

H O R I Z O N S T A T E

Decentralised Engagement and Decision Platform

It is time that the way society collectively makes decisions met the expectations set by the rest of our modern world. Horizon State has built technology whereby constituencies can be engaged with immediacy, and results can never be tampered with. Our blockchain voting system has been open to a national constituency and in use since February 2017.

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Motivation

We live in a world where the smartphones in our pockets have more computing power than NASA had to get us to the moon, yet the way we govern our societies and organisations remains the equivalent of a pocket calculator.

Existing models for collaborative decision making once served our growing democracies well, yet today they are increasingly slow, expensive, and ineffectual. Public trust in their outcomes is eroding and results in voter apathy. Campaign promises are regularly broken, and major decisions are taken without consultation or transparency. Our society is hurtling into the future, but our democratic processes are stuck in the past, failing to advance at the same pace.

Democracy is much more than our electorates, our representative models, or our boards and management teams. **Democracy is the opportunity to participate in the decision making processes that relate to the shared matters which affect us.** Democracy is about reaching consensus on how to best use our shared resources. Democracy is about advancing our collective well-being, providing opportunities to those who have while protecting those who do not.

We need better shared decision making tools and processes in almost every facet of our community lives. We need them to be transparent and trusted, allowing deliberation and inclusion, removing barriers rather than stacking them up. Technical, legislative and budgetary

obstacles have prevented us from achieving this thus far, but do not have to hinder us any more.

These tools are now available. Thanks to the distributed ledger technology we can create systems that directly engage and empower constituencies, employing mechanisms enabling them to vote smartly and efficiently, giving them confidence that their voices will be heard, and allowing them to see, first hand, the results of their voting activities.

Horizon State has built this. Our platform is soon to be extended and used by political independents, publicly listed companies, and communities within developing nations. We are looking toward brighter horizons, to a place where our countries and organisations conduct themselves with accountability and efficiency, a place where voices can be heard securely and simply. We are taking our technology to a global audience and it will underpin the process of opinion and vote solicitation everywhere, from the smallest councils in national public service, to multinational enterprises.

It is time for our democratic processes to meet the expectations set by every other part of modern life.



1.0 Vision & Capabilities

Introduction to Horizon State

Horizon State has built a token-based blockchain voting and decision-making platform that delivers unprecedented trust through the integrity and post-unforgeable attributes of distributed ledger technology. Horizon State delivers a secure digital ballot box that cannot be hacked, wherein results can never be altered and voter identities are protected. Votes cast can be counted transparently, in real time, by anyone in the world. These counts can happen in perpetuity, as results are permanently retained on the blockchain and can never be changed. More than that - Horizon State allows voters to verify their own vote is accounted for, while maintaining their anonymity.

The platform promotes participation, facilitates deliberation and creates opportunity for informed

decision making. It is a method to engage constituents on matters that affect them with immediacy. It is a framework where representatives can collaborate with their constituency with unprecedented efficiency. It is a method for families, communities, staff, and indeed entire citizenships to inclusively participate in the decision making processes that govern their lives.

Our product is already being used commercially by MiVote, an Australian political movement featured in the Financial Review¹, The Guardian², Fast Company³, ABC⁴, and on Triple J⁵. Our early stage platform has facilitated the casting of thousands of votes to the blockchain since February 2017.

Horizon State now intends to take this product to the world.

1. (2017, April 12). MiVote wants to bring remote control politicians to the Senate | afr.com. Retrieved September 3, 2017, from <http://www.afr.com/news/politics/mivote-wants-to-bring-remote-control-politicians-to-the-senate-20170411-gvicfe>
2. (2017, April 14). MiVote aims to shake up democratic process with a click and a tap Retrieved September 3, 2017, from <https://www.theguardian.com/australia-news/2017/apr/14/mivote-aims-to-shake-up-democratic-process-with-a-click-and-a-tap>
3. (2016, September 7). Can Direct Democracy Be Revived Through New Voting Apps?. Retrieved September 3, 2017, from <https://www.fastcompany.com/3063379/can-direct-democracy-be-revived-through-new-voting-apps>
4. (2017, March 3). MiVote: A Senator in your Smartphone? - Download This Show - ABC Retrieved September 3, 2017, from <http://www.abc.net.au/radionational/programs/downloadthisshow/mivote/8318392>
5. (2017, February 11). MiVote: Can your phone save democracy? - Hack - triple j - ABC. Retrieved September 3, 2017, from <http://www.abc.net.au/triplej/programs/hack/mivote-launches-online-direct-democracy-voting-platform/8261112>

Our business development pipeline also includes advanced discussions with a diverse client base, including multinational NGOs, publicly listed companies, and independent politicians.

This paper presents the platform that Horizon State has built so far, lays out the token model we intend to use, and discusses the road ahead, its challenges, and future horizons.

Voting, the Blockchain & Decision Tokens

The blockchain lends itself perfectly to casting votes. It is an immutable public ledger, trustless, and inspectable by all. A vote cast to the blockchain is unforgeable and the voting results recorded on it are undisputable.

Horizon State is a blockchain-based platform and ecosystem that enables efficient vote casting and decision making processes. The platform operates through the use of Decision Tokens (HST). These are used for running the decision and voting processes by providing the 'gas' for voting and other services within the ecosystem.

Increase Participation by Increasing Engagement

Voting, in essence, is the final act in the personal decision making process. The overall voter journey entails gaining knowledge and understanding of the issue under deliberation, developing an opinion, opting to participate and thereby influence the outcome, and only then casting their vote.

Many elections today experience low participation and high levels of voter apathy⁶. This may be due to individuals feeling a sense of distance from the issues, that the process of voting is too arduous, or can't really see their own vote making much difference in the overall scheme. This is true across the spectrum of voter engagements, from general elections and local councils, all the way to shareholders assemblies.

Beyond the voting platform already in use, Horizon State is developing an immersive digital engagement and deliberation platform which aims to overcome obstacles to voter engagement and opinion solicitation. The medium of participation will not be limited to computers or handheld devices. Research and development efforts are currently underway to employ capabilities based on NLP (Natural Language Processing), AI (Artificial Intelligence) and VUI (Voice User Interfaces - such as Google Home, Microsoft Cortana and Amazon Alexa). The results of this work will allow us to create an immersive experience around the decision making process - an experience where information delivery is transformed. Static, passive fixed-content consumption can be augmented by, or even replaced with, dynamic, personalised conversations.

Building an Ecosystem

A truly great service enables synergy by being open and inclusive. Horizon State's philosophy aligns with this by removing boundaries that hinder communication, interaction and cooperation. We are building an extensible platform that will allow us, as well as partner developers, to deploy a variety of products and services to the ecosystem that will further aid the processes of decision making and voting, all of which will use the Decision Tokens as the fuel for this ecosystem.

Horizon State aims to provide an extensible, pluggable platform for decision making tools, processes and applications. There are a number of decision making systems used all around us, each of which has different requirements: general elections, postal votes, union elections, shareholders meetings to name a few. In addition to providing a suite of services and implementation types, Horizon State will be working with partners and service providers to build dApps (Decentralised Applications) on top of our platform. Those dApps will provide services for organisations using Horizon State to facilitate decision making processes, improve deliberation and participation, or provide customised registration and authentication modules.

6. (2017, May 15). U.S. trails most developed countries in voter turnout | Pew Research Retrieved September 3, 2017, from <http://www.pewresearch.org/fact-tank/2017/05/15/u-s-voter-turnout-trails-most-developed-countries/>

Some possible examples of such dApps could be:

- Content delivery by population slices
- Smart contracts for unique voting mechanisms
- Statistical modelling tools
- Sophisticated simulators and what-if analysis
- Smart surveys
- Smart voting agents
- Power BI dashboard integration
- Prediction tools

Benefits Realisation

Local councils, boards of directors, societies, non-profit organisations, unions, political parties and governments share common requirements when requesting opinions from people. High participation rates promise that decisions made will encompass most of the constituency. Low cost processes promote inclusion and deliberation. Transparency and trust in the vote reduce doubts, litigation and contention.

Horizon State addresses these needs by providing unforgeable, fully transparent voting processes, at a fraction of the cost per vote of traditional voting mechanisms. Horizon State offers a range of benefits to each of the different types of users involved:

User Group	Features	Benefits
Organisations <i>Businesses, councils, non for profit organisations, etc.</i>	Horizon State provides a secure, efficient and trustworthy fully-transparent means of voting	<ul style="list-style-type: none"> • Auditability • Trust of constituency • Reduced costs • Reduced Lead Times • Faster Turnaround
Voters <i>Citizens, party members, shareholders, etc.</i>	Horizon State provides tools for an immersive voting process, adjusting to the user's preferred methods of consuming information and voting	Increased participation through enhanced engagement, which promotes voting
Representatives	Horizon State offers tools and a platform for continuous decision making, voter consultation, fundraising and analytics	Increased engagement and deliberation strengthen the ties between a representative and their constituency, elevating trust and openness
Service Developers/Providers	Horizon State is an extensible platform, where software developers and service providers can create new services and expand the ecosystem	Opportunity to create new services on top of the platform, to generate income

MVP Released

In early 2017, Horizon State's blockchain-based voting solution was launched for Australia's MiVote membership, using it to participate in the country's decision making process. The MiVote movement has run 4 nationally-inclusive polls in total as of September 2017, committing thousands of votes to the Ethereum public blockchain through our product.



2.0 Decision Making & Blockchain

Deployment on the Ethereum Blockchain

Robust Network: A secure vote is the most critical component of Horizon State's technology, which is why we have chosen distributed ledger technology (DLT) to achieve this. Beyond DLT being our technology of choice, our first commercial product sits atop of Ethereum due to its network size and subsequent vote security⁷.

Industry support and awareness: The Ethereum Enterprise Alliance has moved the needle more significantly than any other development in commercial blockchain technology. Paired with the largest community of developers in the world of blockchain, the Ethereum ecosystem offers the most extensive pool of resources to draw from as our staff count increases.

ERC20 token standard: Standardised functions enable seamless issuance, distribution and control of Decision Tokens in a formal, uncomplicated manner. Conforming to ERC20 standards affords us flexibility now, and for unforeseen token applications and agreements in the future. This flexibility will enable and promote interoperability of our dApps both within our own ecosystem and externally to 3rd party applications.

Addressing Existing Limitations

Ethereum's production blockchain achieves approximately 13 transactions per second, or 7 for ERC20 tokens. While the current level of transaction throughput would not suffice for national-scale elections, Ethereum is the most well progressed blockchain in respect to the implementation of massively improved scaling solutions.

7. (2017, May 21). Ethereum is Now the Most Secure Public Blockchain, Overtaking Bitcoin. Retrieved September 3, 2017, from <http://www.trustnodes.com/2017/05/21/ethereum-now-secure-public-blockchain-overtaking-bitcoin>

Numerous changes to the Ethereum network which are likely to commence in 2018 will significantly improve transaction scaling. Technologies such as Raiden will take us to over 1 million transactions per second, and upcoming Ethereum releases will enable sharding and proof of stake, further hardening the system.

Research and new developments in this area are coming fast for the Ethereum development team. Their latest scaling solution - Plasma - includes off-chain transactions, and has the potential to allow billions of computations per second⁸.

Features Tackling The Big Issues

Trust, Confidence and Security

There is an inherent element of trust when a secret vote is cast. The voter has to trust that the chain of custody of their vote is unbroken from the moment they cast it to the moment results are published. Today, this trust must encompass many intermediaries: centralised, opaque data stores held by private enterprises; automatic or manual vote counters; volunteers, paid election officials, etc.

In the United States, where electronic voting machines are prolific, it has been demonstrated that they can be compromised with relative ease. In 2005 it was shown that it was possible to hack into a Diebold voting machine to change tallies⁹ in the time it takes to cast a vote¹⁰, while DefCon hackers broke into U.S. voting machines this year.¹¹ Whitehat hackers showed it was possible to alter individual votes, inject malicious code into election servers and potentially exfiltrate voter's identities and ballots, in addition to documenting numerous electronic procedure contraventions with by election officials during the 2013 Estonian elections.¹²

The blockchain technology provides us with web 3.0: a decentralised, democratised and trustless means to deploy and consume services. This is possible largely due to the power of smart contracts, which Horizon State uses to deliver a medium for vote submission and collaborated decision making processes. These processes are delivered in a way that requires no trust in any intermediary. Utilising blockchain technology, we are able to store an irreversible and immutable record of votes. As a result, opportunities for vote tampering are eliminated, and the chain of custody can not be broken.

Horizon State's use of blockchain technology addresses security of the vote, and indeed of broader kinds of participatory commitments. As data stored on the blockchain itself is tamper-proof, once the voter has voted and checked their vote was registered, there is no way to alter it. Where voter anonymity is a requirement, the system ensures that it is not tied to the vote in any way that is meaningful to anyone other than voters themselves, who can check that their vote was entered and counted correctly.

Anonymised Voting - Real Implementation

The MVP used by MiVote entailed the separation of the voter profile from the vote itself, while ensuring that each user of the Horizon State system only had the opportunity to vote once. The votes, cast as transactions to Ethereum's public blockchain, contain no voter identity information. Their association to the voter is anonymised and hashed to ensure voters can not double-vote, but still allows users verify their own votes.

There is ongoing and vigorous development taking place in the Ethereum ecosystem, and upcoming

8. (2017, August 18). Ethereum scaling solution, Plasma, could facilitate ... - Brave New Coin. Retrieved September 3, 2017, from <https://bravenewcoin.com/news/ethereum-scaling-solution-plasma-could-facilitate-billions-of-transactions-per-second/>

9. (2006, May 11). Major Vulnerability Found in Diebold Election Machines - Schneier on Retrieved September 3, 2017, from https://www.schneier.com/blog/archives/2006/05/election_machin_1.html

10. (2016, August 5). How to Hack an Election in 7 Minutes - POLITICO Magazine. Retrieved September 3, 2017, from <http://www.politico.com/magazine/story/2016/08/2016-elections-russia-hack-how-to-hack-an-election-in-seven-minutes-214144>

11. (2017, July 29). These Hackers Reveal How Easy It Is To Hack US Voting Machines. Retrieved September 3, 2017, from <https://www.forbes.com/sites/thomasbrewster/2017/07/29/def-con-hacking-election-voting-machines/>

12. (n.d.). Security Analysis of the Estonian Internet Voting ... - J. Alex Halderman. Retrieved September 3, 2017, from <https://jhalderm.com/pub/papers/voting-ccs14.pdf>

technologies such as zkSNARKs¹³ will open more options for our development teams as we iterate upon existing solutions.

Unencumbered Access

The process of planning and executing geographically centralised or postal votes for communities and nations is long - and infrequent as a result. On the other hand, the gathering of opinions and casting of votes by using modern content delivery systems, responsive web interfaces, and mobile apps, enables efficient setup and distribution models. Paired with blockchain, a robust solution finally exists for sensitive decision making processes and secure vote submissions that need not be wedded to long and expensive methods of orchestration. There is no longer any reason that companies and governments cannot engage their constituents as frequently as is required for better collective outcomes.

Transparency

Traditional methods of voting provide no clarity surrounding a constituent's vote, whether it has been accurately cast or actually counted. Our platform will enable any individual to tally the number of votes and which way those votes went, as the voting process

takes place. This record of votes will now exist in perpetuity, will be able to be recounted with precisely the same number of votes and precisely the same outcome every time into the future for sake of posterity. Additionally, voters can independently verify that their vote was entered and was tallied.

Cost

In a typical democratic system using the methods of vote solicitation (such as plebiscites, referendums and elections) Horizon State's blockchain solution will reduce the cost of voting by at least a factor of 10. As a real world example, Australia will conduct a non-compulsory postal vote on September 12, 2017, costing taxpayers over \$120 million dollars.¹⁴ Considering the 15.7 million eligible and active voters in Australia, this equates to a cost of \$7.70 per vote. Meanwhile the cost of a federal election has risen to \$227 million, or \$15 per vote.¹⁵

Horizon State's MVP blockchain voting solution fares significantly better when compared to traditional voting systems. Our cost per vote - excluding the cost of initial platform development - remains less than \$0.50. This cost will reduce further as blockchain scaling solutions are implemented.

13. (n.d.). zkSNARKs in Ethereum: Great News For Ethereum, Anonymity, and Retrieved September 3, 2017, from <https://steemit.com/academia/@blakemiles84/zksnarks-in-ethereum-great-news-for-ethereum-anonymity-and-fungibility>

14. (2017, August 8). Government to spend at least \$120m on postal plebiscite - ABC News Retrieved September 3, 2017, from [http://www.abc.net.au/news/2017-08-08/government-to-spend-at-least-\\$120m-on-postal/8787384](http://www.abc.net.au/news/2017-08-08/government-to-spend-at-least-$120m-on-postal/8787384)

15. (n.d.). Election could cost \$227 million : Election Watch - Australia 2016. Retrieved September 3, 2017, from [http://electionwatch.unimelb.edu.au/australia-2016/articles/2016-federal-election-to-cost-\\$227-million](http://electionwatch.unimelb.edu.au/australia-2016/articles/2016-federal-election-to-cost-$227-million)



3.0 A New World

The Continuum of Voting

Decisions are rarely binary in nature, but our current models often enforce binary choices. Horizon State's platform provides the flexibility for non-binary voting to accommodate the different needs of different customers. The requirement for some decision making processes will require votes that are split between two or more options, assigning weights proportional to the voter's feelings. Other customer needs include the requirement to delegate votes to trusted proxies.

Horizon State caters for these scenarios, and others, aligning the vote process with the values and laws of the organisation running a constituent engagement and collaborative decision making process.

Informed & Collaborative Decisions

Like-minded individuals or ad-hoc parties can assemble groups or movements through the platform's community module. This can work for people demanding more support for refugees, or for residents wanting to influence their local council to fix a sinkhole in a side street. The power of joined voices will carry into the system in the form of a stronger, united vote.

Horizon State will provide an integrated content management and delivery capability designed specifically to encourage discussions and informed debates relating to the campaigns running on the platform. This will provide a place for people to share their views, debate with their peers, and continuously engage in the process of voting. Smart artificial intelligence engine and advanced use of bots will allow voters to use their time efficiently, focusing and engaging in-depth on the matters that are important to them, while still keeping abreast of other issues voted on.

As the content is generated by the organisations, candidates and people themselves, no external party can manipulate the information presented.

Candidates running in an election will use the system to enrol themselves, present their beliefs and promises, and engage with the voters. The candidates will be able to use additional Horizon State capabilities like funding or analytics to further their causes and compete more effectively.

Horizon State will provide campaigns with multiple options to define, identify and authorise the voting population. The platform will use a PAM (Pluggable

Authentication Module) architecture to allow different organisations to use their own authentication mechanisms (or any they feel meet their requirements). This modular approach, in use throughout the system, ensures compatibility with many different 3rd party projects such as uPort.

Users will be able to control their level of engagement, exposure and social impact. They will be able to audit their own votes - present and historical. They will be able to manage their personal profile on the system (which can be anonymously used for analytics, below). Horizon State will enable voters to share discussions or issues they are passionate about on social media, find like-minded individuals, and much more.

Beyond Voting

In Horizon State, a campaign is the elementary building block of any vote. The campaign management layer allows organisations (such as governments, institutions etc) to create a poll on Horizon State. A poll in this sense is the issue(s) being voted on, be it a shareholders vote on members of the board or a general election.

Horizon State will provide customers with the ability to create a campaign, define the vote issues, questions and processes, manage its content, advertise the rules for candidacy, define the set of users who can vote (constituency) and more.

As part of its operation, Horizon State will gather a vast amount of data. Employing appropriate anonymisation, the platform will provide users of different types with information gleaned from this data. Vote analysis by voter attributes, geographic or socio-economic slices will all be made available. The analysis tools will also let candidates and organisations run what-if scenarios, testing policies and promises with real data.

The future of decision making aids is already here. Both the internet and internal systems employ artificial intelligence and clever bots to advance their agenda or business. The applications we use adjust their behavior to fit us. Customer service has been augmented in many places by bots chatting to users, and data is

transferred automatically between connected services, to bring us what we want to consume, where we want to consume it.

Horizon State will use those technologies to develop systems to support individual decision making by digesting, crystallising and presenting information to decision-makers in the format, capacity and depth they want. We envision that users will be able to create their own bots in the system to gather information, display notifications, and maybe even make decisions on their behalf.

Democracy-as-a-Platform

Democracy and collaborative decision making have many flavours. Each country, institution, union or organisation may have their own interpretation of democracy, and their own rules to exercise it. In Switzerland alone, for example, there are 26 Cantons, each with its own processes and regulations. There is no one democracy to rule them all. Around the world we see direct and representative democracies, presidential and parliamentary, authoritarian and participatory, equal and weighted votes - the list goes on.

Horizon State's mission is to enable democracy and participation that are in line with the various needs of different customers. The platform is therefore not opinionated, and unlike other alternatives, does not try and shoehorn the different methods of practice into a single box. We have taken a different approach - one that provides the user with the tools to mold their own flavour of the decision making processes.

Using Horizon State's platform and the capabilities inherent with the development of smart contracts used through the platform, a customer setting up their votes can configure the ways the vote works in an efficient way, using mostly a graphical interface.

Compliance and Regulatory Requirements

Different jurisdictions have different laws, compliance mechanisms and regulatory requirements. Horizon State will enable users to define a voting flow that

adheres to their processes. With some types of public works, for example, the law requires notification of the issue to be debated, then a period of public submissions followed by deliberation before going to a vote.

In cases like this, the user will be able to configure their campaign to align with this flow, and provide irrefutable proofs along the way that the process was followed.

Constituency

Not all voting campaigns address the same voting populace. A general election engulfs the entire country, while voting for a senate representative is limited to residents of the state.

Shareholders meetings are for company shareholders only, whereas membership in international organisations such as the WWF (World Wide Fund for Nature) - crosses borders and sovereignty boundaries.

Horizon State allows the user to define characteristics of their constituency on a campaign-by-campaign basis.

Stages and Limits

Some votes have multiple stages, each with a different set of rules. For example - in the French presidential elections of 2017 no candidate won a majority in the first round, and a second run-off round between two candidates was held. While the two rounds had the same constituency and were in essence the same campaign - they had different rules and a different set of candidates. Using Horizon State, the rules and candidates can be modelled into a smart contract, and using a preferential list - the run-off round may be avoided altogether.

Flexibility

Administrations around the world use multiple methods of voting. The US Senate for example uses both blind votes and roll calls for different deliberations. Companies use weighted votes based on their

share-holders holdings, some organisations vote regularly, many times throughout the year, others use representatives elected at set frequencies.

Horizon State allows users to define the way their votes will be run, counted and inspected. Full anonymity or full transparency are both available, with degrees in between.

Audit

The process of voting, especially when blind votes are involved, can be mistrusted and contested. To address this, and be able to trust that votes provide meaningful results, institutions have audit mechanisms to ensure regulations are adhered to and the votes are not tampered with. Using the blockchain as an underlying vote collection and counting mechanism provides tamper-proof and visibility attributes to Horizon State's solution. These capabilities can be further enhanced by the users through the ability to add auditors and audit requirements. These actions themselves are then audited, as an inherent capability of the platform.

Transparency and Traceability

The nature of the blockchain is that transactions committed to it are there in perpetuity, and both organisations and their constituency can examine the votes cast and their correct tally. Horizon State will provide out-of-the-box mechanisms for voters to verify that their own vote was cast successfully and tallied correctly, providing adequate anonymisation when required.

The platform will provide built-in audit function encouraging transparency across its ecosystem of services. A set of APIs (Application Programming Interfaces) and SDKs (Software Development Kits) will be provided as well, for users or software providers to expand upon the basic offer. Enabling the building of extra functions this way will allow organisations solve any special requirements they may have.



4.0 Market Opportunity

New customers including political independents, multinational corporates and non-governmental organisations are currently being engaged. Each customer using the system will drive significant demand for the HST tokens which are required to commit constituent votes to the blockchain.

Governments of developing nations, with citizens numbers in the vicinity of 30 to 100 million who have ambitions for innovation have been identified as primary opportunities for the propagation of our technology.

While we have focused the first production release on solicitation of votes with immediacy and security, our technology is applicable to many organisation types and many forms of democratic processes. HST will not only be used for the process of running what are specifically votes, but for the broader purpose of

collaborative decision making in many shapes and sizes. This includes vote and opinion solicitation, information delivery and constituent deliberation.

Immediate Relevance

In the last month alone we have witnessed numerous major events taking place globally with significant relevance to how Horizon State could improve the status quo. Our platform tackles the big issues discussed today: lack of security and confidence in the process and system, lack of transparency, and high cost of running voting processes.

Some examples where Horizon State platform could offer game changing value proposition:

Scenario	Issue	Recent Examples
Federal Elections ^{16 17}	High cost per person/vote	The cost of federal elections in Australia has risen to \$227 million, or \$15 per vote. This will expand beyond \$300 million by 2021.
Census ¹⁸	High cost per person/vote	2011 budget allocation per country, <ul style="list-style-type: none"> • New Zealand - \$90,332,087 @ \$20.41 per person • Canada - \$630,373,000 @ \$18.25 per person • United Kingdom - £482,100,000 @ £8.66 per person
Election Integrity	Security, confidence and trust	Allegations of election authority's system being hacked to manipulate the elections results in Kenya ¹⁹

Horizon State is well positioned to offer the next-generation platform for data collection systems (Census) and election systems at a fraction of the cost per vote.

Given the cost increase and latest system reliability issues related to the recent Australian census,²⁰ the Australian government is considering to move to a census once every 10 years.

Horizon State represents incredible cost savings, improved data and vote collection efficiency allowing countries to run census multiple times a year instead of once every 5-10 years, for a fraction of their existing costs. Moreover, censuses can be run in parts, across specific slices of the population, and many other variations that may improve quality of data, participation and results.

Examples of Usage Scenarios

#1 Poll: Should the Council Build a New Dam?

A local government's water-works department wants to build a new dam to service the needs of the growing population and alleviate the pressure on the local infrastructure. The site identified for the dam borders on a nature reserve and some people are worried about the effect building a new dam might have on the native species.

The council may use Horizon State to poll their constituents. They would purchase the HST tokens from either the token exchanges or via a portal on the Horizon State product, where the price of the token is set by the free market. They then use those tokens as the gas to power their voting on the platform. The larger the number of people they want to poll, the more tokens they will need. As there is a finite number of tokens created during the ICO process, and no more will be created afterwards, the laws of supply and demand will dictate the token price.

16. (n.d.). Election could cost \$227 million : Election Watch - Australia 2016. Retrieved September 3, 2017, from [http://electionwatch.unimelb.edu.au/australia-2016/articles/2016-federal-election-to-cost-\\$227-million](http://electionwatch.unimelb.edu.au/australia-2016/articles/2016-federal-election-to-cost-$227-million)

17. (2017, August 31). Australian Marriage Equality Vote: Everything You Need To Know Retrieved September 3, 2017, from <https://www.lifehacker.com.au/2017/08/australian-same-sex-marriage-vote-everything-you-need-to-know/>

18. (2009, October 27). 25_ECE rev - UNSD - the United Nations. Retrieved September 3, 2017, from <http://unstats.un.org/unsd/censuskb20/Attachment459.aspx?AttachmentType=1>

19. (2017, August 10). Kenya election system was hacked, Raila Odinga alleges - CNN. Retrieved September 3, 2017, from <http://www.cnn.com/2017/08/09/africa/kenya-election/index.html>

20. (2016, August 14). Census 2016: A case study in the confluence of failure | ZDNet. Retrieved September 3, 2017, from <http://www.zdnet.com/article/census-2016-a-case-study-in-the-confluence-of-failure/>

#2 Shareholders Assembly - Vote on the Board Membership

A publicly traded company needs their shareholders to elect new members of their board of directors, and confirm extension of existing directors. The company buys enough HST to run the vote. The vote has to take into account the fact that shareholders who hold more shares carry more weight to their vote. It also needs to allow voting by proxy. This scenario may use extra modules on top of the core-voting capability, and use of those extra modules will be paid for with HST.

#3 Party Vote - Show of Hands

The constitution of the Advantage Party, running in the general election in Brazil, requires voting for the party leader by show of hands. However, their members are spread throughout the country and it is not feasible to assemble them all in one place for a public vote. The party uses Horizon State's platform to create a public, non-anonymised vote. They also purchase enough tokens to register 5 candidates, and each candidate then uses more HST to use the deliberation and campaigning modules. As the vote is run, members can vote from the comfort of their home or work. They can all be accounted for and their votes are public, as per the constitution. Horizon State will allow party members to inspect those votes while hiding the voters' details from the wider population.

#4 Mayoral Race

A city has decided to use Horizon State's platform to run their local elections for mayor and council members. Using the city's treasury to buy HST, a campaign is set up, candidates register, a deliberation platform and several analytic and budgetary tools are configured to assist in the election. The voting is open for a couple of weeks, with constituents allowed to cast their vote as

many times as they want - the system will only count the last vote cast. This lets residents change their minds all the way up until the close of the race, at which time results are known immediately, with no need for a lengthy process of vote counting.

#5 Public Submissions

A town has been approached by the local mall owner, requesting consent to extend the mall by building a second level of shops atop the existing one. As required by law, the town should accept submissions for and against the extension. Using Decision Tokens, constituents are able to submit their opinions, inspect submissions by others and deliberate on them till a decision is made. A slow process lacking in transparency and participation has been transformed into an inclusive and clear one.

#6 Union Amalgamations

The leaders of the Electricity Generators Employees Union met with the leaders of the Aluminum Smelters Union - the largest commercial users of power in the country. As the leaders found a lot of common ground and interest, they decided to approach their respective unions and suggest they amalgamate. As unions are bound to consult with their members on any decision to amalgamate, they bought HST tokens to cast a ballot of all 110,000 members of both unions.

These votes are normally conducted as postal ballots, with significant costs and administration overheads. The vote count at the cut-off time was immediate and the amalgamation was approved by members.

Now that the two unions have amalgamated, the new super union will need to conduct a further ballot of members to determine which union officials will hold elected positions for the next term of union leadership.

#7 Non-Profit

A global non-profit organisation creates a campaign on Horizon State's platform to poll their 100,000+ members and agree on the use of their 3 Billion dollars in donations budget over the next five years. The poll allows members to assign their preferences for percentages of the budget to coarse-grained causes. Once the poll is completed, the allocation of funds to the various causes is done, based on the desire of the membership.

Not all of the members voted, and the organisation had some Decision Tokens left at the end of the vote. As the value of the HST increased since the time the organisation acquired them, they can now be sold back to the market at a small profit - making the entire process even cheaper than originally anticipated.

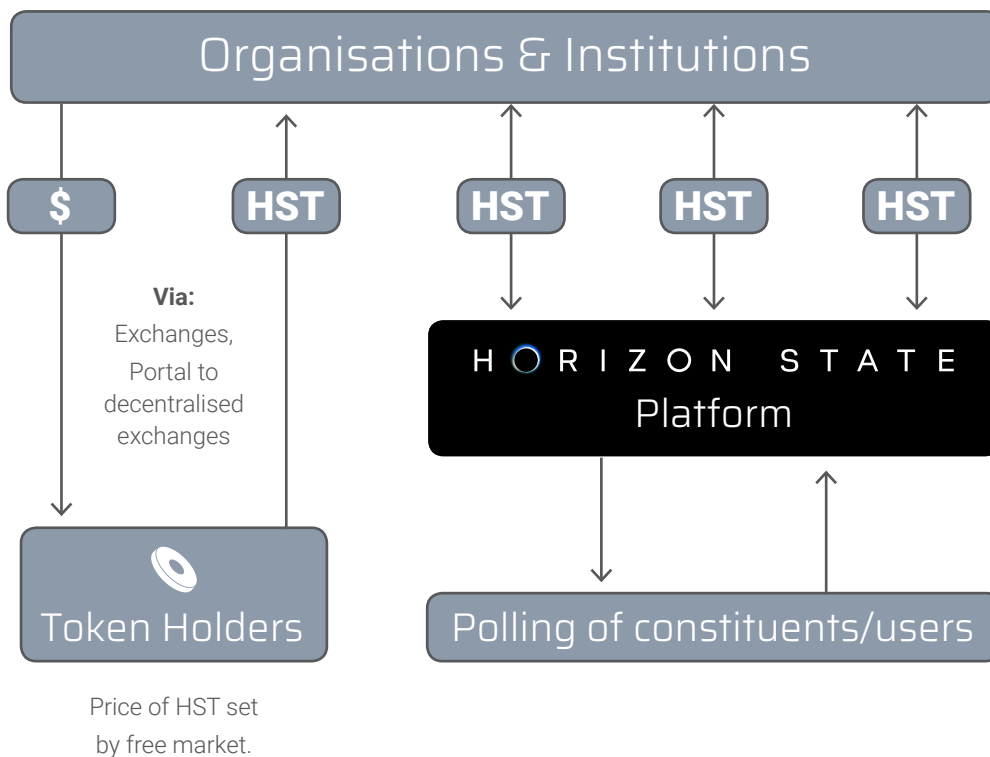
#8 General Elections

The government of a small African country decides to take advantage of the high penetration of mobile phones in their population and run the next general election on Horizon State's platform. They white-label

the platform's mobile apps for the election, and add the political parties as candidates for the constituents to choose from. Using the Decision Tokens for the vote, people can participate in the election from the comfort of their home, and are no longer required to make the lengthy journey to the nearest available voting station. Additionally, allegations of voter fraud, votes manipulation and denial of access that were rife in the previous elections, are no longer an issue.

#9 Census

Every 5 years, the national statistics bureau surveys the entire population residing in the country for important statistical information that guides the government policies for the next five years. The requirements of the census call for a very short window of time when the residents are to complete the survey, and as a result - significant investment goes into purchasing or leasing equipment to be able to handle this load. Utilising Horizon State's platform, millions of survey answers can be cast in a very short time. Taking advantage of the platform's API and SDK, the census data relating to a single person can make use of profile attributes already entered by the person.



Token Use

Horizon State will engage governments, large corporations, blue-chip customers, local councils, unions, education facilities and non-profit organisations to promote the use of the Decision Tokens. We will actively create products and services across the ecosystem that will require the use of HST, thus driving the token value and demand.

The cost of federal elections in Australia has risen to \$227 million, or \$15 per vote.²¹ Our analysis of the economic benefits expects Horizon State’s blockchain solution to be 10-15 times cheaper per vote.

Horizon State’s low cost-per-vote will attract government departments and large corporates, enabling them to run very high number of votes. This will drive significant demand for the HST tokens which are required to use the platform and commit constituent votes to the blockchain.

Additional future modules will drive platform usage even further. Crowdfunding functions, donations management, staff and volunteer management, events and campaigns management and actionable intelligence platform are already in our roadmap to be delivered in the near future.

Mechanisms of Supply & Demand

The Decision Tokens (HST) are a finite resource - with the total amount of tokens ever in existence determined during the ICO, up to a maximum of 1 Billion.

HST is used throughout the Horizon State ecosystem to purchase services, such as the casting of votes. As the breadth of services offered by the platform grows, and as the number and scale of users increases - so will the demand for the token.

From the ability to white label our app, to new module creation, the extensibility of the platform will enable additional features and services over time - with HST being the core currency utilised.

21. (n.d.). Election could cost \$227 million : Election Watch - Australia 2016. Retrieved September 3, 2017, from [http://electionwatch.unimelb.edu.au/australia-2016/articles/2016-federal-election-to-cost-\\$227-million](http://electionwatch.unimelb.edu.au/australia-2016/articles/2016-federal-election-to-cost-$227-million)



5.0 Towards Brighter Horizons

The internet heralded a new era of opportunity for the evolution of our engagement, decision making and democratic tools and processes. Yet, with twenty years of internet technology iteration, a system for internet based voting that is secure, engaging and cost-effective has not been possible.

Until now.

Our technology has become the first to enable the recording of votes to a digital ballot box for a customer with a public and national membership. Distributed ledger technology now positions organisations and governments to conduct decentralised voting processes that are not only more secure than prior internet voting solutions, paper ballots, and electronic voting machines, but with vastly improved economic metrics.

Blockchain plays a critical role in solving the problems that exist with traditional systems: security, immediacy, transparency, and cost. More than that, our technology shifts the constituent engagement paradigm, making

the best use of evolving democratic methods and technologies for access.

Horizon State's vision is revolutionising methods for our democratic processes. This includes broadening discussions, promoting engagement, widening access, improving efficiency, and reducing associated costs. In that light, we exist to devise and design opinion solicitation and voting mechanisms; authentication and eligibility systems; education mediums; and information delivery systems - all inspired by the blockchain technology empowering them to be distributed, unforgeable, and incorruptible.

Real World Use: Our MVP

Achievements

On **August 2016**, Horizon State's team commenced development of the first commercial blockchain voting product.

On **February 10 2017**, Horizon State technology was publicly launched for Australia's MiVote. Their national membership began participating in the decision making process on matters that affect the nation.

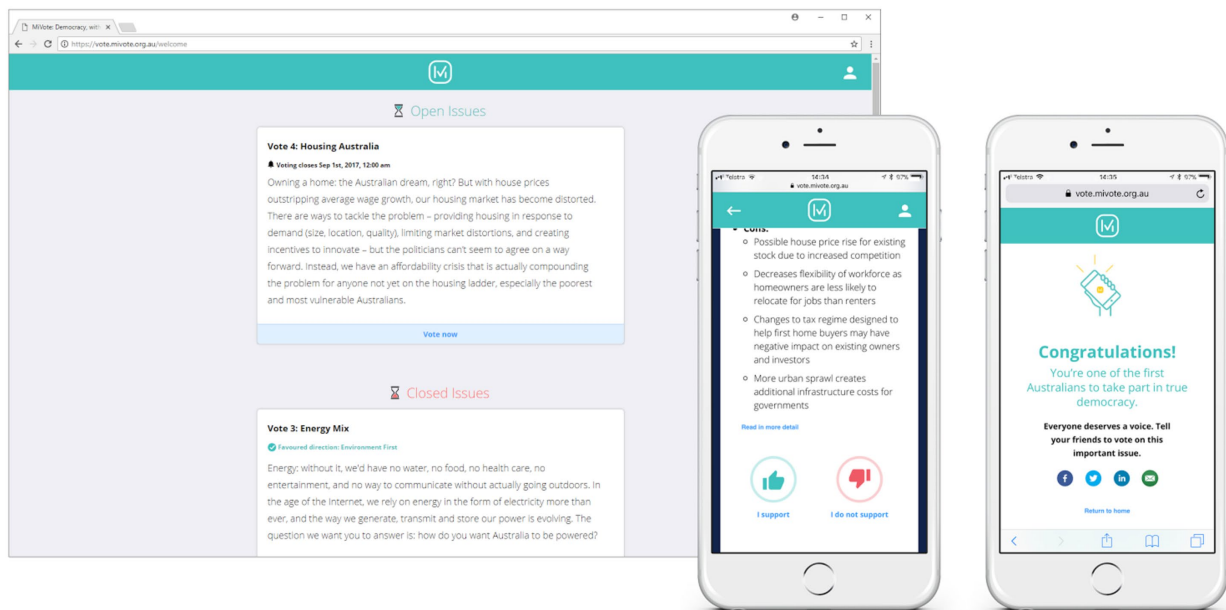
On **March 2017**, distributed ledger voting was enabled. MiVote's second and subsequent campaigns have seen constituent votes cast to the Ethereum public blockchain. The MiVote movement has now run 3 blockchain-enabled nationally-inclusive polls.

MiVote is currently expanding their movement and

Different organisations will have different ways of identifying their eligible voters. For votes which would relate to matters of national politics, users will be checked against the Electoral Role. For private organisations, eligibility may be defined by the granting of access to specific individuals or common domains.

Casting Votes

User votes are cast to the Ethereum public blockchain. Fees are paid for the processing and verification of votes, which take the form of transactions. Each vote



Pictured: Horizon State blockchain voting technology in use

our platform into additional international territories, starting with the United States of America. MiVote is also currently involved in further discussions with 23 countries, 7 parliaments, and numerous multinational charitable organisations.

Voter Access

The first release of our product was designed specifically for MiVote's needs. The user experience of casting votes as it exists today for non-parliamentary matters aims to achieve frictionless access and broad inclusivity. All Australian residents are permitted to participate. Access to voting entails the sending of a one-time access code to a unique Australian mobile number.

is sent with a relationship to a campaign ID, but without identifiable relationship to the voter.

The system requires no knowledge or understanding of blockchain to participate. The fees are paid by organisations and institutions who wish to facilitate these activities, and end users interact using a mobile app - a product similar to experiences they are already familiar with. Horizon State believes firmly that the successful blockchain applications will be the ones that stand as valuable utilities that require the use of unforgeable ledgers. Users do not need to understand the technical realities of the blockchain to use Horizon State. They only need to trust in its promise.

Strategic Focus

While already in use, we consider our current offering to be an MVP (Minimum Viable Product) only. As such, we have a detailed plan of extending the product. Our vision is to create a platform that provides many functional layers on top of the voting process itself. Our roadmap includes elements such as campaign management, user engagement, deliberation facilitation and more.

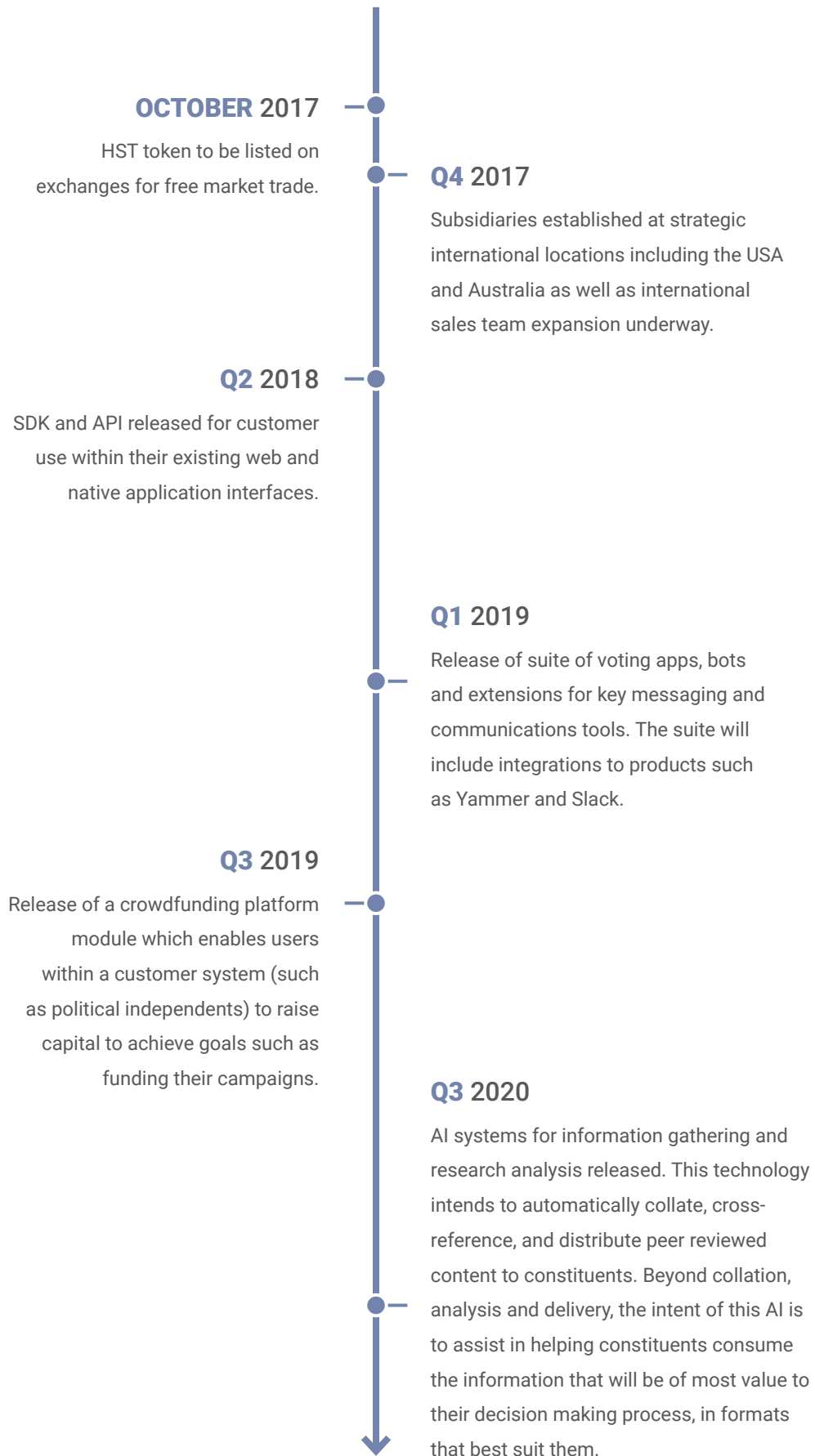
Our strategic focus over the next 3 years include:

- The continued building and commercialisation of a modular blockchain-based technology stack.
- Developing platforms for engagement, deliberation, decisions.
- Research and Development of innovative platform extensions and functionality.
- Providing secure, pluggable mechanisms for identification and authentication.
- The creation of an ecosystem of 3rd party provider plugins supporting social networks (e.g. Facebook), commercial products (e.g. Dynamics CRM, Salesforce.com, and Power BI) and collaboration products (e.g. Yammer and Slack).
- The expansion of our engineering team and establishment of a global sales force and support hubs.

The following dates indicate our aspiration to create a platform capable of delivering the functions mentioned above. It is our intent to be able to recruit enough people to work on executing this plan together.

Roadmap

The delivery timeframes below follow on from the current functionality Horizon State delivers.



6.0 Decision Token Sale

Horizon State will be issuing an ERC20 token called a Decision Token (HST).

In the first iteration, the Decision Token will be used by organisations and institutions to pay for the use of the product. In the future as the product suite of Horizon State is enhanced, additional token use cases will be added.

ICO Configuration	
Funding types accepted	ETH
Maximum total token supply	1,000,000,000 HST
Available to token sale participants	600,000,000 HST (60%)
Horizon State allocation*	400,000,000 HST (40%)
Funding Goal	\$30M USD
Hard Cap	200,000 ETH

Post ICO Final Token Structure	
Total Supply	48,240,070 HST
Circulating Supply	30,862,962 HST
AirDrop	100% bonus to ICO participants
Excess Tokens	Frozen here

Public Token Sale Timeline

14 October 2017

Public token sale deposit address made public only at <https://horizonstate.com>

16 October 2017

Public token sale begins; day 1 token bonus matches presale bonus

30 October 2017

Public token sale ends (if not exhausted earlier). Token contract will enforce no minting after the token sale ends.

Staff and advisor tokens will have vesting conditions spanning a two year period to ensure vision alignment.

* (28% allocated for company reserves, 8% for staff, 2% for advisors and 2% for bounties)

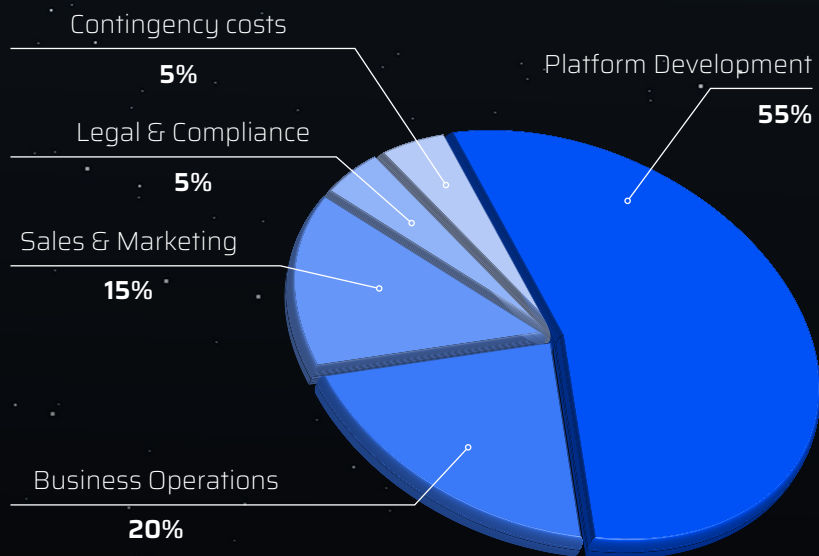
Contribution Period Details

A staggered allocation period will be run, with varying token allotment depending on entry phase:

Token sale period	HST token allocation per 1 ETH
Presale (September)	3750
October 16	3500
October 17 – 23	3250
October 24 – 30	3000

There will be no minimum or maximum ETH amounts set to for token sale participants.

Use of Token Sale Proceeds



Platform Development

Platform development will include expanding the core development team to deliver the product roadmap and build the platform.

Business Operations

Business Operations will be focused on identifying and forming partnerships with new customers and leveraging existing partnerships with MiVote across the globe. In addition, the function will also ensure internal administrative processes are executed with efficiency and best practice.

Sales & Marketing

International B2B marketing, channel partner management, sales, and regional growth. Marketing will

primarily focus on creating a content and distribution channel for Horizon State's blockchain platform offering. The marketing team is also tasked with public and token holder relations delivering publicity activities, advertising and customer interaction.

Legal & Compliance

It will be necessary to engage legal counsel in new jurisdictions to ascertain the laws and regulations of each sovereign country to ensure the platform adheres to licensing requirements and remains in good standing with regulatory bodies.

Contingency Costs

Unforeseen business expenses and ad-hoc consultancy fees.

7.0 Team

Executive Team



Jamie Skella

Formerly Director of UX at Tatts Group and the Australian Football League. Jamie devised and directed development of MiVote's blockchain voting MVP.

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Nimo Naamani

Formerly Chief Technology Officer at iPayroll. Entrepreneur and software developer with 20 years of experience building products.

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Dan Crane

Formerly Chief Online Officer at an Australian Stock Exchange top 100. Cryptoasset researcher, investor and ICO advisor.

[in linkedin.com/in/infoaddict/](https://www.linkedin.com/in/infoaddict/)



Jason Theron

Formerly Google Technical Analyst for Fronde and Datacom consultant. Distributed systems and cloud solutions specialist.

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Daniel Vertes

IPO engagement, accounting, and process optimisation expert. 10 years experience in the role of Chief Financial Officer.

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Board of Advisors



Oren Alazraki

20 years of leadership and executive experience in the IT sector, including a number of General Management roles, most recently at Datacom - a company with over 5,600 people and revenues of over \$1.2 billion.

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Adam Grenier

Head of Marketing Innovation at Uber; formerly Head of Growth Marketing at Uber. Startup advisor and growth marketing consultant. Board of Directors at MiVote.

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Daniel Gasteiger

Blockchain advisor to the state of Zurich and United Nations. Founder of companies in Zurich focused on blockchain business platforms and eGovernance. A former Chief of Staff at UBS.

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Dr Marta Poblet

Associate Professor at RMIT. 40+ scientific articles on topics including digital democracy and crowdsourcing. Co-founder, Institute of Law and Technology at the Autonomous University of Barcelona.

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Professor John Flood

Professor of Law and Society. Inaugural Director of Law Futures Centre at Griffith University. Honorary Professor of Law at University College London.

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Dr Jane Thomason

Formerly Senior Social Sector Specialist at the Asian Development Bank in Manila, and Member of Devex Strategic Impact Advisory Council. Blockchain-for-good hackathon judge and commentator.

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A historic change in our
democratic processes awaits.

H O R I Z O N S T A T E