



CENT
WHITEPAPER
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CENT

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ABSTRACT

While the cryptocurrency economy is emerging and could be considered an alternative to current world economies and financial markets, it still does not have all the features of a mature economy. One key tenet in any economy is interest, used as a basis of income and profit stability. Advancing the concept of interest in crypto-economies would support further development, growth and adoption. Cent has been developed to broaden opportunities to earn interest via a platform that simplifies the earning of blockchain rewards for customers. Cent could also serve as a potential solution to large scale social issues such as universal basic income.

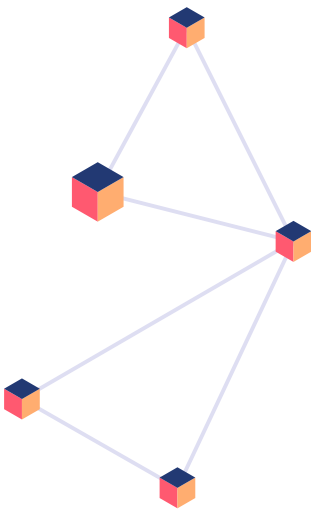
OVERVIEW

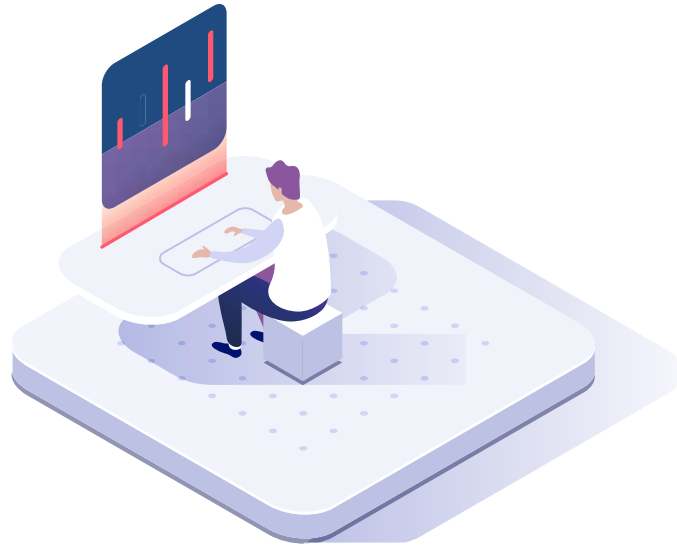
The traditional institution of the nation state economy is broadly speaking, an established one, having enjoyed both evolution and growth over decades, with current world economic output running to US\$87 trillion per year (1). Traditional economics have until now been based on a centralised government controlled system of trust, dependent on permissioned financial institutions to intermediate currency exchange based on supply and demand, and most importantly, turning a profit. As economies have developed, sophisticated economic instruments have been introduced to better serve more complex needs. In today's economy, deposits, loans and the resultant generation of interest have become primary economic instruments, on the back of which nations and their industries have flourished (3). In other words, interest rates play a key part in executing economic policy, supporting price stability or low and stable inflation.

The concept of interest has implications beyond simple currency exchange - the opportunity to generate a profit from deposits, loans, and investments has created enormous commercial opportunities within financial services, and the importance of pricing and capturing interest to reflect risk perceptions cannot be overstated. Whilst interest is seen as the principal 'risk-free' means (the trade off being a lower return) to grow capital and wealth in fiat economies, it remains vulnerable to global crises like that of 2008, and is often an indicator of the health of an economy (2).

As an emerging technology, blockchains and associated crypto assets have the true potential to become viable digital-first alternatives to centrally controlled fiat economies. The total market cap of all cryptocurrencies topped \$800 billion USD in early 2018, while Bitcoin itself grew to over \$106 billion USD market cap and Ethereum to over \$43 billion USD in market cap, providing evidence of significant adoption and value storage within crypto-economies worldwide (5). Cryptocurrency markets, while volatile, are growing and show the potential a global scale digital economy.

One key feature that will become increasingly important in cryptocurrency markets is the ability to earn interest or income passively to mirror fiat economic characteristics. Today, with the market holding a value of between \$230 to \$800 billion USD currently, and daily rewards measured at round \$50million USD there is a large amount of potential for the redistribution of this earned income. We believe that simplifying access to this emitted wealth has the potential to expand cryptocurrency adoption and will support further economic growth and development, not least by increasing attractiveness to potential investors.





In this opportunity we also recognise the potential for disrupting the traditional economic model where centralised third party financial institutions, typically a bank, control lending and interest on money. In this whitepaper we address how an application based on blockchain technology can introduce a new form of crypto-financial instrument and make a significant economic contribution to the health of nation state economies.

INTEREST, EMPLOYMENT, AND UNIVERSAL BASIC INCOME

Beyond the economics, there is also a social challenge Cent aims to address. From improved industrial robotics to automated nurse's assistants, new technology is being adopted into manufacturing, clerical and retail work, law, financial services, education, and medicine (13). Advancing technology aids in making many jobs safer, easier, faster and more productive. Robots and other computer-assisted technologies can learn repetitive and programmable tasks typically performed by the labour force. However, this causes concern over the future of jobs as robots increasingly replace human labour (13). The automation of various jobs by powerful new technologies affects employment and wages across the global market. Estimations about the negative effects of automation on employment see the employment to population ratio reduced by about 0.18-0.34 percent and wages by 0.25-0.5 percent (4).

Whilst automation long ago demonstrated the impact on manufacturing jobs, all the other sectors listed in the previous paragraph are now experiencing a similar trend. A growing number of tasks that were previously thought to require a human touch are being affected, changing the global employment landscape (4) across all levels of management.

While gradual replacement in some occupations is generally thought to be balanced by a growing need in other areas, there is a belief that technology is changing so quickly that it is taking away jobs faster than they can be created (14). Economically speaking, it appears median income has become somewhat stagnant even though the Gross Domestic Product continues to climb (16). To balance this decline in employment opportunities, academics, policy makers and governments have started to experiment with universal basic income (UBI). It provides a fixed and unconditional paid income to everyone in an economy. While UBI has not been centrally adopted in any country, it is considered a viable solution to rising job loss due to the advance of technology (15).



We believe, a cryptocurrency based UBI paid through IKR rewards could have the potential to become a way to mitigate the worst effects of job erosion. UBI based on rewards from the blockchain provides an alternate source of income for those increasingly in need. Cent creates an opportunity for anyone, anywhere, regardless of geopolitical affiliations, to participate in cryptocurrency economies and generate an income from the blockchain to build a life upon.

BARRIERS TO MAINSTREAM CRYPTOCURRENCY ADOPTION

While cryptocurrency is gaining rapid user adoption in many respects, real user experience challenges remain, particularly caused by the technical complexity of several blockchain concepts and products. Considerations like hardware availability, programming ability, financial volatility risks and complex system controls make the ecosystem difficult to engage with on a deep level for the average person.

Blockchain technology goes far beyond a simple user interface to create a world of scripts, puzzles, mining, cryptography and more. Understanding these complex concepts remain one of the barriers to widespread cryptocurrency adoption. There is a need for simplifying user interfaces to allow the general public to participate in the cryptocurrency economy without needing in-depth knowledge of blockchain technology. Where crypto companies make an effort to improve the user experience they have seen an uplift in the use of their products. We are seeing a shift in the take up of better designed crypto wallets and prepaid cards across different jurisdictions. For example, Square's CashApp reached 33.5 million downloads in the US (first half of 2018), overtaking Venmo (17).

One could compare this to the evolution of the digital economy and how the internet evolved from a wild west for commerce, into a more technology friendly and intuitive place to do business, whether as a consumer or business owner. Nobody thinks twice nowadays about launching a business online, creating websites, or integrating with payment gateways, literally with a click of a button. All age groups browse, shop and communicate online. This same progression is a goal for the blockchain industry, as the world needs more intuitive products and experiences.

Cent presents the general public with an easily accessible decentralised application which allows them to access and benefit from crypto economic rewards without the need to understand what is happening behind the scenes. A simple to use cryptocurrency investment product will encourage adoption as well as subsequent learning about the technology itself, promoting understanding of the cryptocurrency economy and in turn growing participation in the cryptoverse.



Cent also broadens the concept of interest in crypto economies, beyond a marketplace for borrowers and lenders. The growth of Cent and introduction of interest contributes to the crypto economy by supplying a missing instrument on the way towards full economic maturity, enabling further crypto economy development. Providing new functions within the crypto economy makes it more sustainable and thus attractive for participants to use as a store of value and a source of income.

THE NEED FOR YIELD IN A SUSTAINABLE ECONOMY

Shares, Funds and Bonds have scope for yield within their respective asset classes, but few crypto-assets do. Those that offer this often require complex nodes, staking systems or other technical barrier for simple usage and adoption.

SOLUTION

WHAT IS CENT?

Cent is a decentralised app (DApp) that makes it easy to earn financial rewards from enabling and supporting different blockchains.

Cent operates as a resource provision layer on top of multiple blockchains, designed to both grow core resources provided to blockchains whilst also providing streamlined access to businesses and individuals who wish to invest in, provide resources to, and earn income from rewards generated by cryptocurrencies of their choice. This investing occurs by provisioning resources to the aforementioned blockchains, increasing a supported blockchain's efficacy and security.

In doing this Cent creates a new form of financial instrument which provides the ability to abstract away blockchain participation complexities, whilst enabling crypto-economic access across national boundaries. As a DApp, Cent is designed to simplify access to this new form of instrument we call the Incentivised Key Resource, or IKR for short.

INCENTIVISED KEY RESOURCES

Incentivised Key Resources are any resource consumed by a blockchain that is so critical the blockchain provides rewards for their provision.

In Bitcoin's case for example, this would be the vast computing power used to process transactions. The Bitcoin blockchain rewards providers of this computing power. The same analogy extends to other blockchains which reward for both this and other types of resources.

Profitable Bitcoin mining requires significant capital investment in both infrastructure, cooling and mining equipment, however there are other types of functions an IKR can serve on a blockchain of equal importance to the security and function of their respective chain, without the overheads outlined for Bitcoin. This could include validation of transactions, the provision of networked resource such as compute, storage or bandwidth, or simply providing economic stability through the voluntary lockup of tokens.



Cent works by provisioning IKRs to blockchains via Infrastructure Provisioners (IPs), which earn a return for investors in Cent, and a payment to IPs for the use of their infrastructure. IPs are made up of those making available infrastructure to Cent for provisioning, whilst holding and staking Cent tokens as a statement of intent to receive and process work via the Cent network.

Cent allows IKR provisioning to multiple blockchains which have been carefully selected based on the type of IKR required to support it, the longevity of its economic model and the soundness of the use-case the chain aims to serve, alongside the ease of automated provision of the respective resource.

This selection of blockchains is not for the purposes of investment choices, as the potential for returns cannot be guaranteed, but rather to provide both customers and IPs with an attractive cross section of blockchains to support and provision IKRs to Cent's application interface is designed to vastly reduce the need to understand the technicalities of a blockchain and its underlying technology, abstracting away complexities and exposing a user to a simplified interface through which they can enjoy the benefits of supporting the platform without the complexity and other challenges.

Cent's application simply allows the user to select the type of blockchain, then automates the deployment of their chosen key resources and the distribution of the proceeds of this resource provisioning.

On a societal level, Cent affords individual and corporate users access to economic freedom from their local or national economy, creating opportunity for participation in the global blockchain economy for all parties regardless of location. As a result, Cent reduces friction for blockchain adoption and growth.

When a blockchain is first released, if there are not enough parties providing resources to the chain, it will not run as intended or will be less secure than desired. This is a common occurrence for many blockchains, and is an example of where Cent can be introduced as a secure solution for the blockchain to acquire resources. By adding an instant block of security and enhancement, Cent becomes a generalised, responsive security and IKR network for multiple ecosystems.





HOW IT WORKS

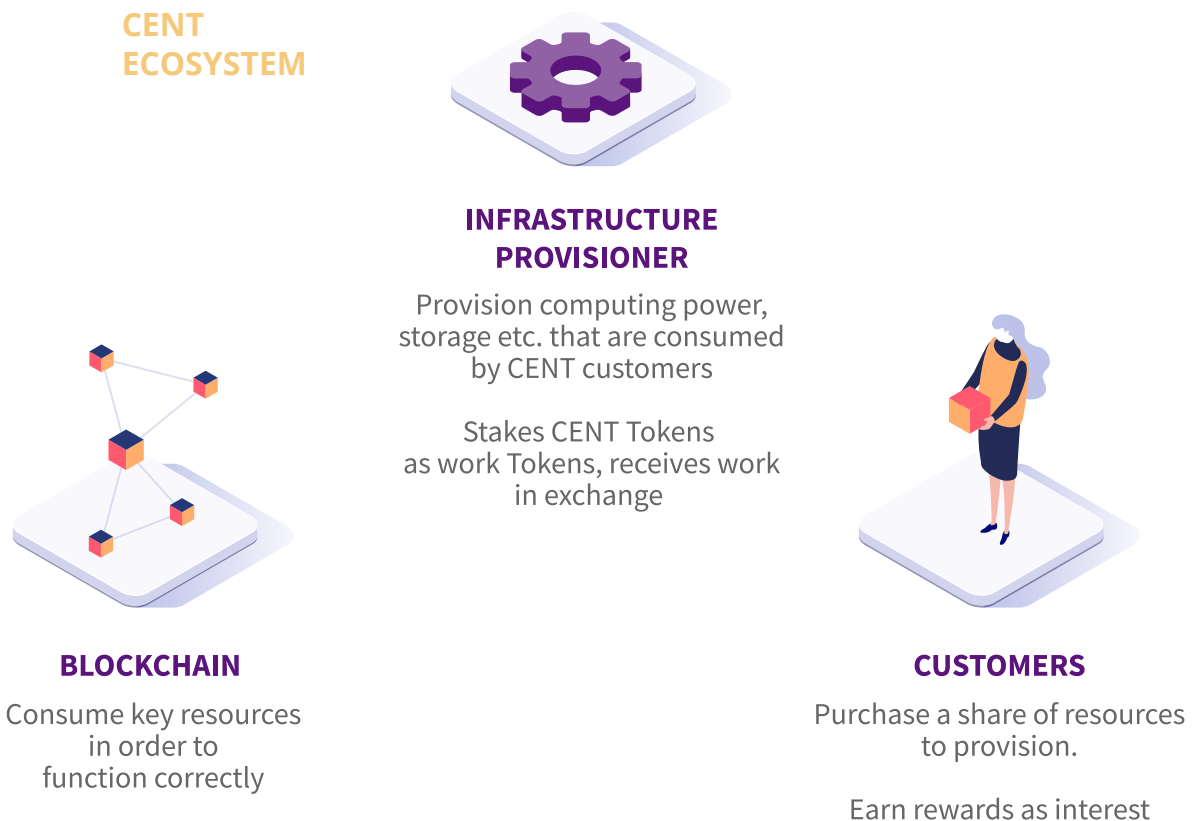
Cent provides Incentivised Key Resource provisioning to selected and approved blockchains, which then consume those resources at a steady rate. Provisioning is provided through customers assets coupled with infrastructure provisioners (IPs), who elect to participate in Cent to maintain a constant stream of needed resources over multiple blockchains.

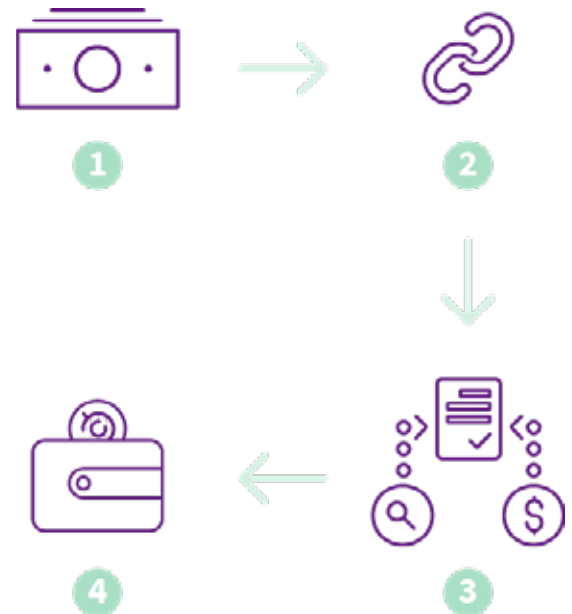
Customers receive rewards as Cent tokens, which are converted based on the spot currency rate from the provisioned blockchains. IPs receive Cent tokens as rewards for provisioning with Cent and can stake Cent tokens in exchange for further work. Thus, a large utility of resources is provided by IPs to be provisioned through Cent to requesting blockchains.

Initially, Cent will be partially centralised as its core technology stack is developed. As its technology stack matures, Cent will progress towards more complete decentralisation.

Dan Morehead, founder of Pantera Capital stated his belief that the combined market capitalisation of cryptocurrencies could easily exceed \$4tn in the coming years (19), and with Masternode assets representing approximately 10% of all crypto-assets (20), this represents a potential \$400bn sector.

CENT ECOSYSTEM

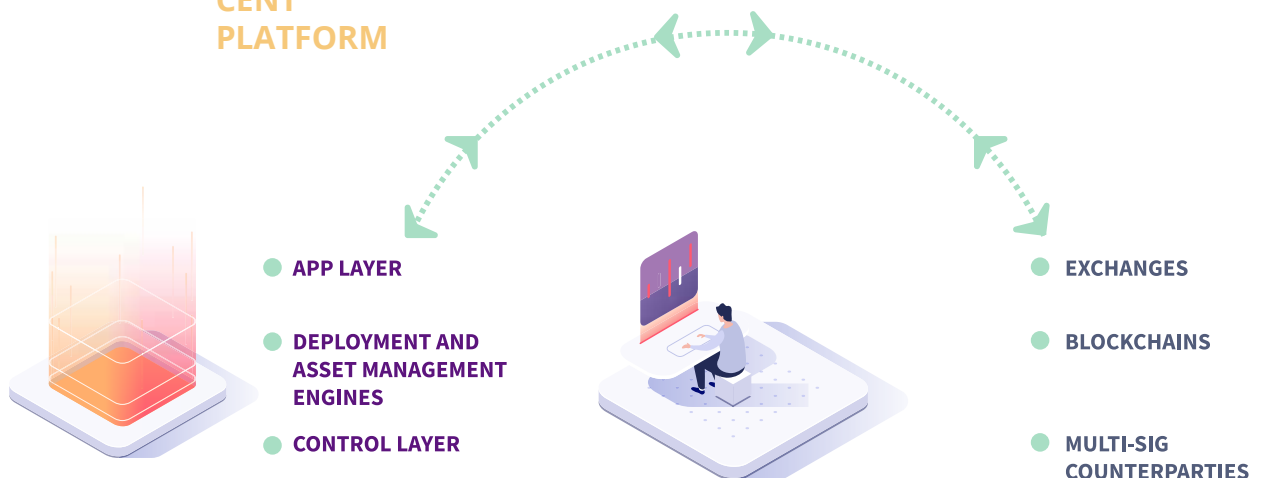




HOW DOES IT WORK

1. You deposit BTC, ETH or USD
2. You select from a choice of available options, which blockchains to dedicate resources to and begin earning from whilst your funds are deployed in IKRSs
3. Your transactions are automated and controlled by smart contracts to ensure fairness and transparency to both you and the infrastructure Provisioner who is responsible for your IKR(s)
4. You get access to transparent, real time reporting and can withdraw your profits as Cent tokens at regular intervals

CENT PLATFORM

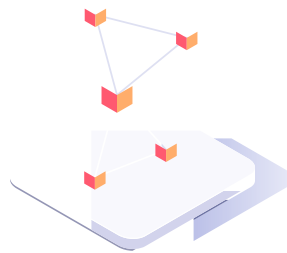




Contract Type	Flexi-Deposit	Capacity Purchase
How were your funds used?	To meet staking/lockup requirements	To meet staking/lockup requirements and source necessary resources for the duration of the contract
How your profit was paid	Some of the profit will be used to cover masternode operating costs and maintenance, the remainder is paid in Cent Tokens	All profits paid in Cent Tokens
Once the contract ends	Initial investment is returned	Original investment was spent when purchasing capacity - it is not returned

EXAMPLE INCENTIVISED KEY RESOURCES

Incentivised Key Resources can be present in the form of computing power, master-nodes, staking wallets or any other necessary performance tool that helps blockchains run effectively. For Bitcoin, a key resource needed is computing power. In Storj's case, this is storage capacity. Additional examples of blockchains and their associated key resource are listed below. These are just a selection of the blockchains supported by Cent.



BLOCKCHAINS



INCENTIVISED KEY RESOURCE

MONERO	.....	COMPUTING POWER
STORJ	.....	STORAGE CAPACITY
SIA	.....	STORAGE CAPACITY
ETHEREUM	.....	STAKING WALLET (EXPECTED 2019)
NEO	.....	STAKING WALLET
BULWARK	.....	MASTERNODES
SONM	.....	MASTERNODES
SKYCOIN	.....	NETWORK CAPACITY



ECONOMIC PARTICIPANTS

Cent customers

Customers can participate in Cent in one of two ways. They can buy an IKR provisioning contract, entitling them to the production capacity of an IKR for a fixed term, or they can place a deposit. In the first case, called a capacity purchase contract, a customer can buy up to 100% of the production of a set of key resources. Subsequently, a higher share of rewards can be paid to the customer for that term. Once the term of the contract ends, rewards stop being accrued since this transaction consists of an actual purchase of resource generation, simulating a traditional mining contract. If a deposit is selected, a customer deposits a sum with Cent as they would with any financial institution. Cent then provisions key resources utilising the customers investment. At the customer's request, interest is paid out over the time the investment is held by Cent. In this case, both original funds and rewards remain in the customers control and so can be withdrawn at any time. The customer retains both liquidity and price exposure to the underlying blockchain, and the customer is not charged aside from a fraction of rewards or a fraction of increased IKR value.

Cent automatically writes all transactions to the Ethereum blockchain using smart contracts for security and trust minimisation purposes. A Cent customer selects the blockchains they would like to provision resources to on a user friendly DApp interface. Cent then deploys IKRs to the selected blockchains, provisioned by its decentralised network of Infrastructure Provisioners (IPs), who supply Cent with the infrastructure needed to deploy Incentivised Key Resources, such as storage capacity or computing power. In return, IPs earn Cent tokens for work done by their infrastructure. Customers earn rewards from the deployment of their assets into the key resources for external blockchains.

Infrastructure Provisioners

Infrastructure provisioners (IPs) join the Cent network to provide the computing hardware & infrastructure needed to create Incentivised Key Resources and choose to do so for economic gain. IPs play a valuable role in the Cent economy, enabling the generation of resources for the benefit of selected blockchains. Cent offers constant utility of IP resources, maximising returns. IPs can also help grow the Cent community as marketers, recruiting new IPs.

The process by which Cent rents infrastructure from IPs is called 'work', and it is essentially the provisioning of a predetermined set of resources such as computing power or storage that the IPs receive payment for. Work is allocated to IPs who stake Cent tokens in proportion to their ratio of total staked Cent tokens. In this way, each IP that helps maintain the network must stake a certain amount of cryptocurrency, proving their authenticity and investment in the network. Cent then provides a financial incentive in the form of Cent tokens to maintain resource provision.

Blockchains

Blockchains use and benefit from Cent as a key resource provisioner. As each blockchain consumes unique resources, Cent provides the chosen resources each blockchain needs through a decentralised IP network. Blockchains reward Cent for resources provisioned in their native currency, which is then passed onto customers and infrastructure provisioners.

Cent selectively lists blockchains on the Cent platform, maintaining a growing blockchain base for resource needs. By screening blockchains, Cent deters ICO scams or hackers from using its key resources on unapproved blockchains. This provides a



verified stream of utility for IPs and a consistent pool of resources for the verified blockchains. As we;; as a high quality pool of blockchains to provision to for customers.

KEY FEATURES

DECENTRALISED AND CONTROLLED RESOURCE PROVISIONING

Decentralised control node layer

A decentralised control node layer allows participants to control their own assets and wallets in which rewards are generated. The control node layer adds permissions to an application so only the customer can control their assets.

Decentralised resource network

Cent comprises a network of infrastructure provisioners and their assorted computing infrastructure. Cent sends work to infrastructure provisioners, who then perform the work and receive payment for that work. The utilisation of an IP's infrastructure provides needed resources to blockchains, which reward Cent, benefiting customers.

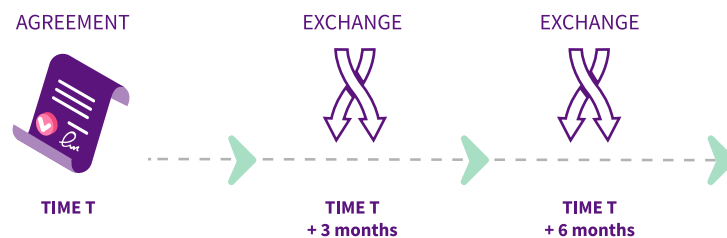
Smart contracts

Customer contracts, payouts and other key details are recorded on the blockchain, with other key details of the app's functionality also encoded in Cent's smart contract.

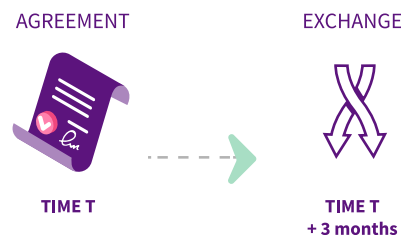
Hedging control to protect from price volatility

Interest earned on an investment can be eroded by volatile marketplace. Volatility in cryptocurrency pricing is not unusual given the infancy of the market. Cent hedging controls offer protection from price volatility by providing access to forward pricing contracts.

MULTI PERIOD FORWARD CONTRACT



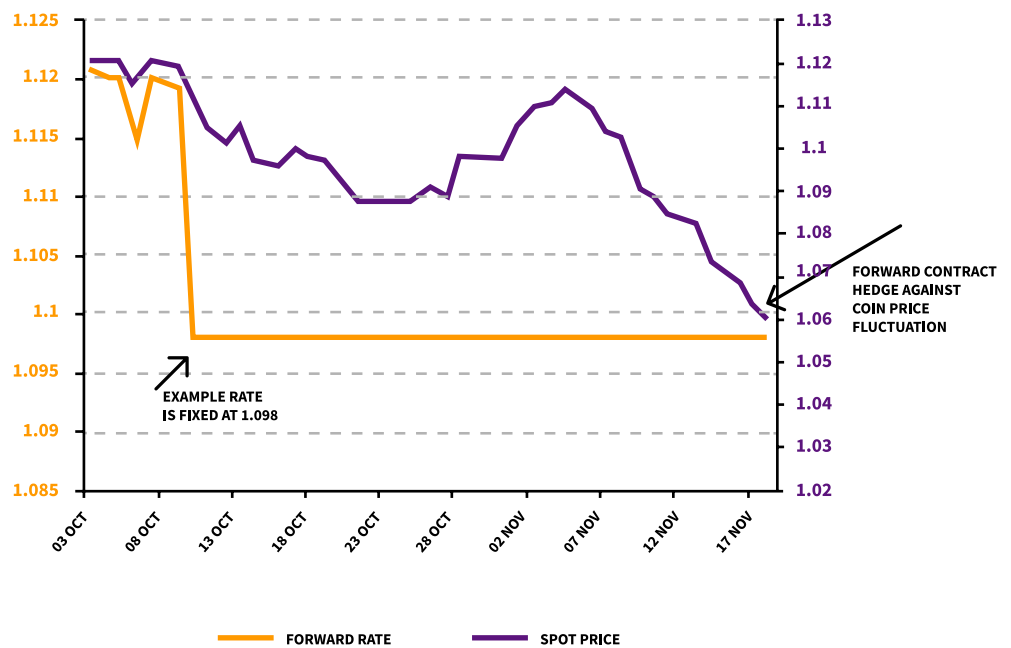
SINGLE PERIOD FORWARD CONTRACT





Gateway

Cent aims to act as a gateway, enabling third parties to run their own resource generation businesses on the Cent platform. New digital businesses will have the ability to white label Cent and create their own brand quickly and easily without having to build a foundation themselves.



CENT TOKEN INTRODUCTION

Tokens provide a basis for an alternative economic model, acting as the primary expression of value for a cryptocurrency. Tokens enable a system of value creation and incentives for organisation of the ecosystem.

Cent tokens are similar to utility tokens in that they are essential for the operation of the Cent ecosystem. Staking tokens earns infrastructure provisioners the right to perform work for the Cent platform, so a more accurate description is work tokens, similar to Augur.

The main advantage of the work token model is, absent of speculators, increased usage of the network will cause an increase in the price of the token. As demand for the service grows, more revenue will flow to service providers. Given a fixed supply of tokens, service providers will rationally pay more per token for the right to earn part of a growing cash flow stream.



INCENTIVES

Work tokens allow Cent to deliver a series of incentives that drive desirable behaviour within its ecosystem. These incentives and the behaviours rewarded are outlined below.

• Desired behaviours to reward

For customers, providing incentives in the form of tokens encourages them to commit to long term deposits with the desire to earn interest as rewards.

For Infrastructure Provisioners their goal of earning rewards for work, or IKRs provisioned, leads them to provide reliable and long term infrastructure provision. These incentives ensure the desired behaviours.

• Undesirable behaviours to penalise

If a customer commits to short-term deposits only, their incentivised reward will be less. By discouraging this behaviour, Cent encourages long-term deposits for increased rewards for all parties.

Given the primary role that IPs play in the Cent model, behaviours must be definitively set to ensure the integrity of the ecosystem. IPs are reprimanded should they provide unreliable or unavailable resources, suffer a breach in security, participate in any attack against the network, supported blockchains or customer wallets. These behaviours are penalised by the loss or reduction of ability to participate in Cent and the removal of tokens as rewards.



TOKEN PURPOSE

Infrastructure provisioners, as Cent token holders, hold the exclusive right to supply the resources that will be consumed by the Cent network, such as virtual private server instances, network bandwidth, computing power and storage space. This is recognised as work within the Cent ecosystem. The IKR infrastructure that is utilised earns rewards from Cent. As the network usage increases with demand for Cent resources, the demand for Cent Tokens is expected to increase as will revenues per token. No price appreciation is implied or guaranteed.

Infrastructure provisioners must stake their holdings in exchange for work, helping to secure the network, stabilise the token price, and create a system of incentives as described above. Work will be assigned in proportion to the ratio of staked Cent tokens held by all IPs. In return for work, providers receive Cent tokens as rewards from Cent, where Cent tokens are used as proprietary currency for payment of IP rewards. Thus, providers will earn a return simply for holding tokens and making their resources available. This model can alleviate issues with high velocity by encouraging demand for and long term holding of Cent work tokens.

Customers can enhance their returns for staking longer. They can also employ hedging strategies within the Cent ecosystem by paying an insurance fee or opting into a forward contract. The insurance provides a good degree of protection of initial investment if their assets drop in value. Once customers have invested their assets into Cent for provisioning, they will earn rewards as native tokens converted to Cent tokens from the blockchains they selected to invest in.

TOKEN DETAILS

Cent has a finite supply of tokens which are all available upon creation of the smart contract. Given that token supply is a fixed characteristic of the application, a finite



supply can help control inflation. The ecosystem contains 100 million tokens to be allocated as follows:

- **50%** of the total will be allocated to the community, particularly to IPs for their IKR provisioning function
- **20%** will be allocated to the team
- **30%** will remain in reserve for bounties, partnerships and future token sales.

The initial 50% sale will be split into five phases for even allocation of tokens. The first sale will be a private sale and presale, raising funds from strategic investors and syndicates, as well as IPs. Each of the subsequent four sales will be a release that distributes tokens in proportion to committed funds in a given window of time. For example, if the initial stake for one of the five sales is 10 million tokens, and eight investors invest 1 ETH each, while two investors invest 6 ETH each, the total ETH invested for the sale sums to 20 ETH. Each of the two investors who invested 6 ETH will receive 6/20ths of the 10 million tokens, or 30% each. The remaining 40% will be equally distributed to the additional eight investors.

CENT USE CASES

Exchanges & custody firms

Cryptocurrency exchange businesses such as Poloniex, Kraken, Coinbase, or Binance enable customers to buy, sell, and trade cryptocurrencies, charging fees for trading and/or processing payments through fiat currency or cryptocurrency. There are multiple offerings and options at exchanges, where each has its own fee structure, service level, trading functions, and selection of coins/tokens. Exchanges could benefit directly from Cent by investing fees garnered for trades in order to earn interest. Funds that are swept into Cent earn interest and can increase returns for the business and its customers.



Startups after Initial coin offering (ICO) sales

ICO startups issue cryptocurrency tokens to bypass rigorous processes for raising company capital. Typically, a percentage of the new cryptocurrency is sold to investors in exchange for startup funds in either fiat currency or other cryptocurrency. Principal funds can be difficult to procure, even within the cryptocurrency marketplace. By depositing in Cent, funds can generate interest and support the startup stage of these ICOs rather than depleting principal funds raised.

Investors

Angel, retail, institutional investors, hedge funds, and professional investors are just a handful of groups that can benefit from participating in the Cent platform. While many of these groups are financially savvy with fiat currency and markets, they may not be as technically familiar with the cryptoverse. Cent provides this user base with a solid and secure base for participating in cryptocurrencies without the technical headache of managing everything from investment security to technical knowledge and asset selection.

Governments

Governing bodies traditionally provide forms of social security for citizens who can no longer work or earn an income in order to support basic needs. Some countries have piloted this in some form of universal basic income (UBI). However, solutions to UBI are not proven, with the largest issue being sources of funding. As options are being explored, Cent can be used as an alternative and supplementary source of revenue in these cases. By investing government funds in Cent's IKRs, interest can be earned that can continually and reliably grow funds available for UBI.



CONCLUSION

Cent represents the crystallisation of a new form of investing, a new way to access cryptocurrency markets and offers a wide range of blockchains a friendly and considerable amount of resource and support. Cent's new financial instrument, IKRs bring to life under one umbrella a range of computing infrastructure that until now will have lain waste but will instead attract consistent income into the lives of a decentralised community of participants and providers. Cent will be used for driving Universal Basic Income, providing a direct return to investors, and prolonging the runway of firms who have ICOed, and may also change the nature of centralised exchanges. Cent truly marks the evolution of income, by introducing decentralisation with low friction via the blockchain.



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20. <https://masternodes.online/#masternode-stats> Total Market Cap (Masternode Coins) \$2.34bn, Total Market Cap (All Crypto-assets) \$219bn (24th September 2018).



APPENDIX

Infrastructure provisioner (IP)

A key resource partner who makes hardware and assorted computational resource available to the Cent network.

Incentivised Key Resource (IKR)

Resources consumed by blockchains, typically that earn emissions/block rewards or transaction fees.

