bluzelle

A DECENTRALIZED DATABASE FOR THE FUTURE

Bluzelle fills a void in the decentralized internet ecosystem

WHITEPAPER V 1.4

December 11, 2017

Written By Pavel Bains &
Neeraj Murarka

CRYP2NOVA

IMPORTANT NOTICE

PLEASE READ THIS ENTIRE NOTICE VERY CAREFULLY. IF YOU ARE IN DOUBT AS TO THE ACTION YOU SHOULD TAKE IN RELATION TO THIS DOCUMENT, PLEASE CONSULT YOUR LEGAL, COMMERCIAL, FINANCIAL, TAX, OR OTHER PROFESSIONAL ADVISORS.

This White Paper states the current views of Bluzelle Platform Pte. Ltd. concerning the proposed decentralized database storage network named 'Bluzelle', the external cryptographic tokens proposed to be used with Bluzelle ("BLZ"), and related matters. Bluzelle Platform may from time to time revise this White Paper in any respect without notice. However, Bluzelle Platform undertakes no obligation to update this White Paper or any of the information it contains. You are responsible for ensuring that you have the latest version of this White Paper and that you read and understand its contents.

Indicative information only. This White Paper presents indicative information only. Unless expressly specified otherwise, Bluzelle and the technologies on which it will be based are under development and are not currently deployed. Any plans, projections, or forecasts mentioned in this White Paper may not be achieved due to multiple risk factors, including without limitation defects in technology, legal or regulatory exposure, market volatility, sector volatility, corporate actions, or the unavailability of complete and accurate information.

Not an offer, solicitation, or recommendation. This White Paper is for informational purposes only and does not constitute, and is not intended to be, a prospectus or an offer to sell, a solicitation of an offer to buy, or a recommendation of BLZ, Bluzelle, an investment in Bluzelle or any project or property of Bluzelle Platform, or shares or other securities in Bluzelle Platform or any affiliated or associated company in any jurisdiction.

Not a contract. By publishing this White Paper, Bluzelle Platform does not intend to solicit, and is not soliciting, any action with respect to BLZ or any contractual relationship with Bluzelle Platform or any affiliated or associated company. This White Paper is not a contract and does not legally bind Bluzelle Platform or any other party. Bluzelle Platform will not accept any cryptocurrency or other form of payment in respect of BLZ based on this White Paper. If Bluzelle Platform elects to conduct a sale of BLZ, any offer to sell BLZ will be made only on the terms and

Archived copy · cryp2nova.com

conditions of a binding legal agreement between the buyer and Bluzelle Platform, the details of which Bluzelle Platform will make available separately from this White Paper.

Not designed or intended as an investment product or securities. Bluzelle Platform has designed BLZ to be an externally-tradable token that can be converted to and from the Bluzelle Platform internal token (BNT), which will be the exclusive medium of exchange within Bluzelle. Bluzelle Platform has not designed BLZ to have the characteristics of an investment product and does not intend them to be securities or any other type of financial or investment instrument in any jurisdiction. Without limitation, BLZ do not entitle holders to a dividend or any financial or other type of return from Bluzelle Platform or Bluzelle simply by possessing them; BLZ do not entitle holders to vote on, or otherwise exercise discretion to govern or influence, any aspect of Bluzelle Platform's or any other entity's corporate entity, Bluzelle Platform's or any other entity's business, or Bluzelle or any other service; and BLZ do not confer ownership, equity, or rights, interests, or benefits in the revenues, profits, or other financial aspects of, Bluzelle Platform or any other entity, Bluzelle, any underlying asset (whether tangible, intangible, or virtual), or any technology or intellectual property developed, acquired, or licensed by Bluzelle Platform or any other entity.

Not a recommendation or advice. This White Paper provides information about Bluzelle Platform and summarizes the target market, business model, and technology of Bluzelle. Nothing in this White Paper should be considered a recommendation for any person to purchase BLZ or to use Bluzelle. Your requesting a copy, possession, or sharing of this White Paper does not constitute participation in any sale of BLZ, if Bluzelle Platform elects to conduct such sale. No information in this White Paper should be considered as business, legal, financial, or tax advice regarding the purchase of BLZ or the use of Bluzelle. No part of this White Paper may be relied on to form the basis of, or in connection with, any decision regarding the purchase of BLZ or the use of Bluzelle.
Not reviewed, examined or approved by a regulatory authority. No regulatory authority has reviewed, examined or approved any of the information contained in this White Paper. Bluzelle Platform has not sought, and will not seek, review, examination or approval of any of the information contained in this White Paper under the laws or regulations of any jurisdiction. The publication or distribution of this White Paper does not imply that applicable laws, regulations, or rules have been complied with.

Archived copy · cryp2nova.com

Third party sources. Bluzelle Platform and Bluzelle Related Parties have not independently verified the completeness or accuracy of any information extracted from third party sources.

Forward-looking statements. All statements in this White Paper, on Bluzelle Platform's website, in communication channels (such as Slack, Medium, Reddit, Telegram, Github, and Twitter), or otherwise made by Bluzelle Platform or its authorized representatives in any media that are not statements of historical fact (including statements using words such as "aim", "target", "anticipate", "believe", "could", "estimate", "expect", "if", "intend", "may", "plan", "possible", "probable", "project", "should", "would", "will", the negatives of those terms, and similar expressions), including but not limited to statements about Bluzelle, BLZ, Bluzelle Platform's financial position, business strategies, plans and prospects, and industry trends are "forward-looking statements". Forward-looking statements involve known and unknown risks, uncertainties, and other factors (including but not limited to changes in political, social, economic, and stock or cryptocurrency market conditions and changes in the regulatory environment where Bluzelle Platform and Bluzelle will operate) which may cause the actual results, performance, or achievements of Bluzelle Platform, Bluzelle, and BLZ to differ materially from the future results, performance, or achievements expressed or implied in the forward-looking statements. No representation, warranty, undertaking, promise, or guarantee is given in respect of the forward-looking statements. Forward-looking statements should not be relied upon.

Limitation of liability. To the maximum extent permitted by all applicable laws and regulations, Bluzelle Platform and its affiliates and its and their founders, directors, officers, employees, advisors, agents, and representatives (Bluzelle Related Parties) shall not be liable for any direct or indirect loss of revenue, income, profits, business, business opportunity, anticipated saving, data, reputation, or goodwill; or any indirect, special, incidental, reliance, consequential, punitive, or other losses or damages of any kind, in tort, contract, strict liability, or otherwise, arising out of or in connection with any reliance on this White Paper or any error, omission, or inaccuracy in any information in this White Paper, even if Bluzelle Platform and Bluzelle Related Parties have been advised of the possibility of such losses or damages.

Disclaimers of representations, warranties, undertakings, and conditions. To the maximum extent permitted by all applicable laws and regulations, Bluzelle Platform and Bluzelle Related Parties do not make or purport to make, and hereby disclaim, all representations, warranties,

Archived copy · cryp2nova.com

undertakings, and conditions (express or implied, whether by statute, common law, custom, usage, or otherwise) regarding Bluzelle Platform, Bluzelle, BLZ, this White Paper, and any forward-looking statements. Bluzelle Platform provides any information in this White Paper "as is" with no guarantee of completeness, accuracy, timeliness, or of the results obtained from the use of this information.

Requirement for reproduction and distribution. Unless this White Paper, including this Notice, is reproduced and distributed in its entirety without change, Bluzelle Platform's prior written consent is required. No part of this White Paper may be reproduced or used in, or distributed to any jurisdiction where possession or distribution of this White Paper is prohibited or restricted.

English version controls. The English language version of this White Paper is the only official version. Translations of this White Paper into any language other than English may introduce ambiguities and errors, despite the best intentions of the translators, and Bluzelle Platform does not guarantee the accuracy of any translation. If there is a conflict between the English version of this White Paper and a translated version, the English version will control.

© 2017 Bluzelle Platform Pte. Ltd. All Rights Reserved.
Bluzelle is a trade mark of Bluzelle Networks Pte. Ltd. All other product names are trademarks or registered trademarks of their respective owners.

CRYP2NOVA

Archived copy · cryp2nova.com

1. INTRODUCTION

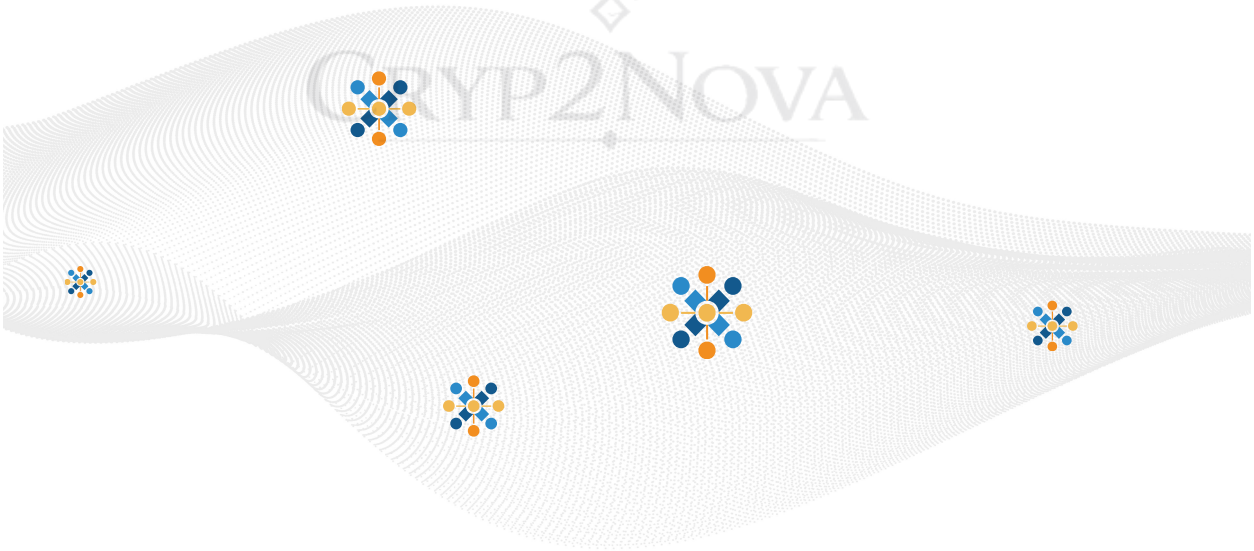
Our vision is to make the internet a safer and more secure place for the data of people and businesses.

1.1. The Problem

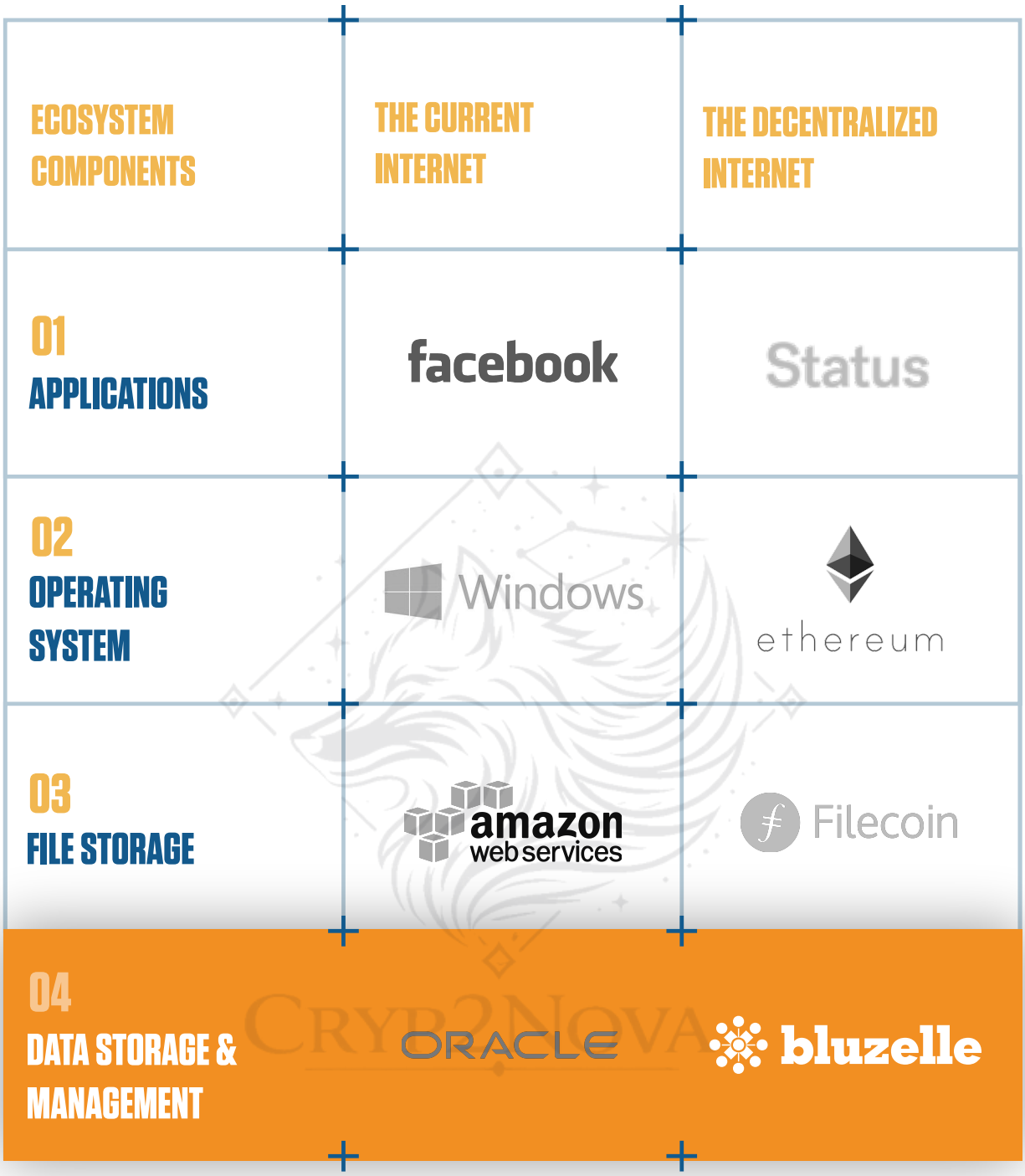
Blockchain technologies are propelling the next generation of the Internet. Protocols like Ethereum are a platform for launching decentralized applications (dApps) that will change the way products and services are consumed. These dApps will exchange massive amounts of data that need to be stored and managed. **The problem is blockchains like Ethereum are not designed for data storage and management;** doing so would take up too much space and take too much time.

1.2. The Solution – Bluzelle

Just like decentralized services like Filecoin and Storj are needed for file storage & management; there is a need for data storage & management. **Bluzelle is a decentralized, on-demand, scalable database service for dApps.** Bluzelle fills a need and is complementary to the other components to make the decentralized Internet complete. Without these decentralized components, the decentralized Internet would not be able to run efficiently and scale to massive use.



Archived copy · cryp2nova.com

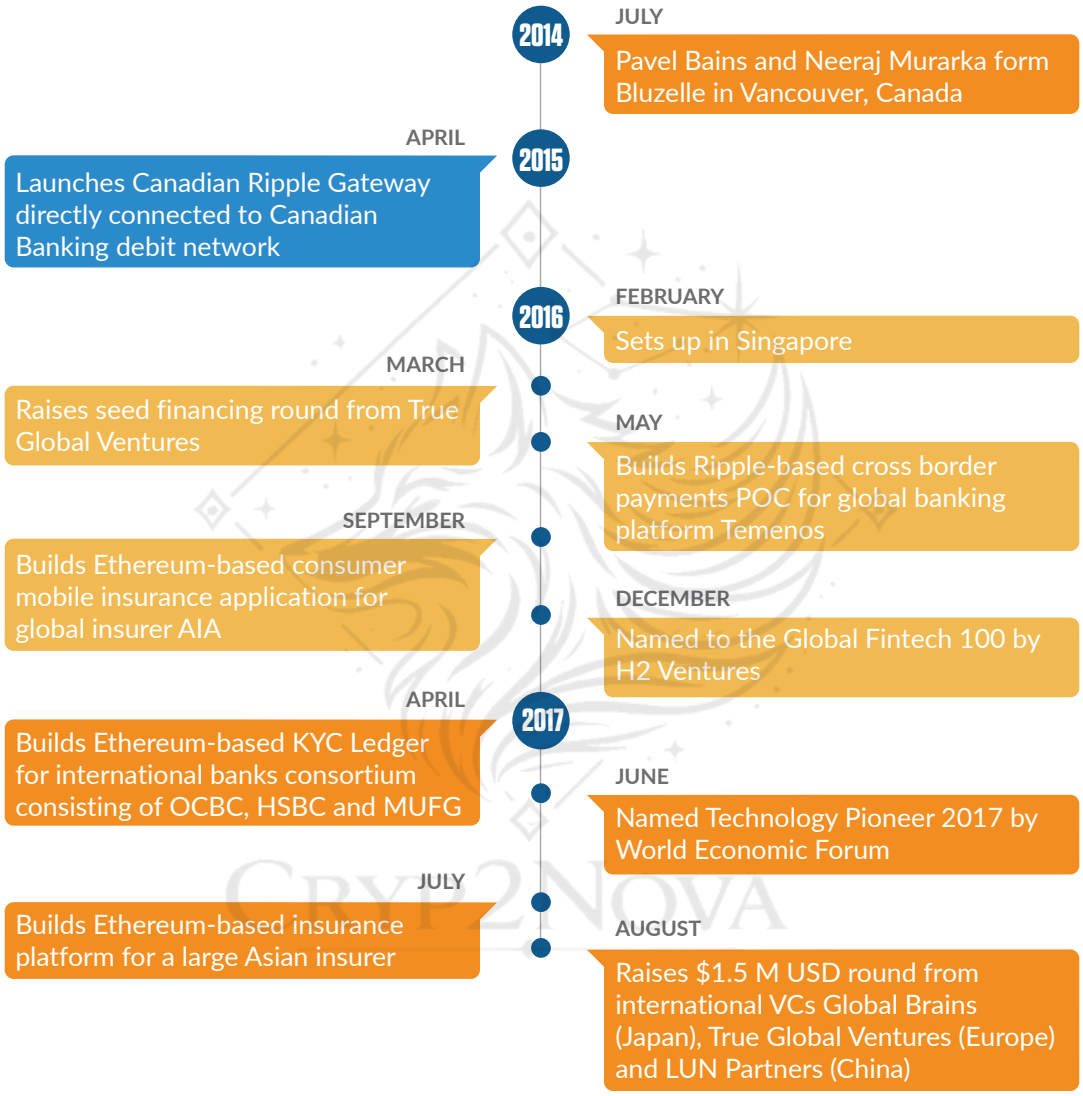


Bluzelle is the right fit because it provides enterprise-grade database services at a price for all Decentralized Application (dApps) developers.

Archived copy · cryp2nova.com

2. HISTORY OF BLUZELLE

Seeing that blockchain can provide numerous benefits to the finance industry, Bluzelle was formed in July 2014. We created a technology stack that abstracts the complexities of managing blockchain applications.



Working with enterprise customers revealed one critical challenge for widespread adoption of blockchain applications: the management of large amounts of data. **This discovery led to the formation of the Bluzelle decentralized database service.**

Archived copy · cryp2nova.com

3. THE CURRENT STATE OF DATABASE SERVICES

It's estimated that in 5 years there will be over 20 Billion connected devices that require the generation, management, storage, and retrieval of enormous amounts of data.

"Business leaders demand next-generation applications and new insights to drive more intelligent engagement and better decisions. To get there, enterprise architects need to design an agile technical architecture that can scale automatically with capabilities, such as databases, that are always available to support new initiatives. It takes enormous time, effort, and coordination to provision new databases today because of a lack of resources to meet the administration challenges of rolling out complex clustered systems." **Forrester Research, 2017 Market Overview Database As A Service**

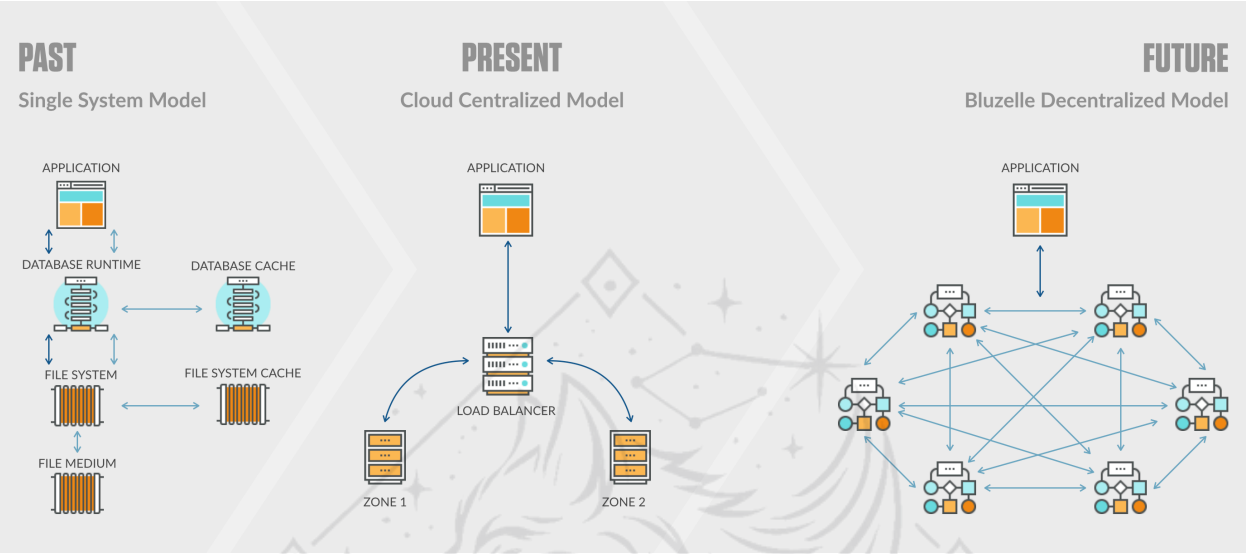
To address this problem, emerged the Cloud Database and Database-as-a-Service (DBaaS) market. According to *Markets and Markets*, this industry is expected to grow at a CAGR of 67.30% to $14.05 billion by 2019. There are four primary drivers of demand for DBaaS:

- **Consumer personalization apps** - financial, dating, social media products
- **Internet-of-things (IoT) applications** - everything is being connected
- **Mobile apps** - amount of data consumed is growing exponentially
- **Line-of-business (LoB) collaboration** - business units share more info

With all these applications producing more and more data, past and present database management services are under-equipped to meet the needs of businesses. There are problems centered around performance, reliability and scalability. These can lead to problems of data breaches resulting in massive amounts of data theft.

Archived copy · cryp2nova.com

The systems of the past and present will now evolve to the future: The Bluzelle decentralized, on-demand, database service.



PAST: SINGLE SYSTEM DB	PRESENT: CLOUD DB	FUTURE: DECENTRALIZED DB
Multiple sources of failure	Single source of failure	No points of failure
Expensive to scale	Expensive to scale	Scales efficiently
No privacy	No Privacy	Highest privacy
No immutability	No immutability	Immutable
Performance limitations	Some performance limitations	No performance limitations

CRYP2NOVA

Archived copy · cryp2nova.com

4. BLUZELLE FEATURES

Bluzelle is a decentralized database service for dApp developers. To ensure developers get the highest throughout in performance, reliability and scalability, Bluzelle implements swarming technologies. A swarm is a large group of nodes (computers) that work together to store and manage data. Nodes in these swarms can go down and new nodes can come up with minimal impact on the network. Overall Bluzelle is a meta-swarm comprised of multiple swarms.

4.1. Performance

Bluzelle's unique and proprietary swarming techniques were designed for the highest performance. Bluzelle can reduce latency by retrieving data from the nearest nodes on the leaf swarm, and/or increase speed manyfold by retrieving data in parallel from the fastest nodes on the leaf swarm. This is like torrents and seeds. When data is requested, it is done in parallel where chunks (shards) are requested from all the different swarms that contain those shards, and these are all retrieved in parallel, resulting in desirable performance metrics.

4.2. Reliability

Using the concept of fog or swarm computing, Bluzelle follows a model where every unit of data is 100% replicated in a single leaf swarm amongst a swarm of swarms. So while the data is only in one swarm, that swarm's nodes are aplenty and are geographically dispersed, immune to localized outages caused by either natural or human-related events.

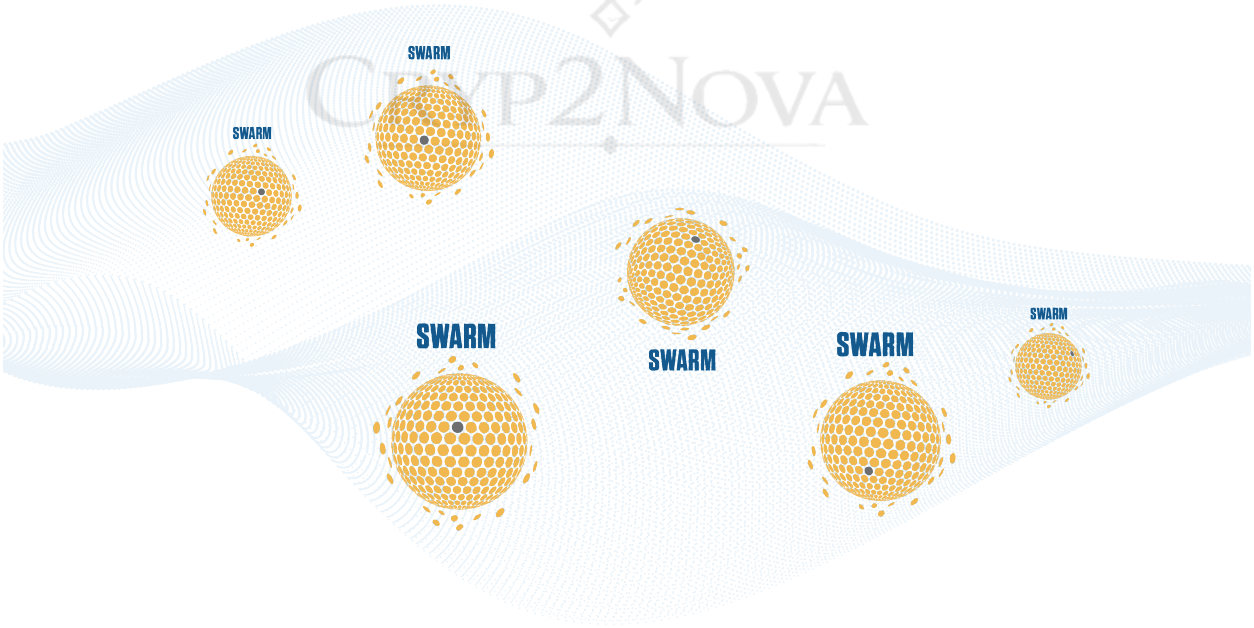
4.3. Scalability

Scalability is possible both horizontally or vertically. Bluzelle manages the various strategies and considerations around the use case of having to increase scale. Horizontal scaling is a cornerstone of the Bluzelle architecture, where every swarm is another "unit" of horizontal scaling at the metaswarm level. Within every leaf swarm, every node acts as yet another agent of horizontal scaling, at the leaf swarm level.

Archived copy · cryp2nova.com

The following table outlines additional features of Bluzelle.

FEATURE	DESCRIPTION
Highest privacy	Bluzelle employs cryptography and sharding techniques to provide a privacy guarantee.
High reliability	Bluzelle redundantly stores tiny pieces of data on nodes across the globe, eliminating any single point of failure.
Enterprise scalability	Bluzelle algorithms store data in a unique, distributed and intelligent manner that will provide enterprise-level scalability.
Data immutability	Bluzelle leverages blockchain technology so that once data is stored to such a network, it is impossible to change that data.
High performance speeds	Bluzelle dynamically adjusts the number and location of nodes sharding the consumer's data to meet performance metrics.
No intruders	Bluzelle's use of consensus is the only method by which updates to the network can be accepted as the "truth".
Low cost	Bluzelle operates few data centers and has little capital costs. Vast majority of computer resources are provided by participant producers.



Archived copy · cryp2nova.com

5. HOW DOES BLUZELLE WORK?

Bluzelle takes blockchain principles and sharding & partitioning concepts to create an AirBnB like marketplace for data storage and management. This is a crypto-economic network of powerful producers and consumers.

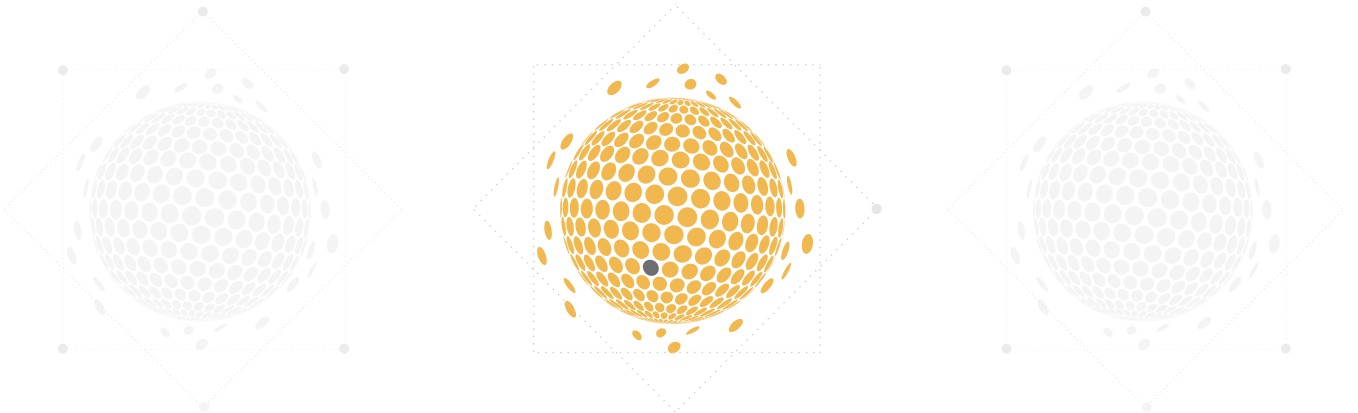
5.1. Consumer

The consumer is the one who “consumes” the Bluzelle database services. These are the developers we target. Consumers are spending Bluzelle tokens so they can store and retrieve data. Additionally a user could get a credit of tokens if a producer failed to meet certain service levels.

5.2. Producer

The producer is the one who provides resources to the network in return for earning Bluzelle tokens (BLZ). Bluzelle producers will be required to put up a proportional stake of Bluzelle tokens, in order to provide a guarantee on the service levels Bluzelle will provide. Bluzelle will encourage competition by producers to provide higher quality services, where those with higher service levels can charge more but also have to put up a higher stake.

Every participating consumer and producer of Bluzelle are initially required to independently create their own Ethereum account and take responsibility for securing and protecting their private key. The private key is used to secure access to their ETH and Bluzelle tokens and encrypt their data before it gets sent out over the Bluzelle network.



Archived copy · cryp2nova.com

6. DAPP USES CASES FOR BLUZELLE

6.1. Predictions Markets

Decentralized predictions markets on Ethereum require the management and storage of massive amounts of data to work. These include: (1) the questions being asked, (2) the different possible outcomes, (3) the predictions being made, and (4) the sourced information for the actual events. A decentralized database can grow and scale as per the products needs. **Having fast and reliable access to data is important for the success of the predictions market to garner new customers and participation.** Historical data stored on Bluzelle will add a new category of predictions that can reduce human speculation by using past events to make better predictions.

6.2. Currency Exchange Protocols

A key part of a currency exchange protocol is the presence of relayers, who enable makers and takers to connect via off-chain order books. The underlying order-books must be fast, efficient, reliable, and easy to supply, by the relayers. A pain point is relayers are responsible to store these order-books each in their own way. **By using a decentralized database like Bluzelle, currency exchange protocols can provide relayers with a standard, consistent, ubiquitous, database that would be available with no effort.** This reduction in friction maximizes the service level and quality as the network would now still be powered by relayers.

CRYP2NOVA

6.3. Data Streaming Networks

Data streaming networks match up consumers of data points with producers of data points. For example a car uses real-time traffic data from the data streaming network. The car collects real-time data while it moves. It is both paying for data it "buys" and "earning" from data it "sells" to the network. The data points need to be both readable and writable with high performance, availability, scalability, and reliability. Bluzelle is ideal to provide the precise infrastructure needed so that a data streaming network can store its data to meet these requirements.

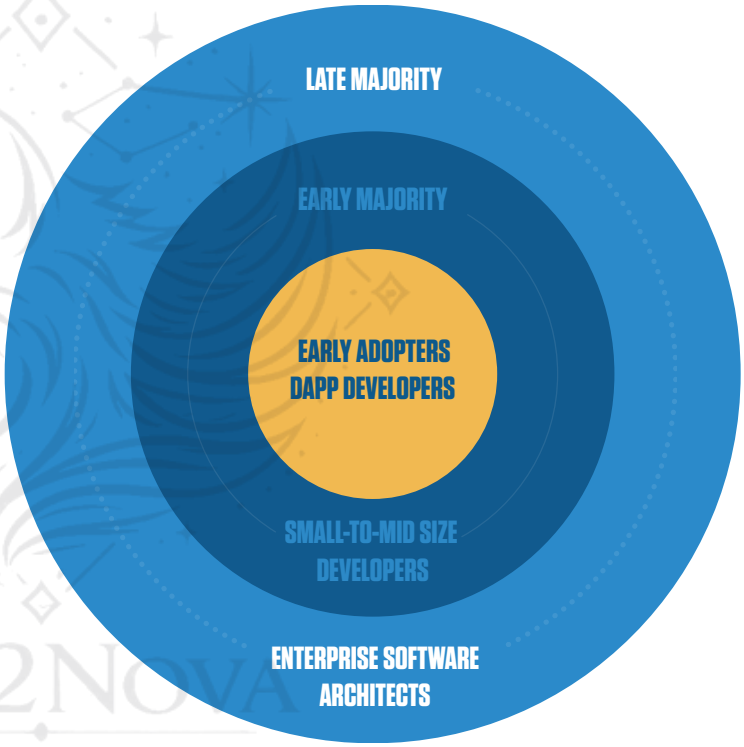
Archived copy · cryp2nova.com

7. MARKETING STRATEGY

7.1. Target Market

Bluzelle has three groups that it targets to become a mainstream product like Oracle Systems. Bluzelle will start the first with the first group and then expand outwards.

- **Early Adopters - dApp developers.** One of the fastest growing segments in the software industry. It involves software developers writing blockchain based applications that take advantage of other decentralized technologies that are complementary to Bluzelle.



- **Early Majority - small-to-mid size developers.** Refers to developers that are not in dApps but building common web, mobile, hardware applications. These developers are writing games, productivity software, mobile applications, utility software, and many other software products.

- **Late Majority - enterprise software architects.** The large enterprises who see how dApps and other developers use Bluzelle and then have the validation to also move their data storage needs to us.

Archived copy · cryp2nova.com

7.2. Regional Focus

With it's offices in both Singapore and Vancouver, Bluzelle is in a unique position to grow in two of the biggest regions for dApps and the blockchain: US/Canada and Asia Pacific.

From China to Korea to Japan to Southeast Asia, this region is home to a fast growing startup blockchain community. These startups require efficient and low-cost services. Many parts of Southeast Asia are rapidly developing as major cities and high-growth economies. They are leapfrogging legacy client-server architecture systems to innovative adaptive and scalable solutions built for the future.

"Asia Pacific is anticipated to aggressively adopt cloud database and DBaaS solutions in the near future. This is basically due to the increasing focus by small, medium, and large scale enterprises for the purpose of improving efficiency and productivity via investment in technology." - **TMR Research Cloud Database and Database as a Service (DBaaS) Market, 2017-2025**

Bluzelle has an R&D center in Vancouver, Canada. Being in Western Canada/US gives Bluzelle a strategic position to offer it's product to the growing blockchain and overall developer businesses in Seattle, Portland, San Francisco and Silicon Valley. Bluzelle's founders, advisors, investors have a history of working in Silicon Valley and have strong connections to build support in the worlds biggest technology center.

These regions are just to start. Bluzelle is a global product that meets the needs of developers everywhere.

7.3. The Bluzelle Developer Community

The first release of Bluzelle is planned for April 2018 and we have started building our developer community. Servicing software developers has less friction as they can be engaged online and are passionate about technologies that help them make better products quickly and easily. Early on, we will get feedback on the product and build the ecosystem enabling both the producers and consumers of Bluzelle.

Archived copy · cryp2nova.com

We will have an online community site, go to hackathons, host meetup events, and much more. As a tech company, Bluzelle's employees have an organic network of peers, friends and acquaintances who are the target market. As mentioned in the prior section, Bluzelle will be doing various developer reach outs to many of the biggest cities in Asia and US/Canada.



Archived copy · cryp2nova.com

8. BLUZELLE'S ECOSYSTEM

The opportunity to get Bluzelle into the hands of consumers is tremendous. A key is to build a healthy ecosystem where Bluzelle is integrated to many technologies; making it easy for customers to find Bluzelle.

8.1. Developer Marketplaces

Bluzelle aims to partner with leading software development ecosystems and establishing channel partnerships that share revenue. Notable examples would include Heroku, AWS Elastic Beanstalk, Redhat OpenShift, Google App Engine, and Microsoft Azure. With such integrations, developers can quickly use Bluzelle's decentralized database, just as effortlessly as they can use traditional cloud database offerings - simply point and click.

8.2. Developer Environments

Development environments such as Android Studio, Apple XCode, Microsoft Xamarin and Visual Studio, Eclipse, IntelliJ, Unity3D, PhoneGap, and Ionic are targeted for plugins and integrations so that dApp developers of both desktop and mobile apps can easily integrate Bluzelle whenever they have database needs for their games, enterprise applications, etc.

8.3. Blockchains

CRYP2NOVA

Blockchains play a large role in the Bluzelle ecosystem. Smart contract classes and instances are planned to be deployed directly not just to Ethereum but other open blockchain protocols like Hyperledger to enable dApp smart contracts to use Bluzelle for storage needs.

8.4. Operating Systems and Browser Tools

Operating-system and browser tools further enhance the developer's ability to access data, whether it is from a GUI application running on their desktop or a browser plugin that enables them to quickly store and retrieve table data.

Archived copy · cryp2nova.com

9. THE BLUZELLE TOKEN

Bluzelle is powered by two tokens:

- **Ethereum ERC-20 external token: BLZ**
  This externally-tradable token bridges the Bluzelle native token (BNT) with Ethereum's own native ETH token.
- **Bluzelle Network Token: BNT**
  An internal token to Bluzelle alone that enables the Bluzelle crypto-economy, where consumers pay and producers earn.

The need for an internal token is because ERC-20 tokens are too slow and expensive for real-time database accounting. The BLZ ERC-20 external token exists to represent on exchanges for customers to easily obtain to use the Bluzelle service. The BNT internal native token exists to enable high-speed, zero-cost, and real-time database accounting. The BLZ and BNT tokens can be interchanged via the Bluzelle token gateway. **For the public sale, people will be purchasing BLZ tokens.**

When a new participant to the network wishes to use its services as a consumer, they will need to acquire BNT tokens. The standard method of doing so is as follows:

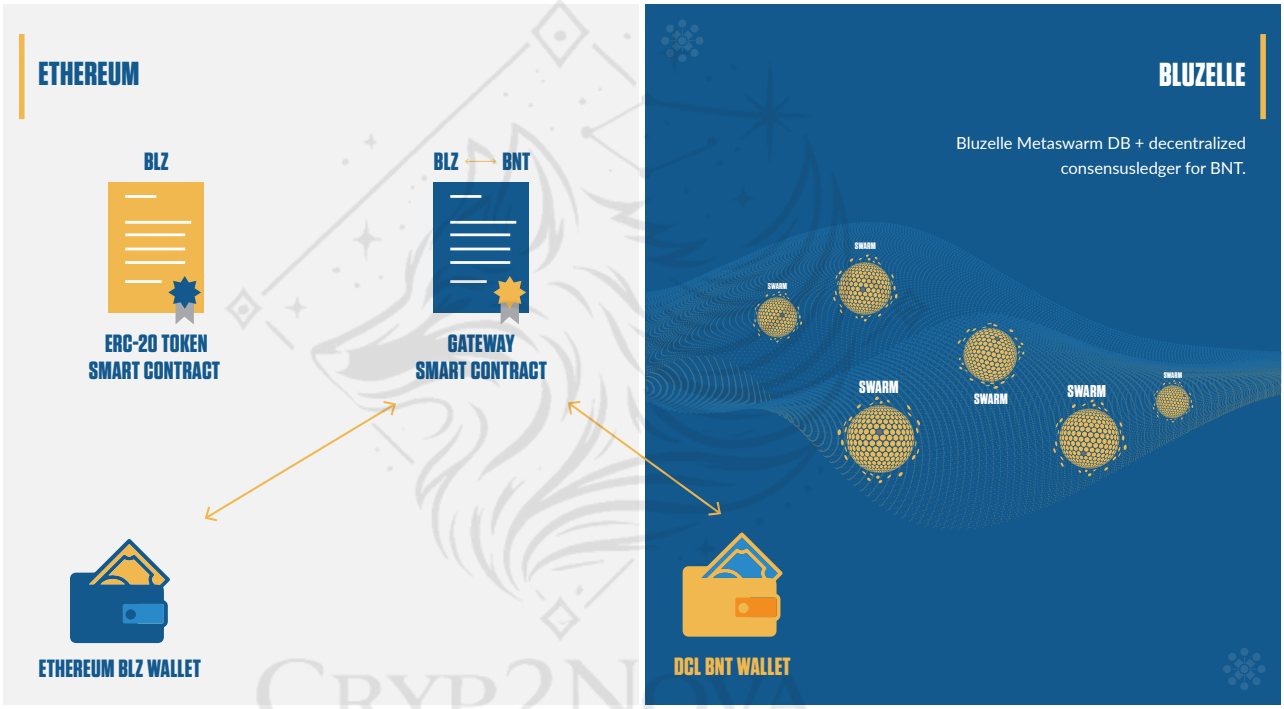
1. Buy BLZ tokens on a crypto-exchange using ETH, BTC or other forms the exchange allows.
2. Send BLZ tokens to the Bluzelle Token Gateway's smart contract via Ethereum. The gateway will issue new BNT tokens to the user's Bluzelle network wallet.
3. The user now has BNT tokens, and is free to participate in the network as a consumer.

CRYP2NOVA

Archived copy · cryp2nova.com

When a producer wishes to “withdraw” their BNT tokens, they use the following steps:

1. Send the BNT tokens to the special Bluzelle gateway.
2. The gateway converts the BNT tokens at a 1:1 ratio to BLZ tokens, and sends these BLZ tokens to the producer’s registered Ethereum wallet.
3. The producer now has the BLZ tokens, and is free to transact with them on the Ethereum network.



CRYP2NOVA

Archived copy · cryp2nova.com

10. REVENUE MODEL

The BLZ <=> BNT gateway proposes a micro-transaction fee for every conversion going through the gateway in either direction. The fee is charged in BLZ tokens and is sent to a special Ethereum wallet owned by Bluzelle. The model is setup so the entire ecosystem remains completely decentralized while still providing a revenue for Bluzelle to improve and innovate the network and its associated services.

Following are two typical scenarios:

- A user needs BNT tokens to use the service.
    1. The user sends 100 BLZ to the BLZ smart contract.
    2. 0.1 BLZ is subtracted from the total of 100 BLZ and is sent to the Bluzelle Ethereum wallet as a non-refundable fee.
    3. The remaining 99.9 BLZ is converted to BNT and credited to the user's BNT Bluzelle native wallet.
- A user wishes to convert BNT to BLZ.
    1. The user sends BNT tokens to the BNT gateway.
    2. The BNT tokens are converted at a BLZ 1:1 rate, resulting in a conversion amount of 100 BLZ. 0.1 BLZ are subtracted from the total of 100 BLZ and is sent to the Bluzelle Ethereum wallet as a non-refundable fee.
    3. The remaining 99.9 BLZ is released out of custody by the Ethereum smart contract and sent to the correct participant' s Ethereum wallet.

Absolute prices are calculated dynamically and are not 100% deterministic. Maximums are baked into Bluzelle, where the network adjusts the number of swarms and distribution of nodes as prices start to approach the maximums, getting increasingly aggressive with network adjustments as the maximums draw nearer, until expected average prices start to trend again.

Archived copy · cryp2nova.com

11. TECHNOLOGY OVERVIEW

This section provides an overview of Bluzelle's technology architecture. For a more in-depth reading with more details refer to the Technology Paper.

11.1. Database 101 - CRUD API

CRUD stands for "create, read, update, and delete" for the four basic functions pertaining to databases and permanent storage. CRUD covers the functionality of relational databases, where each of create, read, update, and delete can be mapped to corresponding SQL and HTTP methods.

A password of the user's own choosing is also required, and it is up to the user to protect this password and keep it available for later. All the data stored in key value pairs are encrypted, with the password being used as the initialization vector in AES 256 symmetric key encryption. This password is only ever used locally and never travels on the network in any way, shape, or form.

11.2. Sharding

Shard stands for "System for Highly Available Replicated Data". Large databases often are hard to work with due to the size and memory constraints they come with. By partitioning the database along logical lines, the database becomes much easier to work with.

A logical shard is the smallest unit in Bluzelle and contains individual units of data that all share the same partition key. A partition key is a unique identifier that allows the shard to be accessed for the retrieval of information. In Bluzelle, partition keys allow the dApp to store and retrieve data from the correctly identified leaf swarm efficiently. In Bluzelle, groups of logical shards are stored on leaf swarms, and it is the amalgamation of these leaf swarms that makes up the entirety of the Bluzelle database.

Archived copy · cryp2nova.com

11.3. Jump Consistent Hashing

Jump consistent hashing (JCH) was first described in a white paper by John Lamping and Eric Veach at Google. It is an elegant algorithm that only takes about 5 lines of code in a language like C++. JCH does not have a state machine, and therefore requires no storage. It is an algorithm without lookups in memory and is therefore much faster.

Bluzelle uses JCH to map from the key (in key value pairs in a NoSQL table) to the id of the swarm that the key is replicated in. Once that id is found, Bluzelle uses Kademlia hashing to find the means to reach that swarm even if that specific swarm is not running.

11.4. Kademlia Hashing

Kademlia is an advanced form of a typical peer-to-peer distributed hash table which has been structured in a way to make particular use of the special symmetric and geometric properties of the bitwise XOR function. Bluzelle uses Kademlia hashing to efficiently enable nodes to know about every other swarm on the network. Using Kademlia's own form of "finger tables", each node in the network only needs to know information about how to reach $O(log(n))$ other leaf swarms, where n is the total number of leaf swarms on the network. This means that irrespective of how large the network ever becomes, every node can reach every other leaf swarm within $O(log(n))$ tries, by only storing $O(log(n))$ data. As a result, Bluzelle is able to handle exponential growth.

CRYP2NOVA

11.5. Partial Replication

Partial replication means that not every node in the network has a copy of the data -- only the nodes within the leaf swarm delegated to that data replicate it. This is one of the key differences between Bluzelle and a traditional "blockchain". Blockchains are inherently slow and do not scale well, as every set of transactions or blocks is 100% replicated everywhere, putting severe vertical scaling limitations on the network. Bluzelle by design only stores the data amongst a strategic subset of the nodes, statistically providing an guarantee that the data is always available and still achieving the benefits of boundless horizontal scaling. Partial replication exists because only ONE

Archived copy · cryp2nova.com

swarm amongst all the swarms in the network replicates a given piece of data. An interesting incumbent technology that can be compared to this is the content delivery network (CDN).

11.6. Load Balancing

A benefit of having a logical shard stored on multiple physical nodes is speed - by having the same data accessible through different hardware resources at various geographical locations, the system may load-balance queries to retrieve data from nearby nodes that are least taxed at any given moment in time. This permits Bluzelle to dynamically perform queries and retrieve data in the most efficient way possible, maximizing use of the shared resources spanning across multiple nodes.

11.7. Redundancy

As replicated data is stored across different nodes with unique infrastructure, there is a severely reduced causation between single-node failure and loss of the shard. This method of mirroring serves to secure the availability of data in an efficient manner by ensuring any single point of failure is inconsequential.

11.8. Consensus

Bluzelle deals with consensus differently from blockchains, doing away with any concept of a network-wide universal state. There is no need for a single state for the whole network, so Bluzelle applies the consensus model on a swarming level, ensuring that leaf swarms of nodes storing data shards are each reaching localized consensus, using our customized forms of consensus and proof algorithms .

A swarm with consensus appears to clients interacting with that swarm (or other swarms interacting with the swarm) as a single, atomic, indivisible unit that stores a set of data reliably. Any node in that leaf swarm can accurately service requests pertaining to that data.

Archived copy · cryp2nova.com

11.9. Karma

Every producer on Bluzelle is entitled to run one or more nodes on the network as farming nodes. Each such producer will use their Ethereum address as the “key” that identifies them. This identifier is unique to that farmer and is tied 1:1 with their Ethereum address. The producer also has a “Karma Index”, which is a score that dictates how well-behaved the producer is. The karmic index can go up and down depending on the producer’s activities and decisions, intentional or not, autonomous or not, and spans all the nodes the producer operates. If one such node misbehaves, the karmic index typically drops and this applies to all the producer’s nodes. Furthermore, the farmer is required to put up a stake (in BNT tokens) that is proportional to the number of nodes and inversely proportional to the karmic index.

11.10. Sybil Attacks

Some blockchain networks, like Bitcoin, allow anyone to add their node to the network. That brings the concern that a malicious organization could potentially add so many nodes that they disproportionately control the network and leading to hijacking the network. This is referred to as a Sybil attack. Bitcoin and Ethereum obviate Sybil attacks by making them prohibitively expensive via proof of work. I

Bluzelle employs several methods to prevent Sybil attacks so that when a bad actor is caught, they can be blacklisted, and economically penalized leading to complete removal from the network. These anti-Sybil attack methods are:

- Producers are required to put up a BNT stake to participate in the network. This stake serves as a requirement for participation and as a strong economic deterrent from bad behaviour.

- The Kademlia distributed hash table is used as it relies on message redundancy and the XOR distance function. Neighbours are selected and messages are redundantly sent to multiple neighbors of the intended node for anti-Sybil verification purposes. Nodes that mislead the swarm location effort will be systematically tracked down and caught.

Archived copy · cryp2nova.com

- A request to a swarm for CRUD functionality is done with redundancy, where multiple nodes in the same swarm all perform the request. Given the node->swarm membership rules for Bluzelle, it is statistically unlikely that multiple such nodes chosen to perform a given transaction are colluding bad actors that deliver bad yet consistent data.

- Swarm membership is determined by the network and cannot be chosen by nodes. This means that a would-be Sybil attacker who attempts to join the network with n nodes or masquerading with the identity of n nodes will not be able to gain a critical mass of memberships into any single swarm.

- Nodes can be posed a challenge request to participate in a proof of storage test. This test is performed in cooperation with the consumer on either a random network-initiated basis or by the consumer directly and forces the targeted node to prove they have the correct data.

11.11. Byzantine General's Fault

One way to protect against Byzantine Faults is to have a default understanding of what to do if there is no information. In Bluzelle, if misleading or corrupted or inconsistent information is detected, the default is to do nothing. Thanks to the aforementioned redundancy in CRUD requests made to a swarm, inconsistency is caught, whether intentional or not. In any case, Bluzelle nodes are instructed to ignore the transaction and do nothing. Only authenticated transactions with proper credentials and checksums are accepted and transacted upon. By this way, Bluzelle is Byzantine Fault Tolerant by design.

CRYP2NOVA

Archived copy · cryp2nova.com

12. THE COMPANY – STRUCTURE, TEAM, INVESTORS, ADVISORS

Bluzelle Platform Pte. Ltd is a Singapore company. Singapore is chosen for its ecosystem of fostering blockchain innovations and regulations that support the growth of well-managed businesses.

12.1. The Team

Bluzelle is a team of 10 and growing with mainly top engineers with backgrounds in computer science, AI, cognitive science, blockchain, security, networking and more. Some members are:



Pavel Bains
CEO



Neeraj Murarka
CTO



Nitin Cunha
Sr Developer



Scott Burch
Sr Developer



Mehdi Kolahchi
Sr Developer



Yingyao Xie
Product Assoc.

Pavel Bains, CEO/Co-Founder – Pavel has over 15 years experience in operational management, digital technology and finance. An NCAA honor roll student-athlete from UCLA, Pavel also was the co-founder of Storypanda, a digital book platform that published critically acclaimed titles by DreamWorks, Warner Bros, Peanuts and more. Pavel was in GM and CFO roles for video game studios, including looking after 7 Disney studios across four continents and 350 people and $150M budgets.

Neeraj Murarka, CTO/Co-Founder – Neeraj is an engineer and computer systems architect with over 20 years experience. He has worked for Google, IBM, Hewlett Packard, Lufthansa, Thales Avionics. Projects include: locking down of modified Android OS for retail markets; multicast UDP satellite-based systems, design and development of secure and FFA-approved systems for Airbus and Boeing. Neeraj was the fourth employee of acquired blockchain startup, Zero Block.

CRYP2NOVA

Archived copy · cryp2nova.com

12.2. Early Investors

Bluzelle raised a round of financing from venture capital firms to kick-start development of the database service, accelerate staffing and provide capital needed for the token sale.

GB Global Brain

TRUE GLOBAL VENTURES

LUN PARTNERS

Kenetic Capital

12.3. Advisors

Bluzelle has put together a specialized unit of advisors to guide the growth of the business. Each person is a technology heavyweight contributing to companies like Facebook, PayPal, LinkedIn, Ethereum and more. These include the following:



Gil Penchina
Super-angel known for investing in Ripple, Civic, LinkedIn and more.



Brian Fox
CTO Orchid, creator of BASH, open-source advocate.



Prashant Malik
Ex Facebook engineer, creator of Cassandra DB



Alex Leverington
Core Ethereum Developer, found of Metagrid, Crypto-tech expert.

CRYP2NOVA

12.4. Corporate Governance , Compliance, Legal

Bluzelle believes in maintaining high standards for operating a transparent business. We have created a group of top professional firms in legal & accounting to ensure these standards are met.

OrionW – legal counsel for Singapore

Bryan Cave – legal counsel for Hong Kong and USA

PriceWaterHouseCooper – corporate governance, corporate strategy, tax advisory

Archived copy · cryp2nova.com

13. TOKEN SALE

Bluzelle will be executing a token sale to raise funds for development and commercialization of its decentralized database service. The maximum amount we will accept is a value of $19,500,000 USD. The only accepted currency will be ETH. Exact pricing of ETH to BLZ will be determined at a later date prior to the official token sale.

13.1. TOKEN ALLOCATION



Token Sale: 33%

BLZ will be offered for sale so that consumers and producers can become part of the ecosystem early and have tokens needed to be used for Bluzelle.

Retained by Bluzelle: 27%

The retained tokens can be used in additional offerings to further development and staff incentives.

Developer Fund: 10%

Used to incentivize, reward and attract outside developers to build projects, integrations, partnerships, hackathons and community involvement. Growing the ecosystem is important.

Archived copy · cryp2nova.com

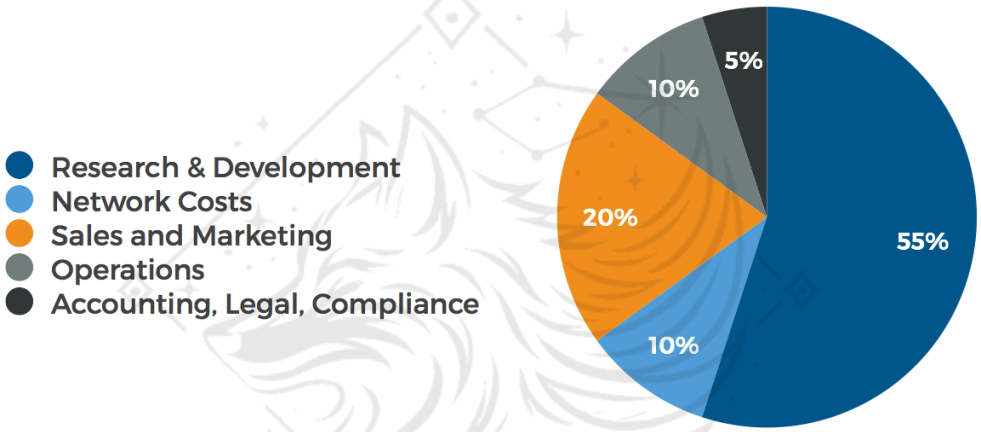
Founding Team: 15%

Bluzelle's founders have been working on the business for over three years. Allocation of their BLZ tokens will vest over three years.

Early Backers, Equity Investors and Advisors: 15%

Bluzelle has been fortunate to have early investors and advisors to help with the development of the technology. Part of the equity investments have been converted into tokens.

13.2. USE OF FUNDS



Research & Product Development: 55%

Use to continuously develop the product, grow the team globally.

Network Costs: 10%

Initial capital needed to seed the network with nodes and kick-start the decentralized service.

Sales and Marketing: 20%

Grass-roots marketing to start and expand to conferences, sponsorships, advertising.

Operations: 10%

General overhead and administrative costs for running the business on a global scale.

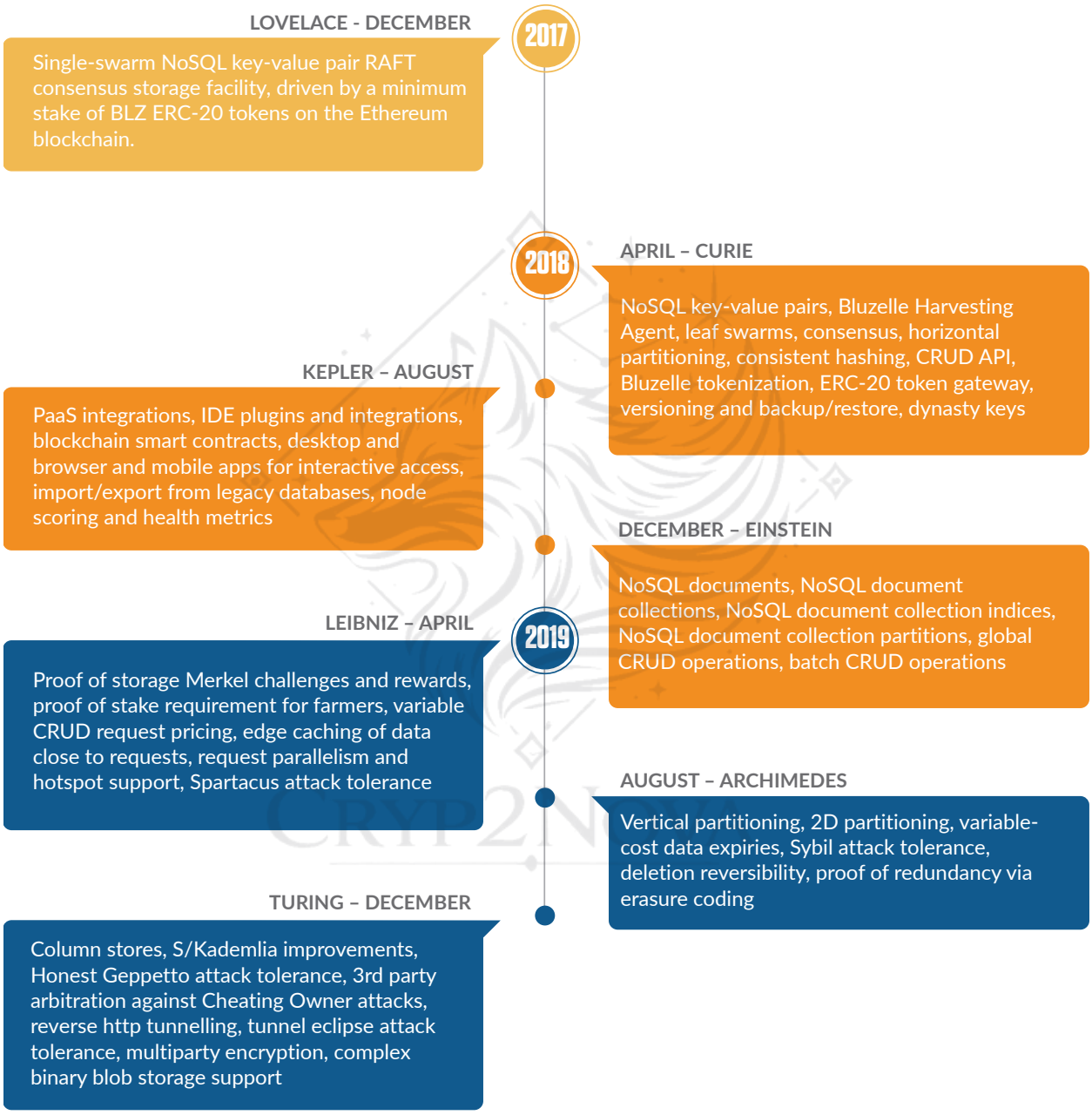
Legal, Compliance, Accounting: 5%

Important to Bluzelle to maintain high standards for its operations and provide transparency.

Archived copy · cryp2nova.com

14. ROADMAP

We break down the development of Bluzelle into 4 month releases, each named after a physicist.



Archived copy · cryp2nova.com

RISK DISCLOSURES

Please carefully read and evaluate the risks that Bluzelle Platform describes below.

The realisation of any one or more of the risks described in this White Paper, or other risks whether unforeseen or unforeseeable, could significantly reduce or eliminate the utility or value of BLZ and a participant (each, a "Participant") in the proposed sale of BLZ (the "Token Sale") could lose their entire amount paid for BLZ. Bluzelle Platform does not represent that this White Paper discloses all risks and other significant aspects of the Token Sale, including risks which may be personal to proposed Participants and thus unknown to Bluzelle Platform.

Proposed Participants who do not fully understand or are not comfortable with any of the risks described in this White Paper should consult their legal, commercial, financial, tax, or other professional advisers; otherwise, they should not participate in the Token Sale.

To the maximum extent permitted by all applicable laws and regulations, Bluzelle Platform and its affiliates and its and their founders, directors, officers, employees, advisers, agents, and representatives (the "Bluzelle Related Parties") shall not be liable for any direct or indirect loss of revenue, income, profits, business, business opportunity, anticipated saving, data, reputation, or goodwill; or any indirect, special, incidental, reliance, consequential, punitive, or other losses or damages of any kind, in tort, contract, strict liability, or otherwise, arising out of or in connection with any loss or damage of a Participant (or a proposed Participant) relating to the risks associated with the Token Sale or in connection with erroneous or insufficient consultation with or advice received from any adviser, even if Bluzelle Platform and the Bluzelle Related Parties have been advised of the possibility of such losses or damages.

References to 'Bluzelle Platform' in the risk factors discussed in this section include, where the context permits or requires, any Bluzelle Related Party involved in the operation of Bluzelle or the conduct of the Token Sale. References to "discretion" mean "sole and absolute discretion", unless otherwise qualified.

Archived copy · cryp2nova.com

Company Risks

Company Failure. As a consequence of the realisation of one or more of the other risks in this White Paper or of risks not described in this White Paper, Bluzelle Platform's business could fail and Bluzelle Platform could be wound up or dissolved. If Bluzelle Platform's business fails and Bluzelle or the software platform on which it operates (the "**Application**") is not transferred to and operated by another company, Bluzelle would terminate and any BLZ would have no utility or value. Bluzelle Platform does not commit that it can or will transfer the Application or Bluzelle to another company if its business fails. If Bluzelle Platform does transfer the Application or Bluzelle to another company, Bluzelle Platform does not commit that the other company will operate Bluzelle to a Participant's satisfaction or at all, or will continue to accept BLZ for use in Bluzelle.

Management Failures. Bluzelle Platform's management may fail to manage its personnel, finances, facilities, information, technology, and other resources to effectively develop, operate, maintain, support, improve, market, and sell the Application and Bluzelle, or to manage the growth of Bluzelle or its business, or to adapt the Application or its business to changes in technology or the markets in which it operates, or to identify and effectively respond to the risks described in this White Paper or otherwise, the realisation of any or all of which could adversely affect Bluzelle.

No Governance Rights. BLZ confer no governance or similar rights with respect to Bluzelle Platform, the Application, or Bluzelle. Bluzelle Platform will, at its discretion, make all decisions concerning its business, the Application, and Bluzelle, including decisions to fork or discontinue Bluzelle; to change any pricing, parameter, or feature of Bluzelle; to subcontract or outsource the development, maintenance, support, and operation of the Application; to sell the Application; and to sell, merge, or liquidate Bluzelle Platform or all or a material part of Bluzelle Platform's assets, any of which decisions may not be consistent with a Participant's expectations or interests.

Business Model Risks. Bluzelle Platform designed Bluzelle (including the Application and BLZ) according to a specific business model. In particular, the adoption and success of Bluzelle depends on several factors, including:

- Bluzelle Platform's ability to hire top engineers to develop the Application and Bluzelle;
- the number of users providing resources to support the functions of Bluzelle;

Archived copy · cryp2nova.com

- the availability of BLZ to Bluzelle users after the Token Sale; and
- the number of users perceiving BLZ to be valuable and thus willing to use Bluzelle as either providers of resources or consumers of Bluzelle.

If the business model of Bluzelle is flawed, or if the assumptions underlying that business model are incorrect, Bluzelle may underperform or fail. Bluzelle Platform may at its discretion elect to change the business model of Bluzelle in response to competition or market requirements, to address perceived flaws, to optimise the model, or otherwise. Any such changes to the business model of Bluzelle may fail to achieve their purpose and could adversely affect Bluzelle.

Insufficient Funding. Bluzelle Platform will depend on the proceeds of the Token Sale to fund its operations until such time, if ever, that Bluzelle Platform earns sufficient revenue from Bluzelle or other activities. The proceeds of the Token Sale are cryptocurrencies that may increase or decrease in value. Bluzelle Platform may, at its discretion, engage in hedging or similar activities to manage the risk of cryptocurrency fluctuations, but those activities may not be sufficient, may fail, or may worsen the consequences of those fluctuations. In addition, the cryptocurrencies held by Bluzelle Platform may not be convertible to fiat currencies or other cryptocurrencies at rates Bluzelle Platform considers favourable or at all. The cryptocurrencies held by Bluzelle Platform are also subject to loss or theft despite security precautions taken by Bluzelle Platform. If for any reason Bluzelle Platform's funds are not sufficient to sustain its operations, Bluzelle Platform may have to reduce or suspend its operations, which would adversely affect Bluzelle Platform's ability to develop and operate Platform at the intended level or at all.

Unanticipated Risks. Bluzelle will be launched and will evolve in technology, business, economic, and legal environments that are uncertain and subject to rapid, unpredictable, and potentially contradictory evolution. The future risks associated with those environments, their respective evolutions, and the interactions among them are unknown and unknowable but they could threaten the viability or existence of Bluzelle.

Archived copy · cryp2nova.com

Product Risks

Delay. Bluzelle Platform may not develop and deploy the Application according to its intended schedule. Delays in deploying the Application may adversely affect the acceptance of Bluzelle in the market and ultimately the viability of Bluzelle.

Inability to Use BLZ. Holders of BLZ will not be able to use them with Bluzelle until Bluzelle Platform makes it them available ("**Launch**"). Launch may be delayed, or may not occur at all. Even after Launch, the availability of certain services will be limited.

Failure to Develop and Support the Service. As a consequence of the realisation of one or more of the other risks in this White Paper or of risks not described in this White Paper, or because of business or technical decisions taken by Bluzelle Platform in good faith, Bluzelle Platform may fail to launch Bluzelle with a full set of intended features and functions or at all, may discontinue certain features and functions of Bluzelle, may not improve or add to the features and functions of Bluzelle over time, may not adequately support Bluzelle, and may not fix bugs in Bluzelle in a timely way or at all. Bluzelle (including BLZ) may therefore not have the utility described in this White Paper or expected by a Participant.

Service Issues. Bluzelle may be degraded, interrupted, or fail because of hardware, software, or network defects, security breaches, hacking, viruses or other malicious code, natural disasters, congestion in underlying networks, and other causes. Bluzelle Platform may be unable to restore Bluzelle to normal operation in a timely way or at all.

Service Updates. Bluzelle Platform may not update Bluzelle in a timely way or at all to fix bugs, address incompatibilities arising because of changes in underlying technologies and services, respond to user feedback, or react to competitive threats. Any such delays or failures could adversely affect Bluzelle.

Failure to Meet Expectations. The initial and future versions of Bluzelle may not meet a Participant's expectations regarding features, functions, performance, availability, quality, security, scale, price, or other attributes that are important to a Participant.

Archived copy · cryp2nova.com

Reliance on Third Parties and Third Party Systems. Bluzelle Platform relies on third parties and third party systems it does not control to operate the Application and Bluzelle and to provide services on which Bluzelle depends. Those third parties and third party systems may be unable or unwilling to act as Bluzelle Platform needs and expects, may themselves act maliciously, or may be adversely affected by other parties acting intentionally, unintentionally, or maliciously or by other events outside their control. The failure of those third parties or third party systems to perform according to Bluzelle Platform's needs and expectations could adversely affect Bluzelle.

Privacy Risks. Bluzelle will rely in part on Ethereum and other public, decentralised platforms. Anyone with Internet access can inspect all transactions and other information stored in those platforms that is not encrypted. A Participant's transactions involving BLZ, and other information about a Participant or that belongs to a Participant that may be processed by or stored in those platforms in connection with a Participant's use of Bluzelle, may be inspected by the public. Certain information may, even if encrypted, be associated with a Participant by combining it with other public or non-public information.

Technology Risks

Core Technology Risks. Bluzelle is built with core technologies that are in some cases immature and unproven, including the Ethereum blockchain platform and various open source software applications and libraries. If those core technologies do not perform according to Bluzelle Platform's needs or expectations, have bugs or security vulnerabilities that are not or cannot be fixed, become unstable, degraded, or unavailable, are changed or forked in a way that is incompatible with Bluzelle, or are not further developed or supported, Bluzelle Platform may be required to change the specifications of Bluzelle and to reduce or eliminate features and functions that are important to Participants, or to discontinue Bluzelle.

Integration Risks. Bluzelle will be integrated using some essential third party services. If the integrations with those services fail, or those services are unreliable or do not perform as expected, those features within Bluzelle, or Bluzelle generally, may be adversely affected or delayed.

Archived copy · cryp2nova.com

Smart Contract Risks. Certain key features of Bluzelle will be implemented in smart contracts on the Application and on the Ethereum blockchain platform. The nature of smart contracts makes them difficult to change to fix bugs, improve performance, or add features and functions. Bluzelle Platform may therefore not correct defects in Bluzelle or improve Bluzelle to meet market needs or respond to competition fast enough or at all, which could adversely affect the utility or viability of Bluzelle.

Hacking. All software systems, including the Application and the Ethereum blockchain platform, have security vulnerabilities. Malicious actors may (a) disrupt, corrupt, or interfere with the Application, Bluzelle, or the Ethereum blockchain platform, (b) defraud Bluzelle Platform or other stakeholders in Bluzelle, including Participants or BLZ holders, and (c) steal BLZ or other valuable data stored in the Application, Bluzelle, or the Ethereum blockchain platform, some of which may belong to or involve Participants or BLZ holders.

Mining Attacks. Certain features of Bluzelle depend on the Ethereum blockchain platform. Ethereum is a decentralised service comprising a global peer-to-peer network of many independent node operators. Coordination or collusion among node operators could subject Bluzelle and its stakeholders, including Participants or BLZ holders, to a variety of attacks that could compromise the integrity of Bluzelle, cause loss, theft, or corruption of BLZ and other valuable data stored in Bluzelle, including Participants or BLZ holders, or increase the cost of using the platform to levels that make operation of Bluzelle uneconomic and unsustainable.

Security Risks. The security and integrity of essential components of Bluzelle depend on cryptography. Known and currently unknown weaknesses in the cryptographic algorithms used in Bluzelle and its underlying core technologies, and advances in techniques or computing power to circumvent those algorithms, may compromise the security and integrity of Bluzelle, cause the loss, theft, or corruption of BLZ and other valuable data stored in Bluzelle, including Participants or BLZ holders, and require the suspension or discontinuation of Bluzelle. The existence or future development of stronger cryptographic algorithms to replace compromised algorithms, and the feasibility of implementing those stronger algorithms in Bluzelle and its underlying core technologies, is uncertain.

Archived copy · cryp2nova.com

Prohibitively High Transaction Costs. All transactions on the Ethereum blockchain platform, including the transfer of BLZ, have a cost in Ether ("**Gas**"). As at the date of this White Paper, Gas prices for basic transactions on the Ethereum blockchain platform are nominal. However, Gas prices may increase and make the trading of BLZ on the Ethereum blockchain platform commercially unfeasible.

Ethereum May be Superseded. In Bluzelle Platform's view, the Ethereum blockchain platform is the optimum blockchain platform from which to issue BLZ. However, the Ethereum blockchain platform may be superseded by competing blockchain platforms that improve on the Ethereum technology. It is not known whether the Ethereum blockchain platform will remain the predominant platform for token issuances. If Ethereum is superseded, BLZ could be adversely affected as usage and adoption declines.

Regulatory Risks

Regulatory Status. The regulatory status of the Application, Bluzelle, BLZ, and the Token Sale is unclear or unsettled in many jurisdictions. Regulators in many jurisdictions have announced their intention to consider the adoption of regulations to cover cryptographic tokens and the markets for them. It is not known if, when, or to what degree different jurisdictions will interpret existing laws and regulations or adopt new laws and regulations that could adversely affect the Application, Bluzelle, BLZ, and the Token Sale, or whether those laws or regulations would be applied retroactively. Adverse laws or regulations and/or the financial and other costs of regulation could cause Bluzelle Platform to modify or discontinue certain features or functions of Bluzelle, or cause Bluzelle Platform to discontinue the Application or Bluzelle in certain jurisdictions or entirely, or make dealing in BLZ regulated or illegal in certain jurisdictions.

Excluded Jurisdictions. The Token Sale will only be open to Participants of jurisdictions where the Token Sale (or similar cryptographic token offerings) is not prohibited or otherwise restricted. It is a Participant's sole responsibility to determine if they are prohibited or restricted from participating in the Token Sale, or if such participation constitutes a breach of the laws or regulations of their jurisdiction, whether by virtue of their citizenship, residency, or other association with a jurisdiction which prohibits or otherwise restricts the conduct of the Token

Archived copy · cryp2nova.com

Sale (or similar cryptographic token offerings). Violation of those prohibitions or restrictions may result in criminal and/or administrative penalties being imposed on the breaching Participants.

Compliance Risks. Complying with laws and regulations that apply to Bluzelle Platform, the Application and/or Bluzelle may be costly and may divert a significant portion of Bluzelle Platform's attention and resources. If Bluzelle Platform must have a licence or other government registration or approval to operate the Application or Bluzelle in a jurisdiction, there is no guarantee that Bluzelle Platform will qualify for or be granted the necessary licence, registration, or approval. The lack of the necessary licence, registration or approval would restrict or prevent Bluzelle Platform from operating Bluzelle in that jurisdiction. If Bluzelle Platform fails to comply with applicable laws or regulations, Bluzelle Platform could be subject to significant legal liability and financial and reputational losses which may adversely affect the Application, Bluzelle, and/or BLZ.

Tax. The tax status of the Application, Bluzelle, BLZ, and the Token Sale is unclear or unsettled in many jurisdictions. Adverse interpretation of existing tax laws and regulations or adoption of new adverse tax laws and regulations could result in unanticipated and potentially retroactive tax liability for Bluzelle Platform and other stakeholders in Bluzelle, including Participants and BLZ holders. Those adverse tax consequences could cause Bluzelle Platform to modify or discontinue certain features or functions of Bluzelle or increase prices for Bluzelle, or cause Bluzelle Platform to make the Application or Bluzelle unavailable in certain jurisdictions, or make dealing in BLZ subject to tax in certain jurisdictions.

CRYP2NOVA

Market Risks

Lack of Market Penetration. Bluzelle may not attract users and/or third parties providing services to Bluzelle at the intended level or at a level sufficient to become or remain useful or viable. Any such lack of use or interest could negatively affect the development of Bluzelle and/or the utility or value of Bluzelle and/or BLZ.

Competition. Other organisations may develop (a) services that compete with Bluzelle, and may do so with some or all of the open source software underlying Bluzelle or (b) cryptographic tokens that can be used in blockchain platform-based database services similar to Bluzelle. Those

Archived copy · cryp2nova.com

competing services and cryptographic tokens may adversely affect the adoption and use of Bluzelle and/or the adoption, utility, and/or value of BLZ, and ultimately the viability and continued existence of Bluzelle and/or BLZ. It is unknown whether or to what extent, if any, those competing services and cryptographic tokens may be interoperable with Bluzelle or may accept BLZ.

Secondary Markets for BLZ. As at the date of this White Paper, there is no public market for BLZ. Virtual currency exchanges and other secondary markets for BLZ may never exist. Even if BLZ are listed or traded on a secondary market, there is no assurance that an active or liquid trading market for BLZ will develop or, if developed, will be sustained. Unless Bluzelle Platform publicly states otherwise, Bluzelle Platform has no financial or other relationship with, and does not endorse, any such exchange or secondary market that elects to transact in BLZ. Exchanges and secondary markets may be new, under-capitalised, illiquid, volatile, operated by persons with minimal or no relevant experience, and subject to minimal or no regulatory oversight, making use of them susceptible to a variety of market, financial, fraud, and other risks that could result in Participants' or BLZ holders' loss of BLZ or other losses.

Price Volatility. The price of BLZ in the Token Sale may not be indicative of the price of BLZ on public markets. BLZ have no intrinsic value at the time they are created. The price of BLZ on public markets may be extremely volatile, may decline below the price a Participant will pay for BLZ, or may diminish to zero in response to various factors, some of which are outside Bluzelle Platform's control, including, among others, the following:

(a) the volatility of the prices of cryptographic tokens generally and in response to events that have little or nothing to do with Bluzelle Platform;

(b) general economic conditions and macroeconomic changes;

(c) changes and innovations in blockchain technology, the industry sectors in which Bluzelle Platform operates, and other technologies and markets;

Archived copy · cryp2nova.com

(d) Bluzelle Platform's announcements pertaining to strategic direction, key personnel, financial and operational results, partnerships, significant transactions, new products, and other events;

(e) activities and announcements of Bluzelle Platform's competitors; and

(f) third-party reports, recommendations, and statements regarding BLZ, the Application, Bluzelle, or Bluzelle Platform.

Risk of Dilution. Bluzelle Platform will create and distribute BLZ other than via the Token Sale, as described in pages 31 and 32 of this White Paper. In many cases those other BLZ will be distributed for less consideration per BLZ than a Participant will pay for BLZ in the Token Sale. The distribution of those other BLZ will increase the overall supply of BLZ in the market, and may affect as well as result in downward pressure on the market price of BLZ. In addition, Bluzelle Platform reserves the right to create and distribute new BLZ in one or more other token sales.

Market Perception. The market price of BLZ could be adversely affected by negative publicity, social media commentary, rumours, and other information, whether or not true, about Bluzelle Platform, the Application, Bluzelle, BLZ, the technology on which Bluzelle is based (including Ethereum), and/or the legal or regulatory environment in which the Application or Bluzelle operates.

General Economic and Market Risks. Adverse changes in general global and regional economic and market conditions may adversely affect Bluzelle Platform, the suppliers and third parties on which Bluzelle Platform depends, and users and prospective users of Bluzelle, all of which may adversely affect the availability, reliability, performance, adoption, and the success of Bluzelle.

Participant Risks

Private Key Risks. Each Participant, not Bluzelle Platform, is responsible for securing the private key that controls their BLZ. If a Participant does not know their private key, they will permanently lose their BLZ. If their private key is lost or stolen, they could permanently lose their BLZ. If they store their private key with a third party wallet or vault service, they will permanently lose their

Archived copy · cryp2nova.com

BLZ if they forget and are unable to recover their credentials to access the third party service, or if the third party service malfunctions, is corrupted or compromised, makes their credentials or private key available to others, ceases operations, is hacked, or otherwise cannot make their private key available to them or loses control of their private key.

Token Sale Process Risks. The process for participating in the Token Sale will be described in the terms and conditions applicable to the Token Sale ("**Token Sale Terms**") which Bluzelle Platform will make available separately from this White Paper. If a Participant does not carefully follow that process, they may not be able to participate in the Token Sale or purchase BLZ, they may permanently lose the funds which they intend to submit as payment for BLZ, or they may permanently lose BLZ which they have purchased. The digital wallet to which payment for BLZ will be made ("**Payment Address**"), like all software systems, has security vulnerabilities. Malicious actors may attempt to steal funds from the Payment Address, including by hacking it. Funds in the Payment Address are also subject to loss or theft by other means. Each Participant accepts all risk of loss or theft of their payments from the Payment Address.

Incompatible Wallet. The technical requirements for receiving BLZ will be described in the Token Sale Terms. If a Participant uses a wallet or other technology that does not conform to those technical requirements, or if they use a third party service whose wallet or other technology does not conform to those technical requirements, their BLZ may be permanently lost.

Uninsured Losses. BLZ are not insured by Bluzelle Platform or by any public agency, and there is no institution supervising and controlling the economy for cryptographic tokens. If a Participant's or BLZ holder's BLZ are lost or stolen, they will have no recourse unless they insure them at their expense. Bluzelle Platform cannot issue new or substitute BLZ to replace lost or stolen BLZ.

Archived copy · cryp2nova.com