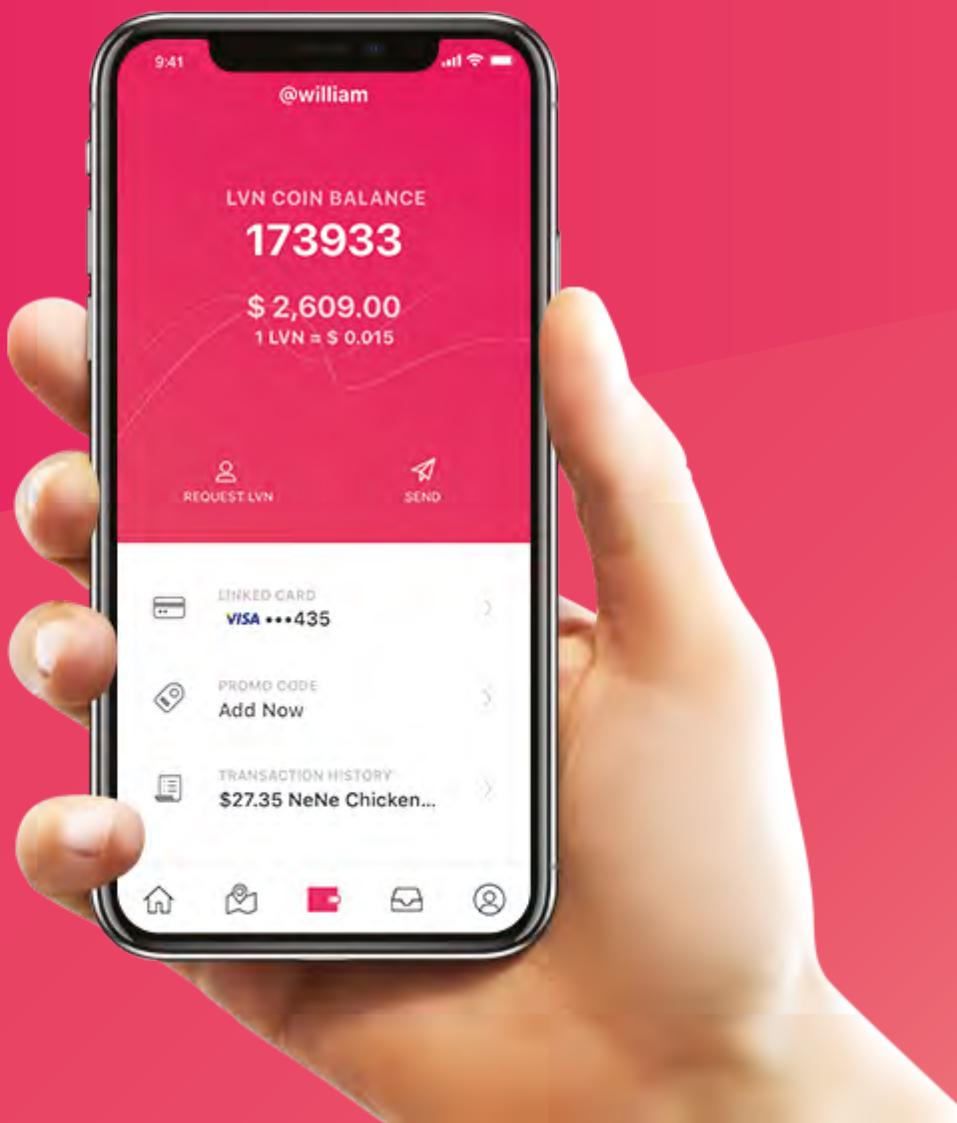


LIVEN pay

Official Whitepaper

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

Version 2.37





Abstract

Shortcomings of contemporary 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 these fundamental problems 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. LivenCoin (LVN) is a business backed blockchain token governed by a decentralised reward protocol, launching on an existing network of more than 1,000 brick-and-mortar merchants and 400,000 users. The LVN platform with a technical reach of more than 20,000 venues through Point of Sale integration, and the LivenPay API will enable immediate adoption of the platform by everyday people, making it 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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Important Notice

This white paper must be read in full and understood before a Contributor proceeds to contribute to this project.

This white paper was prepared by Liven to be a technical document setting out its plans for the LVN Token, the Offer, the and the long-term plans of Liven. It contains important information about the Offer as well as the risks involved in participating in the Offer. The representations in this white paper have not been subject of any external audit or independent verification.

This white paper is not a disclosure document, has not been lodged with the Australian Securities & Investments Commission, is neither a prospectus nor a product disclosure document. As it is not regulated by the Corporations Act, this white paper does not purport to contain all of the information that would be contained in a prospectus or that recipients may require in order to evaluate whether to participate in the Offer.

Neither the Australian Securities & Investments Commission nor any other regulatory body has examined, approved or disapproved this white paper, the Offer, the token generation event or the LVN Tokens.

The information provided in this white paper 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.

Liven reserves the right to consider each Application for the LVN Tokens and to accept or reject any applications. No LVN Tokens will be issued unless all applicable legal and regulatory requirements have been complied with.

Each eligible Applicant acknowledges that: no person has been authorised to give any information concerning Liven, LVN Tokens, or the token generation event other than as contained in this white paper and, if given, that information cannot be relied upon as having been authorised by Liven; and that they have been afforded an opportunity to request, and have received and reviewed, all information considered by them to be necessary or appropriate to verify the accuracy of, or to supplement the information contained in, this white paper and to make an informed decision about participating in the Offer.

Liven may, but without being under any obligation to do so, update or supplement this white paper from time to time.

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 Liven considers that mass adoption is unlikely to occur. It may be 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 significant interest in blockchain, current applications 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 mainstream adoption.

Liven is a universal rewards network with integrated payment facility aiming to consumerise cryptocurrencies for everyday people by solving these problems. Since 2014 Liven has grown to service 400,000+ users transacting at 1,000+ venues in Australia's two largest cities, Sydney and Melbourne, with international expansion beginning in Q1 2019 with London, UK and US. Processing millions in payments already, Liven rewards users with our network currency for every transaction they make. Liven is already integrated with a number of key Point of Sale (POS) partners allowing it to reach more than 20,000 venues. The next step in the evolution of Liven is the addition of blockchain to this payment system through the incorporation of an Ethereum ERC-20 token called LivenCoin, or LVN.

The unique features of the Liven Platform and the existing network of merchant partners and users will seek to address 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 Token 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 they are still paid in fiat. These features combined with Liven's presence in hundreds of venues and large, active user-base assists Liven to overcome the current barriers preventing cryptocurrency adoption at a retail level.

Liven's decentralised rewards protocol is governed by a smart contract which will enable rewards to be disseminated indefinitely despite a limited LVN Token supply, and encourages corrective behaviour with any external markets that may arise, giving the stability necessary for everyday use. LVN Tokens earned by transacting can also be donated directly to a charity.

The LVN Initial Coin Offering will offer for purchase 3 billion of the 10 billion LVN Tokens created with a hard cap of \$28M USD. Approximately \$8.4M will be set aside to cover the redemption/spending of the distributed tokens in the short term. The balance \$19.6M will be allocated towards (i) fuelling Liven's rapid global expansion starting with the UK and (ii) developing the new cryptocurrency gateway.

Introduction

- 1.1 Cryptocurrencies as Mediums of Exchange
- 1.2 Fragmented Incentive Marketing
- 1.3 Usability and Compatibility

1.1

Cryptocurrencies as Mediums 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].

1.2

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 who administer them. 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.

1.3

Usability and Compatibility

Adoption and widespread use of cryptocurrency is directly hindered by the prevailing utopian problem with cryptocurrencies, where proponents of blockchain projects fail to see the practical problems with implementing their grand designs in the real world. While cryptocurrency was created in 2009 bearing 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.



The Liven Network

- 2.1 Transparent ‘LVN to Fiat’ Conversion Rate**
- 2.2 A Large Network of Participating Merchants**
- 2.3 Charitable Fundraising**

Overview

The Liven Network provides a feasible solution to the aforementioned problems, bridging the functional gap between cryptocurrency and consumer-to-business transactions by seamlessly integrating a reward-based token economy into a market leading consumer payment platform. Liven currently operates 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 LVN or in combination with their linked card.

The new and updated Liven Platform aims to provide a dual market system to process transactions in fiat currencies and the Ethereum ERC-20 LVN Tokens at thousands of partner merchants on launch day, while rewarding users with LVN Tokens. Merchants can elect to be 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 its design.

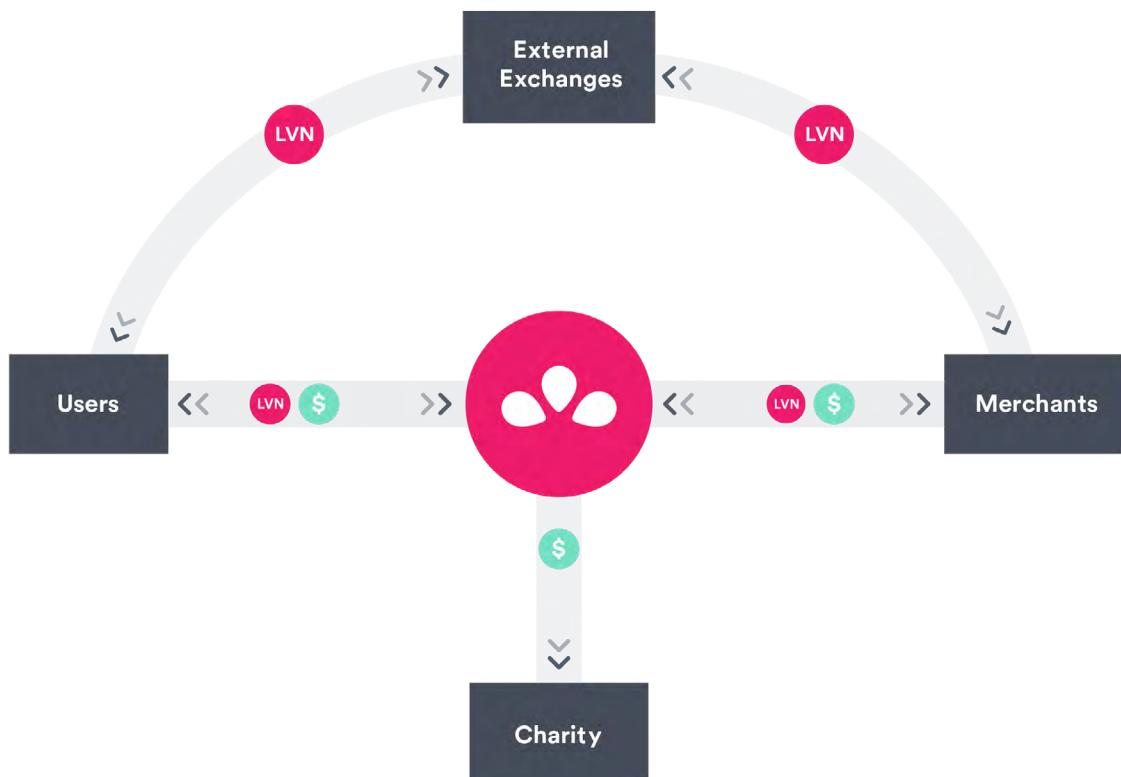


Figure 1: The Liven Ecosystem Liven

2.1

Transparent ‘LVN to Fiat’ Conversion Rate

The economics of the LivenCoin network have been designed in an attempt to achieve price stability. Consumer payments made in LVN through the Liven gateway are converted to fiat and paid to the merchant according to the Liven Platform’s internal LVN to fiat conversion rate. This is discussed further 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 within the Liven Platform based on the total amount of LVN Tokens in circulation and the total amount held under smart contract in the Reward Cache at any moment.

This transparent conversion rate gives both the consumers and merchants confidence in LVN’s purchasing power at any given moment (i.e. what amount of goods and services can be purchase and consume with the LVN Tokens). This also provides resilience to volatility, as users are likely to be 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 will be able to be exchanged for food in thousands of locations, accessible to everyone, everywhere, through the Liven Platform. In this way, Liven believes it can achieve truly crowd-sourced liquidity and volume.

2.2

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 50,000+ projected by mid to late 2019 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 400,000+ 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.

2.3

Charitable Fundraising

Charities incur significant costs to raise funds. Donors generally expect the majority of all of their contribution will be put towards the cause, but many are disappointed to learn the portion of donations consumed by fundraising, administrative and marketing costs.

In Australia, 80.8% of the population made some form of donation over a 12 month period in 2015-16, 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 amount to 85% of total revenue raised, with costs of ~30% typical for most Australian charities, meaning any passive, low-commission fundraising channel is highly desirable.

Currently, Liven users may share their LVN — 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 function will continue after the transition to blockchain, providing a cost-effective fundraising channel for charities and allowing diners to share their reward and pay it forward.





The Universal Currency for Food

- 3.1 A Global Rewards Currency
- 3.2 Trustless & Transparent Rewards Protocol
- 3.3 Socialising Peer-to-Peer Finance
- 3.4 Use of LVN by Third Parties via LivenPay API
- 3.5 Platform Exclusives to Drive Demand
- 3.6 Gamification

Introduction

We believe 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.

3.1

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 currently 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 blockchain token system means that users will 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 Liven Platform 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.

3.2

Trustless & Transparent Rewards Protocol

Some of the major advantages of blockchain are 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 LVN price within our network is always transparent and free from manipulation by Liven or any third party.

The use of 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 described. 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.

3.3

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 will be able to purchase LVN externally 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 supplemented by a username handle, similar to those used on 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.

3.4

Use of LVN by Third Parties via LivenPay API

Liven plans to 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.

3.5

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.

For example: a Liven partner restaurant might create an exclusive 'Liven Burger', a unique menu item that will only be served for one week.

3.6

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.

These elements will access funds from the company's promotional token reserve, the broader scale marketing budget or from Liven's commission on certain transactions. Liven's initial gamification mechanics will not be decentralised by design, but an extension of the company's ongoing lifecycle/retention marketing efforts, and calculated strategically to fit well within the long term value (LTV) determined acquisition cost (CPA) of an active platform user. Further investigation into decentralisation of these mechanics will be conducted at a later date.

Platform & Features

4.1 Users

4.2 Merchants

**4.3 Charities and Not-for-Profit
Organisations**

Overview

The Liven Ecosystem is comprised of the Liven Platform (a payment gateway with a built-in smart contract token reward protocol), users, 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 the Rewards Protocol which operates between the User's (via their wallet in the app) and the Merchants when transactions are made.

4.1

Users

Users comprise 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, (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.



4.2 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.

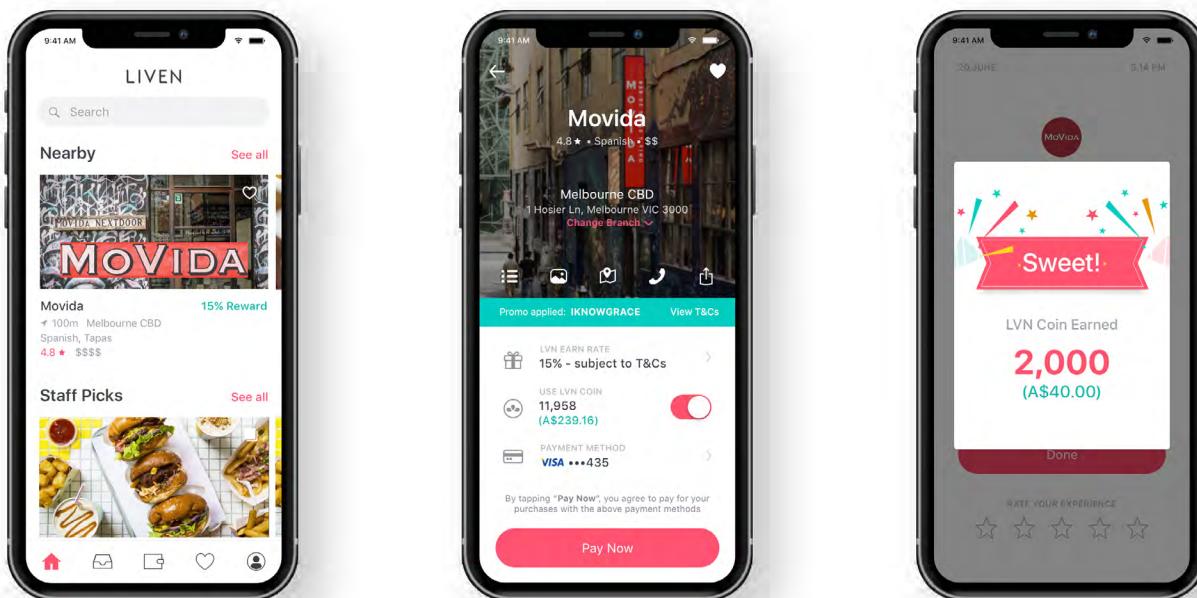
Merchants list their venues on the platform for free but pay a success-based service fee (10% to 40%) each time a transaction is processed as a result of the platform's marketing effectiveness for the purposes of (i) incentivising the users and encouraging return visitation (ii) marketing the business on the platform and (iii) sustaining and developing the Liven Platform.

The payments by users to merchants and LVN rewards received by users are processed with real time confirmation. The merchants receive payments in fiat, unless they nominate to receive LVN directly for their own purposes. Liven has an existing system for the automatic generation of transaction statements for provision to merchant partners, who are paid in fiat currency to a nominated bank account periodically.

4.3 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.

At the conclusion of the transaction dialogue 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.



Token Economics

- 5.1 Introduction**
- 5.2 The Reward Protocol**
- 5.3 Liability from the Initial Token Sale**
- 5.4 Dual Market Effect**
- 5.5 Progression of the LVN Token Economy**
- 5.6 The Technology Stack**

5.1

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, Liven considered some of the following key economic principles:

- The **Total Supply** of Tokens – a total of 10 Billion LVN Tokens 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 is the point of sale through the purchase of low-priced items (i.e food). It is therefore impossible for a substantial amount in fiat or LVN Tokens to flow in or out of the Liven economy in a very short time without a significant volume of merchant adoption, which prevent destabilisation of the LVN's value; and
- **Token Conversion Rate** – As the total number of LVN Tokens available is limited and no additional LVN Tokens will be minted after the initial token generation event, the internal conversion rate of USD/LVN is a function of that supply and restricted outflow of LVN Tokens compared with 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 1,000 venues and a run rate to 400,000+ users as early

as Q1-2019, once the transition process is complete.

Not unlike many business models, this economic model can be duplicated. However, its success depends on having a functioning merchant network and ecosystem with a 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 barrier to entry for companies wishing to create a similar business. Liven chooses to publicise and share the Liven Platform's economic model, and encourages entrepreneurs to adapt and modify our theory to build businesses and help to grow the blockchain economy industry.

5.2

The Reward Protocol

This section outlines the mechanics that define Liven's rewards and scarcity models. Unlike most cryptocurrencies each LVN Token has 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 will be variable, and an internal conversion rate¹ exists which gives each LVN Token purchasing value for use in restaurants and other Liven partner venues. This conversion rate is a function of the proportion of all LVN Tokens 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 Tokens. One half of the hourglass represents the reward cache, and the other half represents the LVN Tokens in circulation. When users make a transaction and spend fiat currency, they are rewarded in LVN Tokens which flow from the reward cache into circulation. When users make a transaction and pay entirely using LVN Tokens, LVN flows from being in circulation back into the reward cache (less the LVN Tokens 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 Tokens remaining in the reward cache. The less LVN Tokens 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 Tokens, they will be able to use that LVN 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 vary however as other users make transactions on the network, resulting in the amount

of LVN Tokens remaining in the reward cache changing. If there is no net change in the amount of LVN Tokens 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 Tokens that are 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 pool of 10,000,000,000 created LVN Tokens. 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 LVN Tokens in the reward cache, as is the case when a user settles their entire bill using LVN Tokens, 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 Token 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 (including Liven). 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, and is a variable of C_i , having units of millions of LVN Tokens, is given by Equation 1.1 and a plot of the curve is shown in figure 2. At the moment that the new Liven Platform is activated, the value of C_i will be 7000, as the reward cache will be equal to 30% of the total supply. The components of the rewards curve are explained in Appendix A1, and a closer view of the region to the left of the starting point at $C_i = 7000$ is also shown on a scale that enables the internal conversion rate in this range to be deduced.

$$\text{Equation 1.1} \quad E(C_i) = \frac{-6.75}{(C_i - 10,000)} + \frac{0.003 C_i}{(2 + e^{-0.05(C_i - 7148)})} + 1.5e^{0.0025(C_i - 9750)}$$

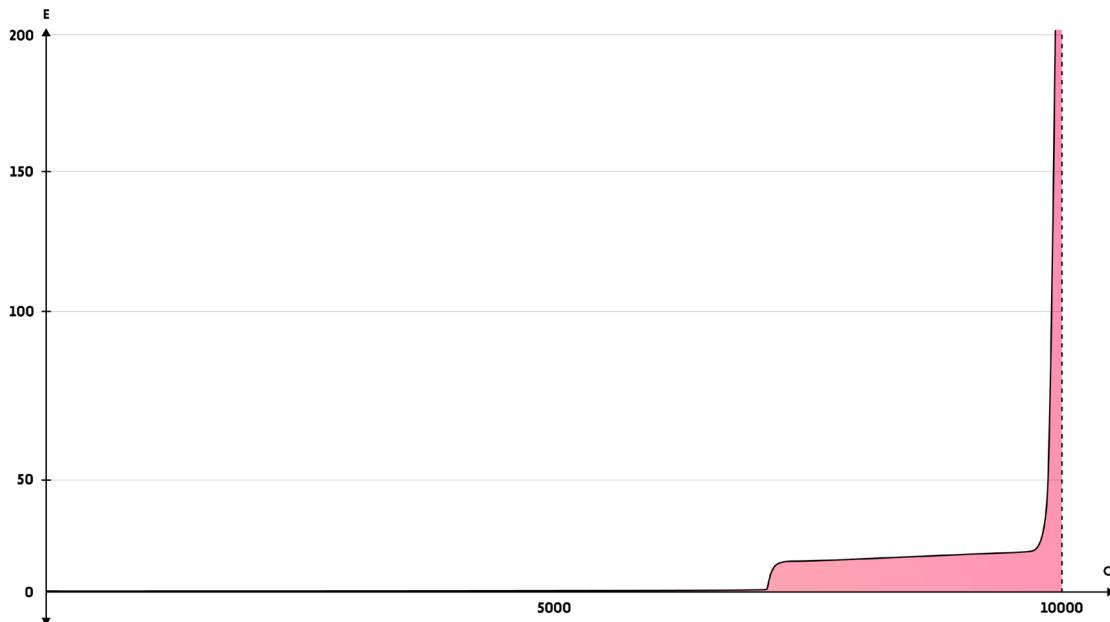


Figure 2: The plot of the Rewards Curve $E(C_i)$ with C_i in units of 1 million coins and E in units of USD/LVN. Each of the 10 billion coins minted are represented here.

If Liven and its user base grows, the reward cache will likely become depleted and the spending potential of each LVN Token in circulation within the Liven ecosystem may 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 Tokens, 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 regarding calculating consumption of LVN Tokens in each transaction is set out in Appendix A2.

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

$$v = \int_{C_i}^{C_{i+n}} \frac{-6.75}{(C_i - 10,000)} + \frac{0.003 C_i}{(2 + e^{-0.05(C_i - 7148)})} + 1.5e^{0.0025(C_i - 9750)} dC_i$$

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 Tokens exchanged in the transaction, where n is simply the difference in the start and end coin numbers, given by equation 1.3:

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

From this relationship we calculate the amount of LVN Tokens used for each transaction, whether the user is being rewarded in LVN Tokens or spending it at a venue. The higher the conversion rate, the less LVN Tokens 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 the integral of the rewards curve is shown in greater detail in Appendix A3.

5.3

Liability from the Initial Token Sale

Each LVN Token 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 LVN Token is eventually “spent” through the Liven Platform, unless the merchants opt to receive LVN Tokens directly. The

total value of all circulating LVN 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 Tokens in circulation at any time is given by the integral of the rewards curve from the zero coin, C₀ 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 that this liability can be met if and when required.

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

The above figures and the current reward curve is based on the Private Sale and Public Sale reaching the hard cap. In the event that the hard cap is not reached, these figures and the reward curve will be adjusted proportionally to reflect the change in the liabilities.

5.4

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 that LVN Tokens 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 those circumstances, we believe these forces should act as a balancing mechanism, ensuring there is rarely a significant deviation between the value of the LVN Token within the Liven Platform (the internal conversion rate) and its value on the open exchange market, providing stability to 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 value on the external exchange is higher than internal value.

Where the value of LVN Tokens on the external market rises steeply due to speculation (which Liven does not encourage) or other forces, users of the Liven Platform should realise

that an opportunity exists for them to earn externally overvalued LVN Tokens by transacting at a venue within the Liven network. They can then move these LVN Tokens from their Liven wallet to an exchange to sell at a higher value. If LVN Tokens are trading significantly higher on the external exchanges, 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 Token they would earn from the reward could possibly surpass the cost of the entire meal.

2. The price on the exchange is lower than internal value.

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

Both of these actions act as a balancing mechanism which Liven hope will prevent any significant discrepancy between the internal and external exchange rates. When a user buys external LVN Tokens on an external exchange and redeems them by spending on the Liven Platform, the exchange rate on the rewards curve moves to the left, lowering the internal price and when the user earns LVN Token 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 should lead to an increase in the usage of the Liven Platform, which is beneficial to our merchant partner network and Liven itself as well as for adoption and use.

5.5 Progression of the LVN Token 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 expect to see significant growth in our user base.

Of great importance is the effect of simple user base growth. Every active user of Liven, no matter how much they spend, will likely hold some amount of LVN Tokens, even immediately after paying a bill in the LVN currency, as they are awarded more LVN Tokens at the end of each and every transaction.

It therefore follows that if the user base grows and more people use the Liven Platform, the amount of LVN Tokens in circulation will rise.

User abandonment, which exists for all companies to some extent, results in LVN Tokens being awarded to a user and then ‘forgotten’ once the user uninstalls the application and leaves the network. While undesirable for the Liven network, this behaviour acts as a pseudo token burn function and has the effect of preventing the internal conversion rate moving to the left, as the rewards pool 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.

Given the rapid progression and development of new blockchain technology, Liven may consider adopting different blockchain solutions for the Liven Platform should that technology be more beneficial.

5.6 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.

In practice, Liven will maintain an internal ledger in addition to the Ethereum blockchain, in order to allow instantaneous payments at venues and between users wallets within the app. The internal ledger will write to the blockchain periodically in batches to optimise gas fees and avoid slow transfer times within the Liven network. When users transfer their LVN from their internal wallet to an external one or exchange, the

transaction will be written to the blockchain immediately and subject to the usual transaction times of the Ethereum network. In future we will work towards a fully decentralised model with no internal ledger, completely based upon the blockchain. the transaction will be written to the blockchain immediately

and subject to the usual transaction times of the Ethereum network. In future we will work towards a fully decentralised model with no internal ledger, completely based upon the blockchain.

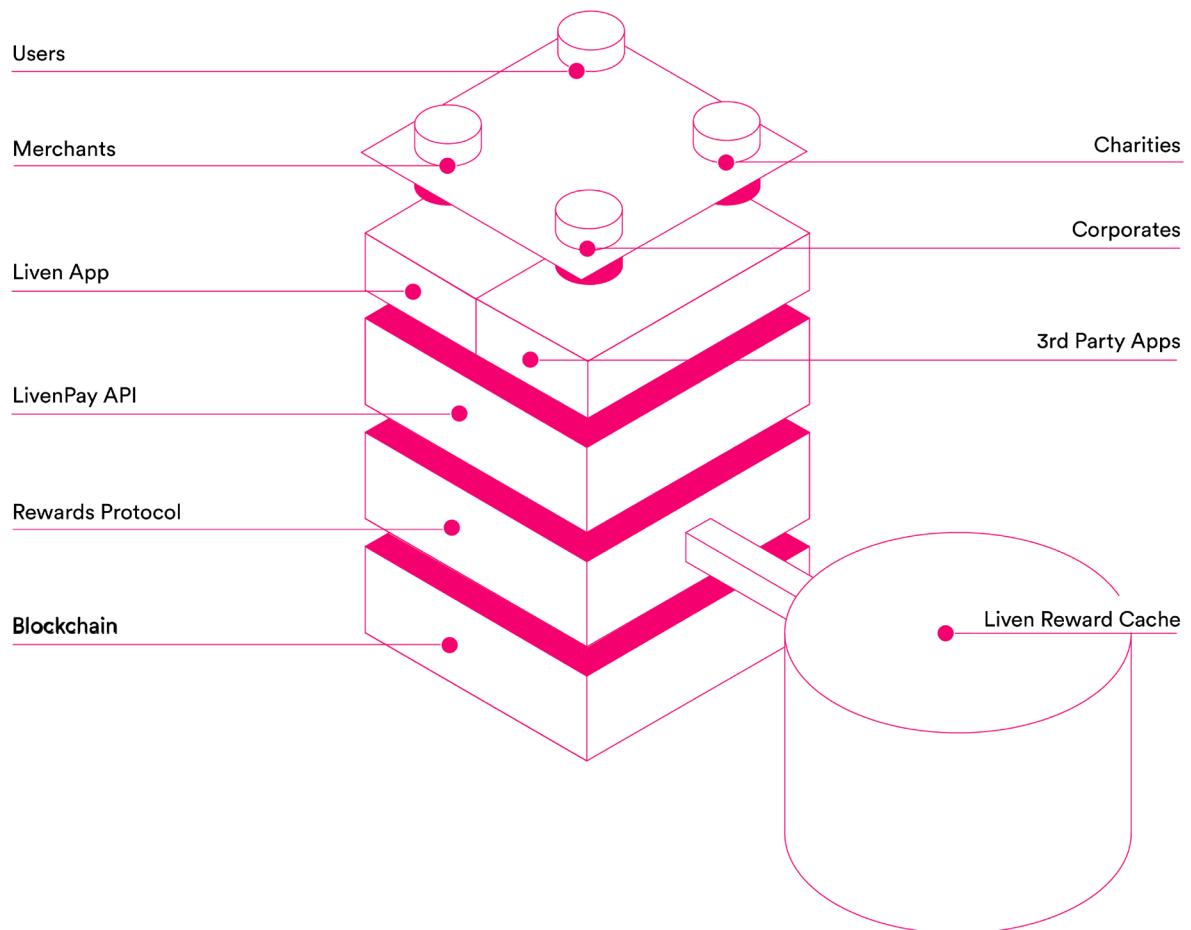


Figure 3: The technology stack

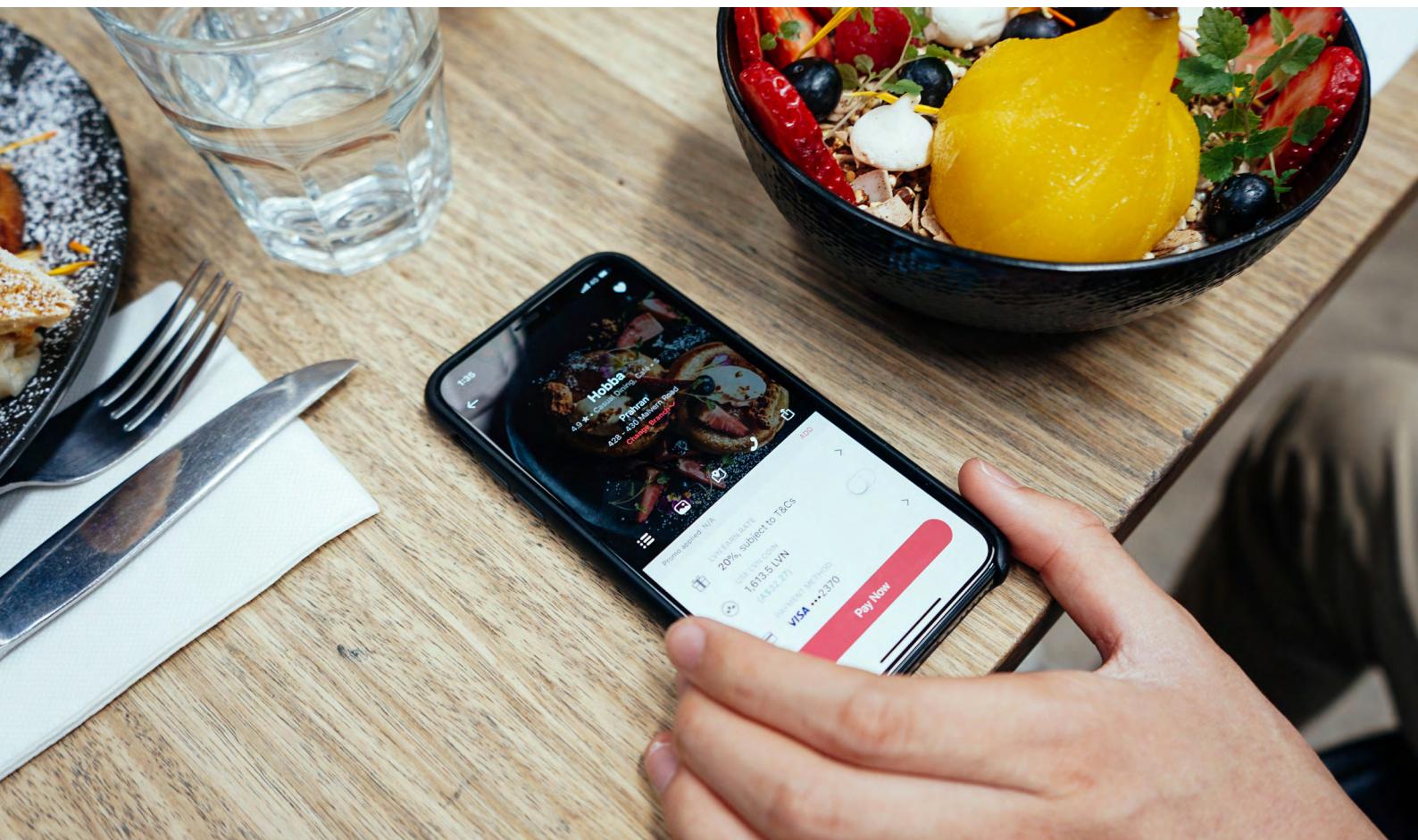
Token Generation & Sale

- 6.1 Token Generation Summary**
- 6.2 Tokens in Reward Cache**
- 6.3 Initial Token Sale**
- 6.4 Incentive & Reserve Tokens**

Overview

The token generation event will create 10 billion LVN. A maximum of 3 billion of these will be offered for sale through a token sale, to be released to purchasers at the conclusion of the event. Any tokens that are not sold during the sale will be burned, and the reward curve formula adjusted to maintain the same ratio of liability to funds raised that would be achieved if the hard cap was met. The smart contracts for the LVN token generation event and crowd sale contributions are viewable from Liven's public Github. All smart contracts have been independently audited by our partners at Hosho to ensure a high standard of security for the ICO, the audit report can be viewed [here](#).

The primary purpose of the Offer is to offer the pre-purchase of food and other products or services represented in the form of the LVN Token and to utilise part of the funds received for the pre-purchase to create the new Liven Platform ecosystem, including the broad distribution of tokens to potential new users through the ICO event and enabling the ability for tokens to be accepted in new geographical locations through the launching of the Liven service in those locations, and other activities to meet this end. There is no guarantee that this objective will be achieved as it is merely an indication of what Liven aims to achieve over the relevant period. Liven's objectives may change at the discretion of its directors. Liven may not be successful in meeting this objective and the token generation event is not guaranteed.



6.1

Token Generation Summary

The below table outlines the key figures and allocation breakdown for the LVN token generation event. The individual breakdown of each portion is detailed on the following pages.

Instrument	LVN
Token Type	Ethereum ERC-20
Token Issuer	Liven Pty Ltd ACN 161 315 519
Total Supply	10 billion (10,000,000,000) LVN Tokens
Reward Cache	30% (3,000,000,000) LVN Tokens
Available for Sale	30% (3,000,000,000) LVN Tokens
Reserve Tokens	15% (1,500,000,000) LVN Tokens
Incentive Tokens	25% (2,500,000,000) LVN Tokens

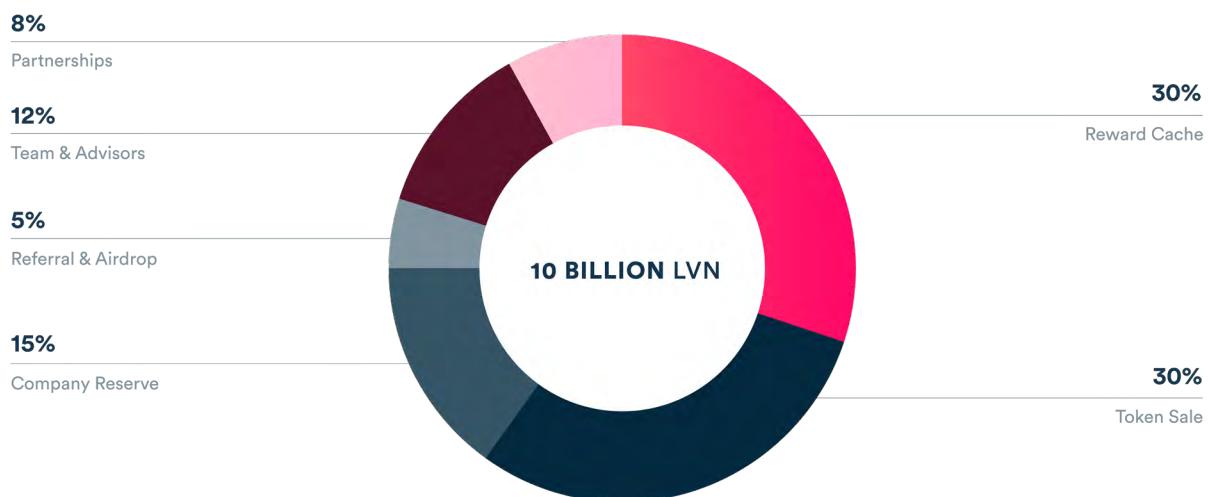


Figure 5: Token Allocation

6.2

Tokens in Reward Cache

Worth noting is that the Reward Cache which is comprised of 30% of the total token supply can not be used by Liven to “flood” the market by being rapidly put into circulation. The balance of the reward cache is locked by smart contract, and is only interacted with through the Reward Protocol described above, as users transact within the Liven network of venues. These tokens are not available to Liven for raising further

funds, and can only be released to users as rewards, and at a diminishing rate, as spending occurs within the network.

In the event that reward cache tokens enter circulation through user rewards the internal conversion rate increases, meaning that the rate at which they are disseminated decreases, according to the reward curve. The end result is that an increase in the circulating supply will always coincide with an increase in the internal conversion rate; providing a measure of insulation against price decreases in the external market despite more coins being in circulation.

6.3

Initial Token Sale

Total Tokens for Sale	3 Billion (3,000,000,000) LVN Tokens
Token Price	0.015 USD/LVN
Accepted Currencies	USD, AUD, ETH
Target Raise	USD\$28M

Indicative Timeline*

Presale Offer Period	4 ~ 6 month before the Presale Offer Opening Date
Public Sale Open Date	2 ~ 4 weeks after the Presale Offer Closing Date
Public Sale Closing Date	6 ~ 8 weeks after the Public Sale Opening Date
Expected Date of Token Generation	2 ~ 4 weeks after the Public Sale Offer Closing Date

*The above timetable is indicative only. Liven reserves the right to vary the dates and times set out above subject to applicable laws. In particular, Liven reserves the right to close the Offer early, extend the date the Offer closes, accept late Applications or withdraw the Offer and the issue of LVN Tokens (in each case without notifying any Contributor). The public sale open date will be published on livenpay.io including all other relevant dates.

Vesting & Lockup Period

Before the beginning of the public sale Liven will hold a private presale with several tiers, with a soft cap totalling 2,250 million LVN. All tokens purchased during the private presale will be subject to vesting schedules of 6 to 12 months in length. All bonus tokens will however be locked up for 12 months, and are subject to a further 6 to 12 month vesting period.

Know Your Client (KYC) Procedures

All participants of the token sale will be subject to Know Your Client (KYC) and Anti-Money-Laundering (AML) checks by Liven. These checks will establish the identity and residency of all contributors, and will require contributors to submit identification documents. Contributors who fail the KYC checks will be forbidden from taking part in the ICO (any contributions already made will be refunded).

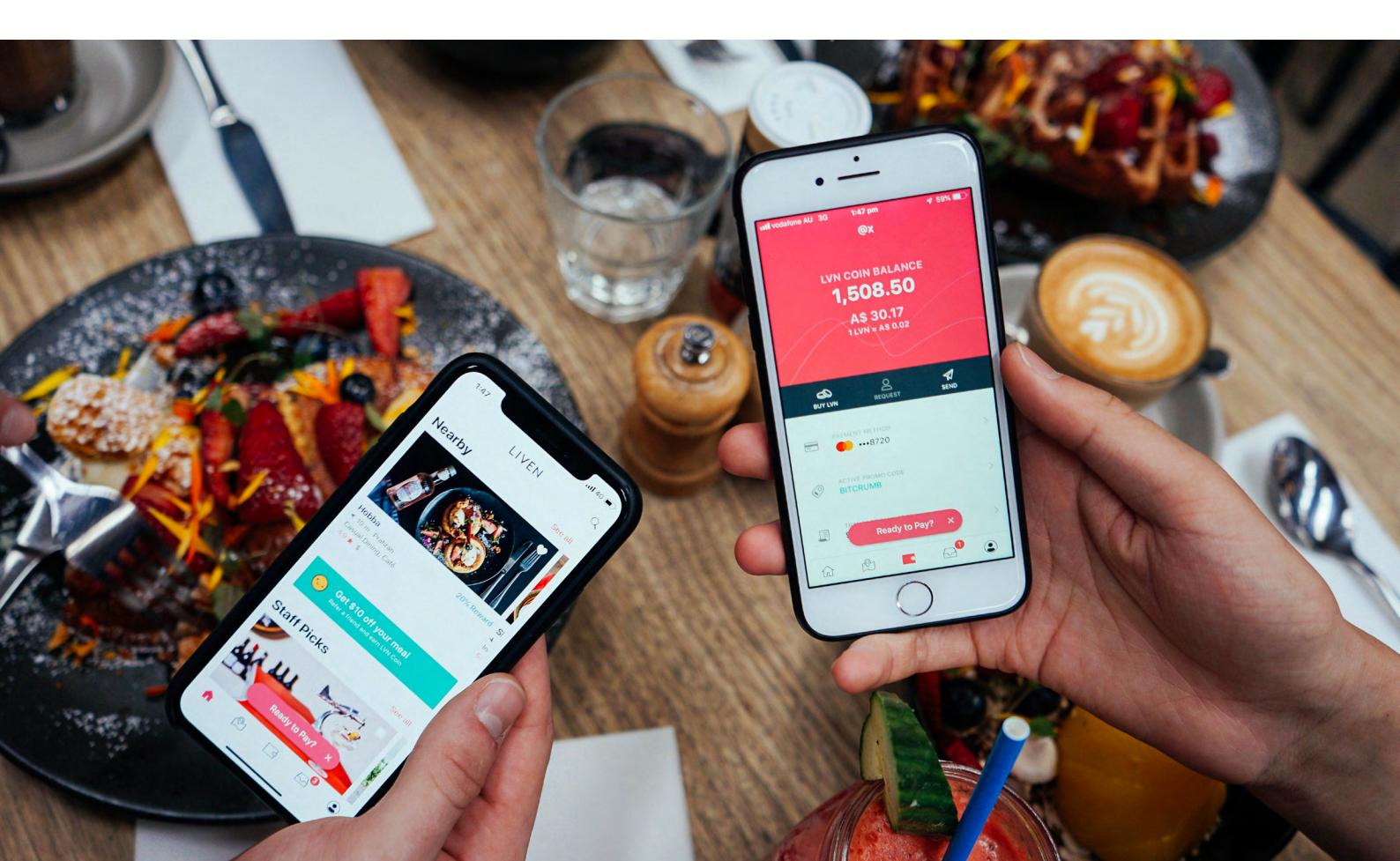
The KYC/AML process will be done internally with the assistance of third party products such as Thomson-Reuters World Check, for the verification of documents and screening of participants.

This process is essential for Liven to be viewed as a legitimate partner to public bodies and other businesses and to ensure that all funds raised in the token sale are legitimate, not coming from illicit sources, people under sanctions or organisations with criminal or terrorist links. Liven will also employ IP-address traffic blocking measures to prevent residents of excluded countries (see Section 13.6) from participating in the public sale.

These checks are also important to protect contributors, as any regulatory investigation that may arise in the future into the source of funds raised could impede the progress of the project or result in the loss of ability to operate in certain markets.

Token Price During Public Sale

We accept contributions made in Ether, Australian Dollars and United States Dollars. The price of LVN will be set in United States Dollars, with other currencies value relative to the United States Dollar evaluated at the time of each contribution.



6.4

Bonus Token Tiers for Early Purchases

The Initial Token Sale will be broken into 8 tranches. Participation in earlier tranches offer a better bonus rate. A tranche is filled when either the maximum allocated tokens are sold or the allocated amount is received, whichever comes first.

Tranche*	Max. Allocated Tokens	Min. Allocated Tokens	Bonus Tokens
1st Tranche	450M	US \$3.5M	35%
2nd Tranche	450M	US \$3.5M	30%
3rd Tranche	350M	US \$3.5M	25%
4th Tranche	350M	US \$3.5M	20%
5th Tranche	350M	US \$3.5M	15%
6th Tranche	350M	US \$3.5M	10%
7th Tranche	350M	US \$3.5M	5%
8th Tranche	350M	US \$3.5M	N/A

6.5

Incentive & Reserve Tokens

Description	Amount	Vesting/ Lockup
Existing Staff	5% (<i>0.5 billion LVN</i>)	12 months vesting
New Staff	5% (<i>0.5 billion LVN</i>)	12-36 months vesting
Advisors	2% (<i>0.2 billion LVN</i>)	12 months vesting
Referral Program	2% (<i>0.2 billion LVN</i>)	6-12 months vesting
Partnership	8% (<i>0.8 billion LVN</i>)	12-24 months vesting
Bounty Program	2% (<i>0.2 billion LVN</i>)	N/A
Airdrop Campaign	1% (<i>0.1 billion LVN</i>)	N/A
Company Reserve	15% (<i>1.5 billion LVN</i>)	N/A

Team & Advisory

7.1 Core Team

7.2 Advisory Board

7.3 Extended Team

Overview

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.



7.1

Core Team

William Wong Chief Executive Officer



William received a Bachelor degree of Law and Politics at Monash University, graduating with honours in the top one percent of his class. There, he won an award for his thesis on legal research. William has also completed his Masters of Banking and Finance at Monash. William has 9 years experience in trading Options, Equity, Bonds, FX, CFD, Gold, and Oil. In addition to this, he completed a diploma of Computer Science from Stamford College. He founded Liven while working full time as a commercial lawyer. He spent 6 years in commercial law and consulted for hundreds of restaurateurs which provided 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 Chief Science Officer



David received a Bachelor of Engineering from Monash University, graduating with first-class honours. He went on to complete his doctorate at Monash and was awarded a CTS Scholarship to undertake the Graduate Certificate of Commercialisation of Research during his candidature. David 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 the Salesian College Young Achiever Award (2018). 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 presented at several International Conferences, as well as advising an Australian Parliament Standing Committee on Education and Innovation.

Grace Wong Chief Evangelist



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 and property law, with a deep knowledge of 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 of the top startups in Australia. Grace has also won various industry and tech awards including the 2018 B&T 30 under 30 and 2018 SmartCompany Smart 30 Under 30.



Cheng Chi Chief Technology Officer

Cheng received a Bachelor of Technology (Computing Studies) and a Masters of Computing at The Royal Melbourne Institute of Technology (RMIT), graduating as Dux (first in class) for his Bachelors and with distinction for his Masters Degree. Cheng is Liven's lead developer and Chief Technology Officer, 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.



Shahrooz Chowdhury Chief Product Officer

Former CDO of restaurant of the year, Guzman y Gomez & leading real estate app, Domain. A B&T 30 under 30 winner, recognised by his peers as one of the industry's most talented executives. Shahrooz adds a wealth of tech exec experience in scaling hyper growth companies leading product, dev, data & marketing teams. From drone delivery & solar to blockchain he has always been an industry pioneer.



Tom Nash Blockchain Project Lead

Co-founded Australia's leading blockchain development house, responsible for leading the most reputable local projects in blockchain implementation and ethereum smart contracts. Tom is skilled in software architecture, solidity, IPDS and Web3.js.



Alexander Ramsay Blockchain Architect

Co-founded Australia's leading blockchain development house, responsible for leading the most reputable local projects in blockchain implementation and ethereum smart contracts. Alex has deep knowledge of and experience in React, 3D Systems and start-ups.

7.2

Advisory Board



James Mawhinney

Founder, Mayfair 101 & IPO Wealth

James is founder of Mayfair 101, a boutique investment group with a portfolio spanning more than 10 countries. Having co-founded and scaled a digital marketing company that he subsequently listed on the Australian Securities Exchange (ASX), he has substantial commercial experience in local and overseas markets in investment management, mergers & acquisitions, IPOs, ICOs and high growth businesses.



Lon Wong

Founder and CEO, ProximaX

Lon is a past President and Advisor of NEM.io Foundation. He spent close to 4 years - from 2014-2018 - in the development of the NEM project, helping to nurture it to become the top two performing cryptocurrency by market appreciation in 2017. Lon was instrumental in contributing to the best-of-breed design of the NEM blockchain solution.



Michael Bacina

Partner, Piper Alderman

Michael provides clients a valuable advantage in dealing with the legal issues around cryptocurrency and blockchain. Michael has a wealth of experience in commercial negotiations, litigation, construction, strata and insolvency. He leverages his past experience as a former software developer and his international legal experience gained working for boutique and national law firms in both Australia and Canada.



JP Thorbjornssen

Founder, CanYa

JP studied aeronautical engineering and was an operational Air Force pilot. He is now founder and CEO of CanYa, a decentralised ecosystem for peer to peer services. He is also the co-founder of Tokenbooks a fully-featured crypto accounting and treasury management solution and the founding director of MasterNode Ventures, a full-stack blockchain advisory services company.



Nick Bell

Founder, Appscore

Nick is recognised as one of Australia's leading entrepreneurs under the age of 40 and was recently listed on the BRW Young Rich List with a self-made fortune of \$114 million. With a start-up capital of only \$400, Nick's group of companies that offer app development, digital marketing, website hosting, domains and website security now turn over more than \$75 million world-wide.



James Waugh

Director, Blueblock.io

James has been embedded in the cryptocurrency and ICO space since the Ethereum network launch. After contributing to 50+ ICO's, James has been advising on ICO best practices, token economics, smart contract architecture and community building. James is also involved with the Blockchain Association of New Zealand and is heavily involved in the Australian ICO space.



Tony Stuart

CEO, Unicef Australia

Tony brings 20 years of experience in various executive roles including as the CEO of NRMA and Chairman of the ACNC. He has a deep and longstanding commitment to the not-for-profit sector and a proven track record of outstanding leadership and is a member of the Prime Minister's Community Business Partnership. His career has been balanced between listed, private, government, membership and charity organisations.

7.3

Extended Team



Lucien Hopkinson
General Manager, Sydney
ex DellEMC, DriveYello



Jan Uwland
Head of Marketing
ex Hired, SCA



Hamish Buttle
Senior Growth Hacker
ex Colenso BBDO



Tim Barrett
Head of Operations
founder Frame Matrix



Hemant Bosamia
Lead iOS Engineer
ex Surefire, Millipede



Yanjie Jo Yang
Lead Java Engineer
ex ChongDong EB



Xiaolei Dong
Phython Developer
ex GoWithTommy



Qi Zheng
Backend Developer
ex Qding Net, Meitianhui



Kristen Allen
Head of Social
ex DELWP



Hanny Allison
Head of Customer Service
ex Menulog



Alix Xiyu Yang
Project Manager
University of Toronto



Jacklyn Yap
Sr. Partnerships Manager
founder Fliptrip



John Carmichael
Sr. Partnerships Manager
ex Foxton's, Celica



Sandeep Singh
Financial Controller
ex ICICI Bank



Jason Mulholland
Marketing Coordinator
ex Mazda



Max Nightingale
Partnerships Manager
ex SITV, MDB



Sam Pagano
Content Manager
ex Lloyd's



Red Hutchison
Growth Developer
ex Lucas Group



Dixon Wight
Operations Coordinator
ex Rowland Ventures



Linh Tran
Growth Coordinator
ex Uber



Bill Yao
Accountant
ex Manera



Tomas Canale
Key Account Manager
ex Huawei



Rachel Lim
Marketing Coordinator
ex MadeComfy



Mitchell Reeves
Community Manager
ex Creative Activation



Clara Wijaya
Graphic Designer
ex Leo Burnett Kuala Lumpur



Anastasia Sujana
Graphic Designer
Swinburne University



Anna May
UX Designer
ex BBDO Proximity



Maggie Zhou
Social Media Coordinator
ex Broadsheet



Carmen Lau
Marketing Associate
RMIT University



Colin Xu
Operations Associate
University of Melbourne



Anagh Sawant
Account Manager
ex Growing Energy Labs



Shasheel Kumar
Account Manager
ex Infosys

Partners

8.1 Investors

8.2 Strategic Partners

8.3 Key Merchant Partners

8.4 Charity Partners

Overview

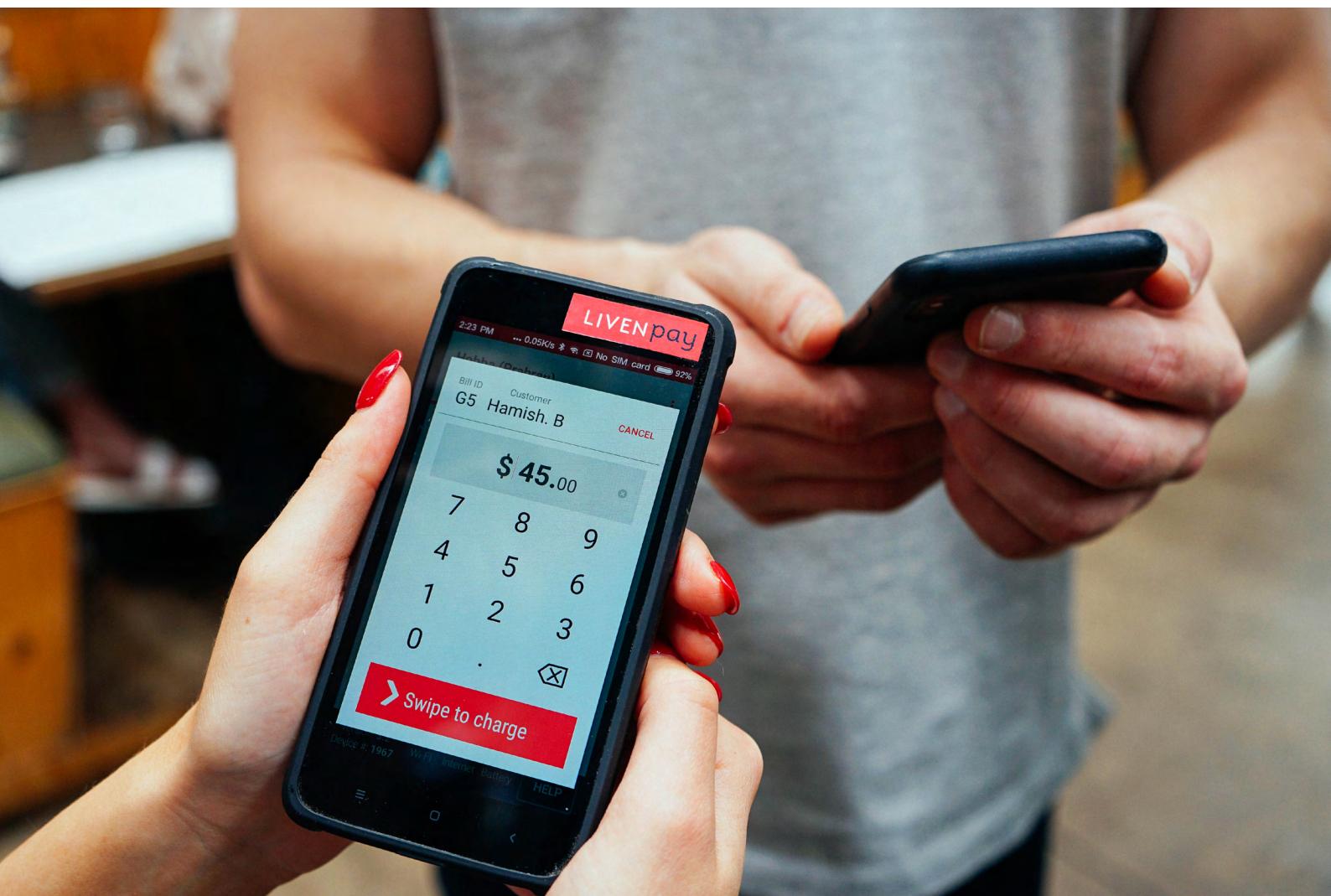
Since its inception Liven has leveraged partnerships across a broad range of industries to accelerate our growth and bring value to our users; this strategy will continue into the future. Identifying the potential for relationships with synergy is a skill the founders have honed over more than 4 years,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

8.1

Investors

Liven has already completed 3 rounds of fundraising, along with the associated due diligence required to convince investors of the strength of the business and competence of the team; a real testament to the strength of the project. The latest round completed in March of 2017 saw the injection of \$10 million AUD of venture capital into the business from Mayfair 101 and IPO Wealth.

MAYFAIR ||| 101



8.2

Strategic Partners



FLEX DAPPS

UBER



KOUNTA

ABACUS



8.3

Key Merchant Partners



Sharetea®



MOVIDA



IPOH CLUB

8.4

Charity Partners



Expansion

9.1 Australia

9.2 United Kingdom

9.3 United States

9.4 Beyond Food & Beverage

9.5 Competitive Analysis

Overview

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 30+ cities by October 2020. Immediately following the ICO, we intend to open up in 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.

As a marketplace platform, Liven's efforts and practices in business development and consumer marketing are paramount to the success of the project and therefore the LVN Token. It is also worth noting international expansion is a sizable challenge for any operation. With 4 years of operating experience with a product in market with over a third of a million product users and over a thousand paying merchant clients in two highly competitive urban markets, the team executing this project are beyond well equipped to undertake such an endeavour, as proven by speed and efficiency launching and scaling operations to a second city from initial Melbourne headquarters. Liven has a proven track record of cost effective and massively scalable user and client acquisition marketing using both digital and traditional media, in addition to advanced, AI driven retention automation, lifecycle campaigning, sales promotion strategies, affiliate marketing, and an inherently engagement optimised platform with referral at the core of its design.



Not dissimilar to many existing O2O businesses (Uber, AirBnB, Deliveroo), Liven offers new users to the platform a starter credit towards their first purchase to rapidly accelerate user-base growth and tighten funnel dynamics pushing a greater percentage of installs to become frequent platform users. Historically, Liven has seen consistent scale of app installs at margins drastically below the Australian national average - at a magnitude of up to 80% lower.^[4]

As a network loyalty platform designed to increase return business, merchant partners are encouraged to spread the word about Liven to their customers and stakeholders. As new merchant partners are onboarded, and the strength of the network increases, this effect amplifies with more merchants actively promoting the platform to their own audience, and Liven having access to a greater network of merchants, providing more value to the consumer as a unique selling point.

Liven employs an advanced array of technological tools and content strategies to ensure new users are informed, incentivised, stimulated, and retained to the platform for an extended lifecycle with high referral and advocacy rates. Through the use of geo-targeted and personalised push notifications, programmatic recommendations, and user interface modifications, Liven achieves a product execution that maximises key user engagement metrics.

Regarding business development, Liven has implemented its own native business development management application, enabling sales representatives to locate, qualify, and score leads before pursuing to acquire them as network partners. Liven's business development team spans two cities, with industry veterans leading the strategic direction and an elastic salesforce of up to 20 people conducting direct business development to merchants. The b2b acquisition model as it stands is optimised for international scaling and will likely increase in efficiency as new cities are added and the notoriety of the Liven Platform increases.

Groundwork is well underway in developing a fully functioning launch model for international markets by way of campaign strategies, visual assets, PR launch plans, recruitment models, and partnership expressions of interest pre-secured.

Another significant element to Liven's expansion plan is full product integration into global point-of-sale technology providers and existing small business financial infrastructure. Liven is in the progress of integrating the LivenPay API directly into many of Australia's leading point-of-sale technologies enabling immediate access to 100,000 additional merchants directly within 12~18 months and without the need to provide hardware to accept LVN as a currency.

9.1 Australia

The immediately addressable restaurant market is \$12 billion AUD per annum 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^[5].

9.2 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^[6].

9.3 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^[7].

- **San Francisco**

While the population of San Francisco is smaller with only 900,000 inhabitants, it has the most restaurants per capita of any American city, with 39.3 restaurants per 10,000 households^[8].

- **Austin**

Austin restaurants average the 4th highest revenue of the US largest 25 cities^[9]. 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^[10].

9.4 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^[11].

- **Cinema**

The cinema industry had global ticket sales of \$38 billion US dollars in 2016^[12]. 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 complementary food, beverage and retail services. In the US alone revenue for live music events totalled 9.28 billion U.S. dollars in 2015^[13].

- **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)^[14].

- **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^[15].

9.5

Competitive Analysis

While Liven has no direct competitors, we do compete in certain dimensions with a range of reward programs, lifestyle aggregators, payment processing providers, and digital marketing solutions.

Some degree of overlap exists with the following business types:

- Reward programs such as Amex Membership Rewards program, Flybuys and Velocity; and Online Affiliate reward networks such as Shopback.
- Blockchain based competitors in rewards and loyalty such as Synchrolife, Emu Project, Ewaiter and Tripago have all collapsed following their initial token offerings due to lack of business development ability and audience.
- Alternate loyalty services which include loyalty aggregator services such as Rewardle or Hey You; and merchant's own stand alone loyalty apps, such as those offered by McDonald's, Subway and Starbucks among others.
- Substitutional competitors for people in the hunger need-state which include delivery services such as Deliveroo, Menulog or UberEats;
- Alternative, substitutional payment facilities such as Physical Card Payment at Point of Sale, including Visa and Mastercard; Tokenized Wallets such as Alipay, Wechat Pay, Google Pay and Apple Pay and other Payment Apps such as Afterpay and Zip Pay.

Rewards platforms such as frequent flyer programs generally suffer from a lack of value for consumers, with unclear value for "points" which often translate to an extremely small reward per dollar spent. These systems also provide little value for merchants as they lack the ability to push consumers to discover new venues. Liven's rewards are significantly higher and represent an actual dollar spending power within the network which is transparent.

Loyalty aggregators offer consumers low flexibility, with the customer's rewards only redeemable at the merchant where they were earned. Stand alone loyalty platforms are expensive to develop and maintain and similarly lack the flexibility desired by consumers. Liven's symbiotic ecosystem approach of allowing rewards earned at one merchant to be spent at another benefits the entire network through higher engagement levels and enhancement of venue discovery.

Liven has demonstrated a business model and unit economics that afford an unprecedented margin to incentivise this two sided market to come together and transact. This commercial driver is further supported by an Uber like retail user experience combined with native loyalty mechanisms to sustain a model where a perpetual Liven wallet balance builds repeat purchase momentum.

No payment processing network is purpose built for better experiences and no incentive marketing model is designed from the ground up to be frictionless, everything we do is unconventional in the name of making a better interaction between business and consumer. Liven is bringing payments, customer experience, behavioural data, and digital marketing to come together. Liven is bringing payments, customer experience, behavioural data, and digital marketing together as one.

Alternative Payments

Company	Strengths	Weaknesses
Visa	VISA facilitates electronic funds transfers worldwide, most commonly through Visa-branded credit/debit cards. Users can opt into a Visa Rewards program to receive points.	Most credit card (CC) processors do little to assist merchants in driving traffic and are not focussed on experience discovery, loyalty or rewards for customers, and hence cannot command large commission rates from merchants. Additionally, the payment rails facilitating magnetic strip or chip cards cannot carry high resolution data, or interact with the user in a meaningful way.
Mastercard	Mastercard processes payments between banks of merchants, card issuing banks and credit unions of customers who use the Mastercard-branded credit/debit/prepaid card.	Similar to Visa, Mastercard itself does not drive traffic to merchants or help consumers to discover new experiences. It does not reward them for transacting, and carries the same interaction and informational limitations.
WeChat Pay	WeChat is China's #1 messaging platform with over 1 billion active monthly users. 800 million of these use WeChat Pay at over 300K offline stores in 40+ countries.	WeChat occasionally provides highly variable offers at select stores, but customers are not incentivised for every payment. LivenPay, however, goes beyond simple payment utility by acting as a platform for loyalty and the discovery of experiences. Merchants using WeChat don't have functionality to manage their experience and increase awareness to platform users, and users are less enticed to specific venues by Wechat due to its ubiquitousness.
AliPay	AliPay is another leader in China for online and mobile payments with over 520 million users and facilitating over 175 million transactions per day. Alipay's strength lies in its eCommerce payment facility for retailers and wholesalers.	Due to Chinese government policy, AliPay only supports RMB settlement and is therefore not suited for global expansion to users outside of China. LVN, however, transcends borders and can be used internationally in conjunction with local fiat currencies.

Company	Strengths	Weaknesses
PayPal	PayPal offers a reliable way, for over 218 million users, to make or receive payments online and with a mobile app.	PayPal has not focussed on in-venue payment processing, and like the CC providers previously mentioned they do not offer discovery or loyalty platforms for users or merchants to drive usage.
Google Pay	Google Pay is a digital wallet platform and online payment system for in-app and NFC purchases on android phones, tablets or watches. P2P payments too.	Their payments approach focuses only on utility as opposed to the customer-centric and rewarding approach of Liven. Moreover, the Liven platform is being designed to be engaging and is also a platform for merchant discovery.
Apple Pay	Apple Pay is a mobile payment and digital wallet service for payments in person (NFC) and on the web.	Apply Pay is exclusive to iOS users which only accounts for 12% of smartphone users worldwide. Thus, Liven is better poised for global expansion as it is available to both Apple and Android device users. Apple Pay also cannot offer target-specific marketing because transaction details are private.

Rewards Programs

Company	Strengths	Weaknesses
Amex Membership Rewards	Amex, with a globally recognised brand, is known to be the safest card when travelling internationally. Depending on the credit card, users earn different points for different purchases to be redeemed.	While Amex' rewards program is the strongest offering from a CC company, it has varied and convoluted reward rates, annual card fees that erode the end value to users, caps on yearly earnings and rebates that take days to weeks to be realised. Liven, however, has clearly communicated reward rates and no users fees ensuring users never make a net loss.
Flybuys	Flybuys is Australia's largest loyalty program with over 10 million cardholders who earn points from household consumer purchasers and can exchange these points for gift cards and other rewards.	Flybuys points are quite arbitrary and fail to create value for the customer. Expiry is short and their redemption is not flexible; a limited range of items are available for redemption. Liven rewards our digital currency on every transaction which can be used to pay at other venues immediately following.
Shopback	Shopback is a cashback reward program in the Asia-Pacific region with over 5 million users. Online shoppers get a portion of their cash back when purchasing through their platform. They are partnered with global brands and online giants.	Shopback only provides services online and not in-venue and doesn't incentivise loyalty. Liven, however, promotes the in-store experience and is more lifestyle-focused. Moreover, Liven instantly rewards users whilst Shopback takes several days to credit users with their rewards, after which they must 'cash it out' to a bank account.

Payment Aggregators

Company	Strengths	Weaknesses
Rewardle	Rewardle aggregates individual merchant loyalty cards with their own loyalty card for Rewardle partner merchants.	Rewardle facilitates the use of multiple loyalty cards digitally, with rewards only able to be redeemed at the individual merchants at which they were earnt, lacking flexibility.

Stand Alone Merchant Apps

Company	Strengths	Weaknesses
McDonalds, Starbucks	In general, these apps offer loyalty points, app-exclusive deals and in-app menus for customers for a single brand.	Inflexible, annoying to keep track of for consumers and sporadic in offer quality, very few of these programs offer meaningful rewards to users. These programs focus on limited-time deals and do not fit into the lifestyle of experience conscious consumers. Such apps are prohibitively expensive for most merchants to build, administer and maintain.

Substitutional Competitors for Food

Company	Strengths	Weaknesses
UberEats	<p>UberEats offers peer-to-peer food delivery services. Their loyalty program, Uber Rewards, offers \$5 back for every \$500 spent and tiered rewards.</p>	<p>With Liven, merchants have control over their quality of service and are accountable for their reputation (they don't risk bad service from untrained deliverers).</p> <p>Liven brings people into venues, helps to build brand loyalty and encourage users to go in for the dining experience. Liven also has the potential to expand into other verticals outside of food that UberEats cannot.</p> <p>Regardless, there will always be healthily sized markets for both delivery and in-venue dining, meaning competition from such providers is not a major concern for Liven.</p>
EatClub	<p>EatClub advertises flash deals at restaurants with spare tables.</p>	<p>EatClub does not promote loyalty to merchants as a "flash deals" approach is only offered during certain times and appeals to a cost sensitive segment whose dining decisions are more influenced by price than experience.</p>

Blockchain-based Payments Gateways

Company	Strengths	Weaknesses
Emu Project	Emu Project is a food ordering app allowing users to view picture menus, see nearby restaurants and pay in cryptocurrencies.	This project did not progress past its ICO, likely due to an underestimation of the difficulties of getting merchants onboard, something that Liven has overcome over a period of 4 years of learning.
Crypterium	Crypterium offers cryptobanking services for consumers and merchants, including P2P transfers, currency exchange and loans. They propose a linked CC product that lets users pay with a Crypterium debit card or linked Apple/Android Pay through CC rails at venues.	Crypterium currently only allows the purchase of digital products through their app. In venue payments made with their card are subject to currency conversion rates and the users purchasing power therefore subject to movements in the open crypto market.
BitPay	BitPay provides Bitcoin and Bitcoin Cash payment processing services for merchants for flat 1% settlement charge.	Shapeshift APIs on top of an exchange layer. BitPay pays the merchant in the currency they want and then buys the consumers currency at poor exchange rates and sells it on quickly while the bitcoin is transferred to the user wallet. Unlike LivenPay settlement is not confirmed instantly due to this intermediary step. The value of the BTC is the most confusing part of the process and BitPay take several percent commission on the exchange rate, unlike Liven who have a transparent internal value for LVN.

10. Use of Funds

Expansion into new markets requires significant funding requirements for staffing, office space, marketing, and legal advice as well as increased technical development and infrastructure costs. The liability for circulating tokens that arises as a result of the Initial Token Sale also places a requirement on Liven to hold certain amounts of funds

in reserve to cover the short-term costs of reimbursing merchants in fiat currency should LVN Tokens be redeemed at their venue.

The following information outlines our best estimation of the costs required, and is based on the collective experience of our team and advisory members who have run successful businesses of their own in relevant markets.

Description	\$15M USD Raised	\$28M USD Raised
Product Development Target	Develop the LVN Token gateway and implement it on top of the existing Liven Platform. Further develop the basic and essential features.	Develop the LVN Token gateway and implement it on top of the existing Liven Platform. Further develop the full set of features.
Network Expansion Target	Expand and operate in 6 to 10 additional cities	Expand and operate in 20 to 30 additional cities
Token Redemption Liability Reserve	\$4.5M	\$8.4M
Product Development	\$3M	\$4.5M
Business Development	\$1M	\$2.3M
Operations Team	\$0.5M	\$1M
PR & Marketing Team	\$0.5M	\$1M
Merchant Expansion	\$0.5M	\$1.8M
User Acquisition	\$2.5M	\$4M
Brand Marketing	\$1.5M	\$3M
Occupancy	\$0.5M	\$1M
Miscellaneous	\$0.5M	\$1M

11. Milestones & Roadmap

The Liven Platform is designed for scale, and our plans for the future reflect that. After 4 years of successful operation Liven is now poised to expand rapidly into new territories while continually developing our technology and feature set.

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- A vertical timeline chart with a grey background and a light grey vertical bar on the left. The year '2017' is at the top of the bar. The year '2018' is at the bottom of the bar. To the left of the bar, there are five red circular markers aligned with the milestones. To the right of the bar, each marker has a corresponding section title and a detailed description below it.
- 2017**
 - **Q2 – LivenPay Beta Launch**
Beta launch of fiat mobile payment product (LivenPay) enabling consumers to make incentivised mobile payments at point of sale in Melbourne and Sydney, Australia.
 - **Q4 – Major Brand Partnerships and Milestones**
Signs partnership with major Australian and international retail brands (300 stores). Major product update - new payment flow, one-tap quick payments, curated discovery system, and GPS enabled payment security features.
 - 2018**
 - **Q1 – Beta Completion**
Completion of LivenPay beta payments trial with retail brands, commence development on full product release.
 - **Q2 – Blockchain Transition Announced**
Announcement of blockchain-based network cryptocurrency - LVN, to replace the existing Liven Cash.
 - **Q2 – POS Integration**
Liven integrates with several of Australia's most prominent point-of-sales providers to further increase our technical merchant reach, improve the smoothness of the payment experience and increase our data gathering capabilities.
 - **Q3 – Alpha Launch**
Major product release featuring new codebase, entirely rebuilt user interface, alpha 'LVN Wallet', bluetooth iBeacon proximity sensor for payment security maximisation. More brands join and development of functional cryptocurrency wallet commences.
 - **Q4 – Test Net Development**
An implementation of our smart contracts on an Ethereum test net is created which outputs the internal exchange rate based on the balance of a test reward cache.

- Q4 – ICO**

Conduct an ICO on the back of major success with over 1,000 business partners and a user base surpassing 400,000, beta testing crypto-payment solution.

- Q4 – 20,000 Venues: POS Integration Milestone**

Achieve technical reach of 20,000 retail venues via API integration partners. Completion of LVN wallet beta test and begin rollout of payment rails to entire network. LivenPay wins the awards for Sir Richard Branson's 2019 XTC Challenge, Crypto-Currency and Blockchain Verticals.

- 2019**

 - Q1 – Reward Protocol Activation**

Completion and integration of the reward protocol smart contract into the Liven Platform. Dynamic LVN internal conversion rate becomes active with the LVN purchasing power set by the reward curve. The balance of the reward cache is publically visible through the smart contract, and users can verify that the internal conversion rate is free of manipulation.

 - Q1 – UK Expansion**

Launch product in London, UK. LivenPay ecosystem expanded to over 10,000 venues.

 - Q2 – Self-Serve Portal**

Release of full-scale merchant and enterprise portal enabling businesses to create accounts autonomously and begin processing transactions with LivenPay reward protocol and wallet integration, with deep behavioural analytics and insights plugged directly into their sales.

 - Q3 – US Expansion**

Launch product in 3 US cities over a 6 month period. LivenPay ecosystem expanded to over 40,000 venues.

 - Q4 – Dynamic/Gamified Rewards**

Full release of Liven 7.0 redesigned from the ground up as the world's first real world incentive based transactional 'game' - meaning dynamic incentives, rewards, achievements, unlocks, Gacha, and many other key mechanics at the core to maximise user and business engagement.

- 2020**

 - Travel, South East Asia, and Software Integrations**

Introduction of own designed fiat payment architecture, socialised financial services such as peer to peer lending or staking of funds held, and integration into larger business and marketing platforms such as CRM, Mulesoft, and accounting softwares. Expansion into further markets including more US cities, South East Asia, South America, and Europe. Expansion into travel industry with integration to native and third party booking and accommodation services.

12. Key Risks

We are already operating a fully functional platform including backend services, and client-side apps for users, merchants and sales teams. The mobile applications are available for download from Apple App Store and Google Play Store. We have an existing in-house team of skilled developers and UI/UX designers ready to begin the development of the LVN gateway, as well as an advisory team who are positioned to connect us to some of the world's best blockchain development talent both in Australia and the US.

Risk of our business failing is less pronounced than the risk for blockchain-based projects who do not have any existing operations or customer bases. Liven has been successfully operating for several years and has a large user base, strong

partnership portfolio and experienced team. We have scaled from our home city, successfully launching a satellite office in Sydney and developing a large user base in this market. In doing so we have developed procedures and best practices that will allow us to continue scaling rapidly into new territories as is planned for the US and UK markets.

However, there are still risks associated with a purchase of LVN Tokens and in respect of cryptocurrency generally. Many of these risks are outside the control of Liven and its directors. The key risks include those outlined below and elsewhere in this document.

Before applying to purchase LVN Tokens, Contributors should consider whether LVN Tokens are a suitable purchase for them. Contributors should seek independent advice and complete their own risk analysis of Liven and LVN Tokens.

Summary of Topics

External market price of LVN Tokens

The price at which holders are able to sell LVN Tokens on any external exchange is uncertain and is generally beyond Liven's control. The external market price on any such exchange may be below the Issue Price of US\$0.015 per LVN Token if the LVN Tokens are listed at all on a secondary exchange.

The circumstances in which the external market price of LVN Tokens may decline include general financial market conditions, the availability of better rates of return on other cryptocurrency and market perceptions.

The LVN Token may also be subject to price volatility due to the small use of LVN Tokens and other cryptocurrencies and relatively high use by speculators.

Upon the expiration of vesting schedules a potentially significant number of LVN Tokens may be sought to be redeemed or sold which may impact the purchasing power or price of LVN Tokens on a secondary exchange.

Dependence on key personnel

The key personnel employed by Liven have a high degree of expertise and Liven is reliant on their services to operate Liven and the ICO. Loss of key staff or advisors or the inability to recruit and retain high calibre staff to manage future growth and operations could adversely affect the operation of the Liven Platform and consequently, the value of the LVN Tokens.

**Destabilisation
of the internal
value of
LVN Tokens**

Despite features of Liven's reward protocol which are designed to reduce volatility in the currency's internal value, there is a risk that the price of LVN Tokens could fluctuate under market pressures.

Regulatory risk

Political, taxation, economic, legislative or regulatory change in Australia or in other countries in which Liven operates may have an adverse effect on the value of LVN Tokens.

Regulatory actions by governments and government agencies could materially affect global markets, including the pricing of cryptocurrencies, and the LVN Tokens.

Liven may require regulatory approvals or licences in order to continue to carry on their business or the ICO. If such an event should occur, there is a risk that Liven may not receive the appropriate approvals or licences for some time, if at all.

It may be illegal now, or in the future, to acquire, own, hold, sell or use LVN Tokens or any other cryptocurrency in one or more countries.

ICOs carry additional regulatory risks as they are a new form of raising funds and have received negative regulatory action in China, United States and South Korea.

**Not a policy
liability**

LVN Tokens are not policy liabilities of Liven and are not guaranteed by any government or other person. The price of LVN Tokens is also not guaranteed by Liven.

User adoption risk

The number of active users drive the revenue generated by Liven and the spending capacity of LVN Tokens on the Liven Platform. Liven expects user adoption to grow over time and has put in place marketing and other strategies to promote this growth.

A number of factors could impact Liven's ability to attract new users:

- the quality and breadth of the product and service offering compared to similar solutions and services;
- the availability of the Liven App and the Liven Platform from Apple App Store and Google Play Store;
- market reputation and customer satisfaction;
- the ability of Liven to differentiate itself in a competitive market;
- the success of planned launches in new cities internationally.

Liven may fail to accurately predict user interest or acquisition rates or to fully understand or estimate the conditions or behaviours that drive user behaviour, which may lead to improperly informed marketing efforts.

Merchant adoption and retention risk

Increasing and retaining merchants on the Liven Platform is essential to the success of the Liven Platform and the LVN Tokens.

There is a risk that key merchants cannot be retained by Liven due to factors beyond Liven's control.

Brand and reputation risk

Promotion and marketing of the Liven brand will be critical to expanding awareness and users on the Liven App and the Liven Platform. The ability to attract users depends in part on increasing the brand recognition of Liven, which may not happen successfully if Liven does not create and implement a working ecosystem.

Any loss of Liven's reputation as a result of issues with the Liven Platform or rewards system may result in negative publicity and a reduction in the adoption of LVN Tokens.

Operational risk	<p>LVN Tokens depend on the operation of the Liven App and the Liven Platform for users to redeem their LVN Tokens and rewards.</p> <p>Operational risks that may impact the value of LVN Tokens include loss resulting from inadequate or failed internal control processes, information technology systems or from external service providers.</p> <p>Other operational risks impacting on the value of the Liven Token include but are not limited to, risks arising from processing errors, fraud, information technology system failures, failure of security and physical protection systems, internal pricing errors and employee negligence.</p> <p>Apple App Store and Google Play Store may place restrictions on, or introduce policies restricting the use of, cryptocurrency related applications.</p>
Technology and information systems	<p>Liven has invested significant capital in technology and will invest in significant blockchain technology for the Offer of LVN Tokens. There can be no guarantee that this technology will continue to service Liven in future. If Liven is required to change or update its IT systems, then these costs are likely to be significant and could adversely affect the Liven Platform and the value of LVN Tokens.</p>
Hacking and phishing attacks and reliance on blockchain	<p>Liven plan to take measures to reduce the likelihood of hacking and phishing attacks including hosting a bounty program to detect security flaws early however, there is still a risk of hacks or phishing attacks on Liven or a LVN holder's account that are beyond Liven's control.</p> <p>If a malicious actor or botnet obtains control of more than half of the processing power on a network (for POW blockchains) or half of the supply (POS blockchains), such an actor or botnet could manipulate the blockchain to adversely affect the value of the LVN Tokens.</p> <p>A reduction in the processing power expended by miners on the network could increase the likelihood of a malicious actor or botnet obtaining control of the blockchain network.</p> <p>Liven will rely on a public blockchain, all of which have variable transaction speeds, and Liven will be completely reliant on the selected blockchain functioning in the future in the same way it operates now, which is not guaranteed.</p>

Other Cryptocurrency Risks	<p>Cryptocurrency tokens by their nature are inherently highly volatile and highly risky.</p> <p>Lost or destroyed private keys required to access a digital currency will cause a user to prematurely lose access to their LVN Tokens.</p> <p>The slowing or stopping of the development of acceptance of digital currency by the public may impact the use of LVN Tokens.</p> <p>Any large-scale sales of cryptocurrency due to the impact of geopolitical or economic events on the supply and demand for cryptocurrencies..</p> <p>Increases in other digital currencies may negatively affect the confidence in the cryptocurrency market.</p> <p>Cryptographic transactions through smart contracts using blockchain technology are generally irreversible and any errors made in transactions may not be reversed.</p>
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Other Cryptocurrency Risks	<p>Cryptocurrency tokens by their nature are inherently highly volatile and highly risky.</p> <p>Lost or destroyed private keys required to access a digital currency will cause a user to prematurely lose access to their LVN Tokens.</p> <p>The slowing or stopping of the development of acceptance of digital currency by the public may impact the use of LVN Tokens.</p> <p>Any large-scale sales of cryptocurrency due to the impact of geopolitical or economic events on the supply and demand for cryptocurrencies..</p> <p>Increases in other digital currencies may negatively affect the confidence in the cryptocurrency market.</p> <p>Cryptographic transactions through smart contracts using blockchain technology are generally irreversible and any errors made in transactions may not be reversed.</p>
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Liquidity risk	LVN Tokens may not be listed on third party exchanges and may be only redeemable through the Liven Platform or tradable on decentralised exchange platforms.
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Insolvency risk	Due to the uncertainty surrounding cryptocurrencies and token generation events, there is a risk that Liven may not be able to repay debts that are due and payable. Liven may not be able to generate enough revenue to maintain the Liven App or the Liven Platform.
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**General
market risks**

Liven is exposed to a number of general market risks that could affect its assets and liabilities, financial position, profits and losses, and prospects.

Enterprises in cryptocurrency undertaking ICOs have substantial risks that are outside of their control including changes in the general economic outlook.

**Third party
contractual risk**

There is a risk that contractual counterparties, such as any technology developers and other project contractors, may default on their obligations to Liven thereby leading to delays in completion of the projects or a potential loss of capital and/or income.

13. Key Commercial Terms

By lodging the Application with Liven Pty Ltd ACN 161 315 519 (us, we) and sending the Contribution Monies to us for the purchase of LVN Tokens pursuant to this white paper, a contributor (you) agree to the terms set out in this white paper (Agreement). This Agreement constitutes a legally binding agreement between you and us and may only be varied by written agreement between you and us.

1. In lodging the Application with us and sending the Contribution Monies to us, you acknowledge, represent and warrant that:

- (a) you have read this white paper in full, investigated all material matters that a prudent person would investigate;
- (b) you have sought and received independent professional advice in relation to your Contribution (including legal, accounting, tax and financial advice, as required), have satisfied yourself about anything arising from that advice and are able to evaluate the risks and merits of making a Contribution;
- (c) you understand that purchasing cryptocurrency and participating in ICOs is risky and that you may lose all of the Contribution Monies sent to Liven;
- (d) acknowledge that the information contained in this white paper is not investment advice or a recommendation that participating in the ICO is suitable for you, given your financial circumstances or particular needs;
- (e) participation in the Offer by you is not prohibited or restricted by any applicable laws in the Contributor's jurisdiction and where any restrictions in relation to participation are applicable, you have observed and complied with all such restrictions at your own expense and without liability to Liven;
- (f) you understand the operation, functionality, usage, storage, transmission mechanisms and other material characteristics of cryptocurrency, the blockchain system, wallets or other related storage mechanisms and blockchain technology;
- (g) we are not liable for any indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits or loss of use or data, arising out of or in connection with any acceptance of the Offer or reliance on the white paper by you;
- (h) you are responsible for ensuring that the email addresses you provide to us are secure, have two factor authentications enabled and that all

communications we receive from your primary email address are legitimate;

- (i) you are not engaged in any illegal activity and the Contribution Monies are not related to any illegal activity in any jurisdiction;
- (j) the LVN Tokens do not provide any right or ownership in Liven or any related entity;
- (k) you will not enter into any pooling arrangements or any arrangements that are in breach of any laws in respect of the transfer of the Tokens by Liven;
- (l) you are aware that Liven and any third parties will receive, keep and use the personal information supplied by you, and you consent to Liven collecting, disclosing and using the personal information in accordance with Liven's Privacy Policy and in the manner set out in the white paper;
- (m) the above representations and warranties are true, complete, accurate and not misleading from the time you accept the Offer; and
- (n) to the fullest extent permitted by law, all terms, conditions, undertakings, inducements, warranties or representations by us, whether express or implied, statutory or otherwise, not expressly set out in this Agreement which relate to this Agreement are excluded.

2. Contribution Monies will be held by us in a trust account (Trust Account) with an Australian authorised deposit-taking institution (Bank) for contribution made in fiat or a multisig wallet for contribution made in cryptocurrency. The Trust Account and the multisig digital wallets will be designated as a trust account/wallet and will be held by us on bare trust for you and other persons who make Contributions.

3. Your only rights in connection with your Contribution are as set out in this Agreement and are subject to its terms. You are not entitled to the withdrawal or refund of your Contribution, except where the Token Sale does not proceed in accordance with clause 4.

4. We will use reasonable endeavours to initiate a Token Sale of LVN Tokens in accordance with the white paper by no later than 30 June 2019 (Final Date).

5. In the event that a Token Sale has not occurred by the Final Date, we will return your Contribution to you in full less any transfer fees and in the same form in which the Contribution was initially provided, together with any interest we have received from the Bank in respect of your Contribution. In this case, you accept all risks in the change (if any) in value of any cryptocurrency forming any part of the Contribution and releases Liven from any claim for any change in the value

or purchasing power of the Contribution (whether or not the Contribution is the subject of a refund request).

6. If a Token Sale occurs, your allocation will be confirmed in writing and you will be issued with LVN in proportion to your Contribution upon us conducting the Token Generation Event (TGE) as determined in accordance with the calculation methodology summarised in the white paper.

7. Our obligations to transfer the LVN Tokens to you under this Agreement are subject to and conditional on:

- (a) you making a Contribution in accordance with this Agreement;
- (b) us being reasonably satisfied that the Token Sale can proceed without us being required to obtain government approval or licensing or to issue a formal disclosure document;
- (c) us being reasonably satisfied that the Token Sale will not cause us to be in breach of any applicable law or regulatory requirement;
- (d) us making changes to the nature of LVN (including its rewards or benefits as described in the Materials) as may be reasonably required to ensure the Token Sale can proceed without us being required to obtain government approval or licensing or to issue a formal disclosure documents and to ensure we are not in breach of any applicable law, provided that any changes preserve our intention to give priority to investors who have made Contributions;
- (e) us successfully completing the Token Sale and issuing LVN without any unforeseen technical challenges;
- (f) you providing all information or documentation required by us to comply with any Anti-Money Laundering and Counter-Terrorism Financing Act 2006 (Cth) (AML/CTF) requirements, AML/CTF procedures or policies adopted by us, any Know Your Customer requirements adopted by us and any laws applicable to us;
- (g) your Contribution continuing to be held by us on your behalf in the Trust Account; and
- (h) you having satisfied all of your obligations under this Agreement and all of our other reasonable requirements from time to time.

8. You must, at your own expense and within a reasonable time of being requested by us, do all things and execute all documents that are reasonably necessary to give full effect to this Agreement.

9. Your Application will not be processed until the Contribution Monies is received by Liven.

10. Lodging an Application does not guarantee your allotment of any LVN token and we may accept or reject your Application in full, or allocate a lesser number of LVN tokens.

11. If your Application is rejected, then your Contribution Monies will be refunded to you in full less any transfer fees and in the same form in which the Contribution was initially provided, without interest.

12. This Agreement contains the entire understanding between the parties concerning the subject matter of the Agreement and supersedes, terminates and replaces all prior agreements and communications between the parties.

13. If any term of this Agreement is prohibited, void or unenforceable under any applicable law, it will be severed to the extent necessary to make this Agreement valid and enforceable. The severance of a term will not affect the validity or enforceability of the remaining terms of this Agreement.

14. Neither party shall be liable for any failure in performing their obligations under this Agreement where such failure or delay results from any cause that is beyond the reasonable control of that party. Such causes include, but are not limited to: power failure, Internet Service Provider failure, industrial action, civil unrest, fire, flood, storms, earthquakes, acts of terrorism, acts of war, governmental action or any other similar event.

15. You cannot assign or otherwise transfer the benefit of this Agreement without our prior written consent.

16. This Agreement is governed by the laws of Victoria. You and we submit to the exclusive jurisdiction of the courts of Victoria and Australia.

14. Disclaimer

No Securities

The LVN Tokens represent a pre-purchase of goods available via the Liven App (initially food and drinks, but may cover other products and services in the near future). They do not grant the LVN Token holders 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. They do not provide any right of equity, debt or ownership in Liven Pty Ltd or any related entity and are not offered as any kind of security, share, derivative, or interest in a managed investment scheme.

Liven does not purport to make any offer under this white paper to issue any securities, shares, financial products, derivatives or an interest in a managed or collective investment scheme, in any jurisdiction.

The products set out in this white paper are currently under development, and may not available to be purchased at the date of this white paper. The existing Liven Platform does not utilise blockchain technology.

No Substitution for Independent Advice

Each eligible Contributor should not rely on any statement made in this white paper as a substitute for independent judgement when making a decision to participate in the Offer. Contributors should consult a legal, tax, financial, business or other professional adviser regarding the contents of this white paper and consider their particular financial situation before making any decision to participate in the Offer. Liven does not provide any guarantee that the LVN Tokens will have any present or future value, or will appreciate in value after the date of issue.

Exclusion of Liabilities

Liven, its directors, officers, employees, advisors, consultants and agents accept no liability to Contributors, any recipient of this white paper or any other person, including, without limitation, any liability arising from fault or negligence (including gross negligence) for any loss arising from this white paper, or its contents, omissions or otherwise arising in connection with it.

To the maximum extent permitted by the applicable law, Liven will not be liable for any indirect, special, incidental, consequential, or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of the Offer, or reliance on this white paper, or any part thereof by any person. The financial and non-financial information contained in this white paper has been prepared to the best of Liven's knowledge and ability, and has not been the subject of verification by Piper Alderman or any other party but Liven.

Each Contributor should rely on their own investigations and assessment as to the contents of this white paper and in relation to whether the LVN Tokens represent fair value. Liven does not make any representation or warranty (whether express or implied) in relation to the reliability, accuracy or completeness of any of the information provided in this white paper. Liven disclaims all liability for the contents of this white paper to the maximum extent permitted by law.

Forward Looking Statements

This white paper contains statements that may not be statements of historical fact, but rather forward-looking statements, projections, forecasts, estimates, prospects, or other similar terms. These will generally be identifiable by the use of the words "anticipate", "will", "believe", "estimate", "plan", "intend", "may" "expect" or similar words. Contributors should not place undue reliance on such statements. All forward-looking statements are inherently subject to risks including the risk factors listed in this white paper and due to any unforeseeable circumstances.

Actual results may be materially affected by changes in the economy and other circumstances. Contributors should not rely on the projects and forecasts referred to in this white paper. Contributors should use their own commercial judgement in considering forward looking statements by Liven. No representation or warranty is made by Liven that any projection, forecast, assumption or estimate contained in this white paper should or will be achieved.

The risk factors listed in this white paper are not exhaustive and other risks may apply to Liven, LVN Tokens and the Liven Platform. Contributors should seek independent advice in relation to those risk factors and their individual circumstances before participating in the Offer.

There is a chance that the token generation event, the Liven Platform and other projects referred to in this white paper may never be fully developed, operational, or generated, including the LVN Tokens themselves. Liven does not provide any guarantees or representations for the success or outcome of the Offer, Liven, the Liven Platform or the LVN Tokens. No forward-looking statement in this white paper constitutes a representation or warranty on behalf of Liven that the outcome which is contemplated, suggested, inferred, indicated or implied by such statement(s) will actually be realised. Any time periods set out in this white paper are not guaranteed and are subject to the risk factors set out in this white paper and unforeseeable circumstances.

External Links

This white paper may contain references, hyperlinks, or quotes from external sources. No references, hyperlinks, or quotes from external sources constitute endorsement, approval, recommendation, advocacy, agreement or support of the contents of those references,

hyperlinks or quotes and Liven disclaims any and all liability that may arise from the use of those external sources to the maximum extent permitted by law.

Contributors should be aware that with the uncertain regulation around cryptocurrencies and initial coin offerings, this white paper may be subject to sudden regulatory changes and amendments to existing legislation. Liven has made all reasonable endeavours to comply with applicable laws current at the time of preparation of this white paper.

Restricted Other Jurisdictions

This white paper does not constitute an offer or invitation to purchase LVN Tokens in any jurisdiction where, or to any person to whom, it would not be lawful to make this Offer. The distribution of this white paper in jurisdictions outside Australia may be restricted by law and persons who come into possession of this white paper should seek advice on and observe any such restrictions. Eligible participants outside of Australia should comply with all laws of the jurisdiction applicable to an application for tokens made by that participant. Any failure to comply with such restrictions may constitute a violation of applicable laws. For the avoidance of doubt, citizens and residents of the United States, China, Egypt, Saudi Arabia, Bangladesh, Pakistan, Taiwan and Indonesia are excluded from participating in the token offering.

Application

This white paper is only available on the Website (<https://livenpay.io/>) and may not be reproduced, redistributed, disseminated, republished or passed on, in part or in full, for any purpose without the prior written consent of Liven. This white paper is not intended for distribution or use in any jurisdiction where such distribution or use may be illegal. Persons who come into possession of this paper should inform themselves of the laws governing the offer of cryptographic tokens in the jurisdiction in which they are located.

Liven reserves its rights to consider each Application and to reject an Application and not issue LVN Tokens on any grounds including, but not limited to, the Contributor providing inadequate information or evidence as reasonably requested by Liven.

Privacy

Liven is committed to protecting and maintaining the privacy of personal information provided by Contributors.

By completing and submitting an Application, a Contributor will be providing personal information to Liven, and consents to the collection, storage, use and disclosure of that personal information in

accordance with this white paper. More details on the Privacy Policy that applies to a contributor can be found [here](#).

Certain laws may require Liven and other service providers engaged by Liven to collect personal information, including the Anti-Money Laundering and Counter Terrorism Financing Act 2006 (Cth). Liven will collect personal information from the individual Contributor unless it is unreasonable or impractical to do so.

Where a contributor is a company or a trust, Liven may collect personal information from the company or trust, including the name and contact details of a representative of the company or trust and the names and addresses of the shareholders and directors of the company or the trustee(s) of the trust. Liven may also collect the names, addresses and contact details of a Contributor's accountants or agents. If Liven does not collect Contributor's personal information, it may not be able to issue a Contributor with LVN Tokens or manage or administer successful Contributors' holdings of LVN Tokens.

Each Contributor's personal information will be collected, held, used and disclosed both in and outside of Australia by Liven to its agents, contractors and advisors of Liven, to process each Application, service their needs, provide services to Contributors and carry out administration of LVN Tokens. In addition, Liven may disclose private information about Contributors, where Liven is required or permitted to do so by law, including under the Privacy Act 1988 (Cth).

Liven may take steps to verify information collected from Contributors which may involve disclosure of personal information to, and collection of personal information from, third parties.

Liven aims to ensure that the personal information it retains about Contributors is accurate, complete and up-to-date. If a Contributor does not provide Liven with complete or accurate information, Liven may not be able to process their Application or provide the Contributor with the products or services the Contributor has requested.

Contributors will be required to acknowledge that their personal information may be transferred and/or stored in various jurisdictions in which Liven or its agents has a presence, including to jurisdictions that may not offer a level of personal data protection equivalent to the Contributor's country of residence.

In lodging an Application, a Contributor will be taken to have consented to Liven disclosing the Contributor's information to any affiliate, to any other service provider to Liven or to any regulatory body in any Contributor jurisdiction to which Liven is or may be subject. Such information includes copies of the Application and any information concerning Contributor's in Liven's possession, whether provided by the Contributor to Liven or otherwise and any such disclosure, use, storage or transfer will not be treated as a breach of any restriction on the disclosure, use, storage or transfer of information imposed on any such person by law or otherwise.

Contributors acknowledge that any personal information provided to Liven will be collected and handled in accordance with Liven's privacy policy. Liven's privacy policy contains further information about how an individual may access their personal information held by Liven and other service providers, seek correction of such information and complain about a breach of the Australian Privacy Principles, and how Liven and its service providers will deal with such a complaint.

By submitting any Application or other form to Liven, the Contributor further consents to its personal information being collected and used by Liven in accordance with its privacy policy.

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Unless stated otherwise, all data contained in charts, graphs and tables is based on information available at the date of this white paper.

Unless stated otherwise, any trade marks, trade names or other intellectual property shown in this white paper are owned by other organisations. Liven does not purport to own that intellectual property and the use of any other party's trade mark, trade name or logo should not be interpreted to mean that the owner of that trade mark, trade name or logo has endorsed or endorses this white paper or its contents.

15. Glossary

Applications	Means a valid application for purchase of LVN Tokens pursuant to this white paper (1) for presale allocation by completing the Presale Application Form attached to this white paper (if applicable) or (2) for public sale, by completing the Token Purchase Process on the Website.
AUD	Means Australian dollars.
BTC	Means the unit of currency for the Bitcoin blockchain network.
Contribution	Means the act of sending the Contribution Monies to Liven for the purchase of LVN Tokens.
Contribution Monies	Means the amount of money in fiat currency or in cryptocurrency required to be submitted with an Application, to purchase the LVN Tokens.
Corporations Act	Means the Corporations Act 2001 (Cth).
Contributor	Means persons that make an Application to purchase LVN Tokens.
ETH	Means the unit of currency for the Ethereum blockchain network.
ICO	Means the token generation event operated by Liven for the LVN Tokens.
Internal Conversion Rate	Means the purchasing power of each LVN Token within the Liven network, at a given moment.
Issue Price	Means the price for each LVN Token.
Liven	Means Liven Pty Ltd ACN 161 315 519, an Australian company registered under the Australian Securities and Investments Commission.
Liven App	Means the mobile application that supports the Liven Platform and the LVN Tokens.
Liven Platform	Means the blockchain software system to be built by Liven that will use LVN Tokens.
LVN	Means LVN Tokens.
LVN Tokens	Means the cryptographic token known by the name of LivenCoins or LVN or such other name as Liven may determine.
Offer	Means the offer for the pre-purchase of goods to be made available via the Liven App made under this white paper, represented by LVN Tokens.
Reward Cache	Means a portion of the LVN Token supply that is locked away by a smart contract, to be distributed to users when they transact through the platform, and replenished by users when they spend LVN through transactions.
Reward Protocol	Means the mechanism which governs the reward system of the Liven Platform, including the smart contract which controls the Reward Cache and the Reward Curve.
Reward Curve	Means the mathematical formula that gives the value of the internal conversion rate, based on the size of the reward cache.
Token Sale	Means the sale of LVN Tokens pursuant to this white paper.
USD	Means United States dollars.
We, Our, Us	Means Liven Pty Ltd ACN 161 315 519.
Website	Means https://livenpay.io/ where Contributors are able to purchase LVN Tokens.
You, Your	Means the Contributor.

16. Appendices

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 A1.1. Figure A1.2 shows a closer look at the reward curve to the left of the starting point after the ICO.

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 a 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.

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 Tokens within the Liven network, and moving the internal conversion rate along the rewards curve to the left. This has the effect of disincentivising the complete cashing out of LVN Tokens immediately following the launch of the LVN gateway.

Additionally this also reduces the liability of Liven for the LVN Tokens distributed during the ICO, enabling Liven to put more funds towards the growth of the Liven 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 Tokens paid in each reward becomes increasingly small, but the value of each LVN Token increases dramatically.

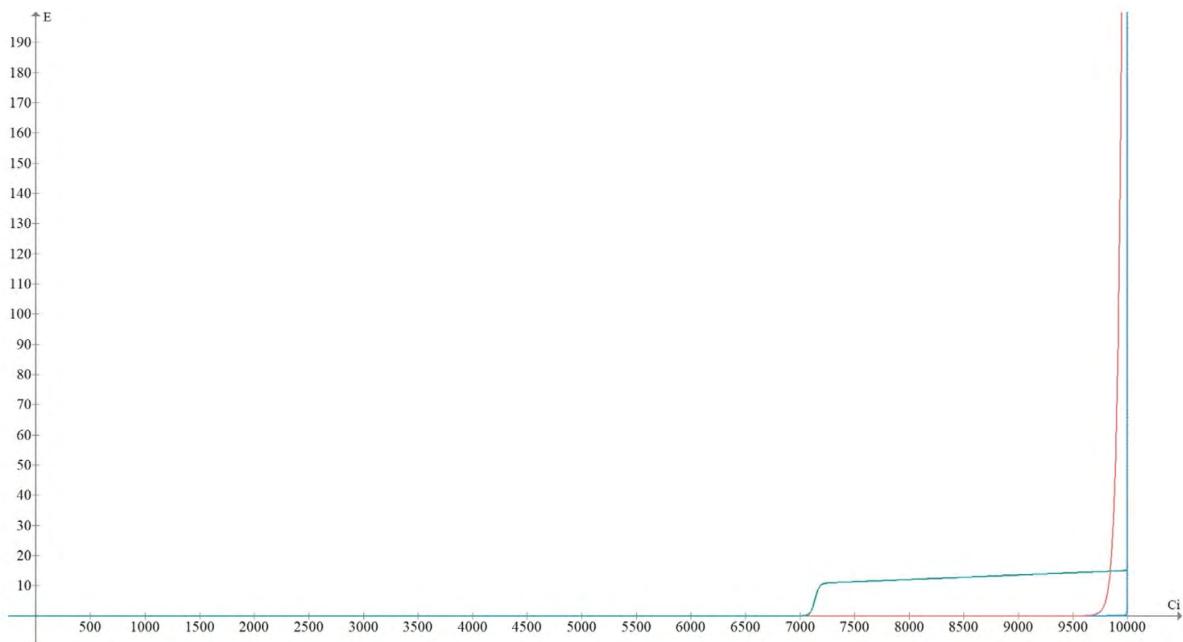


Figure A1.1- The three components of the rewards curve plotted separately.
Exponential in red, sigmoid in green and reciprocal in blue. Where C_i is in units of 1 million coins and E in units of USD/LVN.

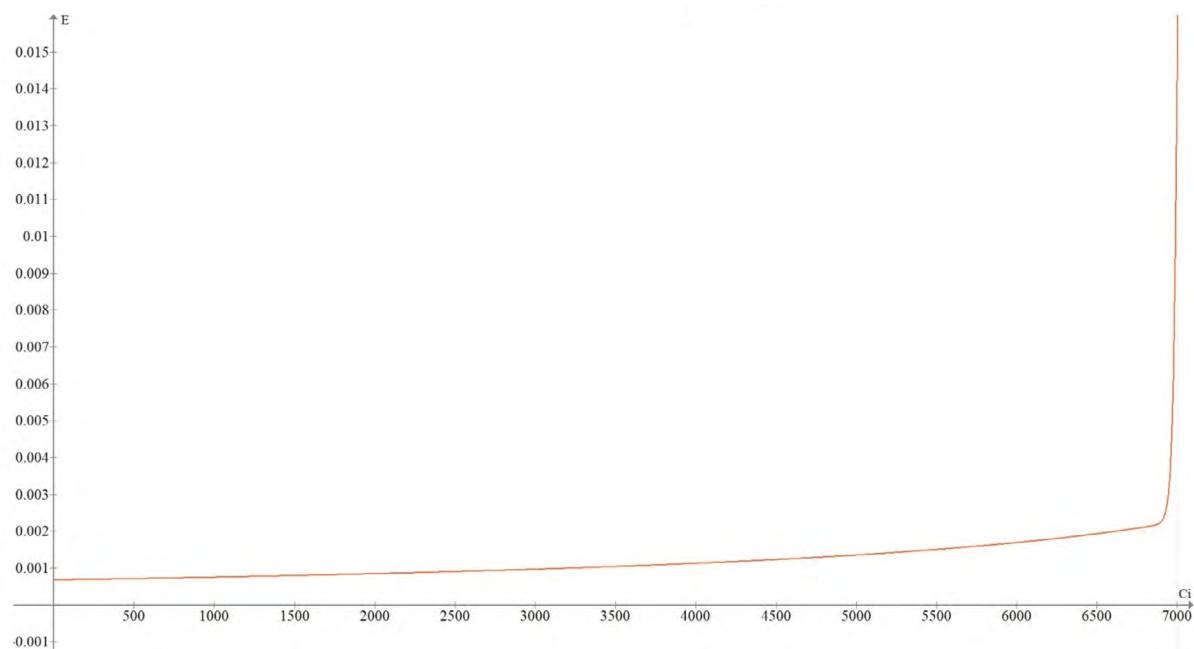


Figure A1.2- Closer look at the reward curve between C_o and C_i immediately following the ICO. Where C_i is in units of 1 million coins and E in units of USD/LVN.

A2 – Calculating consumption of LVN

The amount of LVN Tokens awarded per dollar value of reward is given by the reciprocal of E, which we define as the Reward Rate, denoted by $(\text{LVN}/\$USD)$, 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:

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

Under the LivenCoin system, reward values in dollar terms remain the same but they will be paid in LVN Tokens. For every transaction the bill amount and allowance rate are known, and we are required to calculate the number of LVN Tokens. The value of the reward paid in LVN Tokens is equal to the integral of the rewards curve, E, between C_i and C_{i+n} , shown in equation A2.3 below.

$$\text{Equation A2.3} \quad - \quad v = \int_{C_i}^{C_{i+n}} E(C_i) dC_i$$
$$v = \int_{C_i}^{C_{i+n}} \frac{-6.75}{(C_i - 10,000)} + \frac{0.003 C_i}{(2 + e^{-0.05(C_i - 748)})} + 1.5 e^{0.0025(C_i - 9750)} dC_i$$

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 Tokens 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 Tokens to be paid for each transaction, whether the user is being rewarded in LVN Tokens or spending it at a venue. In practice the integral in equation A2.3 is evaluated numerically, as shown in Appendix A3.

A3 – Numerical Evaluation of Integral

In order to simplify the evaluation of n values for any given transaction, Liven uses 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 it 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 Liven achieves 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 Tokens from moment to moment, as the value of E is fixed for all 100,000 coins in a given node.

For its use case Liven set each node width to a value of 100,000 coins. For a total supply of 10 billion coins, this results in 100,000 nodes in total to approximate the integral. This essentially slices the integral of the rewards curve into 100,000 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, Liven has employed 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.

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

The total integral is given by the sum of all nodes. The amount of LVN Tokens 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.

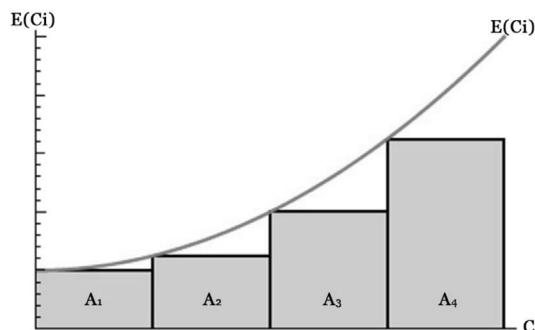


Figure A3.1 - The left hand rectangular rule as a numerical approximation of the integral of the reward curve (with only a small segment shown).

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

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

This sum gives an approximation of the integral for the entire curve, but in practice Liven needs 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 Liven uses its knowledge of C_i , the current coin as of the conclusion of the previous transaction, and its 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 Tokens (either fully or partially). Figure A3.2 illustrates this visually, with the value of v represented by the darker area spread across 2 nodes.

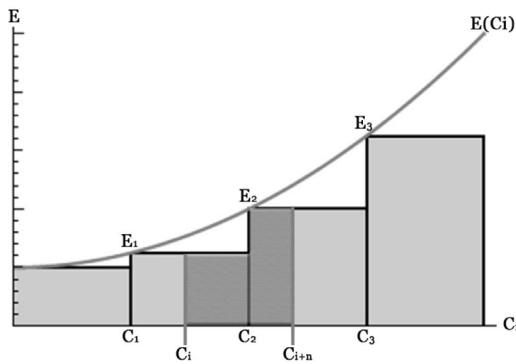


Figure A3.2 - Solving for n , the amount of coins given in a transaction with a reward of a particular size, v . The darkened area represents the value of v .

From equation A2.3 v is equal to the integral of $E(C_i)$ between C_i and $C_i + n$. 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 Liven 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 .

As 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 Tokens (such as when a user pays their entire bill in LVN Tokens) we move from right to left, with v taking a negative value.

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

If $E_i(C_2 - C_i) > v$ 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

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

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

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:

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

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:

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

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 ($t \geq 3$). Given the large size of the nodes selected it is unlikely that many transactions will take place over more than 2 nodes.

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

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

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

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.

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