

ChronoBank

Business Outline

Version 0.91

Summary

ChronoBank is a multi-blockchain project aimed squarely at disrupting the recruitment sector, in the same way that Uber revolutionised the taxi industry and Upwork represented a step change in freelancing. Specifically, we want to bring about a revolution in the short-term recruitment of real-world professions – primarily e-commerce, cleaning, warehousing, industrial, building and various forms of freelancing.

ChronoBank is based on the tried-and-tested model of **timebanking**, in which workers trade hours of labour for goods and services. However, ChronoBank updates timebanking by removing its inflexibilities and limitations. While timebanking requires that one hour of labour be equal to any other, regardless of industry or performance, ChronoBank will leverage the blockchain and associated technology to bring a truly free market approach to the idea – making it suitable for the needs of the 21st-century global economy.

The ChronoBank project has three main stages:

TIME token crowdsale

The initial stage is TIME token crowdsale. Funds collected from the crowdsale of TIME tokens will be used for marketing and development of ChronoBank. TIME token holders will get rewards from various fees as the platform gains adoption and popularity.

Labour-Hour stable coins

The next stage of our project is to create the financial backbone of ChronoBank: national Labour-Hour (LH) tokens. LH are issued by major recruitment and labour-hire companies and linked to average hourly wages in the host country. They are backed by issuer's real labour force and are redeemable for work of any profession from their supply at current market rates. Labour is abundant enough for everyone to have access to it, yet scarce enough to be valuable. It is the most tradeable resource in the real economy.

TIME token holders will receive rewards 1-5% from issuance and 0.15% transaction fees of LH tokens.

LaborX decentralised marketplace

The last stage is to create LaborX, a decentralised marketplace where people in real-world professions will be able to sell labour hours to anyone – just as easily as Uber drivers or Upwork freelancers do.

LH tokens will act as a substitute for payments in fiat currencies and will enable people to be rewarded for their work – without cryptocurrency's signature volatility risk.

Each LaborX participant will have a reputation assigned to them to enable them to access remuneration appropriate to their skill level. The better the individual's reputation based on previous work, the higher the price they will be able to demand for an hour's work, similarly to Upwork's reputation system.

Introduction

ChronoBank has been designed by a consortium of professionals with over 100 years of combined recruitment experience, in consultation with experts who can create the software to leverage blockchain technology to solve real-world business problems.

We already have an existing partnership with Edway Group¹, a large company based in Australia, which we will leverage to kickstart both ChronoBank and the broader idea of time-based cryptocurrencies.

Our goal is to make a fundamental difference in the way people find work and are rewarded for their labour, decentralising the process and moving it outside of the framework of traditional financial institutions. Currently, there are few blockchain apps that operate successfully in the real world. ChronoBank will be a trailblazer for blockchain adoption, working with all of the major blockchain protocols and communities including Bitcoin, Ethereum, Classic, Waves, NEM and other key platforms that may arise in the future.

ChronoBank will create Labour-Hour (LH) tokens on the blockchain, rewarding holders of the TIME token every time one is issued. These LH tokens can then be traded freely on the LaborX exchange, allowing people to monetise their labour through access to markets around the world, with very little friction.

The economic context for ChronoBank

Since the global financial crisis of 2007-09 and its ongoing effects across both the financial sector and the real economy, there has been growing recognition of the shortcomings of our current economic model. Debt-based growth and short-term profit seeking have created an unstable and unsustainable system that is highly vulnerable to external shocks. Low growth is now entrenched in the eurozone, the US and Japan, with emerging large economies such as China experiencing dramatic slowdowns.

Monetary policy has become ever more extreme in the ongoing effort to address this and is now at the limits of what it can achieve. Quantitative easing, a radical policy when it was first proposed, is now considered run-of-the-mill and may well become a feature medium- to long-term. Interest rates are at their lowest ever, and some countries have even adopted a negative interest rate policy (NIRP) in their attempt to encourage consumption-fuelled growth. 'Helicopter money'² is openly being discussed as an option and, in some cases, actively considered by central banks. Bond yields remain at all-time lows.

Meanwhile, national, personal and corporate debt remain at historically high levels and population demographics remain problematic, as the baby boomer generation retires and becomes a net recipient of taxpayer funding rather than a contributor.

Amid such apparently intractable problems, there are opportunities. The suite of new technologies encompassed by the catch-all term 'blockchain' presents the chance to revisit alternative forms of economy – those that have proved successful and popular in the past, but which have been limited by the constraints of the times and local areas in which they have operated. Time-based currencies, an idea almost 200 years old, are one of the most promising of these alternative forms. Reimagined on the

¹ <http://edwaygroup.com.au>

² https://en.wikipedia.org/wiki/Helicopter_money

blockchain, we believe that ChronoBank's version of time-based currencies offers not just a compelling financial investment in the current climate, but a fundamentally different kind of economy.

The current generation who will invest in this have the most to lose from the traditional economy, didn't cause the problems, and have the most to gain from meaningful change.

The technological context

The era of blockchain money was announced in 2008, with the publication of Satoshi Nakamoto's Bitcoin paper, and realised early the following year with the launch of the Bitcoin protocol.

Bitcoin has been, by any accounts, an enormous success. It is an effective and secure form of peer-to-peer online money that has never yet been bettered: despite the innovation that has taken place in the altcoins and the technically superior protocols now available and regular claims of Bitcoin's demise, its network effect and stability have so far been unassailable – and are likely to stay that way medium- to long-term.

And yet, there are limits to what Bitcoin can do. It is extremely good at transferring one kind of value (BTC as a currency). Its borderless nature and status as a reserve currency have made it the currency of choice for crowdfunding within the crypto community. However, Bitcoin's wider adoption in commerce has been negatively impacted by its volatility. This is one of the major factors that have put off e-commerce merchants and bricks-and-mortar stores. As such, the excitement and narrative in the broader fintech world have not necessarily been about Bitcoin itself, but about the blockchain and the opportunities this brings.

ChronoBank will leverage both Bitcoin's status as the preferred form of money within the crypto community, and the functionality available through smart contracts and 2.0 platforms such as Ethereum, NEM and Waves. Blockchain enables totally new forms of money, and the ability to trade them against each other with almost zero friction. In today's uncertain economic climate, there is room for financial as well as technological innovation. ChronoBank will do both.

The time for time-based currencies

We believe that now is the right time to launch this project based on the intersection of the technological, ideological and economic realities we are experiencing. Before Bitcoin, there was no effective way of curating the economic system we will describe below – and, in fact, it is only with the launch of new protocols such as Ethereum and Waves that we can implement the functionality that will make ChronoBank a success. Economically, we are at a watershed moment as the old orthodoxies are questioned, and monetary policy reaches its limit. We do not know how the West's economic problems will be solved, but there is clearly an opportunity at such a point in time. Moreover, there is a moral imperative to look for new ways of creating and distributing wealth, outside of the financial system that is struggling to survive in its current form.

For millennia, gold and silver were the default forms of currency – though money has taken diverse forms throughout history since its use was first formalised (possibly in the Sumerian temple complexes of 5,000 BCE). In the ancient world, grain and cattle were used along with precious metals, and in

different contexts since, anything from cigarettes to limestone boulders, from rum to squirrel pelts have been used as 'money'. Money has generally been backed by some kind of real-world commodity, whether gold, silver or some other physical object. In this respect, fiat money is a very recent aberration.

Monetary economists generally agree that money should ideally serve at least three main purposes. It is:

- A medium of exchange
- A store of value
- A unit of account

Facilitating these functions are six ideal properties:

- Durable – won't decay over time
- Portable – easy to transfer
- Divisible – easy to use in small units
- Recognisable – yet hard to counterfeit
- Fungible – one unit the same as any other
- Scarce – though not too scarce

Naturally, different forms of money over the centuries have displayed these properties to differing extents; what Micronesian Rai stones lack in portability and divisibility they make up for in resistance to counterfeiting and durability, for example. The reality is that money is whatever people agree to use as money and generally this is whatever is most convenient under the circumstances. We believe that time-based currencies offer a compelling alternative to existing forms of money, due to both their innate properties and the nature of the economic realities we face.

A history of time-based currencies

The first time-based currency was created around 200 years ago by American anarchist Josiah Warren³ and British socialist Robert Owen.⁴

The idea of time-based money had roots in the socialist labour theory of value (LTV)⁵ and was later advocated by Karl Marx himself. (The main difference between LTV and traditional capitalism was the idea that cost limits the price and time-based money is the medium of labour time exchange. Profit, rent and interest were considered unjust economic arrangements.⁶)



Cincinnati Time Store/National Equitable Labour Exchange

The Cincinnati Time Store was the first issuer of time-based money, also known as labour notes. These were created in the USA by Josiah Warren in 1827 to test his theories around LTV.

In the store, customers could purchase goods with labour notes, which represented an agreement to perform work. The Time Store charged 4-7% commission to cover its running costs, instead of making profits from sales.

Labour exchanges were thus a new system aimed at fairly rewarding workers instead of simply profiting from their labour. The value of goods was determined by the cost of materials and labour time necessary for production.

Socialist Robert Owen⁷ established the National Equitable Labour Exchange in 1832 in the UK, which also issued labour notes representing hours of work. These ideas have since been developed and used in many different locations and settings around the world.



3 https://en.wikipedia.org/wiki/Josiah_Warren

4 https://en.wikipedia.org/wiki/Robert_Owen

5 https://en.wikipedia.org/wiki/Labor_theory_of_value

6 https://en.wikipedia.org/wiki/Cost_the_limit_of_price

7 <https://books.google.com.au/books?id=PZ1XzaOe9r4C>

Ithaca HOURS

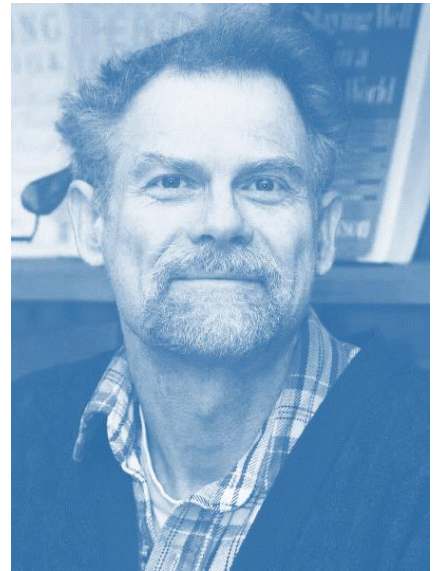
ChronoBank advisor Paul Glover⁸ created the time-based currency Ithaca HOUR⁹ in 1991.

Glover's primary aim was to support the local community of Ithaca, New York, by creating a new alternative to the traditional financial system. Keeping money within the community and away from international corporations and banks was an integral part of the idea, in the same way that other forms of local currency like BerkShares or the Bristol Pound encourage money to circulate within a given geographic area.

One Ithaca HOUR was valued at \$10.00, because this was the average wage in the surrounding Tompkins County – though parties to a transaction can negotiate the exchange rate if they wish. HOURS are real money: they are local tender rather than legal tender and are backed by real people, real labour, real skills and tools. Professor Lewis D. Solomon of George Washington University has written a book titled *Rethinking Our Centralized Monetary System: The Case for a System of Local Currencies* (Praeger, 1996), which is an extensive case law study of the legality of local currency.

Ithaca HOUR notes, in five denominations, can be used to buy a wide range of goods and services including plumbing, carpentry, electrical work, roofing, nursing, chiropractic sessions, childcare, car and bike repair, food, eyeglasses and firewood. They can be used to pay mortgages and rent; restaurants, stores and hundreds of other businesses accept them.

So-called 'timebanks' have been created in dozens of countries, with several hundred present in the US and the UK alone. Having established the viability of time-based currencies and their enduring popularity, we believe that the blockchain can update and improve the idea and bring it to a global rather than local audience.



⁸ <http://www.paulglover.org>

⁹ <http://www.ithacahours.com>

Labour-Hour (LH) tokens

The first stage of our project is creating the sustainable and stable crypto-coins that will act as the financial fuel of ChronoBank. These will take the form of national Labour-Hour (LH) tokens, linked to average hourly wages in the relevant country and backed by a real labour force from large recruitment and labour-hire companies.


As explored above, the idea of time-based currencies is not new.¹⁰ It was invented almost 200 years ago as a viable alternative to traditional fiat money, backed by labour and measured in person-hours.¹¹ Viewed in terms of the ideal properties of money, labour is abundant enough for everyone to have access to it, yet scarce enough to be valuable. It is the most tradeable resource in the real economy.

LH tokens will tokenise labour. These LH tokens will act as 'stable coins' with ultimate inflation protection and next to zero volatility in comparison to Bitcoin or even fiat currencies. ChronoBank will use major and well-established recruitment/HR/labour-hire companies that have an immaculate reputation to back the coins. Due to their quality and our underpinning blockchain infrastructure, LH tokens will be highly liquid and accessible 24/7 via the LH debit card.

National LH tokens

Since ChronoBank will be recruiting workers and engaging labour-hire companies around the world, LH tokens will be issued according to their country of origin (LHAU, LHUS, LHGB, LHEU).

The specific LH token value will always be equal to **the average price of labour per hour** (hourly labour cost) in that country. This feature is important since average hourly wages differ widely from country to country.

Country				
Ticker	LHUS	LHAU	LHEU	LHGB
Token	US Labour-Hour	Australian Labour-Hour	European Labour-Hour	British Labour-Hour

ChronoBank will be the decentralised platform that allows companies to issue and redeem tokens, and that will act as a market-maker to ensure tokens are as liquid as major cryptocurrencies.

Legally, LH tokens will be redeemable vouchers for services at current market rates.

10 https://en.wikipedia.org/wiki/Time-based_currency

11 <https://en.wikipedia.org/wiki/Man-hour>

Once all four major currencies listed above have successfully been launched, it will be possible to issue 'global' LH tokens that will essentially comprise a basket of national LH tokens – similar to the SDR¹² currency basket used by the International Monetary Fund.

Constituents of global LH token				
Ticker	LHUS	LHAU	LHEU	LHGB
Percentage	50%	10%	30%	10%

Sustainability of LH ecosystem

Companies will form syndicates to print common national LH tokens to make the system more sustainable, in the same way that the EU uses a single currency.

For maximum sustainability, there should be at least 10 issuers per token.

Issuers will pay annual fees to a 'guarantee fund' for the outstanding amount of LH tokens. The guarantee fund will be used to buy back LH tokens in case of insolvency of one of the issuers.

More information about economics of ChronoBank ecosystem will be available in ChronoBank White Paper

Advantages of LH tokens over fiat-pegged tokens

These national and ultimately global LH tokens will have many advantages over fiat currencies, or crypto-tokens pegged to or backed by fiat currencies, such as:

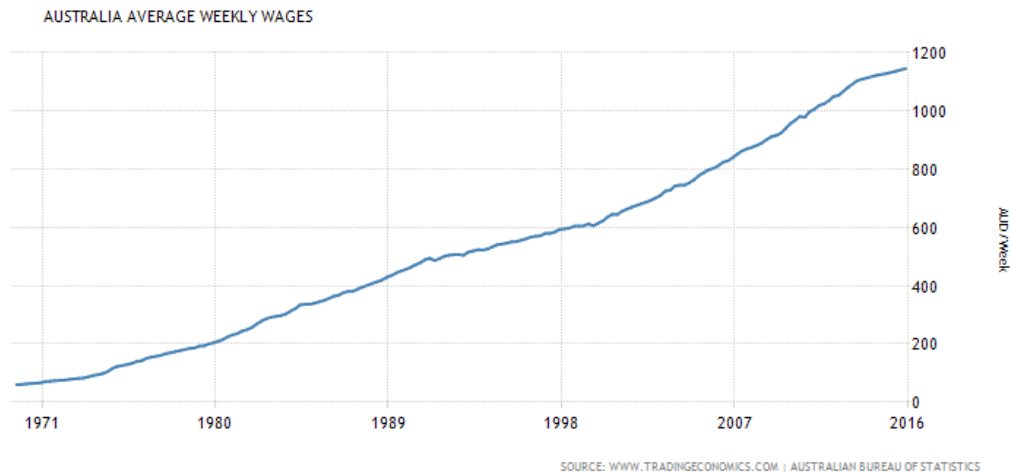
- No banks or financial institutions are involved in the process of creating, circulating or redeeming tokens.
- The value of hourly wages grows with real inflation rates that outpace reported Consumer Price Index.
- The real-terms value of average person-hour price has very little volatility.
- Labour-hire companies can form national syndicates for maximum reliability of commonly issued LH tokens – a form of distributed private money.
- LH tokens will be hyper-liquid and accessible 24/7 via the LH debit card.

12 https://en.wikipedia.org/wiki/Special_drawing_rights

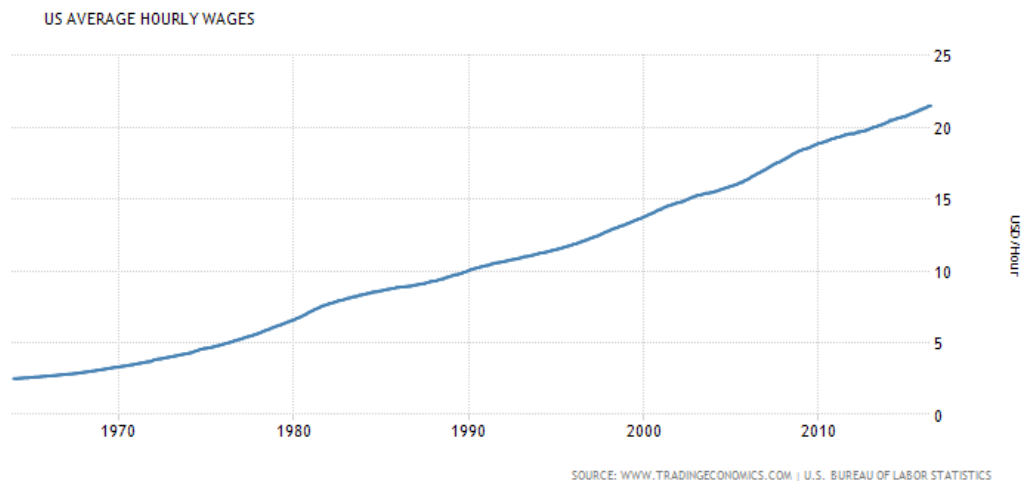
Historical growth of average hourly wages

Historically, average hourly wages have **significant growth in value with low volatility** since weekly wages tend to increase in a steady and sustainable manner.

Australia: annual wage growth of 6.66% per annum.¹³



United States: annual wage growth of 4.23% per annum.¹⁴



Time-based money's value, therefore, grows over time with the rise in average wages. In today's zero-interest-rate environment, this is a very attractive alternative to holding fiat money.

A second major and related benefit is **insulation from the inflation tax**.

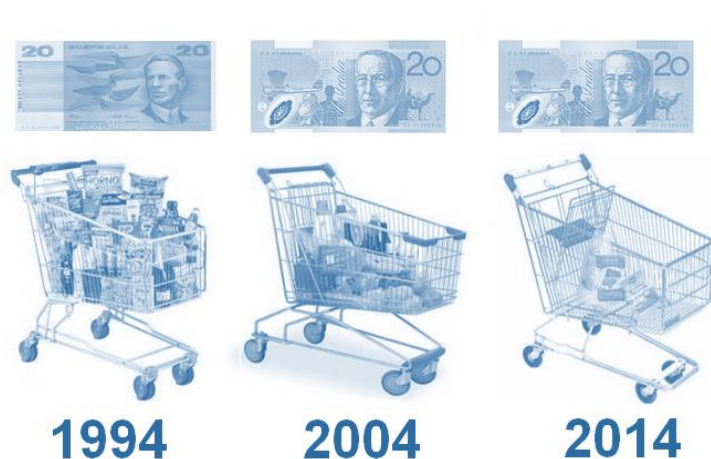
Inflation means there is more money in the economy chasing the same number of goods and services. Thus an item that is worth \$1 this year may be worth \$1.05 next year (5% inflation).

13 <http://www.tradingeconomics.com/australia/wages>

14 <http://www.tradingeconomics.com/united-states/wages>

There is almost no up-front cost to creating money for governments, which generally happens at arm's length via central banks: value can ostensibly be brought into existence at will. The practical upshot of this is that governments can inflate their national debts away since there is less to repay in real terms over time. There are also subtle perception benefits, in that a degree of inflation can mask real-terms wage decreases and make people feel richer. However, the reality is that inflation is harmful to ordinary citizens in a number of ways:

- It reduces the value of earnings and savings, especially if interest rates do not keep pace with inflation.
- It incentivises unsustainable consumption-led economic growth.
- It discourages further saving, thereby placing those on low incomes at greater risk due to their lack of a safety net.
- Unexpected inflation means that creditors are not repaid the amount they are due and that they expected in real terms.

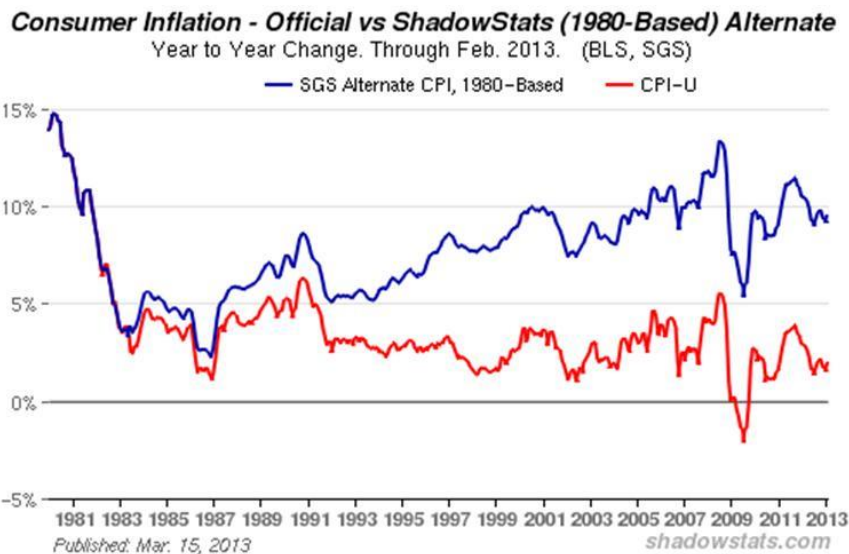


Inflation is the oldest and most insidious method of taxing populations without their knowledge, because:

- It happens so slowly that few people see it.
- It is hidden since there are no tax forms to fill out and no new taxes are added to purchases or bills.
- People actually feel richer, because their salaries and the prices of their houses increase. However, the money and assets they own are worth less.
- It does not require any new laws that people and parliaments could debate and vote down.
- It disproportionately affects poorer people because they keep more money in cash, While wealthier people keep most of their money in inflation-protected assets such as real estate, stocks, gold, etc.

To measure and track inflation, the US government introduced the US Consumer Price Index (CPI). However, the methodology of this has been altered more than 20 times since 1980, rendering it opaque and misleading. The situation in other countries is often the same, partly because governments have the incentive to keep reported inflation as low as possible. CPI, as it stands, does not even address the government's own definition of inflation 'as a process of continuously rising prices or equivalently, of a continuously falling value of money'.¹⁵

Research by ShadowStat.com compares inflation as measured by current CPI, and by the methodology employed in 1980, displaying a marked difference over time.¹⁶



Courtesy of ShadowStats.com¹⁷

Time-based money is a perfect protection from this hidden tax, because:

- Average hourly wages broadly increase with inflation.
- Average hourly wages grow with increasing labour productivity as a result of technological progress and innovation.

Average hourly wages have significantly outpaced official inflation rates over the last 40 years. This makes LH tokens an inflation-proof asset that can underpin a more just and transparent economy, and have wider benefits beyond its own immediate-use cases. Key to making these benefits more widely available is the LaborX marketplace.

¹⁵ <http://www.forbes.com/sites/perianneboring/2014/02/03/if-you-want-to-know-the-real-rate-of-inflation-dont-bother-with-the-cpi/>

¹⁶ <http://www.shadowstats.com/article/no-438-public-comment-on-inflation-measurement.pdf>

¹⁷ http://www.shadowstats.com/alternate_data/inflation-charts

Advantages of LH tokens as stable coins

The revolution started by Bitcoin was simultaneously technological and financial in nature, creating an unprecedented amount of non-government money. At the time of writing, total cryptocurrency market capitalisation is more than \$12 billion. Impressive though this sounds, it is a tiny fraction (0.0048%) of the total wealth held by global financial institutions (over \$250 trillion USD), and therefore one with huge potential for growth in the coming months and years.

The reasons for the rapid growth of cryptocurrency lie in the advantages of the blockchain over the systems used by the traditional financial system:

- Next to zero transaction costs
- Global, borderless transferability
- Trustless peer-to-peer financial network structure
- Pseudo-anonymity of accounts and transactions
- Real-time transparency of all transactions
- Full independence from the traditional banking system

However, the first generation of cryptocurrencies had very limited mainstream use due to their extremely high price volatility: While they provide an excellent medium for transfer, they are a poor store of value. This made them a unique asset class uncorrelated with any traditional financial instrument, but also prevented mass adoption as a substitute for fiat currencies for savings and everyday use by the vast majority of people.

To deal with volatility, subsequent generations of blockchain start-ups have created stable coins pegged to fiat currencies and backed by real fiat money in bank accounts as collateral – Tether being one of the most popular.¹⁸ This approach successfully solved the volatility problem, but still has at least two disadvantages:

1. Fiat-linked crypto coins may bring risks over and above any associated with the existing banking system because they typically use a combination of offshore companies with bank accounts in dubious jurisdictions or companies without a financial licence to store collateral for crypto tokens.
2. Real inflation is much higher than the government-calculated Consumer Price Index (CPI), and significantly erodes the value of money every year. This helps governments to reduce their debts at the expense of their citizens' wealth.

ChronoBank offers an alternative, time-tested solution that will have all the benefits of cryptocurrencies but will lack this key disadvantage of price volatility. Their advantages can be summarised in terms of technical and economic features.

18 See tether.to

Technological advantages:

- **Utility.** ChronoBank tokens can be used in the same way as any other cryptocurrency and integrated with existing merchants, exchanges and wallets.
- **Multi-blockchain solution.** ChronoBank will issue tokens on all major blockchains, depending on market demand from users and the development of new blockchain platforms. Thus ChronoBank will never become obsolete on the grounds that all tokens were issued on a blockchain that falls from favour. The preliminary list of supported blockchains includes Ethereum/ETC, Waves, NEM and Bitcoin itself.
- **Easy-to-use interface.** ChronoBank's wallet will be designed for non-technical users.
- **Hyper-liquid and accessible tokens.** These will be available 24/7 via the LH debit card.

Economic advantages:

- **Independent status.** Time-based money does not involve any banks or financial institutions.
- **Inflation-protection.** Time-based money is linked to the average hourly wage. Average wages have been increasing 4-10% annually for the last 40 years, depending on the country. LH tokens are therefore extremely well insulated from inflation in comparison to fiat currencies and have historically enjoyed extremely low volatility in comparison to other financial assets such as gold.
- **Real-world backing.** Time-based money is backed by the real labour force and is redeemable for real person-hours.
- **Decentralised system.** Local communities, timebanks and labour-hire companies with excellent reputations and strong financial standing will be the backbone of this alternative financial ecosystem.

Together, these technological and economic properties will make LH tokens and the LaborX exchange ideal solutions for a diverse range of individuals and organisations, lending ChronoBank's products to a broad set of use cases and applications.

Guidelines for calculating LH prices

Labour-Hour (LH) tokens are intended to be a highly stable coin, backed by something tangible and of real value. We have based the token on the cost of labour in each country. For example, the USA has LHUS, which is denominated in US dollars. Calculating labour cost involves a number of factors, including:

- Industrial agreements
- Statutory on-costs (at state and national levels)
- Workers' compensation levies
- Social Security tax/superannuation
- Payroll tax
- Casual loading

We will draw our raw figures from official statistics bureaux in each country and then add a constant loading percentage to account for all the statutory on-costs and taxes that are paid by the employer in each country.

The labour hour cost will always lag behind the current one by a year at most, due to the nature of statistical reporting. The current (not indexed) rates in each country, denominated in their national currencies, are:

- USA: \$25.79 USD/hour
- Europe (EU-28): €25 EUR/hour
- UK: £13.89 GBP/hour
- Australia: \$39.89 AUD/hour

Each of the above figures includes:

- Wages and salaries in cash
- Regular bonuses
- Salary sacrifice amounts – the value of goods and services obtained through salary sacrifice arrangements, where an employee chooses to forgo a proportion of wages or salary in cash in return for goods and services

The above figures exclude:

- Payments in kind – the value of non-cash goods or services provided to employees (fringe benefits)
- Employers' contribution in respect to their employees paid to social security and pension schemes, and also the benefits received by employees under these schemes (e.g. pension and superannuation)
- Severance and termination payments

There will also be a constant added to the Labour-Hour cost to represent all the costs associated with employing anyone:

$$\text{LHV} = (1+Y)X$$

LHV is the published value of a labour hour. $0 < Y < 1$ where Y is the figure reflecting all local on-costs to the company that employs people. X is the rate quoted above, different for each country.

More information will be available in ChronoBank White Paper

Guidelines for selecting issuers of LH tokens

ChronoBank will take great care when screening the recruitment/labour-hire companies we work with to ensure that every labour-hour issued by the platform can be redeemed in good order. We have set in place minimum requirements that will apply to any company that will be working with us:

- The entity is incorporated in the territory in which it operates.
- The company has been in operation for at least three years.
- The company has at least 50 full-time or full-time-equivalent workers.
- The company is currently profitable.
- No adverse information is available about the company.
- Upon issue, Labour-Hours will be added to the secured section of the company's debt to guarantee they are ranked above trade creditors in the event of administration/liquidation.
- To minimise exposure, only one month of available Labour-Hours for any one company will be exchanged.
- At the start, no incoming company will represent more than 20% of total national Labour-Hours on the issue. It is ChronoBank's priority to promote diversification such that no incoming company will constitute more than 1% of the total issued hours within one year of the project's start.
- No single sector of the company's operations (for example, the construction sector) will represent more than 20% of the total Labour-Hours on the issue.
- Not all of the funds from the sale of Labour-Hours will be available to the company. A small percentage of every issue will be held in a liquidity reserve.
- The liquidity reserve will be an escrow account that will protect Labour-Hours against future shocks to the system in the form of company bankruptcies or industry sector downturns.
- At the end of each month, depending on circumstances, the company is either asked to redeem the Labour-Hours back into fiat currency, or the hours are rolled over to the next month.
- The timeframe of a month is chosen as it will provide liquidity for the issue and redemption of Labour-Hours, While minimising the risks to only a month's worth of LH.

Applications of LH tokens

LaborX main currency

The LaborX exchange will act as the financial heart of ChronoBank, with LH tokens the ‘blood’ or fuel of the broader ecosystem.

LaborX is a decentralised marketplace where professionals will be able to sell their person-hours to anyone else, just as easily as Uber drivers or Upwork freelancers find work. LH tokens will act as a substitute for payment in fiat currencies, enabling people to be rewarded for their work wherever they are in the world. They will be paid transparently and easily due to the properties of the blockchain, but without the signature volatility risk entailed in most cryptocurrency transactions.

Due to the volumes traded and ChronoBank’s own market-making activity, LH tokens will be highly liquid. They will also be accessible at any time via the LH debit card.

Applications for HR/recruitment/labour-hire companies

ChronoBank will allow companies to become their own central bank, by issuing vouchers that will act as private money. There is a long history of private money issuance, particularly in the US, with companies, stores, churches and even individuals issuing their own forms of money. This practice has since been discontinued, but blockchain technology lends itself to this application very well, and it is highly likely that companies will once again start issuing private money – not least in the form of loyalty points that are transferable and tradeable beyond the company in question.

Time-based currencies are another variation on this idea. Legally, LH tokens are vouchers or coupons for labour, provided by HR/recruitment/labour-hire companies. Therefore, issuing LH tokens on the ChronoBank platform is essentially selling their clients’ labour and getting paid in advance, long before the tokens are actually redeemed for the services they represent.

Due to the tax and regulatory status of time-based money, it is likely that this form of private money will be treated differently to other forms that more closely resemble fiat money (though regulation lags behind the technology and is continually changing). Thus there may be further benefits in terms of a lack of friction and freedom from regulatory oversight.

Applications for the cryptocurrency community

There are several major categories of people who routinely use cryptocurrencies:

- Day traders and short-term speculators
- Medium- and long-term investors
- Miners
- Ideological users, who are willing to support alternatives to the traditional financial system (libertarians, anarchists)
- Users from countries with unstable currencies and financial systems (Argentina, Greece)

- Users from countries with strict capital controls (China)
- Users from among the world's 2 billion 'unbanked' or 'underbanked', who do not have adequate access to traditional banking services

For these categories, using LH tokens will be beneficial in many ways:

- It is a secure store of value for those looking to trade bitcoins, but without the risks of keeping funds on exchanges. Moving LH from exchanges to their wallets after a trade is completed makes it possible for traders and miners to avoid the kinds of huge losses incurred in the collapse of MtGox and the recent Bitfinex hack.
- Users have the ability to store fiat-linked value without a bank account, especially in countries where opening an account in major currencies like USD/AUD/EUR/GBP is difficult or impossible.
- Users can transfer value with the stability of fiat currencies, but without the limitations of existing money transfer services, local capital control rules or interference by any intermediaries.
- Cold offline storage of stable value in USD/AUD/EUR/GBP provides inflation protection and zero risks of loss from hacking or theft.

Applications for exchanges

Crypto exchanges are still a relatively new phenomenon and are forced to adapt to the changing regulatory and security environments. While there have been huge advances in the professionalism of these organisations over the past two years, the evolving picture raises complications for existing and emerging exchanges.

Problem

In many jurisdictions there may be one or more obstacles for crypto exchanges that wish to operate directly with fiat currencies, including:

- A full financial licence is required and is too expensive to obtain and maintain. This is typically the case in the US.
- Cryptocurrencies may be absent from local legislation entirely or poorly covered. Obtaining a licence is, therefore, impossible and operating with fiat may be illegal (as is the case in many developing countries).
- Opening a bank account for companies dealing with Bitcoin is hard or impossible due to the hostile attitude of the local banking community. This has generally been the case in the UK, for example.
- Exchanges' bank accounts can be used for money laundering by criminals. BitInstant, a New York exchange co-founded by Charlie Shrem, encountered this problem.

In addition to these issues, operating with international wire transfers brings significant problems, such as:

- Huge costs, especially as a proportion of smaller transfers. The typical flat fee may be \$25-50 USD.
- The long settlement period of international wire transfers – often up to 7 days.
- Substantial costs for currency conversions. Fees are in the region of 1-5% for major currencies and up to 20% for currencies from emerging economies.

Solution

By using LH tokens, it is possible for exchanges to avoid these obstacles entirely. Customers can deposit, withdraw, trade and store fiat-linked value using LH tokens, just as they can with ordinary cryptocurrencies, with the following benefits:

- Fast and secure, with very low fees
- No bank account needed
- Exchanges can use cold storage for most of the customers' funds for maximum security

Another important benefit is that adding trading stable coins to crypto-only exchanges creates significant turnover and revenue for these pairs, thanks to new hedging and arbitraging opportunities for traders.

Applications for start-ups

For many start-ups and entrepreneurs, LH could be a useful addition to – or ultimately a replacement for – Bitcoin or other volatile currencies for the following reasons:

- LH offers a stable alternative for money remittance start-ups that use Bitcoin to transfer value between countries, with the double conversion from local currency of sender to local currency of recipient. Using LH will help to avoid the risk of sudden BTC/USD price swings.
- LH will be a fast and convenient way to store revenues, maintaining their value without the risks of Bitcoin's volatility or the inconveniences of fiat exchanges.
- The fiat value of LH tokens is linked to average hourly wages and is extremely stable in comparison to Bitcoin's value. LH is, therefore, a safe and convenient means of pricing.

Labour-Hour life cycle

Issuance process

ChronoBank will conduct due diligence for issuing labour-hire companies to ensure that issuers have an immaculate reputation and history, a solid financial record and that they are profitable and sustainable.

Labour-hire companies can form syndicates to issue national LH tokens, significantly increasing the supply and reliability of the token because it will be in the best interests of each company to conduct peer-to-peer due diligence to ensure the financial stability of every participating company.

To issue a batch of LH, the company writes a guarantee letter for future redemption of that batch. Thus LH tokens are private money, guaranteed by the issuing company and audited by their peers as well as by ChronoBank.

Redemption process

LH tokens will be redeemable vouchers for labour provided by issuing companies, at current market rates from their price lists. Prices in price lists are quoted in fiat money and average labour hours.

Because labour-hire costs grow with average hourly rate costs, prices in LH will be very stable in comparison to prices in fiat currencies.

Redeemed LH are converted according to the agreement between the user and the labour-hire company that provides the labour force of selected professions, and that accepts LH tokens as vouchers for payment for their services.

Exchange and market-making

With the help of ChronoBank, issuing companies will act as market-makers for LH, or will use the services of professional third-party market-makers to ensure LH are as liquid as the most tradeable cryptocurrency pairs.

It will be possible to convert LH to Bitcoin, Ethereum or fiat-pegged coins in at least two ways:

- Within the ChronoBank wallet, with a very low bid/ask spread
- At independent cryptocurrency exchanges, using third-party market-makers who will create maximum liquidity

Preliminary list of supported currencies:

- LH-BTC
- LH-ETH/ETC
- LH-NEM
- LH-USDT (Tether)
- LH-WAVES

LH technology

Detailed information about ChronoBank architecture and smart contract technical specifications will be available in ChronoBank White Paper

A multi-blockchain solution

To achieve long-term functionality and success, ChronoBank will issue LH tokens on both existing and new blockchains, depending on market demand from users and the development of new blockchain platforms. Therefore, if a new blockchain protocol emerges and dominates the market in the future, ChronoBank will create tokens and decentralised applications on this platform to meet the evolving market's demand.

ChronoBank will never become obsolete like some other crypto start-ups, which have chosen a single blockchain and issued all of their tokens on a protocol the market ultimately deemed unsuccessful.

Ethereum/Classic blockchains

ChronoBank will create decentralised applications (dapps) for token users and issuers, with a user-friendly interface and secure transactions using escrow smart contracts.

As soon as it is safe to do so, decentralised exchanges will appear on ETH/ETC blockchains, and our dapps will be integrated with their smart contracts and APIs.

ChronoWallet is a Mist/Parity dapp for the safe and convenient use of ChronoBank tokens. Features include:

- Buying/selling tokens with one click. It will be possible to trade LH tokens in a safe and decentralised way using escrow smart contracts
- Sending/receiving tokens
- Redemption of tokens
- Easy-to-use interface with balances in LH and valued in terms of national currencies. For example, if the user needs to send LH for \$10, he/she will be able to enter \$10 in the form, and an equivalent amount of LH will automatically be selected in the next field

ChronoMint – is a dapp for companies to issue and redeem tokens.

In addition, ChronoBank will develop market-making software to ensure minimal spreads and maximum liquidity, to facilitate the exchange of LH to any liquid ERC20¹⁹ tokens.

¹⁹ <https://github.com/ethereum/EIPs/issues/20>

Waves blockchain

As soon as the Waves platform is ready, ChronoBank will create **ChronoWallet** and **ChronoMint** dapps for token users and issuers, similar to the above model proposed for Ethereum and with the same key features.

In the case of Waves, the decentralised asset exchange will allow for fast and secure trading between LH tokens and any other Waves token for which there is a market. ChronoMint will again include market-making software to provide minimal spreads and maximum liquidity for Waves' built-in peer-to-peer exchange.

Solution for the Bitcoin blockchain

Assuming there is demand from the crypto community, it will be possible to create LH tokens on Bitcoin's blockchain. Bitcoin was the first blockchain and remains the most secure and reliable. Implementation of time-based money will be achieved using the Omni Layer platform, similar to the way in which MaidSafeCoin²⁰, Synereo²¹ and Tether²² were created. Users will be able to use LH with any Omni Layer-enabled wallets like Omniwallet or HolyTransaction.

More information will be available in ChronoBank White Paper

20 <http://maidsafe.net>

21 <https://www.synereo.com>

22 <https://tether.to>

LaborX decentralised marketplace

The second stage of ChronoBank is to create LaborX, a decentralised marketplace where those in the real-world professions will be able to sell their person-hours for LH tokens or other crypto on a fully decentralised basis.

ChronoBank's model differs from classic timebanking in at least one critical aspect: in the traditional form, one hour of labour is equivalent to any other hour of labour. A one-hour of work is uniformly interchangeable, no matter what form it takes. While this may work relatively well in small and limited local economies, or in specific instances where there is an emphasis on a particular type of work (such as elderly care), it is entirely unsuitable for the needs of a globalised labour marketplace.

At the same time, the overheads of administrating a more complex system that would reflect these realities are prohibitive for the kinds of local communities that have adopted traditional timebanking successfully to date. This is why traditional timebanking has remained limited in scope: it simply lacks the flexibility to scale.

A blockchain-based free market approach will allow ChronoBank to differentiate between labour of varying forms, as well as allowing workers to be ranked according to skill and performance. Thus the one-size-fits-all paradigm of timebanking has been updated to take into account such factors as training, experience, average hourly wages in different sectors and countries, and performance.

The ChronoBank project is backed by Edway Group, a large company in Australia with 400,000 customers on its books, who will be the first potential users of LaborX as a testing ground. LH tokens will act as a substitute for payments in fiat currencies and will enable people to be rewarded for their work on a decentralised basis, but without the signature volatility risks of cryptocurrencies.

LaborX has been designed with great care to present a low-friction system optimised for ease of use, to make sure that the exchange of labour time for LH tokens and vice versa is efficient and straightforward.

The key to ChronoBank's distinctiveness and its appeal over traditional timebanking is the use of a reputation system. Reputation is assigned to each participant, allowing them to secure appropriate compensation for their hours of work. The better the individual's reputation, based on feedback for previous work, the more they will be able to command for their next hour. Initial reputation will be set based on the individual's experience within the partner company. For those who have not participated in the system in any previous capacity, a nominal, average reputation is assigned. Every care is taken to encourage the user to increase their reputation and maintain it at the highest level.

LaborX will, therefore, represent a truly global and free market approach to timebanking by leveraging the fully decentralised architecture of the blockchain, with the additional benefit of significant initial adoption by key labour-hire companies.

One major problem this mitigates is that of the network effect, which has hampered cryptocurrency adoption to date, the issue being that a given technology is often not worth adopting by newcomers until a critical mass of people already use it. By 'bootstrapping' ChronoBank using Edway's labour force, we are able to bring significant users and utility to the system. This, in turn, promotes a liquid market for LH tokens on LaborX, minimising slippage and other inefficiencies of thinly traded markets, and bringing wider benefits to the cryptocurrency community (see further below).

On Ethereum and blockchains that support smart contracts, TIME token holders will be rewarded with **transaction fees** from any LH 'send' or 'redeem' transaction, including LH payments on LaborX. Therefore, the greater the volume on LaborX, the higher investors' rewards.

Conclusion

ChronoBank is a mass-market application of blockchain technology that seeks to disrupt the labour-hire industry. It is an implementation of time-based currencies that seeks to update the principles of the well-established phenomenon of timebanking, so they are suitable for application to the global economy in the 21st century. We believe that the current economic realities and the advantages of blockchain technology make time-based currencies the foundation of an attractive alternative economy. Key features include:

- TIME tokens, to be issued to ICO investors.
- National Labour-Hour tokens, representing average cost of a person-hour, to be issued by ChronoBank via large labour-hire companies and other organisations. Since they represent labour, and average wages tend to increase in line with or above inflation, LH will provide an excellent store of value.
- LaborX exchange to enable LH trading. ChronoBank will act as a market-maker to ensure excellent liquidity, making LH an attractive alternative to fiat-pegged crypto coins.
- Rewards for TIME holders in the form of transaction fees and issuance fees that derive from new LH being issued. These will be distributed to TIME holders either as rewards or through regular buybacks of TIME tokens.