.	Control of your digital identity and reputation system built in-app Wide range of solutions, including advising
Colu [MC]	Colu provides tools for launching and managing community currencies within city, product or service to connect people and businesses. As they claim, their main mission is to help cities build a local economy where users are rewarded for good deeds for their homes. In return, they can spend the reward across local partner network that accepts the municipal currency.	Local economies powered by local currencies The social network for cities
Zeex	A platform that allows you to buy goods for cryptocurrencies directly from brands. From the strong sides, Zeex, as they claimed, has gained access to top brands like Starbucks, GAP, H&M, Amazon, and more. Zeex has also partnered with several prominent crypto wallets and offers a variety of gift cards.	Partnership with brands Integration with popular wallets Gift cards
Ubcoin [MC]	Their positioning sounds like "eBay-like peer-to-peer marketplace based on cryptocurrency." They claimed that the company is developing its own Ubcoin Market as a part of Ubank app (a mobile payment app). However, it seems that the project is onhold.	Own Marketplace with goods and art-objects Own app
Eligma [MC]	A company with a whole bunch of retail solutions. All buzz words are used in communication - from blockchain and AI to chatbots and payment gateways with credit card integration. At e-commerce, they're working with own POS solution and mobile wallet.	Alipay app with loyalty rewards POS solution Private Wallet with an embedded
OB1	Another company that is working on several projects including Heaven (a private app for e-commerce, i.e., wallet with marketplace) and OpenBazaar (a decentralized marketplace for digital goods).	marketplace (in development) Own decentralized marketplace

<u>Ink Protocol</u> [MC]	Ink Protocol is the reputation and payment system within the Listia marketplace. Additionally, Ink Protocol can be integrated into new or existing marketplaces and can also be used in marketplaces that don't directly handle payments. It allows view any seller's global reputation, pays with escrow, and leave feedback for completed transactions.	Reputation system Own Marketplace Different apps for different needs
<u>Open Sea</u>	The marketplace for crypto collectiblesthat have 120 categories, more than 3 million items, and more.	Designed specifically for collectibles like CryptoKitties and others
<u>RAVELOUS</u>	One more marketplace where its native tokens act as a means of exchange for anycurrency	Just a marketplace with a native token
<u>SM.M</u>	Decentralized influencer advertising marketplace. It allows us to collaborate with bloggers and advertisers and run advertising campaigns on the platform.	Marketplace for influencers

Loyalty Rewards Solutions

Company Name	Description	Key Takeaways
<u>Getpei</u>	Cashback service. Pei is a mobile application that links to your existing debit and credit cards and returns you automatic cashback for extra savings in Bitcoin or USD.	Cashback via App A lot of existing partnerships
<u>Loyyal</u>	Blockchain-as-a-Service offers brands to use Loyalty programs powered with distributive technologies. Uses subscription model of monetization.	Supports a wide range of loyalty programs Designed for businesses
<u>REME</u>	Cashback service fueled with Reme coins. You pay with Reme on repaying .me-marketplace - you receive cashback. They're designing an MVP so far.	Marketplace Cashback Data control
<u>Purse</u>	Purse is using Bitcoin to provide consumers with a large selection of goods at low price points. The platform claims that by shopping with Bitcoin and Bitcoin Cash on the Purse platform, users can save more than 15% on purchases from Amazon. Users set their desired discount percentage and individuals who own Amazon gift cards exchange them for the user's Bitcoin or Bitcoin Cash at a discounted rate.	Interesting mechanics with Amazon gift cards

<p><u>Qiibee</u> [MC]</p>	<p>Qiibee allows businesses around the world to run and manage their loyalty programs on the blockchain. Powered by branded token or with QBX.</p>	<p>Loyalty platform</p>
<p><u>Vexanium</u> [MC]</p>	<p>VEXANIUM is a decentralized marketing ecosystem. Utilizing blockchain technology, it builds an online marketplace that allows merchants to tokenize their rewards and promote their products efficiently. They claim that the VEX Platform built for connectivity between the Retail world and the crypto world.</p>	<p>Own wallet Tokenized promotions</p>
<p><u>Bitrewards</u> [MC]</p>	<p>A company creates the rewards and loyalty platform that will permeate the online retailers of all shapes and sizes and connect them with their customers by virtue of BIT tokens.</p>	<p>Rewards for purchases, friends' invites, Facebook likes, etc. AI-based recommendations for merchants</p>
<p><u>Likeoin</u> [MC]</p>	<p>As they claim, LikeCoin uses Proof of Creativity mechanism that helps content creators make money every time someone pushes the Like button.</p>	<p>Based on GIFTD Asia-based project Rewarding for Likes</p>
<p><u>LoyalCoin</u> [MC]</p>	<p>A Blockchain-based customer loyalty rewards app. You can earn LCredits buying items at partner merchants and spending them with your wallet.</p>	<p>Wallet with an embedded loyalty reward system</p>
<p><u>Sandblock</u> [MC]</p>	<p>A company with two solutions. First, called Stakin and designed to create and engage crypto-communities. Second is Suprice, a rewarding app for your purchases.</p>	<p>Two products with different missions Interesting solution for crypto-communities</p>
<p><u>Fluz</u> [MC]</p>	<p>FluzFluz is a retail rewards platform that offers cashback. Users have the option of redeeming their rewards in the form of cryptocurrencies or selling the points they don't plan to use. Cashback is also distributed communally across the platform so that other users' purchases are also your gain.</p>	<p>Strong affiliate mechanics Claimed huge partnerships with popular stores in the future</p>

Projects Based on Advertisement Business Model

Company Name	Description	Key Takeaways
mCart	mCart enables discovery and tracking of influencers who are moving customers along the path to purchase. Using mCart, retailers, malls, marketplaces, brands, and agencies can guarantee proper influencer attribution and gain complete awareness about the content that is driving sales — allowing marketers to incentivize their efforts.	User-generated shoppable content publishing platform Data tracking and analytics
Shopin	Shopin’s technology platform provides a universal shopper profile safeguarded with a GDPR-compliant blockchain. The universal shopper profile is a “just for you” recommendation engine for retailers and shoppers, reflecting merchandise style and fit preferences based on what shoppers have purchased across all their historic retail experiences.	BaaS project a comprehensive platform to identify your shoppers and reward them if necessary
Tradove	TraDove allows suppliers to connect and collaborate with buyers and sellers worldwide using our AI and blockchain. It's kind of improved social network for B2B. Members can collaborate on projects, find new markets for their leads and needs, and conduct trades with our blockchain payment solution.	A social network for B2B which matches buyers and suppliers
Adhive [MC]	This platform fully automates ad placement with influencers. As they claim, Adhive’s technology recognizes the brand identity or vocal mentioning and triggers payments from the advertiser to the influencer using AI and Blockchain.	Native advertising with influencers Own token for rewards and payments
Buttrfly	One more platform-marketplace for purchasing social influence. It matches brands and bloggers through the app. An influencer can access the Buttrfly Network, swipe on a brand they are willing to advertise for and see if there is a mutual connection.	App for brands and influencers
Canlead	Canlead is an ‘Opportunity Sharing’ platform and service where headhunters/ referrers can refer friends/ candidates to opportunities posted by customers. This service rewards users each time they successfully extend a job or service to somebody in their network.	Our switch to EOSIO Sharing platform for recommendations
AC3 [MC]	This service helps companies acquire their first brand advocates and build their own community. The platform delivers engagements by brands using social networks and media channels on a single platform like bounty campaigns 2.0.	growyourbase.io — a rewards platform

<u>Lead Coin</u> [MC]	Consumers can earn LDC tokens by sharing their data with interested businesses on LeadCoin's Lead Sharing Network. The data is shared via a cookie or web form and is related to products or services they wish to buy. Then they get real-time targeted offers from the business that bought their lead. As their lead is being exchanged on the network, they earn LDC tokens directly to their digital wallets.	Data sharing platform which offers deals in exchange for information
<u>Friendz</u> [MC]	Friendz offers a variety of digital advertising services, among which brand awareness and product placement campaigns, sharing content activities and market researches. The Friendz community can take part in the activities available on the platform such as supporting brands in the process of content creation and validation. Participants are rewarded for these activities.	A platform with an app that connects brands with their target audience Huge list of clients Cool design
<u>Birdchain</u> [MC]	Birds app rewards users for watching ads and reading the content. As they claim, it is an all-in-one app where you are rewarded for interacting with content, discover and learn about the technology, and hold or exchange your earned BIRD.	Be rewarded to watch and engage content matching your interests

Blockchain Migration

Why and How Did We Upgrade CDDC Blockchain?

CDDC started out in late 2017 as a bootstrap project of Jason Daniel Paul Philip. We needed to validate our business hypothesis fast and get early traction. For these purposes, we forked Bitcoin, which was one of the leading solutions of its time (and still continues to be within its market niche). Bitcoin had a sufficient amount of technology adopters, mining infrastructure, and technology improvements.

In Spring 2018, our CTO started actively researching the existing solutions to replace cloned Bitcoin blockchain with a technology that best suited our purposes. After several months of research, it became clear that EOSIO is an unbeatable candidate for the case. In June 2019, we started switching to EOSIO blockchain, and in August 2019, we launched the CDDC testnet, which is a private DPoS blockchain based on EOS. We invented and developed the concept of hybrid account-model, which generates added value for both: customers with the basic understanding of blockchain transactions and for expert customers.

Our Reasoning When Switching to EOS

Transaction Fees Do Not Depend on Token Value

According to EOSIO technical documentation [[EOS GitHub](#)]: "one of the major benefits of the EOSIO software is that the amount of bandwidth available to an application is entirely independent of any token price. If an application owner holds a relevant number of tokens on a blockchain adopting EOSIO software, then the application can run indefinitely within a fixed state and bandwidth usage. In such case, developers and users are unaffected from any price volatility in the token market and therefore not reliant on a price feed".

This independence from volatility in the token market is particularly helpful, as Bitcoin and Ethereum transaction fees killed many worthy startups in 2017—2018 during times of to-the-moon.

DPoS Consensus

DPoS requires way less computational resources compared to proof-of-work and is more community-driven comparing to regular proof-of-stake. Less computational resources mean less commission and other financial burdens on the end customers. More community participation means additional revenue streams for technology-savvy community members. We explain more in the [economics section](#) of this paper.

CDDC and Byzantine Fault Tolerance of the DPoS Consensus

BFT comes from the famous cryptography problem, explained using the Middle Ages story of the hypothetic generals of Byzantium, who are leading the army against an enemy (Persians) and because the empire is in moral and financial decay — there are high chances that one or several of the generals (not ruling out the commander of the force himself) are traitors.

In the conditions of the blockchain world, where many nascent ecosystems usually rely on unverified providers of computational resources (and this does not necessarily mean “bad” providers) the BFT becomes particularly valid. It significantly lowers the risk of fraud by one or several BPs.

EOS-like systems` BPs have additional incentive to function properly, besides BFT algorithms. This incentive is a social capital, which BPs are striving to get during the voting for the actual BPs. Compromising this social capital and trust is risky and economically unjustified.

Migration Roadmap and Milestones

Timing	Event
Mid-April, 2019	Feasibility study
May 10, 2019	EOSIO blockchain development for CDDC started
Mid-June, 2019	Testnet launched
August 4, 2019	Freeze in-out on exchanges
August 7, 2019	Trading of generation 1 CDDC Coin stops on crypto exchanges, 24 hours prior to
August 8, 2019	Official launch and migration kick-off

What Will Happen to Existing Coin Holders?

In August 2019, the CDDC management team managed to conduct migration for existing CDDC Coin holders . During the transitional period, which started from August 8, 2019, existing coin holders were able to exchange their gen. 1 coins into gen. 2 coins using a [simple exchange interface](#) [CDDC Migration Manual] within the CDDC Wallet.

Customer's View	CDDC Admin's View	External Auditor's View
<ol style="list-style-type: none"> 1) Receives migration notice from: <ul style="list-style-type: none"> • Email • Our blog or media • Legacy wallet in-app notification • Friend 2) Installs and opens a new wallet. 3) Creates account. 4) Presses the «Migrate» button. 5) Selects MC Wallet or Aladdin among our legacy wallets. 6) Inputs legacy wallet credentials. 7) Gets email confirmation. Confirms. 8) Waits for CDDC approval of the migration request (up to several hours). 9) Gets email confirmation of the migration approval. 10) Sees account balance update in new wallet. 11) Spends or stakes CDDC Coins. 	<ol style="list-style-type: none"> 1) Gets migration request via Migration Server. 2) Checks customer credentials, account balance, and migration eligibility. 3) If there are security or eligibility issues — Migration Server halts the transaction and generates approval request to human admin. 4) CDDC approves migration request automatically or via control panel of Migration Server. 5) CDDC transfers customer funds to cold wallet in CDDC 's gen. 1 blockchain for temporary custody. 6) Migration Server allocates the equivalent of gen. 1 CDDC Coin to the new account of this customer in gen. 2 blockchain. 7) Migrated CDDC Coins on customer account in gen. 2 CDDC blockchain are available for use by this customer. 	<ol style="list-style-type: none"> 1) Source transaction on gen. 1 blockchain (fundstransfer to a cold wallet) appears in block explorer of gen. 1 blockchain. 2) Target transaction on gen. 2 blockchain (allocation of migration equivalent funds) appears in the block explorer of gen. 2 blockchain.

ABBC Generation 2 Blockchain

Block Producers

Being built on EOSIO CDDC Blockchain consists of an unlimited number of nodes, of which unique 21 are selected as active block producers (BP) by means of automated voting every 126 seconds. Like in EOSIO blockchain, we produce our blocks [exactly every 0.5 second](#) and exactly one block producer is authorized to produce a block at any given point in time [[EOS GitHub](#)].

If a BP misses a block and has not produced any block within the last 24 hours, they are removed from consideration until they notify the blockchain of their intention to start producing blocks again. [[EOS GitHub](#)] This ensures the network operates smoothly and minimizes the number of missed blocks by excluding unreliable BPs.

Selection Criteria

1. **Technology.** In order to be eligible, a BP candidate team must be able to run secure and reliable servers necessary to actually produce blocks, operate a full node, and offer API endpoints to users. Our block producers should also be ready to scale out their infrastructure and provide sufficient processing capacity, storage, and network bandwidth. Both cloud and bare metal servers are accepted. However, our management team will examine specific details of how those are operated. Cloud-based teams should run their software via multiple providers in order to minimize reliance on any single cloud service. Teams operating bare metal servers should have secure data centers with sufficient backups.
2. **Community.** EOSIO philosophy is about rewarding diverse community members with various areas of expertise via their participation in block production [[Samani](#)]. Therefore, we will incentivize BPs from various industries and technology layers. We are particularly looking for BPs, having not only great technical expertise but also able to lead and inspire other community members.
3. **Ethics and civilized dispute settlement.** Running decentralized blockchain is a sophisticated matter from many standpoints, including relations between the community members. Developer's ego and "fork battles" ruined and diminished market valuation of many interesting projects, including Bitcoin and early Ethereum.
4. **Geographical and institutional decentralization.** To hedge our blockchain from political risks, we invite BPs from various regions, countries and economic backgrounds to apply. We will do our best to avoid situations when the majority of our BPs are located in a single country.

Voting and Proxies

In the EOS-like liquid democracy [[Aurora](#)], any user who has staked CDDC tokens can vote. Each user can vote for up to 30 BP candidates using the full weight of their stake. For example, if a user has 100 CDDC staked, she can cast 100 votes each for up to 30 BPs. Thus 21 unique block producers are chosen by the preference of votes cast by token holders. The selected producers are scheduled in an order agreed upon by 15 or more producers. [[EOS GitHub](#)]

We then split up the BP funds to maintain higher value for those most trusted in the community and those who run 1 of the active 21 BPs. We use the same active/standby proportion as EOSIO, with 25% of the BP pay going to active producers and 75% going to standby BPs calculated from a percentage of the votes received. [\[Floyd\]](#)

Users have the option of voting directly for block producers, but they can also delegate their voting power to another account to vote on their behalf. The delegated account, called a proxy, has no control over the original user’s account — the user can proxy her vote trustless without handing over any keys. The proxy is authorized to direct that user’s voting power towards certain block producers, but the user can revoke proxy’s voting privileges at any point.

Commission and Customer Account Levels

Transaction fees are a serious barrier to entry for a number of well-developed blockchains, original Bitcoin being a good example. Using “receiver pays” philosophy developed by EOSIO [EOS GitHub] we have built a multi-layer approach towards customer credentials based on two basic parameters: (1) transaction activity and amount of (2) CDDC Coins in custody.

Account Levels	TX Activity	Credentials	Custody of CDDC Coins
Novice	Only accepts funds	The customer only installs a wallet	None
Account Owner	Can accept and send funds Pays commission for each TX	The customer has a wallet installed, and we created an ID for her	>1 CDDC (~\$15 cents as of now)
Staker	Same as above, but without commission	The customer has a wallet, registered ID and staked coins for CDDC blockchain computing resources	>20 CDDC

As we see, “Novice” is a basic account level for customers who are trying our solution for the first time. All you need to do to become “Novice” is simply install the wallet. After the customer gets her first CDDC Coins (1 CDDC at least), she becomes an “Owner.” This customer type can not only accept but also send funds to other ecosystem participants. For readers interested in understanding more about our account levels, we describe this technology in the [Hybrid Account Model](#) section below.

Functional Infrastructure

CDDC 's functional infrastructure consists of a number of microservices, nodes, and databases. Gateway modules, Notifications module, Customer Authentication module, and Transaction History Access Module are four major microservices of our system.

Notifications Module

NM generates information feed providing live coverage of all system events within our network to other modules and to external clients via Notifications API. We developed it based on [Firebase Cloud Messaging](#) that is currently gaining widespread popularity in the blockchain world [[Jayathilaka](#)]. We picked Firebase for our NM because it provides: (1) a battery-efficient connection between our server and customer devices, (2) targeted messaging functionality based on user demographics and behaviour, (3) A/B testing integrated with [Google Optimize](#).

Notifications may originate either from CDDC 's system notifications manager or from our [merchants](#), provided ~~that~~ they obey the schedule and content guidelines as stipulated by the notifications policy (document to be drafted by our merchant relations team within six months after the launch of generation 2 CDDC Coin).

Customer Authentication Module

CAM provides single credentials and a single point of customer authentication within our system. We use login/password pair, which we then convert into JSON Web Token (JWT) as specified by [RFC 7519](#) to ensure secure storage of customer credentials.

Note that our [wallet app](#) is non-custodial, i.e. customer's private key, which our wallet app generates when creating customer's account, never leaves the customer's device and is separated from CAM [[Abra](#)]. Unfortunately, this might create additional loss risks for the customer. However, this is the current market best practice [[Skellern](#)], and it is dictated by the fact that only in 2018 \$1,7 billion worth of cryptocurrency was hacked or stolen [[Chavez-Dreyfuss](#)].

JWT authentication via CAM, in its turn, helps customer device to store and sync non-custodial data to our server. This data includes transaction history, app access details, loyalty programs which this device participates in and the number of rewards accumulated to customer's bonus account. However, to use the rewards customer still needs the private key.

Transaction History AccessModule

TxHAM is a server-side enabler of our blockchain explorer. TxHAM interacts with CDDC Blockchain Index Storage (BIS) to read indexed block data from our blockchain and enable any willing individual with an Internet connection to examine all transactions within our blockchain chronologically. Therefore, TxHAM provides our blockchain with its quintessential features, namely: openness and transparency.

Transactions history is available for access via our Wallet app (you have to install it and register) and online via a web interface. We are also ready to provide it machine-to-machine for automatic processing via Transaction History API.

Migration Server

MS stores migration requests from end customers to internal database and processes their requests by reading legacy user balances from Heritage Balance Data Storage and converting these balances into new user balances in BIS. TxHAM then reads indexed data from CDDC blockchain gen. 2 and provides the updated balance on gen. 2 blockchain to the end customer. The migration is now technically complete.

CDDC Wallet is a multi-account hierarchical deterministic (HD) multi-currency wallet based on BIP44 proposal [BIP44]. The core-supported currency of our wallet is CDDC. User can send and receive funds, review recent transactions, and manage blockchain resources. Our Wallet also supports Ethereum and ERC-20 tokens [ERC-20] from the start, with more currencies to be added in the future versions.

Dedicated

A blockchain ecosystem that has its own wallet has much better chances of success comparing to an ecosystem without one. The logic is simple: controlling additional element of the added value chain and the key customer touchpoint creates more probability of success.

However, this approach of building and supporting an essential element of technology infrastructure and customer interface requires substantial investment. In our case, smart partnership strategy and hiring of the best blockchain engineering talent that is available on the market enabled CDDC to build its own dedicated wallet within a relatively short time frame (less than 6 months) and with substantially less investment comparing to the market average.

BIP44

Created by Trezor founders Marek Palatinus and Pavol Rusnak, [Bitcoin Improvement Proposal 0044](#), or simply BIP44, is a document which improves the previous governing standard, BIP32. It specifies multi-account hierarchy for deterministic wallets, namely: address type, registered coin types, account types (sending or receiving funds, purpose), change, and public derivation.

By being BIP44-compatible CDDC wallet ensures it can interact with most of the existing blockchain wallet solutions for transferring and receiving funds. The advantage of BIP44 is the support of multiple accounts.

Multi-Currency

People like to have all their finances in one place and do them in a simple manner. J.D. Power's 2019 research on mobile banking applications discovered that "feature overload strains customer satisfaction with online banking and mobile apps." [J.D.Power] Cryptocurrency wallets are somewhat similar to mobile banking with the substantial difference of crypto customers doing the banking process themselves. We can then conclude that simplicity and "all-in-one" approach brings customer satisfaction.

The CDDC Wallet initially supports CDDC Coin, Ethereum and ERC-20 tokens. We plan to add support for more cryptocurrencies throughout 2019. Another good reason for multi-currency support is the development of our crypto rewards program. This program will provide various rewards and loyalty bonuses that will incentivize our customers whenever they spend more crypto via CDDC merchant platforms.

Multi-Account

Besides multi-currency support, that requires multiple accounts per se, we also support hierarchical multiple accounts inside our wallet. Hierarchy means each account can have funds in multiple currencies inside it. How is multi-account support relevant? Digital and crypto customers, primarily millennials, are now finding their way to financial stability and savings [Lerner]. Digital nature of modern banking and personal finance, including personal crypto finance, enables an unlimited number of accounts, which are merely a number within the accounting system of the provider.

In practice, this means: a customer might have an account for vacation savings, an account for online shopping with increased security, an account for educational savings for kids, etc. And like in traditional banking, all that is possible in the world of crypto finance as well. Multiple accounts are a simple yet powerful tool for savings and for building healthier financial habits.

Hybrid Account Model

CDDC Wallet fully supports hybrid account model, where user can either send funds using staked resources without any transaction fees or pay a small fee and avoid using resource staking. New users will receive basic-level accounts for free, which will be upgraded automatically once the user receives the first transaction on this address.

This [account-model](#) invites new customers to start using CDDC Coins in real commerce without staking obligations and with only basic knowledge of how blockchain and cryptocurrencies work. Customers can acquire their first CDDC Coins directly in the wallet app, simply via the in-app purchase on the App Store or Google Play. As many authors indicate: complexity is one of the major barriers to decentralization and cryptocurrency success [Stankewicz]. By removing additional touchpoints in the customer journey (exchange, coin tickers, transfers in/out), we help our customers to overcome this barrier.

How does our Hybrid Account work? Classic EOSIO account-model assumes that before you start using the blockchain to receive, store and send funds, you should create an account. EOSIO creates accounts on a paid basis. An existing account on the blockchain has to pay for account creation, assuming this customer has staked enough resources. At CDDC, we feel that this procedure will be too complicated for the first-time user (having to create an account, stake resources, etc.). Therefore, we improved EOSIO account model in the following manner:

Level 0 or “Novice”

This is a basic type of account. Customer does not need to do anything to create it. The customer only provides a public key, which we then use as an address. Before a customer receives the first asset on our blockchain, there is no record of this address on this blockchain (like in Bitcoin or Ethereum). We created the record only after we receive the first transaction. “Novice” customers can only receive transactions and hodl. In case they want to create transactions, then they should upgrade to “Owners.”

Level 1 or “Owner”

Once the Novice received some minimum assets within our system (i.e. more than 1 CDDC), we upgrade this customer to Level 1 or “Owner” account. Owners have a unique name assigned. They can also use this name to monitor account balance, as well as to send and receive funds. No resource staking is required at this point. Owners pay a fixed fee of 0,01 CDDC for each transaction they create regardless of the recipient's account level.

Level 2 or “Staker”

“Staker” account type is a proper EOSIO-style account. It has an account owner who has created an account within our system, bought some RAM, and staked NET and CPU. Basically, “Owner” is also a proper CDDC blockchain user. The difference between these two is that “Owner” does not stake resources. We don't charge Stakers with transaction fees.

Interaction with CDDC Server Infrastructure

Our Wallet interacts with other blockchain nodes on [CDDC blockchain](#) to check account balances and statuses; it also interacts with [CDDC Server Infrastructure](#) to authenticate customer account, sync transactions history, and to receive critical updates, such as migration notification, wallet software update, etc.

Interaction with CDDC Blockchain and Other Blockchain Nodes

To send a transaction, the Wallet authenticates customer account credentials via Server Infrastructure then checks account balance with CDDC Blockchain Node. After that, it will then create and sign the new transaction. New transaction subsequently gets confirmed by other nodes.

EOSIO states that typical DPoS transaction can be considered confirmed with 99.9% certainty after an average of 0.25 seconds from the time of broadcast. In addition to DPoS, EOSIO adds asynchronous Byzantine Fault Tolerance (BFT) for faster achievement of irreversibility. The aBFT algorithm provides 100% confirmation of irreversibility within 1 second.

Figure 10. **Wallet Interaction with CDDC Blockchain**

CDDC is focused on achieving a long-term goal. Therefore, one of our main aims is to adopt decentralization principles not only in our technology but also in the management model.

Principles of CDDC Community Governance

Firstly, while the philosophy of decentralized autonomous organization provides agility and flexibility, it may also make managing such system a very complicated task [[Sanfelix](#)]. Secondly, according to market studies, the lack of a centralized authority reduces costs [[Blockchainhub](#)] and more control.

Opposite to typical organizational model of a tech startup, a decentralized autonomous organization is a governance model, which enables us to be guided through business processes by data-driven decisions, based on the wishes of all members of the community. Besides, it is accessible at any time via smart contracts and blockchain technology. At the same time, the choice of this model by such projects as [Dash](#), [PIVX](#), or [EOSIO](#) confirms the interest and trust in such type of organization by the blockchain community.

Along with the basic principles of Decentralized Autonomous Organizations [[Seth Bannon](#)], which are complete transparency, total shareholder control, unprecedented flexibility, and autonomous governance, this approach delivers a higher number of benefits. Starting from a much faster and more efficient decision-making process, in comparison to the typical corporate structure, and ending with psychological factors. DAO users aren't just investors or token holders, but also the disruptors of the business model that use the power of their voices. At this point, let's look into the user model.

Node Selection and Voting

In addition to our team, we recognize the two main actors of CDDC DAO. They are users with voting power (basically, each holder of CDDC Coin) and block producers (BP) who act as a decentralized government. The following basic rules guide us:

- Each CDDC holder can delegate their voting power to a proxy to vote on their behalf.
- Each CDDC user has the right to receive a status of BP by (1) staking a fixed part of their coins, and by (2) being elected as other BPs and community members.
- As a vital part of our ecosystem, each BP will vote on CDDC's blockchain for proposals that can directly impact the business.

For example: expanding CDDC's service to a certain region; launching a strategic partnership with a specific crypto project; sponsoring a team or project for presenting CDDC in front of major leaders in the e-commerce industry or implementing new features to our blockchain.

We're designing the code behind CDDC's DAO with several safeguards that are aimed at preventing its creators or anyone else from cheating the voting. However, because the current whitepaper focuses on the technical execution of CDDC Coin's blockchain and our business model, the detailed description of architecture and the principles of CDDC governance is available upon your request.

CDDC DevFund

As a vital part of our ecosystem, BPs and other community members will vote on the CDDC blockchain for proposals that can directly impact our platform. Below are a few examples of proposals that could be submitted to the network:

- expanding CDDC 's service to a certain region;
- launching a strategic partnership with a certain payment broker or partner;
- creating custom hardware for accelerated transaction processing;
- developing of a module for augmented reality payments via contact lenses;
- presenting CDDC in front of major leaders in the e-commerce industry through conference sponsorships ;and,
- establishing a relationship with a regional merchant platform.

As we can see, each decision can make a significant impact on CDDC success, and create a gradual network effect, which is exactly what happens with [Dash](#). The more people come into the ecosystem and implement valuable projects, the more established a network becomes.

Voting on Use of Proceeds from the Dev Fund

The voting for the dev fund projects should be similar to BP selection process with proxies allowed and each CDDC staker having an opportunity to support a number of projects in varying voting proportion. The voting should take place on a yearly basis for a one-year roadmap. In line with this, the CDDC management team considers immediate evaluation of projects through ad hoc voting.

In the case of roadmap voting, the total amount of projects to be voted for should be selected based on the total amount of budget available. For example, if there are 100 project candidates with a total budget of \$10 million and the total budget available for the given year is \$500k, then the number of projects which will be included in the roadmap decreases when the total amount of requested funds reaches \$500k.

In the case of ad hoc voting for the project, there should be a reserve funds allocation available. Otherwise, $\frac{3}{4}$ of the total number of CDDC holders should vote for the immediate allocation of project funds using the next year budget, provided that such budget already exists.

Migration and Our Upgraded Economics

In the world of business, technology should deliver profit. CDDC enables several business models for our community members to earn money and build their reputation. This section outlines them. Our original whitepaper listed several business models for CDDC Foundation:

1. **Placement fee** — a revenue model that is typical to any early marketplace [[Timmers](#)]. Merchants pay fees to a platform to be listed there and to have access to the customers of this platform. This is a business model on which eBay and Alibaba built their business. However, the competition for merchants has been increasing between platforms. So, most modern e-commerce platforms have moved from the placement to transaction fee, which we will introduce after the migration.
2. **In-store promotion** — CDDC will provide all participating merchants with various promotional instruments including straightforward “pay-to-be-on-top” opportunity. While, branded content programs for CDDC’s platform blog will be given to selected media outlets and bloggers. We want to view SM and all the “social”-based features of our platform not merely as “posts and clicks,” but as “social computing features” that acknowledges the recent fusion which occurred between content and community, making the social experience central to the content website's digital business strategy. [[Oestreicher-Singer](#)]
 - a. **Referral programs** — our initial paper only listed this business model as an option. Currently, we came to a clearer understanding of referral programs and will split this business into several sub-elements:
 - b. **Referral program as a service** — [CDDC Wallet](#) and [server infrastructure](#) enable us to build a crypto-referral program for any willing merchant quickly. The participants will get various perks which primarily refers to cryptocurrency as a form of money. These can be airdropped tokens from some hot recent token sales, or customer adoption influxes from the established mass-market cryptos like Dash, NEM or Litecoin.
3. **B2B Referrals for Merchants and Providers** — we will provide a referral fee for participating merchants and solution providers who successfully invite their friends to join CDDC. The fee will be a discount for the future service fee and transaction fee.
4. **Value-added services** — we are particularly interested in our community members’ and ecosystem participants’ business with each other. This approach creates additional value for CDDC as an ecosystem. A good example is video content, created by professional video editors for merchants who sell some produce or merchandise. Another example is accounting services provided by one ecosystem member to another. As we already explained in our initial white paper, CDDC serves as a guarantor for complex transactions that requires both parties to rely on guarantor/arbitrator whom they both trust.

Migration to EOS-based generation 2 of CDDC blockchain will enable three additional business models which differ substantially from the existing ones and which will attract more technology-centered community members to our ecosystem.

5. **Transaction fee** — as mentioned in item 1 above, the modern merchant platforms are moving from placement fee (merchant pays for opportunity without understanding what revenue will it exactly generate) to transaction fee (merchant pays for exact deliverable measured by a specific customer action). That is why we also decided to introduce a transaction fee for transactions that were completed on our platform. In various instances we might wave this fee, namely: (1) the amount of transactions for this merchant exceeds X, (2) the transactions occur in a specific field, which we consider our growth zone, (3) the amount of referral customers which this merchant generated is Y.
6. **Block production** — according to the EOSIO whitepaper, anyone may choose to participate in block production and will be allowed to produce blocks, provided that they can persuade token holders to vote for them [[EOS GitHub](#)]. The 21 BPs of the original EOS have estimated earnings between \$100k—150k [[Boulianne](#)]. While CDDC won't be originally that intensive, it can still provide BPs with a steady monthly income of several thousand US dollars.
7. **Development projects implementation** via [CDDC DAO](#) — another revenue stream for the tech crowd and huge growth driver for CDDC . Developers are also usually the early adopters of the new business models and payment options. By reinvesting profit generated by CDDC ecosystem into the development of its infrastructure and building of new products based on the CDDC platform we will strengthen our competitive edge and provide stimuli for the continuous growth of the users' base.

Go-To-Market Strategy

Radical personalization of customer experience is the global retail trend for the past few years. This applies to both traditional brick-and-mortar players and younger e-commerce businesses (which is the niche of CDDC). The latest researches show that merely 80% of consumers [[Epsilon](#)] are more likely to make a purchase when brands offer personalized experiences.

Along with personal offers, exclusive promotions, and virtual stores, the opportunity to choose the means of payment should also be included in the personalized experience. Besides, let's not forget about pricing. Due to the lack of commissions and the speed of transactions, solutions based on virtual currencies allow retailers and vendors to reduce the cost of goods, making it more attractive to the buyer. Up to now, 81% of customers rate product prices as "important" when searching for and selecting products online, and 68% of mobile device users have searched for a retail coupon or another form of loyalty program [[UPS Pulse](#)].

Based on the information above, we'll focus on two main areas of work after the introduction of our updated blockchain. The first is a partnership with the global blockchain community and the second is direct cooperation with the key users of our platform – e-Tailers – who are both users and owners of marketplaces. Let's pause and go into more detail.

In the second half of 2019, we're going to focus on testing and adjusting marketing hypotheses on our local market. The results will be scaled up globally, involving players from other regions in the CDDC platform : EMEA, APAC, and finally AMER. Speaking of more fragmented initiatives, the roadmap can be presented in the following way:

1. Formation of a team with core developers specializing in major market cryptos
2. Presentation of the solution at key blockchain and e-commerce events
3. Sales-pipeline finalization and integration of Customer Relationship Management Software for the sales team
4. Scaling up to EMEA
5. It is attracting advertisers to use the data generated by CDDC
6. Splitting of the office into R&D and international sales HQ (sales HQ begins relocating to the target geographical markets on a rotation principle)
7. Launch of the first loyalty program and partnerships for personalized promo offers
8. Scaling from APAC to the North and South America
9. Involvement of advisors from the advertising cluster (beginning of cooperation with global advertising networks)
10. Dedicated team for cooperation with the open-source community to create a comprehensive industry standard for blockchain and e-commerce
11. Usage of the CDDC solution by market leaders (Amazon, Alibaba, eBay, etc.)
12. Entering the omnichannel retailer market

For each quarter, we will pick the core business processes, target geographical market, and core industry challenges. The targets might be revisited and changed according to our current business alignment. However, the principle will remain the same.

Conclusion: What's Next for ABBC?

We did not waste our opportunity window that opened in 2017. As what the readers learned from this paper, in a span of two years, CDDC has managed to build a solid product with the help of its resourceful team. We completely [re-engineered our blockchain](#) and based it on EOSIO — one of the most vibrant and rapidly evolving developer's communities in the blockchain world.

We revamped our [business model](#), shifting it from placement fee to per-transaction fee, requiring participating merchants to pay commission only for the successful transactions which deliver revenue. We added two essential new models: block production and dev projects implementation. We aim these two models at the technical crowd within our community, hoping to unleash their innovation and tech business acumen.

We transformed the CDDC Foundation into [CDDC DAO](#)— this will help our community to have more control over the use of funds and have more participation in the way we use them. It is our pleasure to ensure this openness and transparency via the same decentralized algorithms which we use in our business.

[CDDC Wallet](#) is a matter of our personal pride. It has a beautiful design and well-tested user interface, and supports CDDC Coin, Ethereum, and more than 1600 ERC-20 tokens (with Litecoin, Dash, and EOS coming soon). The Wallet also opens new opportunities for our merchants as they can now create customized loyalty programs for their customers. Instead of some lucid "point" or "miles," customers can receive CDDC Coin as rewards and immediately spend it for online shopping.

The [Hybrid Account Model](#), which we implemented for account management of our customers, substantially improves the original EOSIO account model. Based on our expectations, it will significantly lower the entry threshold for new customers. We expect it to be widely adopted by competitors and other participants of the blockchain ecosystem.

It is hard to be "Amazon", although we realize all the cumulative benefits this market position generates. We think that the future of digital commerce lies in return from "everything store" to curated specialized marketplaces, where the owner is a gatekeeper and a trendsetter in one person. Because e-commerce development happens in "waves," we expect the next wave to be personalization. And of course, such personalization will require handy payment tools with the commission being as low as possible.

The current market is tough for blockchain e-commerce projects as the market is cleansing itself from pretenders. However, hard times are usually followed by even huger opportunity windows. We strongly believe that customized payment instruments, based on blockchain or any other relevant technology that will emerge soon will drive the future of e-commerce within the next several decades. And it is truly a great pleasure to surf "ahead of the waves".

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List of Abbreviations

AI	Artificial Intelligence
APAC	Asia Pacific
API	Application Protocol Interface
B2B	Business-to-business (transaction type)
BIP	Bitcoin Improvement Proposal
BIS	Blockchain Index Storage
BP	Block Producer
BFT	Byzantine Fault Tolerance
CAM	Customer Authentication Module
CTO	Chief Technology Officer
DAO	Decentralized Autonomous Organization
DPoS	Distributed Proof-of-Stake
EMEA	Europe, the Middle East and Africa
GMV	Gross Merchandise Volume
HQ	Headquarters
IT Consulting	Information Technology Consulting
JWT	JSON Web Token
MS	Migration Server
NM	Notifications Module
SMM	Social Media Marketing
TxHAM	Transaction History Access Module

List of Abbreviations

1. Target Audience of CDDCEcosystem
2. Projects that Inspire Us. Multi-wallets
3. Projects that Inspire Us. Loyalty Rewards Solutions
4. Ad-based Projects that Inspire Us
5. CDDCBlockchain Generation 2 Migration Roadmap
6. Migration Process Flow Explained in Quick Steps
7. Customer Account Levels for CDDCBlockchain
8. User Flow via Functional Infrastructure of CDDCBlockchain
9. CDDCGateway Architecture. Generic Node and API Implementations
10. Wallet Interaction with CDDCBlockchain
11. CDDC's Go-to-market Strategy in 12 Steps