LIVEN

The world's first global food economy -
for everyday use, by everyday people -
powered by the blockchain

May 24, 2018

Abstract

Current shortcomings of cryptocurrencies include price volatility, difficulty of use, and incompatibility with existing financial infrastructure, making them unsuitable for everyday use. Liven is an existing mobile payment and loyalty platform for the food and beverage industry that seeks to solve this fundamental problem with a universal network rewards currency, whereby users participate in an economy in which they transact in-app and receive a reward to be used within Liven's network of merchants. Users have the option of saving their earnings in their Liven wallet or donating to a nominated non-profit or community organisation. The Liven Network is a symbiotic three part ecosystem designed to benefit all participating entities and optimised for rapid adoption, accessible natively through the Liven mobile app, or publicly via API. LivenCoin (LVN) is a business backed token; dynamically price-stabilised and governed by a decentralised reward protocol. The LVN platform, and the LivenPay API will be purpose-built for immediate adoption by everyday people, accessible to businesses and consumers through integration with fiat networks, and ready for transacting at thousands of partner merchants on day one of implementation.

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Executive Summary

Contemporary cryptocurrencies fail to function as reliable mediums of exchange for purchasing goods or services due to both their extreme price volatility and a lack of adoption by merchants and consumers. If users of these currencies cannot have confidence in the stability of their purchasing power then we believe mass adoption is unlikely to occur. It is difficult to convince merchants to adopt new payment methods due to associated costs and complexity, and similarly challenging to overcome consumers' fear of change. Despite the flood of interest in blockchain, applications based on it (crypto wallets for example) are not user friendly, intuitive or accessible to the everyday person, making them incompatible with real world application. These are just some of the barriers preventing adoption of cryptocurrencies by the mainstream.

Liven is a universal restaurant rewards network with integrated payment facility aiming to consumerise cryptocurrencies for everyday people by solving these problems. Since 2014 Liven has grown to service 200,000+ users and 1,000+ venues in Australia's two largest cities, Sydney and Melbourne. Processing millions in payments, Liven rewards users with its network currency for every transaction they make. The next step in the evolution of Liven is the addition of blockchain to this payment system through the use of Liven Token or LVN.

The unique features of the Liven Platform and the existing network of merchant partners and users will seek to solve both problems identified above. First, the economic design of LivenCoin reduces price volatility through a unique, internal conversion rate which gives LVN intrinsic value - every LVN in circulation possesses purchasing power that can be used within the Liven Platform. Second, the addition of the cryptocurrency payment gateway will be unnoticeable to merchants, as these merchants are still paid in fiat. These features combined with Liven's presence in hundreds of venues and large, active user-base allow Liven to overcome the current barriers preventing cryptocurrency adoption at a retail level.

Liven's decentralised rewards protocol is governed by a smart contract and enables rewards to be disseminated indefinitely despite the limited LVN supply, and encourages corrective behaviour with any external markets that may arise, giving the stability necessary for everyday use. Parallel to the payment gateway is the donation wheel, enabling users to share rewards with nominated charities with complete transparency. LVN earned by transacting can be donated directly to public buy orders posted by charities looking to fund a project or initiative.

1.   Introduction

Cryptocurrencies as a Medium of Exchange

A common criticism of contemporary cryptocurrencies is that they are unlike true currencies as they cannot be easily used as a reliable way to purchase goods and services due to their extreme price volatility, and the lack of available merchants who accept payment in such currencies.

There are three primary functions currencies should serve; to be a store of value, a medium of exchange and a unit of account. When a currency suffers from significant price volatility its ability to meet all three of these functions is severely impaired. Mass adoption will not occur if people do not have confidence that a currency's purchasing power will remain stable.

The top cryptocurrencies all suffer daily fluctuations in price that make exchanging them for physical assets or services extremely problematic. A small business owner could not feasibly price a menu or service sheet in Bitcoin when by the end of the business day the price could have fluctuated by as much as 15% in either direction.

The volatility of a currency can be measured by means such as the standard deviation of daily returns. Fiat currencies such as the US dollar have a standard deviation of daily returns (30 day) between 0.5-1%, while the cryptocurrency with the highest market capitalisation and trade volume, Bitcoin, measures at around 7%[1].

Many businesses such as retailers could not operate with currencies such as Bitcoin as their margins are simply too small to absorb the swings in value suffered by such currencies. The retail industry averages only 2-5% margin, and restaurants similarly operate with between 3-5% profit margin, hence a 5% day to day fluctuation in the value of a currency could be the difference between posting a profit or a loss[2].

Fragmented Incentive Marketing

Beyond the above issues with the cryptocurrency and blockchain ecosystem lies a longstanding problem with rewards and loyalty programs. In their current form, the loyalty systems used by businesses globally are fragmented and broken, existing within their own insular economies and failing to provide merchants with truly holistic solutions.

Third-party loyalty systems offer minimal value to customers and businesses, but instead obscure a revenue raising mechanism for centralised payment networks and

banks. These systems largely benefit those third-party organisers, with users encouraged to share valuable data and businesses engaging with programs that have minimal demonstrable return. Meanwhile, the middleman loyalty service reaps the benefit of increased user acquisition and retention with businesses fronting the costs and customers missing out on any tenable reward for their loyalty.

Attempts by small businesses to build and integrate their own loyalty or rewards platform are often extremely costly to implement and cost tens of thousands of dollars to continually operate, while consumers have little to no interest in participating due to the hassle of keeping up with a different program for each business and the inflexibility of the rewards received.

This results in a world where consumers are constantly asked (often unsuccessfully) to carry multiple loyalty cards and download hundreds of separate loyalty applications, just to be issued 'points' which can only be used within their respective loyalty economies, such as airline miles only being able to be used for flights, or cafe points for coffee.

While full-gamut loyalty program options exist, they fail to provide truly holistic solutions for businesses from across the three pillars of loyalty, payments, and marketing. There is currently no digital marketing platform existing within a payment network, meaning that paying fees to a card provider or bank draws ever closer to being money for nothing.

Usability and Compatibility

Adoption and widespread use of cryptocurrency is directly hindered by the prevailing utopian problem with cryptocurrencies. While their creation in 2009 bore the promises of a decentralised future with borderless communities of asset-sharing, open-source international business as standard, and no centralised control of owned or managed assets, the modern reality is far from this.

We currently have an entirely alternate way to distribute, measure, and exchange value from individual to individual. Cryptocurrency is the first feasible replacement for traditional currencies ever created, but almost no-one uses it. As has been seen with previous groundbreaking innovations such as the Internet or cloud computing, widespread success directly correlates with user enablement and engagement.

Technology requires reciprocity and compatibility to make progress - Apple's Macintosh would not have gone far if it could only do word processing and share files with other Macs. Current cryptocurrencies foster neither compatibility or reciprocity. Users of decentralised applications are required to deposit sovereign-backed currencies to exchanges, and must purchase cryptocurrencies or utility tokens to gain access to the

platforms in question. Furthermore, once the user has concluded their interaction on the decentralised web, or is required to liquidate cryptographic assets, they must exit to fiat currencies to continue making purchases.

This shows that these systems are designed to interface only with other cryptocurrencies and cryptocurrency-based platforms, and consumers around the world are not interested in re-learning how to use money. Blockchain foundations and decentralised applications must interface with the existing world to accelerate public adoption of the technology, and bring consumers and businesses in to drive volume to these products and services.

If the goal of cryptocurrencies and distributed ledger technology is global decentralisation, the walled garden approach is slowing us down. Foundations and applications need to use centralised infrastructure and resources to make blockchain work for normal people and normal businesses.

2.   The Liven Network

The Liven Network provides a feasible solution to the above problems, bridging the functional gap between cryptocurrency and consumer-to-business transactions by seamlessly integrating a token economy into a market leading consumer payment platform.

Liven currently exists as a payments ecosystem that rewards users for every transaction they make within the network of Liven merchants. A user purchases a meal by paying their bill through the Liven mobile app through a linked credit or debit card. Upon payment, the user immediately receives a percentage of their bill as a reward, earning 'Liven Cash' which they can at present donate to a nominated charity or keep in their Liven Cash wallet. If not donated, this Liven Cash is added to the users account, and they can put it towards their next bill when dining at any Liven partnered venue, settling the entire bill with Liven Cash or in combination with their linked card.

The new and updated Liven Gateway aims to provide a dual market system to process transactions in fiat currencies and LVN tokens at thousands of partner merchants on launch day, while rewarding users with LVN tokens. Through the backend, as transactions are being reconciled, merchants can elect to have accounts receivable paid in either LVN or fiat currency - regardless of the user's choice of payment method.

We believe these factors, in combination with our internal economic model, will create a functional and user-friendly cryptocurrency based on a working model that is ready for immediate public adoption at launch, and is insulated from manipulation and volatility

at the core of it's design. The new platform will continue to be bolstered by the social enterprise aspect of sharing rewards with charity, enhanced by the transparency of the blockchain.

Transparent 'LVN to Fiat' Conversion Rate

The economics of the LivenCoin network have been designed in an attempt to achieve price stability. All payments made in LVN through the Liven gateway are converted to fiat and paid to the merchant according to the platform's internal LVN to fiat conversion rate, further described in the token economics section.

This internal conversion rate is not based on a free-floating value determined by an external market such as a crypto exchange, but is instead determined by a decentralised protocol that adjusts the purchasing power of each LVN based on the limited supply and its theoretically unlimited demand as a function of the total amount in circulation and the total amount held under smart contract in Liven's reward cache at any moment.

This transparent conversion rate gives both the consumers and merchants confidence in LVN's inherent purchasing power at any given moment (i.e. what goods and services you can purchase and consume with the LVN tokens you currently have). This also provides resilience to volatility, as users are less concerned about the LVN they hold dropping in value rapidly, as each token possesses spending capacity in the growing number of Liven partner venues that will accept payment through the app.

Unlike a currency backed by gold or oil, where only a bank or large body could reasonably claim the intrinsic value of the token, LVN tokens can be exchanged for food in thousands of locations, accessible to everyone, everywhere, through the Liven platform. In this way, we can achieve truly crowd-sourced liquidity and market trade volume.

A Large Network of Participating Merchants

It is generally difficult to convince small or medium enterprise (SME) owners to adopt a new 'crypto-payment' method due to its associated costs and complexity. Most SME owners are not particularly tech savvy, and do not possess wider knowledge of cryptographic assets, nor a desire to add another complicated layer to the operation of their business. In addition, it is virtually impossible to convince these business owners to learn about and implement the necessary facilities to start accepting a new cryptocurrency, especially if it is extremely volatile.

For any payment solution to reach mass adoption, a critical number of users must be gained first. This is the "chicken and egg" causality dilemma - consumers will not change

their behaviour to adopt a new currency or form of payment if few outlets accept it, but those outlets will not invest the required time and resources to accept a currency with little consumer demand. This dilemma is not unique to payment focused solutions. In fact, any business model requiring two-sided market adoption faces the same challenge.

Unlike many blockchain projects, LivenCoin is a project built on an existing payment network of more than 1,000 brick and mortar businesses (with an additional 2,000+ projected by the end of 2018 based on acquisition since the beginning of the year), and is a business that has had significant growth since its formation in 2014. With over 200,000 consumers already using Liven to purchase food, there is high demand for new restaurants to come on board and for the LVN token itself to be used on a daily basis within the platform once launched.

Our merchants will not need to know or understand what currency is being used, as it will not affect them at all; their workflow will remain the same as in the current system. They will be paid in fiat currency according to the bill totals, unless they nominate to receive payment in LVN for their own personal use.

Charitable Fundraising

Charities incur significant costs to raise funds. Donors generally expect all of their contribution will be put towards the cause, but many are disappointed to learn this is not the case due to fundraising, administrative and marketing costs. Currently there are a lack of transparent platforms that allow donors to know exactly where their contributions are going, and how much of their donation is consumed by the aforementioned costs.

In Australia, 80.8% of the population made some form of donation in the 2015-16 year, totalling $12.5 billion AUD in contributions for charities and not-for-profit organisations with an average donation of $764[3]. Administration and fundraising costs can take up to 85% of total revenue raised, with costs of ~30% typical for most Australian charities.

Currently, users may share their Liven Cash — in whole or part —with a charity of their choosing post-transaction. This engaging, cost effective fundraising channel allows charities to access an audience of affluent consumers at a time when they are most amenable to giving. This will continue in an updated and improved form through the new 'Donation Wheel' system, providing a fundraising channel that is transparent and efficient - showing donors exactly where their contribution is going using the blockchain.

3.   The Universal Cryptocurrency for Food

The Liven Platform presents a strong use case for blockchain technology and a liquid token economy. Blockchain technology enables our platform to do more for our users and partners, evolve beyond the current mobile payments landscape, and pushes us ever further towards our goal of building a global payments ecosystem empowering people to do more of what they love.

A Global Rewards Currency

LVN will play a pivotal role in the Liven platform as both a medium of payment and the medium of incentive. Liven currently exists in fiat form as a rewards-based payment technology where users earn an internal network currency (that is pegged to the value of the Australian Dollar) on every transaction at a variable earning rate of 10-30%. User account balances are stored on a private ledger against the user's email address and can be spent freely as fiat value at any Liven partnered merchant.

Implementing a token economy broadens the scope of our network in a number of ways. Liven utilises a closed-loop payment network as part of a strategy in place to benefit merchant partners. Users are incentivised to transact within Liven's network of merchants due to the positive feedback incentive of eating and earning with a currency native only to the platform. Evolving to a token system means that users have more freedom with their rewards, but the value itself must still be eventually redeemed within the merchant network.

While tokens can be socially exchanged among friends or held indefinitely, they still remain LVN tokens and can only truly be 'redeemed' within the system. This retains the network effect for merchants and increases flexibility for users. Moving from an AUD pegged value model to an internal economy opens up the use of LVN to global travellers once the business is launched internationally, while minimising market fluctuations common in cryptocurrencies.

Trustless & Transparent Rewards Protocol

One of the major advantages of blockchain is the transparency of the public ledger, and the ease with which value can be transferred between individuals. Liven's publicly visible reward protocol and reward cache means the value of the reward within our network is always transparent and free from manipulation.

The use of Ethereum's powerful smart contract functionality also allows us to publicly provide assurance to users and merchants alike that these system elements will operate

securely and as prescribed. The reward cache from which all LVN rewards are disseminated is governed through the use of a smart contract which contains the mathematical algorithm that sets the internal conversion rate and also secures the contents of Liven's reward cache. By decentralising the reward protocol the smart contract provides security against criminal parties attempting to steal from the tokens of the reward cache - as nobody can directly access these tokens, even Liven - and also lends transparency to users.

Socialising Peer-to-Peer Finance

Incorporating blockchain technology into Liven's platform makes it possible for users to easily send currency, split bills, and share rewards - making peer-to-peer sharing simple. Users can also pre-purchase LVN to 'precharge' their account or to gift to friends and family. In order to make the Liven platform more accessible on the user level, the Ethereum wallet address that stores users LVN balance will be obfuscated by a username handle, similar to Twitter or Instagram.

This @handle mechanism is familiar to users of these popular social platforms and using it with LVN will create an instantly recognisable experience, which lends itself to an increased facility of entry into the practical applications of cryptocurrency for everyday consumers.

Use of LVN by Third Parties via LivenPay API

Liven will create a payment gateway SDK that can be deployed by third parties directly into their own applications and websites, allowing LVN to be spent and earned during the checkout process. When a consumer makes a purchase through these third party platforms and comes to the checkout phase of the transaction, they will be given the option to pay with LivenPay in a fashion that is reminiscent of paying with PayPal.

Through this SDK certain approved third parties will be given the ability to disseminate LVN from the reward cache and also receive it as payment by their customers. In this way they can access a ready-made loyalty system that uses a currency which can only be used within the Liven network. The simple integration of an SDK into existing checkout systems also saves them the effort and expense of building and maintaining their own complex loyalty program. This scheme is highly beneficial to Liven as it allows rapid expansion into new markets and verticals, perhaps even beyond our current geographical territories, spreading the usage of LVN wide and fostering external demand for the token.

Decentralised & Transparent Fundraising

The addition of blockchain technology extends the capabilities of our platform, especially its charitable giving component. By creating a decentralised, API-driven charitable crowdfunding platform, we will allow any registered charity, community organisation, or even social group to fundraise through our platform, setting up wish-lists for items that can be directly paid for by users of Liven. This system will allow donors to follow exactly where their contribution is going, eliminating administrative and fundraising costs associated with the operations of charities currently. By creating a new portal for organisations to directly upload their own wishlists, we will be able to scale this part of the Liven platform while requiring minimal interaction with Liven's team.

Integration of LVN payments into supplier websites will mean the blockchain will provide full transparency - giving users confidence in the system and showing them exactly where their donations are going, right down to the point of item delivery, ultimately encouraging more people to give back to the community.

Platform Exclusives to Drive Demand

Within the Liven platform and its network, capabilities exist for strategic events or timed promotions that limit the purchase of system exclusive offerings - such as event tickets or unique menu items - only to holders of LVN tokens, making them irredeemable with fiat payments.

Campaigns of this type increase external market demand for LVN tokens from users who wish to gain access to these products or offers. For example: a Liven partner restaurant might create an exclusive 'Liven Burger', a unique menu item that will only be served for one week. A user who has no LVN balance wants to try the unique burger badly, he has two options; either purchase LVN on the external market, contributing to driving the price up by effectively generating a new source of external market demand, or make transactions on the network to earn the LVN required through rewards - both positive for the ecosystem.

Gamification

Habitualization is a powerful force and one that is important for any type of platform where repeat usage is critical. Gamification elements improve user retention and engagement through habitualization, and can be used to entice users to transact more frequently, leave reviews of their experiences, post pictures of our merchant partners

and their food, or refer others to the service - behaviour that has benefit for the entire Liven ecosystem.

Gamification strategies that will be incorporated into Liven include 'levelling up', where users reach higher levels of achievement for performing certain actions. Greater rewards for users who display desired behaviour and achievement badges for completing challenges, such as visiting a set of restaurants, referring a certain number of friends or simply discovering all of the features of the applications.

4.   Platform and Features

The LVN Ecosystem is comprised of the Liven Platform (a payment gateway with a built-in Ethereum-based token reward mechanism), consumers, merchants, e-commerce stores, charities and external token exchanges.

The LivenCoin serves a number of utilities in the ecosystem but its main functions are facilitated by two major parts of the ecosystem: (1) the Rewards Wheel on the one side and (2) the Donation Wheel on the other.
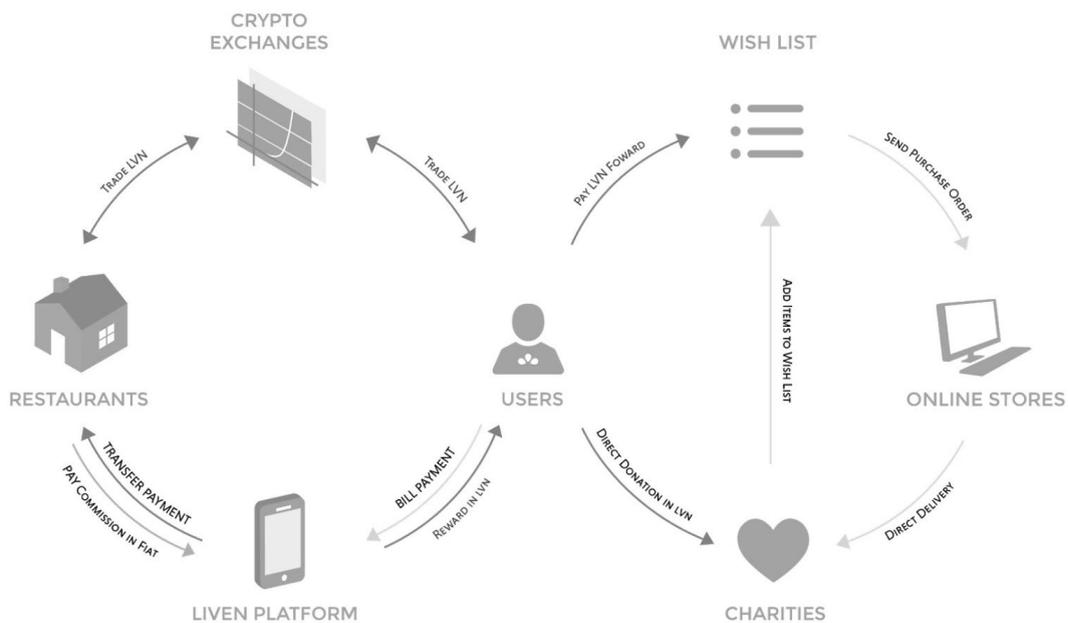
Figure 1: The Liven Ecosystem

Users

Users lie at the heart of the Liven ecosystem, whenever a user pays for their meal through the Liven platform, they receive a portion of their bill back in LVN as their reward.

The user can choose to use the LVN in the following ways: (i) spend through the network as payment for other meals, (ii) forward some to a charity who can spend it as it sees fit, (iii) put some or all of their LVN towards purchasing a specific item that was added to a Liven Wishlist by a non-profit organisation, (iv) continue to accumulate LVN in their wallet for future use or (v) trade LVN on any open crypto-exchange markets should they arise.

Merchants

Merchants join the Liven platform to gain exposure to an engaged and relevant audience. Universal loyalty allows brick and mortar businesses to benefit from being part of a larger network, with users who are incentivised to continue dining within the ecosystem of complementary businesses as they are rewarded for each transaction, with a currency exclusive to the network.

Merchants list their venues on the platform for free but pay a success-based service fee (10% to 25%) each time a transaction is processed as a result of the platform's marketing effectiveness for the purposes of (i) incentivising the users and encouraging return visitation (ii) marketing the business on the platform and (iii) sustaining and developing the Liven platform. The payments are processed with real time confirmation of payments for merchants and users, as well as any LVN reward the user has received. The merchants receive payments in fiat, unless they nominate to receive LVN directly for their own purposes.

Charities and Not-for-Profit Organisations

Through Liven, charities are given access to an audience of affluent potential-donors at a time when it is most appropriate to ask for a contribution.

Charities can add items to their own Liven Wishlists for them to purchase as recipients of donation, or they can add specific items from any of Liven's partner e-commerce sites by clicking on an "Add This Item to Liven Wishlist" link. Users are given the option to forward some, or all, of their LVN reward either directly to the non-profit organisation to spend as they see fit or to be put towards purchasing a specific item from a wishlist.

5.   Token Economics

Introduction

The following economic factors, among others, generally contribute to the fluctuation of a currency's value:

- The **demand** for specific goods or services markets which the currency enables a user to purchase, e.g: as the demand from the US for Chinese manufacturing increases, the Chinese Yuan becomes more valuable for US buyers.

- The **supply** of the currency. Using the above example, if the supply of the Chinese Yuan exceeds the demand for the currency from the US, then the currency's value may actually decrease. This is the simple economic principle of supply and demand.

- **Capital flow.** How much of a currency can flow in and out of the economy also dictates the currency's value. Any substantial inflow or outflow of foreign currency will create volatility.

Cryptocurrency token economics is a brand new field of research and much needs to be learned. However, when designing the LVN token economic model, we considered some of the following key economic principles:

- **The Total Supply of Tokens** - a total of 5 Billion LVN will be minted, more than sufficient to service the Liven network as it grows from two cities to 30+ cities around the world

- **Token Flow Points** - The only points where LVN Tokens can flow in and out of the Liven platform are physical brick and mortar stores (at the point of sale) through the purchase of low-priced items (i.e food). It is therefore difficult for a substantial amount in fiat or LVN to flow in or out of the Liven economy in a very short time, which prevents destabilisation of the currency's value; and

- **Token Conversion Rate** - As the total LVN available is limited and no additional LVN will be minted after this initial token generation event, the internal conversion rate of USD/LVN must be a function of limited supply, and restricted outflow of LVN tokens vs incoming fiat currency.

The resulting token economic model is simplified to one single formula further described below. With this formula in place, LVN is capable of immediate, real world

adoption by more than 1000 venues and a run rate to 300,000+ users as early as October 2018 once the transition process is complete.

Not unlike many business models, this economic model can be duplicated. However, its success depends upon having a functioning merchant network and ecosystem with depth of transactional volume. It is possible for any business or founder to create a user platform and apply practical economic theory, but to replicate the model and compete with Liven an extensive network of merchants and engaged user base is needed, effectively creating a reasonably high barrier to entry. Liven chooses to publicise and share the platform's economic model, and encourages entrepreneurs to adapt and modify our theory to build businesses and help to grow the blockchain economy industry.

The Reward Protocol

This section outlines the mechanics that define Liven's rewards and scarcity models. Unlike most cryptocurrencies each LVN has inherent value - or purchasing power within the network - the amount of which is independent of any external price on exchanges. The spending capacity of LVN tokens within the Liven network is variable, and an internal 'conversion rate' exists that gives each LVN an equivalent fiat purchasing value for spending in restaurants and other Liven partner venues, this conversion rate is a function of the proportion of all LVN that are currently in Liven's *reward cache* only; no other variables affect the internal conversion rate.

The reward protocol can be visualised as an hourglass. Instead of sand, the hourglass is filled with LVN. One half of the hourglass represents the reward cache, and the other half represents the LVN in circulation. When users make a transaction and spend fiat currency, they are rewarded in LVN which flows from the reward cache into circulation. When users make a transaction and pay entirely using LVN, it flows from being in circulation back into the reward cache (less the LVN earned by the user in the very same transaction). The internal conversion rate is set by a mathematical formula which only takes into account the amount of LVN remaining in the reward cache. The less LVN remaining in the reward cache, the higher the internal conversion rate.

This internal conversion rate means when a user has a balance of a fixed number of LVN, they will be able to purchase a set, dollar amount of food at that moment, which will not vary across any of the restaurants in the network. The conversion rate will change however as other users make transactions on the network, resulting in the amount of LVN remaining in the reward cache changing. If there is no net change in the amount of LVN in the reward cache, then the internal conversion rate also remains unchanged.

This conversion rate, denoted by the letter E, is set by a mathematical formula called the Reward Curve, which is a function of the Current Coin Circulation number, C_i, which represents the LVN that is next to exit or enter Liven's reward cache, either by being spent at a venue (entering reward cache) or given as a reward (exiting reward cache) out of the total supply of 5,000,000,000 created coins. The current coin could be thought of as the next grain of sand to flow through the center of the hourglass, regardless of which direction it is coming from, and is related directly to the size of the reward cache as the total supply is fixed. When a transaction results in a net gain to the coins in the reward cache, as is the case when a user settles their entire bill using LVN, the conversion rate moves along the rewards curve to the left, when a transaction results in a net loss from the reward cache, as when a customer pays in fiat but receives an LVN reward, it moves along the curve to the right.

The reward cache is managed by the smart contract according to the reward protocol, beyond the reaches of any centralised body. Only transactions within the network can result in changes to the size of the reward cache, and the mathematical formula that underpins this system is publically observable. The rewards curve, where the conversion rate is denoted by "E" and has units of \$USD/LVN, which is a function of C_i, having units of millions of LVN, is given by Equation 1.1 and a plot of the curve is shown in figure 2. The shape of the curve is explained in detail in Appendix A1.

$$\text{Equation 1.1} \quad E(C_i) \;=\; \frac{-47.5}{(C_i - 5000)} \;+\; \frac{0.005C_i}{(2 + e^{-0.85(C_i - 3258.5)})} \;+\; 1.5e^{0.025(C_i - 4700)}$$
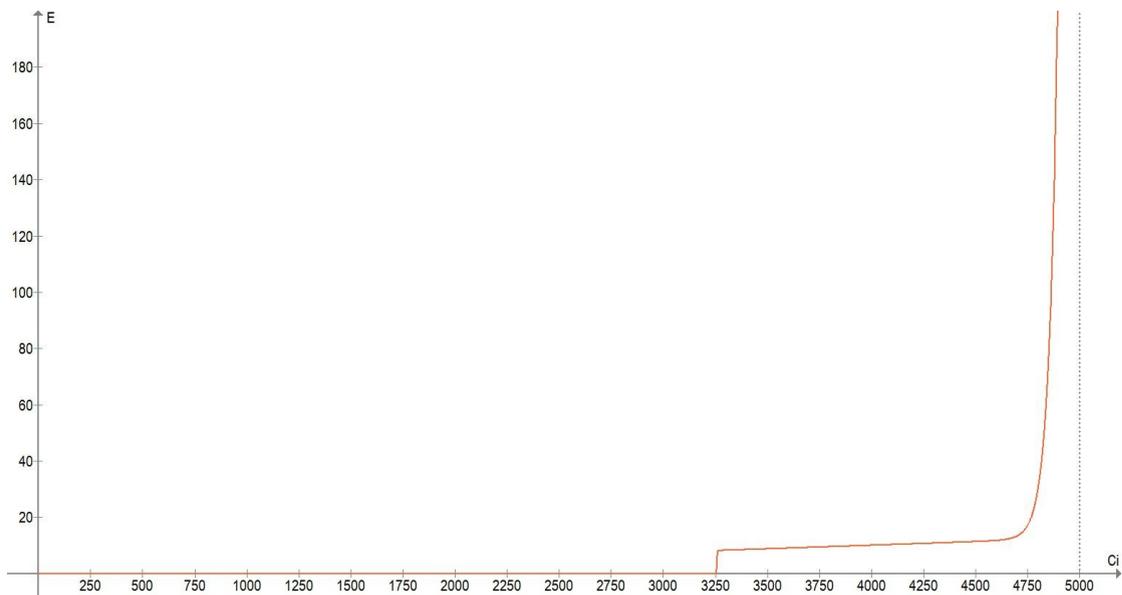
Figure 2: *The plot of the Rewards Curve E(C_i) with C_i in units of 1 million coins and E in units of USD/LVN. Each of the 5000 million coins minted are represented here.*

In the case Liven and its user base grows, the reward cache will become depleted and the spending potential of each coin in circulation within the Liven ecosystem is likely to increase.

Liven has secured contractual agreements with each partnered venue to receive a percentage of any user spending at that venue as a success-based marketing commission. Under the proposed system, reward values (in fiat) will remain the same but they will be paid in LVN, rather than the Liven Cash as is currently the case. The dollar value of the reward, v, is equal to the integral of the rewards curve, E, between C_i and C_{i+n}, shown in Equation 1.2 below (the integral is the area under a curve, between two horizontal boundaries). Further information is in Appendix A2.

$$\text{Equation 1.2} \quad - \quad v = \int_{C_i}^{C_{i+n}} E(C_i) \; dC_i$$

$$v = \int_{C_i}^{C_{i+n}} \frac{-47.5}{(C_i - 5000)} + \frac{0.005C_i}{(2 + e^{-0.85(C_i - 3258.5)})} + 1.5e^{0.025(C_i - 4700)} \; dC_i$$

C_i is the initial coin circulation number at the beginning of the transaction, while C_{i+n} is the coin circulation number at its conclusion. Therefore *n* is the amount of LVN exchanged in the transaction, where *n* is simply the difference in the start and end coin numbers, given by equation 1.3:

$$\text{Equation 1.3} \quad - \quad n = \Delta C_i = C_{i+n} - C_i$$

From this relationship we calculate the amount of LVN used for each transaction, whether the user is being rewarded in LVN or spending it at a venue. The higher the conversion rate, the less LVN consumed in the transaction, though the dollar value remains the same.

In practice, a numerical approximation of the rewards curve is used. The evaluation of this is shown in greater detail in Appendix A3.

Liability from the Initial Token Sale

Each LVN in circulation (those sold or allocated through the ICO and those earned by users post ICO) represents a liability to Liven that will need to be paid to merchants if the token is eventually "spent" through the Liven Platform, unless the merchants opt to receive LVN directly. The total value of all circulating tokens must therefore remain on Liven's books as an 'Unearned Income Liability' classified as short, mid or long term in nature.

The total liability of Liven for the LVN in circulation at any time is given by the integral of the rewards curve from the initial coin, C_o and the current coin C_i, shown below in equation 1.4. This figure represents the cost to Liven if all coins in circulation were to be immediately spent within the network. As with all liabilities Liven has a responsibility to ensure this liability can be met if and when required.

$$\text{Equation 1.4} \quad - \quad \int_{C_0}^{C_i} E(C_i) \ dC_i$$

As rewards are paid in LVN to users, the liability to Liven increases, and Liven must set aside the cash allowances paid by the restaurants to cover this growing liability. When LVN is spent by users through transactions on the network, the cash set aside from previous transactions is consumed to cover the liability owed to the merchant partner.

Liven considers that it is highly unlikely all 1750M LVN distributed would be redeemed within a short time period. It is also impossible for any significant portion of LVN (e.g. 100M) to be redeemed rapidly due to the physical constraints of the network - as it is impractical at the early stage for 1,000 physical stores with limited stock levels, selling low-priced items, to be able to process a large volume of tokens quickly. As the platform matures, gaining more users and more venues, the amount of LVN intake/outtake will also increase, but so will the flow of fiat currency and revenue the network generates at scale to offset the additional liabilities.

Using our historical transactional data and predictive modelling, Liven intends to employ a fractional-reserve system which sets aside a sufficient cash reserve called the Token Liability Contingency Reserve to cover our short term liability at all times. We intend for this Reserve to cover at least 30% of the total tokens in circulation initially and be adjusted constantly. The starting Token Liability Contingency Reserve would then be:

$$\int_{C_0}^{C_i} E(C_i) \quad \text{x 0.30 = US \$14.96M}$$

With an acceptable margin of error of 10%, the ideal amount of Token Liability Contingency Reserve should be US$16.46M.

These figures and the form of the rewards curve itself are based on the ICO achieving its intended targets. In the event the sale achieves only a portion of its maximum potential, these figures and the reward curve will be adjusted proportionally to reflect the change in the liabilities.

Dual Market Effect

The Liven platform is unique in that it has its own internal conversion rate which gives an intrinsic value to the LVN token, as given by our novel Reward Curve system.

Once the ICO concludes and the LVN Tokens are issued, it is possible LVN will be listed and traded on external exchanges. Any trading on an external exchange would create a situation where two markets would exist for the same token, operating independently but nonetheless linked by economic forces. In these circumstances, these forces should act as a balancing mechanism, ensuring there is rarely a significant deviation between the value of the token within the Liven Platform (the internal conversion rate) and on the open exchange market, providing some insulation from volatility for the LVN token.

Two scenarios exist where a significant difference in the internal and external values will lead to changes in user behaviour:

1.   **The price on exchanges is higher than the internal value.**

Where the value of LVN on the external market rises steeply due to speculation or other forces, users of the Liven platform will quickly realise that an opportunity exists for them to earn externally overvalued LVN by transacting at a venue within the Liven network. They can then move these LVN from their Liven wallet to an exchange to sell at a higher value. If LVN is trading significantly higher on the external exchanges, 4x higher for example, a smart user could actually eat for free or even at a profit at many Liven partner merchants as the external value of the LVN they would earn from the reward could surpass the cost of the entire meal.

2.   **The price on exchanges is lower than the internal value.**

If the spending value of LVN within the app is higher than the price for which it is available on the exchange, a smart user could buy LVN cheaply on the external market, move it into their wallet in the Liven app and then enjoy meals at a discounted price, as the internal price of the LVN is higher than what they paid for the tokens on the exchange.

When a user buys external LVN and redeems it by spending on the platform, the conversion rate on the rewards curve moves to the left, lowering the internal price, when the user earns LVN with the intent of selling them on an external exchange, the rewards curve shifts to the right, increasing the internal price.

Both of these scenarios lead to an increase in the usage of the Liven Platform, which is beneficial to our merchant partner network and Liven itself as a payment company.

Progression of the LVN economy

There are several forces at play that will impact the rewards curve progression as Liven grows in the future. As Liven expands into large new markets such as the US and UK, we can expect to see significant growth in our user base.

The effect of simple active-user base growth is of great importance. Every active user of Liven, no matter how much they spend, will always hold some amount of LVN tokens, even immediately after paying a bill in the LVN currency, as they are awarded more at the end of each and every transaction. It therefore follows that if the user base grows and more people adopt the platform, the amount of LVN in circulation will rise.

User abandonment, which exists for all companies to some extent, results in LVN being awarded to a user and then 'forgotten' once the user uninstalls the application and leaves the network (often known as 'breakage'). While undesirable for the Liven network, this behaviour acts as a pseudo token burn function and has the effect of moving the internal conversion rate to the right, as the reward cache is permanently depleted of these coins which will likely not return to the network.

Another incentive exists that is designed to encourage users to spend fiat currency through the system. This is a bonus in the form of increased reward rates for users who have displayed regular and significant spending in the recent past. An algorithm will dynamically adjust the transaction reward rate (the percentage of the bill given as a reward, paid in LVN) for each specific user based on these factors, with the bonus coming out of the difference between the merchant allowance rate and the standard reward rate; effectively being funded by Liven's commission, paid as a reward for good user behaviour. The end result is encouragement of increased spending of fiat within the network.

The Technology Stack

The Liven platform is comprised of various components, with the blockchain at its foundation. The rewards protocol sits on this, built through the use of a smart contract which controls the flow of LVN in and out of the Reward Cache. An API layer sits above this, bridging the gap between Liven's database and Reward Protocol and the front-end applications and 3rd party apps. Users, merchants, charities and corporate partners then interact directly with the Liven ecosystem through the Liven app or 3rd party apps.
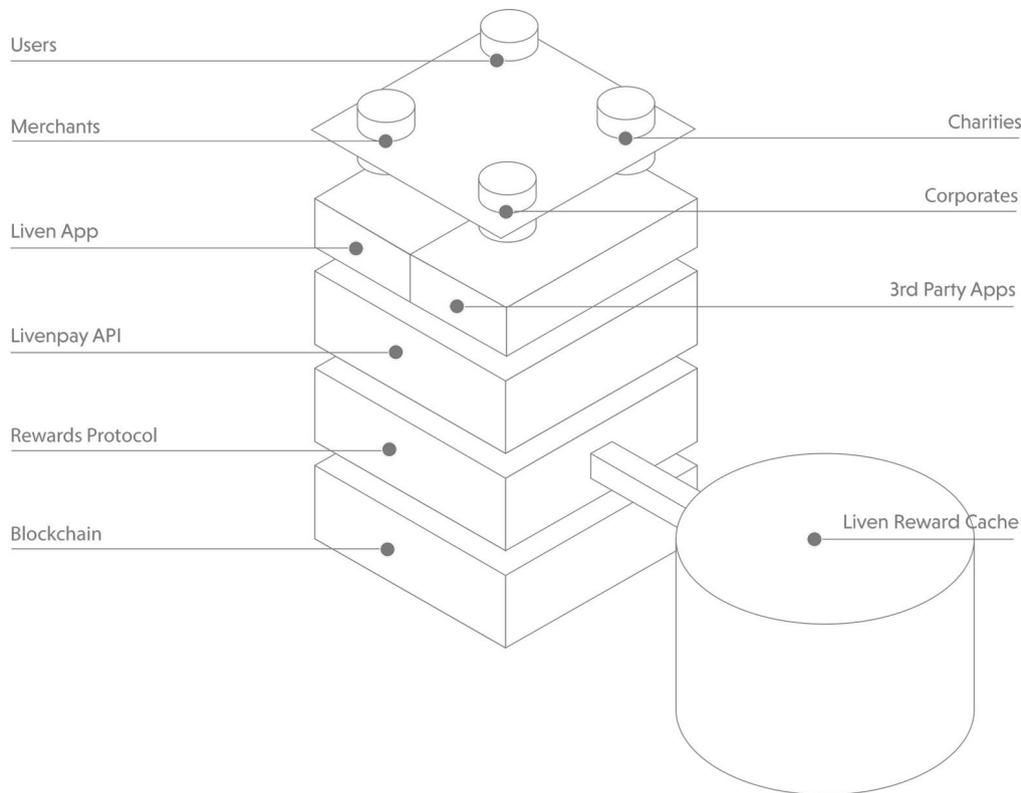
***Figure 3**: The technology stack*

6. Team

Unlike many blockchain projects and foundations started by developers without much business experience, the Liven Platform is built on an existing business by a core team possessing a wealth of knowledge and experience in payments technology, online hospitality & tourism platforms, and virtual marketplaces. The founders are supported by a growing team of more than 40 talented people, spread between the head office in Melbourne and satellite office in Sydney.

William Wong, CEO

William received Bachelor's degrees in Law and Arts(majoring in Politics) at Monash University, graduating with honours in the top one percent of his class and winning an award for his thesis on legal research. William has also completed a diploma of Computer Science from Stamford College and a Masters of Banking and Finance at Monash. He spent 6 years as a commercial lawyer and consulted for hundreds of restaurateurs which provided him deep insights into the hospitality industry. He has spoken as a thought leader for reputable institutions such as the Government of

Victoria, General Assembly, and Mayfair 101 and was included in the SmartCompany Smart 30 Under 30 (2018).

Dr. David Ballerini, PhD, COO

David received a Bachelor of Engineering from Monash University, graduating with first-class honours before returning to complete his PhD via research. David has authored more than 10 scientific journal papers achieving over 900 Google Scholar Citations, is listed as an inventor on 3 patents and has been the recipient of numerous prestigious awards such as the ANSTO Australian Museum Eureka Prize for Innovative use of Technology (2012), IChemE Dhirubhai Ambani Chemical Engineering Innovation for Resource-Poor People Award (2012) and SmartCompany's Smart 30 Under 30 (2018).

Grace Wong, CFO

Grace completed a double degree in Law & Commerce at the University of Melbourne, graduating with honours in law. She has 3 years of experience in Commercial & Property Law, with a deep knowledge on regulation and systems. Grace is the natural spokesperson of Liven, speaking as its representative at local universities, international conferences, and private investor summits. In 2016, Liven was invited as an industry leader to speak at a Parliamentary Inquiry and Grace represented the company as one the the top leaders of startups in Australia. Grace has also won various industry and tech awards including 2018 B&T 30 under 30 and 2018 SmartCompany's Smart 30 Under 30.

Cheng Chi, CTO

Cheng received a Bachelor of Technology (Computing Studies) and a Masters of Computing at The Royal Melbourne Institute of Technology (RMIT), graduating as the top student. Cheng Chi is Liven's lead developer and Chief Technology officer, solely responsible for building Liven's platform from the ground up. Cheng is a talented full-stack developer with extensive experience in languages such as Java, Kotlin, Python, and JavaScript.

7.   Strategic Partners

Since its inception Liven has leveraged partnerships across a broad range of industries to accelerate our growth and bring value to our users; this strategy will continue into the future. Identifying the potential for relationships with synergy is a skill the founders have honed over more than 4 years, with partnerships with organisations such as Uber

driving early growth for the platform that was invaluable. Liven has forged lasting partnerships with many of Australia's most loved brands, including restaurants, charities and other organisations.

Key Merchant Partners

Key Charity Partners

Corporate Partners

8.   Expansion Roadmap

Liven has been proven to be successful in Australia, with a robust and reciprocal ecosystem. This model can be replicated in other countries as Liven offers a solution for a universal need: food. As more individuals purchase and participate in regular LVN use globally, it will only add to the growth of Liven. Expansion will be further aided by current partner contracted relationships as many of these businesses have other businesses and/or franchises outside of Australia.

The global hospitality market is worth **3.5 trillion USD**. Our grand vision is to expand to and operate in 20+ cities by October 2020. Immediately following the ICO, we intend to open up a 3rd Australian city and also expand to London and the greater London area as our first overseas expansion city, followed by San Francisco, New York, Austin and Chicago in the United States. Either concurrently or subsequent to the US expansion, we would explore expansion opportunities in SE Asia, New Zealand, Japan, and South Korea.

Australia

The immediately addressable restaurant market is $12 billion AUD in Australia alone, ballooning to $39 billion AUD when cafes and takeaway providers are included. 35.2% of the Australian market is in New South Wales with 28.6% in Victoria, making them by far the two most dining focused states, hence why we have begun our expansion by launching services in the capital cities of Melbourne and Sydney[4].

United Kingdom

The British spend £87 billion GBP per year on eating out, the average Londoner eats out 3.7 times per week, with 83,634 providers existing in the restaurant and mobile food service industries to meet this demand, and 39,338 food service establishments in London alone[5].

United States

The US restaurant industry is large with more than 1 million restaurant locations and almost $800 billion USD in spending, but this is widely distributed geographically across many cities, and as such a closer look at the market in particular cities is necessary:

New York City

NYC is the largest US city by population, with upwards of 8 million inhabitants. It is fourth by the number of restaurants per capita, with 25.3 restaurants for every 10,000 households[6].

San Francisco

While the population of San Francisco is smaller with only 800,000 inhabitants, it has the most restaurants per capita of any American city, with 39.3 restaurants per 10,000 households[7].

Austin

Austin restaurants average the 4th highest revenue of the US largest 25 cities[8]. Also known as the "Silicon Hills" due to the large number of tech companies headquartered there.

Chicago

Number 9 in the world-wide Michelin rankings and number 3 within the US, Chicago has a large population of 2.7 million people who seem to love dining out, with 7,300 restaurants for them to choose from[9].

Beyond Food & Beverage

After expanding geographically Liven will to expand into new verticals, introducing LVN to other lifestyle segments beyond hospitality.

Travel

Including hotel stays, flights, cruises, tours and sightseeing services. This huge industry globally had a direct economic impact - including accommodation, transportation, entertainment and attractions - of approximately 2.3 trillion U.S. dollars in 2016[10].

Cinema

The cinema industry had global ticket sales of $38 billion US dollars in 2016[11]. An opportunity exists for Liven in ticketing sales as well as complementary food and beverages available to purchase in the theatre.

Entertainment

Music concerts, events and festivals. Opportunities include ticket sales as well as complimentary food, beverage and retail services. In the US alone revenue for live music events totalled 9.28 billion U.S. dollars in 2015[12].

Health, Beauty Services

Wellness, beauty and massage service providers such as hairdressing salons, manicurists, massage parlours and exercise services such as yoga, pilates and other exercise studios. The global spa industry alone had a market size of $99 billion US dollars, and the related thermal springs market was $51 billion (both in 2015)[13].

Retail

Retailers including both online and bricks and mortar businesses. This industry is so large it is difficult to quantify its size accurately, but it has been predicted the global retail industry will be worth $28 US trillion by 2019[14].

Disclaimer

This early community release white paper does not constitute a full disclosure of the Liven Coin initial coin offering, and should only be used as an introduction to key concepts. Further reading of the entire full-release white paper, once available, is essential for making informed decisions regarding the ICO and is highly recommended. Any Token Sale participants should only rely on the information found in the full-release white paper document. No person is authorised to provide information or to make any representations in connection with the project or Token Sale which is not contained in the full-release white paper document. Any information or representations not contained in the full-release white paper document may not be relied upon as having been authorised by Liven Pty Ltd in connection with the Token Sale. Except as required

by law and only to the extent that it is required by law, neither Liven Pty Ltd or any other person warrants the future performance of Liven Pty Ltd, LivenCoins, the Liven Platform or any return on any application or allocation of LivenCoins. The information contained in both this document and the full-release white paper document is for information purposes only and is not a forecast of operating results to be expected in future periods.

The LVN token sale is not intended for speculation and we strongly discourage participants from treating their purchase as such. The ownership of LVN tokens does not represent an ownership or security interest in the assets or property of Liven Pty Ltd, nor do they grant a share of any profits earned by Liven or any special rights or decision making power in relation to the operation or decisions of Liven.

The information provided in this document is not investment advice or financial product advice and has been prepared without taking into account Token Sale participants' objectives, financial situation or particular needs (including financial and taxation issues). It is important that you consider the risk factors that could affect Liven Pty Ltd, the Token Sale, LivenCoins and the Liven Platform. Token Sale participants should consider all risk factors and their own situation and needs and seek professional advice before deciding to participate in the Token Sale.

The distribution of this document in jurisdictions outside Australia may be restricted by law. If a potential participant in any jurisdiction outside Australia comes into possession of this token offering document, they should seek advice on and observe any such restrictions. The Token Sale is not open to any US citizens or residents.

Appendix

A1 - Components of the Reward Curve

The rewards curve is composed of three components, each of which serve a specific function. Independent plots of the three curves are shown below in figure A.1.1.

The Sigmoid $1/(1+e^{-C})$ term

This term is actually a form of the *Logistic function,* shown below as equation A1.1, which is used across many fields including in relation to population growth. This curve is characterised by an initial period of exponential growth which then slows before completely stopping. By adding another C_i term to the numerator we achieve a steady, linear growth instead of a flat line as the curve proceeds to the right.

$$\text{Equation A1.1 : The Logistic Function} \quad - \quad f(x) = \frac{L}{(1 + e^{-k(x-x_0)})}$$

The Exponential e^C term

The exponential term creates a region of very slow, steady diminishment as the reward cache expands in the event of many users spending their LVN within the Liven network, and moving the internal conversion rate along the rewards curve to the left. This has the effect of disincentivizing the complete cashing out of LVN immediately following the launch of the crypto gateway.

Additionally this also reduces the liability of Liven for the coins distributed during the ICO, enabling us to put more funds towards the growth of the platform instead of storing them to cover a potential liability.

Secondly, the exponential term adds growth which is increasing to the right of the initial rise created by the sigmoid term.

The Reciprocal term $1/(C_i-C_T)$

The purpose of this term is to make it impossible for the rewards cache to ever be fully depleted. By placing an asymptote at C_T - which is the final coin in the total supply - we achieve this, meaning that the value of E will approach infinity as the reward cache approaches zero.

As E approaches infinity, ρ will approach zero, meaning the amount of LVN paid in each reward becomes increasingly small, but the value of each LVN token increases dramatically.
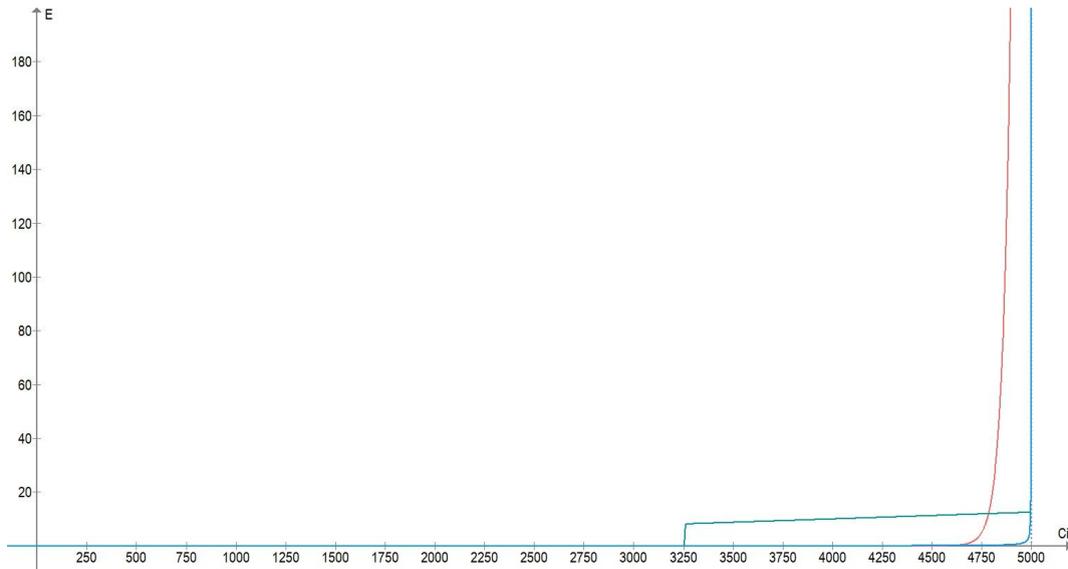
Figure A1.1 - *The three components of the rewards curve plotted separately.*
Exponential in red, sigmoid in green and reciprocal in blue. Where C_i is in units of 1 million
coins and E in units of USD/LVN.

A2 - Calculating consumption of LVN in each transaction

The amount of LVN awarded per dollar value of reward is given by the reciprocal of E, which we define as the Reward Rate, denoted by ρ (LVN/$USD), as shown in equation A2.1.

$$\text{Equation A2.1} \quad - \quad \rho = \frac{1}{E}$$

Liven has agreements with each partnered venue to receive a percentage of any user spending at that venue, this allowance rate is denoted by *a* ($/$ or % of the bill), and is a percentage of the total bill amount, B ($). The dollar value of a users reward, *v ($)*, is therefore given by equation A2.2:

$$\text{Equation A2.2} \quad - \quad v = a * B$$

Under the LivenCoin system, reward values in dollar terms remain the same but they will be paid in LVN. For every transaction the bill amount and allowance rate are known, and we are required to calculate the number of LVN. The value of the reward

paid in LVN is equal to the integral of the rewards curve, E, between C_i and C_{i+n}, shown in equation A2.3 below.

$$\text{Equation A2.3} \quad - \quad v = \int_{C_i}^{C_{i+n}} E(C_i) \ dC_i$$

$$v = \int_{C_i}^{C_{i+n}} \frac{-47.5}{(C_i - 5000)} + \frac{0.005 C_i}{(2 + e^{-0.85(C_i - 3258.5)})} + 1.5 e^{0.025(C_i - 4700)} \ dC_i$$

C_i is the initial coin circulation number at the beginning of the transaction, while C_{i+n} is the coin circulation number at its conclusion. Therefore *n* is the amount of LVN exchanged in the transaction, where *n* is given by equation A2.4:

$$\text{Equation A2.4} \quad - \quad n = \Delta C_i = C_{i+n} - C_i$$

From this relationship we can calculate the amount of LVN to be paid for each transaction, whether the user is being rewarded in LVN or spending it at a venue. In practice the integral in equation A4 is evaluated numerically, as shown in Appendix A3.

A3 - Numerical Evaluation of Integral

In order to simplify our evaluation of *n* values for any given transaction, we use a numerical approximation of the integral of the Reward Curve, employing the left-hand rectangle rule. This approach has several benefits. The main motivation for a numerical approximation over the use of a continuous integral is that is simplifies coding requirements and makes it easier to calculate the amount of coins given/consumed in a transaction. A further benefit of this method and the rectangle rule in particular is that we achieve a form of 'micro stability' across each node, which in practice means that users of the app will not be subject to continuous fluctuations in the value of their LVN from moment to moment, as the value of E is fixed for all 100,000 coins in a given node.

For our use case we set each node width to a value of 100,000 coins. For a total supply of 5 billion coins, this results in 50,000 nodes in total to approximate our integral. This essentially slices the integral of the rewards curve into 50,000 small parts, each represented by a tall, narrow rectangle, with the curve passing through the top-left corner of each.

Due to the far-right of the curve possessing an asymptote, we employ the left-hand variety of the rectangle rule of integration. Using the left-hand rectangle rule with nodes of 100,000 coins width, each node has an integral approximation given by equation A3.1 where E_i is the value of E which passes through the top left hand corner of each

rectangle. This is illustrated by Figure A3.1 below which shows a sample of nodes under the $E(C_i)$ curve.

$$\textit{Equation A3.1} \quad - \quad A_i\ (\$) = E_i * 100{,}000$$

The total integral is given by the sum of all nodes. The amount of LVN required for each transaction can be calculated by knowing the initial coin number, C_i and the value of the transaction, *v,* which is positive for LVN rewards and negative for LVN spending.
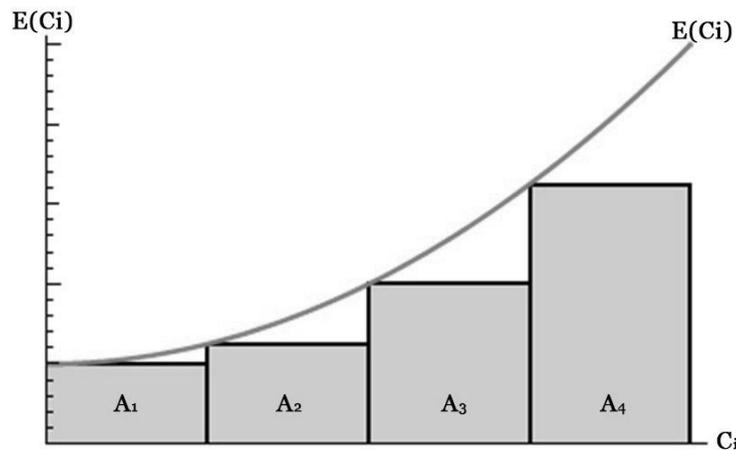

Figure A3.1 - The left hand rectangular rule as a numerical approximation of the integral of the reward curve (with only a small segment shown).

The total integral can be evaluated by summing the area of all the nodes, as given by equation A3.2.

$$\textit{Equation A3.2} \quad - \quad \int_0^T E(C_i) \approx \sum_0^T A_1 + A_2 + A_3 \ldots + A_T$$

This sum gives us an approximation of the integral for the entire curve, but in practice we need to use this relationship to determine the value of n for each transaction, which is the number of coins that are exchanged during every purchase or reward exchange. In order to calculate the value of n we use our knowledge of C_i, the current coin as of the conclusion of the previous transaction, and our knowledge of v, the dollar value of the reward or B, the dollar value of the bill in the event that the user is settling a bill with

LVN (either fully or partially). Figure A3.2 illustrates this visually, with the value of v represented by the red area spread across 2 nodes.
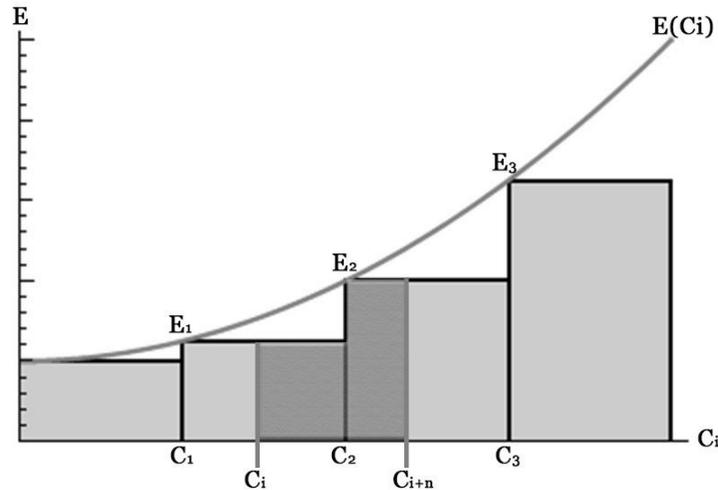

Figure A3.2 - Solving for n, the amount of coins given in a transaction with a reward of a particular size, v. The darkened area represents the value of v.

From equation A2.3 we know that v is equal to the integral of $E(C_i)$ between C_i and C_{i+n}. C_i. Figure A3.2 shows a less typical situation where the value of v is sitting across multiple nodes in our approximation. Using our approximation of this integral we can calculate the value of C_{i+n} which will reveal the Coin circulation number at the end of the transaction in question. Equation A2.4 can then be used to calculate n.

Because the node width is 100,000 coins, and $E(C_i)$ has C_i in units of 1 million coins, the nearest node boundary, C_1, can be found from C_i / 0.1 rounded down to the nearest multiple of 0.1. For transactions which are net inward flowing for LVN (such as when a user pays their entire bill in LVN) we move from right to left, with v taking a negative value.

This can be calculated computationally with a simple 'if' statement:

If $E_1(C_2 - C_i) > v$ then C_{i+n} lies within the first node. If this is the case then we solve for C_{i+n} using equation A3.3:

$$\text{Equation A3.3} \quad - \quad v = E_1(C_{i+n} - C_i)$$

$$\therefore \quad C_{i+n} = \frac{v}{E_1} + C_i$$

If the statement is false, then C_{i+n} falls in the second node or one of the nodes further beyond that. We must continue testing each node until we find the correct one. For the second node, our test becomes:

$$\textit{Equation A3.4} \quad - \quad E_2(C_3 - C_2) \; > \; v - E_1(C_2 - C_i)$$

which simplifies to the following as the node width is set to 0.1 million coins:

$$E_2(0.1) > v - E_1(C_2 - C_i)$$

If true, we solve for C_{i+n} using equation A3.5 below, then solve for n using equation A2.4:

$$\textit{Equation A3.5} \quad - \quad C_{i+n} = (v - E_1(C_2 - C_i))/E_2 + C_2$$

If false, the test repeats with each test node according to the general equation A3.6 which is applicable for all nodes beyond and including node 3, where *t* is the number of the test node (t is $\geq$ 3). Given the large size of the nodes selected it is unlikely that many transactions will take place over more than 2 nodes.

$$\textit{Equation A3.6} \quad - \quad E_t(0.1) > v - E_1(C_2 - C_i) - \sum_{N=2}^{t-1} E_N(0.1)$$

If true then C_{i+n} can be found within node t using the general equation A3.7.

$$\textit{Equation A3.7} \quad - \quad C_{i+n} = C_t + [\, v - E_1(C_2 - C_i) - \sum_{N=2}^{t-1} E_N(0.1) \,] / E_t$$

Once we have solved for C_{i+n} we can use equation A2.4 to solve for n as mentioned previously. The next transaction to take place on the system will have a new value of C_i, which will be equal to C_{i+n} from the previous transaction, and so the process repeats itself with a new value of *v*.

Please visit www.liven.com.au to learn about the existing Liven platform, and read our blog at www.medium.com/livenpay for further updates on the LivenCoin project.