

BUSINESS WHITEPAPER

Empower urban mobility with blockchain

A decentralised platform and protocol for bike sharing and urban mobility



LEGAL DISCLAIMER

Please read the following notice carefully before proceeding to read this Whitepaper document issued by BikeCoin Pte Ltd, a company incorporated and existing under the laws of the Singapore (hereinafter – “Distributor”). This notice applies to all persons who read this document. Please note this notice may be altered or updated. The Whitepaper does not constitute any relations between you (hereinafter – “you” or “Holder”) and the Distributor.

Acquiring of the BKC tokens is available only after accepting the Terms of tokensale (hereinafter – “T&C”). Acquisition of BKC cryptographic tokens does not present an exchange of cryptocurrencies for any form of ordinary shares of the Distributor and a Holder of BKC cryptographic tokens is not entitled to any guaranteed form of dividend. Holders of BKC tokens are only entitled to certain rights within the T&C. BKC tokens are not intended to constitute securities in any jurisdiction. This Whitepaper does not constitute a prospectus or offer document of any sort, and is not intended to constitute an offer of securities or a solicitation for investments in securities in any jurisdiction.

This Whitepaper is for information purposes only. The contents of this Whitepaper are not a financial promotion. Therefore, none of the contents of this Whitepaper serves as an invitation or inducement to engage in any sort of investment activity. Prospective acquirers of BKC tokens should carefully consider and evaluate all risks and uncertainties associated with the cryptocurrencies, BikeCoin Pte Ltd and their respective businesses and operations, the BKC tokens and the BKC Initial Coin Offering. Familiarize yourself with all the information set out in this Whitepaper and the T&C prior to any purchase of BKC tokens. Ensure that you are aware of all of the would be risks prior to obtaining BKC. We recommend that you seek out independent financial advice before engaging in any sort of business endeavour.

TABLE OF CONTENT

Legal Disclaimer	2
Abstract	4
1. Problem Statement	5
1.1 Centralisation	5
1.2 Negative Social Impacts	5
1.3 Constraints on Evolution of Urban Mobility	6
2. Our Solution	7
2.1 Overview	9
2.2 Development	10
2.3 Architecture	10
2.4 Data Privacy	12
2.5 3rd-Party DApps	12
2.6 Customers & Revenue	12
2.7 Roadmap	16
3. Applications	17
3.1 Volata Fleet Supply	17
3.2 BikeCoin Fleet Services	19
3.3 BikeCoin Decentralised P2P Services	21
4. Token Model and Distribution	21
4.1 Our Tokenomics	22
4.2 Use Cases	22
4.3 Token Sale & Distribution	24
5. Company and Team	26
5.1 Corporate Structure	26
5.2 Management Team	26
5.3 Our Advisors	28
5.4 Our Partners	30
6. Conclusion	30

ABSTRACT

Bike sharing is not a new business, but it is about to undergo a dramatic leap into the 21st century. The transformation in bike sharing will focus on “smart bikes” that have an electronic dashboard, navigational aids, integrated communications systems and which are protected by sophisticated anti-theft systems. These bikes will be part of the Internet of Things and their movements will be recorded on a blockchain.

We talk about three generations of bike sharing. The 1st generation of bike sharing took the form of fleets of bikes provided by public transit authorities in larger European cities, housed in racks around city centers. The 2nd generation of bike sharing is prevalent in the world now, characterised by large Chinese companies that operate bicycle fleets in many cities. They use very inexpensive bikes and dockless systems that are unlocked using smart phones. Social problems such as abandonment and vandalism are common.

BikeCoin Network is the first 3rd generation bike sharing system. What makes this different is decentralisation of the business model, made possible by blockchain. With BikeCoin, the bike supplier, fleet operator and retail service provider can be different entities. They set their own prices and interact in whichever business model they prefer. The BikeCoin platform also supports P2P sharing between owners and riders.

BikeCoin overcomes many issues that have plagued earlier bike sharing schemes. BikeCoin’s protocol ensures privacy of data. It also breaks down ownership barriers, improves the urban transit mix, promotes use of premium bikes along with responsible ridership, eliminates abandonment, and supports the ecological and social goals of a sharing economy. As new partners come onboard, the entire ecosystem benefits from network effects.

BikeCoin is partnering premium bike supplier Volata Cycles which has already developed smart bikes. BikeCoin will focus on development of a decentralised blockchain platform and protocol, while Volata will establish a services division which will operate a fleet of smart bicycles. Bike sharing fleet operations will jumpstart the BikeCoin economy.

“

BIKECOIN’S DECENTRALISED PLATFORM BREAKS DOWN OWNERSHIP BARRIERS, IMPROVES THE URBAN TRANSIT MIX, PROMOTES USE OF PREMIUM BIKES ALONG WITH RESPONSIBLE RIDERSHIP, ELIMINATES ABANDONMENT, AND SUPPORTS THE ECOLOGICAL AND SOCIAL GOALS OF A SHARING ECONOMY.

”

BikeCoin transactions will be enabled using the BKC utility token. There is a strong set of use cases for the token, including purchase of rides, purchase of maintenance services, incentives for responsible ridership, discounts for merchandise purchases, automated distribution of revenue shares using smart contracts and development of Decentralised Applications (DApps) which leverage the BikeCoin protocol.

The company is holding a token sale to enable interested parties to support and participate in the emergence of this 3rd generation bike sharing and urban mobility system, built on blockchain and specially developed privacy protocols.

1. PROBLEM STATEMENT

1.1 Centralisation

The main problem with bike sharing is that the model is centralised. Either a single large company is operating the service, or it is a government-sponsored project. Both of these models block other market participants and present scalability problems.

In Singapore and Melbourne, bike sharing company Obike recently declared bankruptcy and riders complained they were unable to obtain deposit refunds¹. Also, users had already given up lots of sensitive data including credit card information, contact numbers and details from social media accounts, which Obike can transfer to another company during liquidation.

Obike is not alone. Bike sharing company Ofo states in its terms and conditions that it is collecting detailed data on customers' locations and movements and marketing them for profit. That's very centralised, and it's giving bike sharing a bad name.

A centralised bike sharing system is responsible for delivering the entire value chain, including: supply of bikes, fleet operations (including technology infrastructure, insurance and maintenance) and retail deployment. The incumbent vendors, companies like Mobike and Ofo, are good at bike supply and fleet operations but not very good in retail deployment. For each new city in which they introduce service, they need to replicate the whole value chain. Other than manufacturing, there are no economies of scale. A competing service provider has to replicate the whole value chain, with no network effects.

1.2 Negative Social Impacts

In the past 3 years, we have seen the introduction in major cities of so-called "dockless" sharing schemes in which bikes are wheel-locked rather than secured to a rack. We describe these as 2nd generation bike sharing services, in comparison to the older service offered by municipal authorities using racks with lock and key systems.

Operators of these new services leverage technology to overcome many of the barriers to bike usage in cities - especially cost, availability and theft. It is a phenomenon made possible by low cost manufacturing in China and miniaturisation: components which are small enough to be built into a bicycle frame so they are theft-proof.

Mobike, the Chinese company recognised as one of the first innovators in the dockless share bike market, has a fleet of seven million bikes and serves 160 cities around the world. And there are many competitors, including Ofo, which touts more than 25 million daily transactions on its service and has a 2020 plan to have a fleet of 20 million bikes in 20 countries. Are they fully utilised? That is not so clear.

1. "oBike's Deposit Refund Button On App Mysteriously Disappeared, Company Now In Liquidation", The Independent, Jun 2018, <http://www.theindependent.sg/obike-deposit-refund-button-on-app-mysteriously-disappeared-company-now-in-liquidation/>

Because of the focus on one-way rides, such as from a train station to home or work, social problems of theft and abandonment are commonplace. Bikes are thrown into canals², left on busy highways, and abandoned in remote locations. Even if a bike costs less than USD 50 to manufacture, operating costs include paying employees to haul bikes back to busy intersections, find abandoned bikes, fight theft, and comply with new regulations sprouting up because city officials are annoyed at hordes of cheap bikes blocking sidewalks³. This model of bike sharing incurs huge business and social costs.



Figure 1. A pile of Obikes in a local park in Bronte, Sydney.

1.3 Constraints on Evolution of Urban Mobility

In many respects, 2nd generation bike sharing has been a race to the bottom. The price of one-way urban bike rentals is so low that it's difficult for operators to make a profit, even for big brands like Mobike and Ofo. Ofo charges about USD 0.20 per ride or USD 5 (SGD 6.99) per month. It can take up to 6-months for a commodity bike to earn back its manufacturing cost, and this does not factor in rising operating costs, which necessarily include paying employees to collect and repair lost or vandalised bikes.

The manufacturing cost has to be less than USD 100, so there are constraints on what features can be added to these bikes. This limits a supplier's ability to make bikes which are smarter and better able to integrate into the urban landscape.

In the past century, other than new materials, there have been relatively few innovations on the classic 2-wheeled pedal bike. Since the 80s we've seen more enhancements, including the Shimano Freehub⁴, direct-pull brakes, compact cranksets, clipless pedal systems and a few other things, but they're not fundamental changes - just minor refinements. In the past 20 years,

2. "Uncivil Cyclists Sink Milan's Shared Bikes", The Local online news, October 2017, <https://www.thelocal.it/20171018/milan-bike-sharing>

3. "Bike Sharing Rejigs Model For Japan To Avoid Sidewalk Clutter", Business Times, January 2018 <http://www.businesstimes.com.sg/transport/bike-sharing-rejigs-model-for-japan-to-avoid-sidewalk-clutter>

4. "Shimano Cassettes & Freehubs", article by Sheldon Brown, <https://www.sheldonbrown.com/k7.html>

we've seen the introduction of carbon frames, carbon belt drives, internal gear hubs, hub dynamos (with a small electrical generator built into the wheel hub) and super-bright lights.

This is changing - as many boutique bike assemblers are integrating Internet of Things (IoT) devices and sensors into their newest models, usually available first on more expensive bikes. But, because of the low price structure, it will be a challenge to introduce these innovations to the bike sharing ecosystem.

2. OUR SOLUTION

BikeCoin Network's proposed solution is a 3rd generation bike sharing platform and protocol which is fully decentralised, and which allows multiple merchants to collaborate. With this approach, independent bike suppliers, fleet service operators and retail service providers can come together and deliver a ride sharing solution.

We are developing this bike sharing platform using blockchain technology. which provides auditable integrity, decentralisation and network effects. Unlike earlier bike sharing schemes, BikeCoin doesn't require users to trust a single private or government entity and it is entirely community-driven. Our BikeCoin Protocol includes features to assure privacy of merchant and rider data.

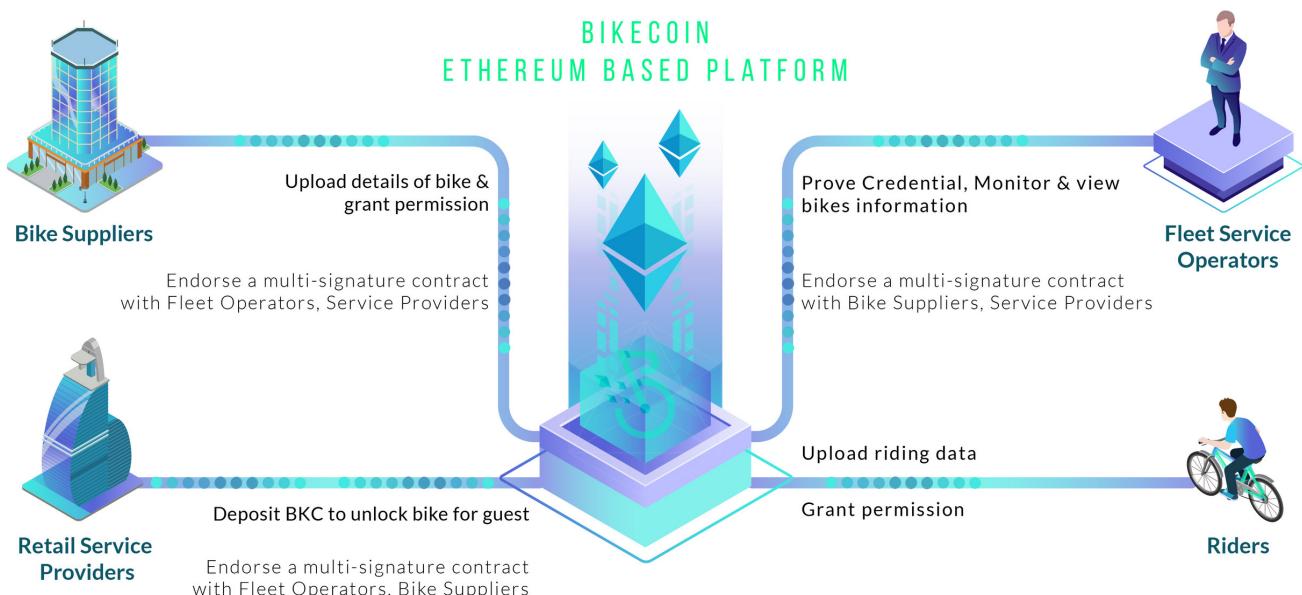


Figure 2: Decentralized BikeCoin Ecosystem

The operator of a bike sharing fleet service collaborates with service partners who act as custodians for the physical assets (ie- bikes). Anyone can invest a small amount of money to establish a fleet, and so we expect there will be many fleet operators sharing the platform, perhaps one per city, each with their own service partner relationships.

These collaborations will be enhanced by some of the core features of blockchain which are not found in client server systems: transparency, immutability and auditability. For example, a blockchain's inherent capabilities as a 'single source of truth' allow for trustless verification of payment distributions. Blockchain also allows the community participants - particularly fleet service operators - to make their own choices regarding how their business operates, such as pricing decisions. Various business models are possible, such as: 'free-to-use', 'paid-by-hour', and 'group tours'.

BikeCoin technology incorporates many exciting innovations, but for the cycling world, our project will introduce two main innovations, which will further promote premium cycling using smart bikes in the urban environment:

- A services platform and protocol which supports decentralised fleet operations for bike sharing and other forms of urban mobility. The protocol includes features to assure privacy of merchant and rider data, and any developer may implement their own DApps using this protocol.
- A reference specification for smart bicycles which stipulates the required features: (a) bike computer, (b) GPS tracking, and (c) an anti-theft system with alarm. A firmware library will make it easy for any manufacturer or assembler to supply bikes meeting this specification. Any such bikes may be deployed on the BikeCoin platform.

Here is how our solution will address problems mentioned in Section 1.

PROBLEM	SOLUTION
CENTRALISATION	BikeCoin provides fully decentralised fleet operations and peer to peer sharing, that allow anyone to participate in the ecosystem. All merchants share revenue from renting bikes in a fair, secure, flexible and seamless manner.
NEGATIVE SOCIAL IMPACTS	By providing better quality bicycles, flexible pricing and encouraging round-trip rides, BikeCoin promotes a sustainable urban transport and overcomes negative social impacts.
CONSTRAINTS ON EVOLUTION OF URBAN MOBILITY	Any bike supplier can implement BikeCoin's firmware and tokenise these assets on the blockchain. Anyone with a small investment can setup a fleet and appoint retail service providers. And developers can launch their own DApps. BikeCoin makes it easy to spawn a thriving urban mobility ecosystem.

With BikeCoin, bicycles become electronic vehicles, providing riders with advanced informational, safety and social features. And premium bicycles can now join the sharing economy. In the following pages, we explain how we will achieve our goals.

2.1 Overview

We are introducing a distributed bike fleet services platform built on our own blockchain which uses the Ethereum codebase. This will be a fully decentralised platform that supports transfers of ownership and rental transactions using tokens. It also provides data privacy. There will be no central authority. On top of this blockchain layer we will launch at least two BikeCoin Decentralised Applications (DApps), one for fleet services and one for P2P bike sharing. These DApps can be used by the market participants to provide or receive services.

BikeCoin's 3rd Generation Bike Sharing solution has the following capabilities:

BIKE & FIRMWARE CAPABILITY	SYSTEM CAPABILITY
<ul style="list-style-type: none">Navigation system with realtime directionsPerformance trackingRemote status monitoring with geo-locationAnti-theft and alarm systemBattery management system	<ul style="list-style-type: none">Fleet managementFleet and P2P business modelsDetailed asset and location data for reporting theft or damageIncentivising desired actions by riders and merchants

ACTORS

Our platform will have four main market participants or 'actors', as listed in the table below. In some markets, the Fleet Services Operator may also play the role of a Bike Supplier, ie- owning their own fleet. In the case of P2P bike sharing, a Bike Supplier deals directly with Rider and no Fleet Services Operator or Retail Service Provider is involved.

ACTOR	PRIMARY ACTIVITIES
RIDER End consumer	<ul style="list-style-type: none">Uses a DApp to contract services from a Service Provider, paying via tokens. OR --Visits a Service Provider's premises and contracts the service using tokens or fiat as a means of payment.
RETAIL SERVICE PROVIDER Hotel, Resort or Co-Working Space	<ul style="list-style-type: none">Acts as custodian of bikes.Uses the platform services to loan or rent bicycles.Receives payment from riders and uses the platform services to distribute revenue to other participants.

FLEET SERVICES OPERATOR Distribution partner operating in a city or other specific territory	<ul style="list-style-type: none"> • Receives bicycles from a Supplier. • Secures insurance for bikes and riders. • Coordinates with local regulators and transport authorities. • Uses the platform services to operate a fleet of bicycles. • Provides bicycles to the Service Providers and performs maintenance services as needed.
BIKE SUPPLIER Manufacturer, assembler or capitalist	<ul style="list-style-type: none"> • Owns one or more bikes. • Upgrades bikes to meet the minimum specifications. • Supplies bikes to the Fleet Services Operator, Retail Service Provider or (in the case of P2P sharing) directly to Riders.

Other parties, such as equipment manufacturers or insurers are considered as 3rd-parties. At this time they do not have a direct role in bike sharing transactions and are not required to accept payment in tokens.

2.2 Development

The technical design for the blockchain platform is completed and the team is working on creating a Minimum Viable Product (MVP). Our MVP is expected to be released in 3rd quarter 2018. Please see Section 2.6 Roadmap for further details.

2.3 Architecture

We are creating a services platform which supports decentralised fleet operations for premium bike sharing. Our platform includes a number of technologies which will help DApp developers to quickly deploy decentralised and highly scalable services of their own. Below are listed some of the key technologies adopted and implemented in the platform. Not all of these will be introduced at once. See section 2.6 Roadmap for the schedule.

TECHNOLOGY	BENEFITS
BIKECOIN CHAIN	BikeCoin chain with Proof of Stake consensus algorithms uses the Ethereum codebase to execute smart contracts faster and more flexibly. This implementation includes a peer-to-peer storage layer using IPFS.
ZERO KNOWLEDGE PROOF (ZKP)	We use our own innovative ZKP algorithm to assure user and transaction privacy (protecting the blockchain addresses of the users and user data). As part of our ZKP implementation we will provide the ability to search for data and for selective disclosure.

ERC721	This digital asset token proves the ownership of each bicycle, and supports blockchain-based ownership transfers. Each bicycle also has another smart contract, to support distribution of rental earnings to the various parties among cooperating merchants.
PAYMENT CHANNEL OR MICRO-RAIDEN	This implementation will automate payment processing for a decentralised bike fleet and P2P sharing applications by providing high-speed token transfer transaction processing off-chain, using payment channels. These transactions will later be settled on the Ethereum public blockchain (using ERC20 tokens).
ETHEREUM ERC20	Our own token provides a 'medium of exchange' for consumers and merchants using the platform.

We are also developing a reference specification for bicycles to interoperate with the BikeCoin platform, so that potential bicycle suppliers can modify their designs or make upgrades to meet the requirements. We will provide firmware that manufacturers or IoT vendors can use to integrate bike CPUs, smart locks and location monitoring solutions. These open source packages will allow any bike assembler or manufacturer to become a supplier for rental bike fleets.

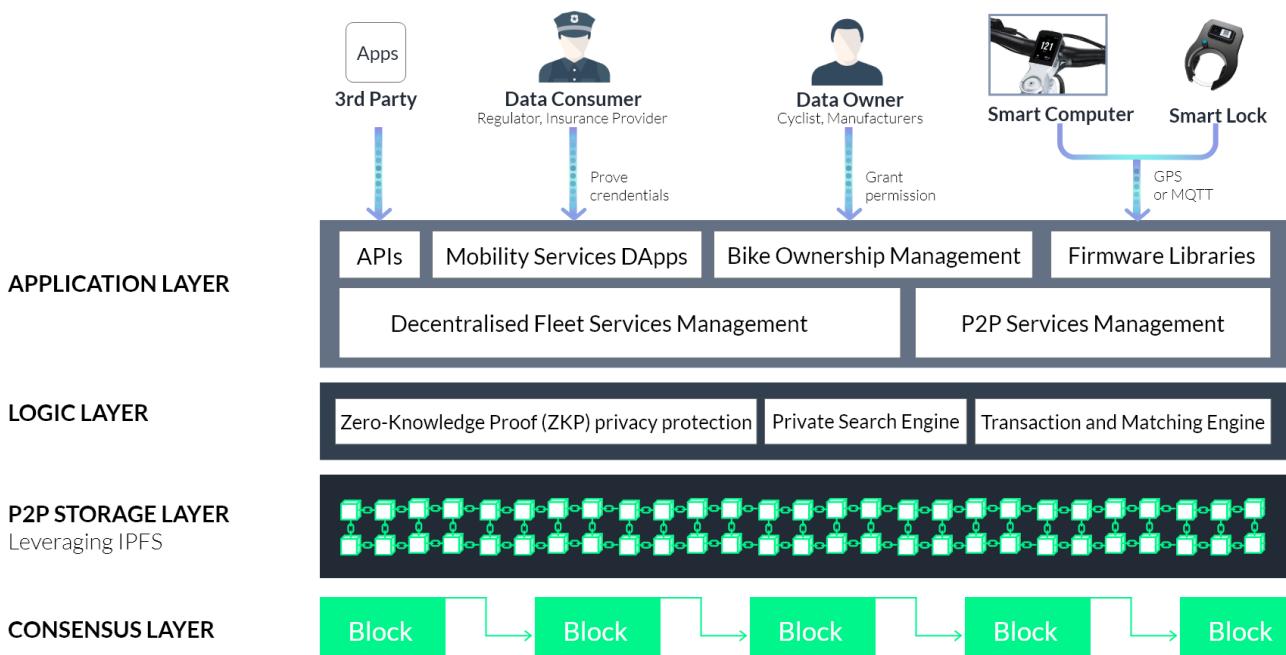


Figure 3: High-level System Architecture of BikeCoin

2.4 Data Privacy

One of the challenges of building on decentralised architecture is the permissioned sharing of data. Our data privacy capability is a key feature, giving us a strong competitive advantage.

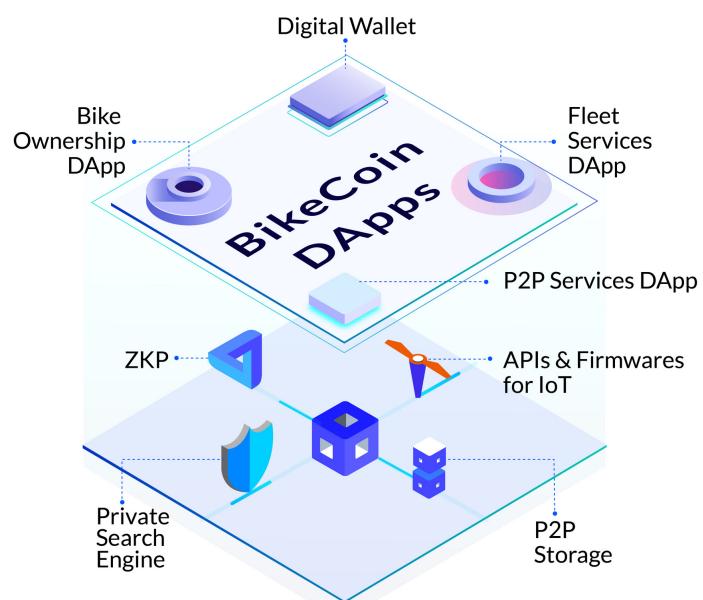
Whereas certain information is recorded for transparency on the BikeCoin chain, commercial and personal data will be stored end-to-end encrypted on the decentralised storage layer and will be “hidden” using Zero Knowledge Proofs. Data can be searched and shared by the owner, but addresses are not traceable and confidential information is not accessible. This is explained in the technical whitepaper.

BikeCoin protocol ensures that merchants feel that their commercial data is protected and that riders are comfortable with the collection of their personal data. Bike suppliers, fleet service operators, retail service providers and riders are able to communicate in a frictionless way, and to simultaneously access different types of information, in real-time and remotely.

2.5 DApps

Decentralized fleet services and P2P sharing are our pioneer Dapps.

However, BikeCoin chain will be able to support multiple DApps. With robust features such as privacy protection supported by ZKP, search models on encrypted data, tokenized asset and API for IoT devices, BikeCoin encourage developers to build DApps for bicycle services and other urban mobility devices. Developers can leverage BikeCoin technologies and data for many potential services for vehicles such as: crash detection, maintenance notification & remote diagnosis, vehicle insurance payment.



For more details on the architecture, refer to the Technical Whitepaper.

2.6 Customers & Revenue

CUSTOMER DEMOGRAPHICS

There is a reason we are aiming ‘up market’ to focus on premium bikes. Premium cyclists are health conscious, environmentally conscious and socially conscious (eg- parking their bikes properly, following local ordinances). Some use bikes primarily to go to and from work and some use bikes for recreation or athletic exercise. Premium bikes, like premium cars, are a status symbol, and owners of premium bikes tend to outspend their peers on cycling accessories, including clothing.



Cycling is both segment and gender-neutral, appealing to all ages and genders. Buyers of premium bikes tend to be 30 years old and above. Women buyers are the fastest growing segment.

The majority of millennials don't own a bike, perhaps due to informal living arrangements. But they are very much engaged in the sharing economy. There is a huge opportunity for millennials to start enjoying cycling with premium share bikes.

MARKET SIZE OF THE SHARING ECONOMY

The total size of the sharing economy is difficult to estimate because most of the platform providers are private. But we're certainly talking about over a hundred billion dollars in valuation, just among the 4 top firms: Uber, Didi Chuxing (known as the Chinese Uber), AirBnB and WeWork⁵. In a March 2017 funding round, Airbnb was valued at about USD 31b while a settlement between Waymo and Uber in January 2018 valued Uber at USD 72b⁶.

MARKET SIZE OF THE SHARING ECONOMY

The valuation of bike sharing companies is soaring, just like peers in other sharing economy segments. In February 2018, Chinese bike sharing firm Ofo raised USD 866m in new venture funding on a multi-billion dollar valuation⁷. In March 2018, market leader Mobike was sold for USD 2.7 billion⁸.

Therefore we can confidently assume annual sales are US 1b for each company.



Figure 5: Market Value

5. "Sharing Economy's 'Billion-Dollar Club' Is Going Strong, But Investor Risk Is High", VentureBeat article by Jeremiah Owyang and Phillippe Cases, February 2016, <https://venturebeat.com/2016/02/07/sharing-economys-billion-dollar-club-is-going-strong-but-investor-risk-is-high/>

6. "Uber's Latest Valuation: \$72 Billion", Recode magazine, February 2018, <https://www.recode.net/2018/2/9/16996834/uber-latest-valuation-72-billion-waymo-lawsuit-settlement>

7. "Chinese Bike-sharing Firm Ofo Raises Us\$866m Led By Alibaba", Channel News Asia, March 2018, <https://www.channelnewsasia.com/news/asia/chinese-bike-sharing-firm-ofo-raises-us-866m-led-by-alibaba-10039260>

8. "Chinese Bike-sharing Pioneer Mobike Sold To Ambitious Meituan Dianping For \$2.7b", TechCrunch blog, April 2018 <https://techcrunch.com/2018/04/03/chinese-bike-sharing-pioneer-mobike-sold-to-ambitious-meituan-dianping-for-2-7b/>

While bike sharing is still a small segment in dollar terms, it engages a huge in number of consumers. Ofo claims 4m weekly users and 500,000 rides per day in China alone⁹. In 2017, the number of global bike share users reached 227 million, according to Cheetah Data¹⁰. By 2019, it is expected to exceed 300m. Most of these riders are in China, but market leaders Mobike and Ofo have expanded to 11 and 21 countries respectively.

Persistence Market Research reports that the global market for bicycle purchases was USD 55b in 2017, increasing at 4.2% annually and is expected to hit USD 80b by 2026¹¹. And the report highlights bike sharing: “As sharing and rental services are currently gaining higher traction in the global bicycle market, stakeholders are increasingly striving to adapt to this trend.”

According to China-based iiMedia Research¹², the bike-sharing market is estimated to be worth RMB 10.3b (USD 1.5b) by end of 2017 and RMB 23.7b (USD 3.5b) by 2019. Roland Berger predicts worldwide bikeshare market of at least USD 4b in 2022¹³. It seems headed for USD 5b.

Another metric is paid rides in developed nations. Data from National Association of City Transportation Officials (NACTO) indicates there were more than 60 US cities offering bike sharing and total trips per year amounting to 35m in 2017. Europe is an even larger market. Leaving aside questionable earnings reports from China, we can estimate 50m international bike share riders and an average earning of USD 75 per year from each (as shown in the chart above), the market size in 2019 is USD 3.75b. This tallies with iiMedia Research and Roland Berger estimates.

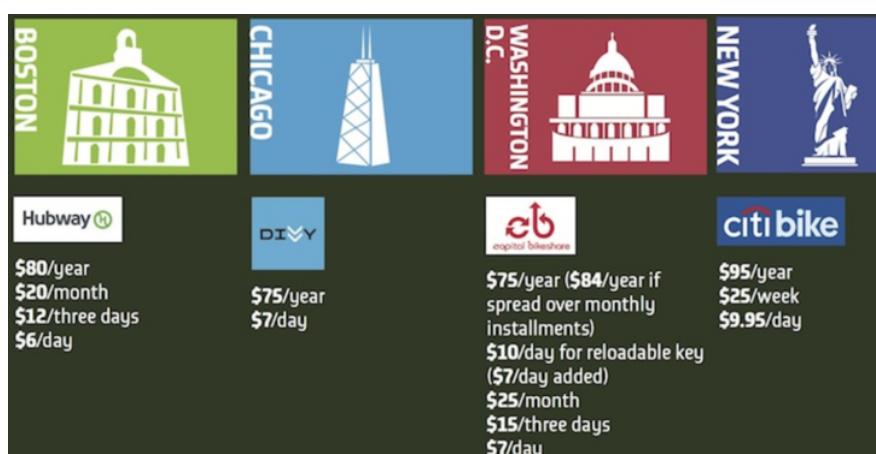


Figure 6. Bike Sharing Services Rates in the U.S

-
- 9. "Mobike and Ofo: Reinventing the Bike-Sharing Business Model in China", Daxue Consulting, June 2017, <http://daxueconsulting.com/mobike-and-ofo-bike-sharing/>
 - 10. "Report On Global Development Of Bike-sharing", Cheetah Data, April 2018, <http://data.cmc.com/report/detail/260>
 - 11. "Bicycle Market to Reach Nearly US\$ 80 Bn by 2026 End", Persistence Market Reports, May 2018, <https://www.persistencemarketresearch.com/market-research/bicycle-market.asp>
 - 12. "What's Really Driving China's \$1 Billion Bike-Sharing Boom?", Forbes, June 2017, <https://www.forbes.com/sites/ywang/2017/06/20/worth-1-billion-but-whats-really-driving-chinas-bike-sharing-boom/#3cd6652d427e>
 - 13. Roland Berger (2016) Bike Sharing 4.0 Study, Hamburg, June.

Based on this information, the lower bound being bike sharing sales and the upper bound being total bike sales, we estimate that the addressable market for shared bicycles in 2022 to be worth at least USD 4 billion, headed for 5 billion. As an early entrant (if not the first entrant) in 3rd Generation Bike Sharing, we expect BikeCoin to be a dominant player - growing to a 15% market share in 3 years of operation. That means that our obtainable market by 2022 is somewhere between USD 500 - 800 million, and will reach at least USD 1 Billion by 2024, making BikeCoin a potential unicorn company.

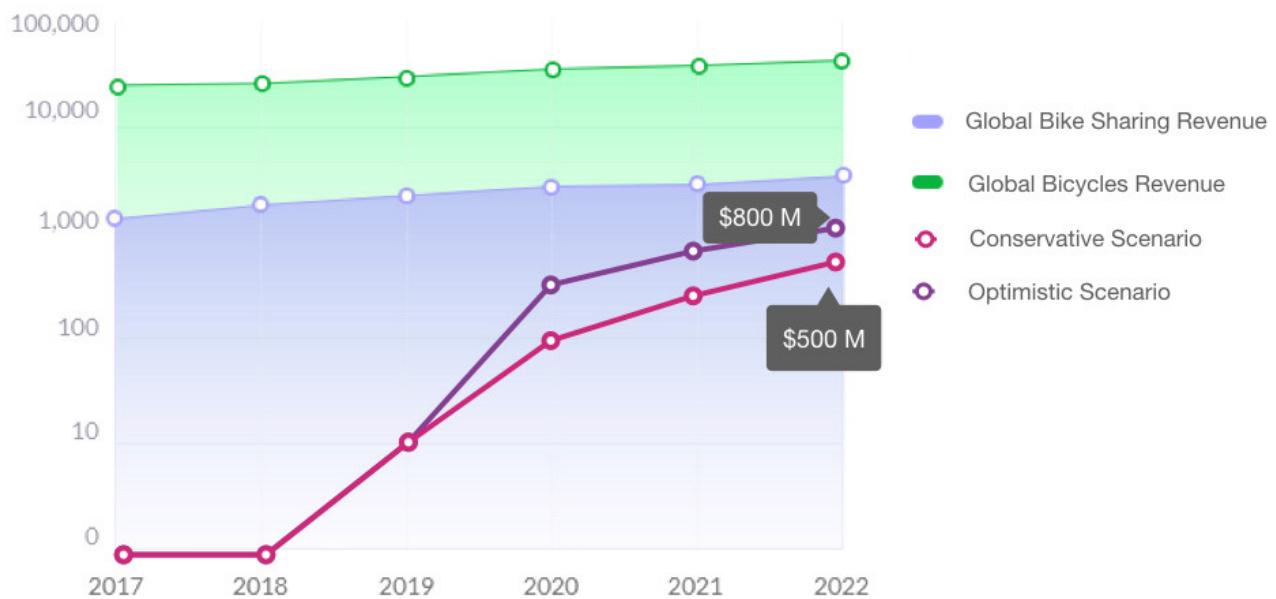


Figure 7. Bicycle Market Revenue Projection

GO TO MARKET STRATEGY

We will initially focus on the San Francisco Bay Area as it is the home of many innovative bike companies such as Breezer and Fisher, plus it is the heartland of new technology startups with a vibrant blockchain economy. And then we will introduce services in other North American cities with a bike-friendly culture, such as Boston, Portland and Montreal.

But, according to the same research by Persistence: "Europe and South East Asia Pacific will also retain the key market positions, whereas North American market is anticipated to experience sluggish growth during 2018-2026." So our subsequent market rollouts will be in prominent European cities favorable to cycling such as Milan (the home of Italian bike-making), Amsterdam, Berlin and Copenhagen. Copenhagen consistently ranks as the most-bicycle friendly city in the world¹⁴.

Next in priority, we will introduce services in prominent and bike-friendly Asian cities such as Singapore , Tokyo and Seoul. All of these choices are dictated not only by the urban transport mix, but also by rider demographics and disposable income, as we expect bike sharing to be synergistic with ownership of premium bikes. We also want to ensure that our riders are responsible and tech-savvy.

14. "The 20 Most Bike-Friendly Cities in the World", Wired magazine, June 2017, <https://www.wired.com/story/world-best-cycling-cities-copenhagenize/>

2.7 Roadmap

Below is the technical roadmap of the BikeCoin project. We aim to launch fleet services in early 2019 and open the platform in stages for other developers.



3. APPLICATIONS

Volata Cycles is a California-based bike-tech company that specialises in producing smart bikes, with integrated digital features and standout Italian design. The BikeCoin team will work closely with Volata Cycles on integration of their bike computer with the blockchain platform, so that Volata can establish fleet services on BikeCoin's platform.

More than just a fleet services operator, Volata Cycles is our catalyst partner and is providing seed funding, technology transfer and licensing of the Volata brand. Once the BikeCoin platform is launched, Volata will become the first fleet service operator. We expect that this initial rollout will showcase the BikeCoin platform and attract more partners as bike suppliers, fleet service operators and retail service providers.

3.1 Volata Fleet Supply

Volata is a vertically integrated production, retail and servicing company. It began as an urban specialist shop that builds custom bikes, similar to Mission Bikes of San Francisco and Priority Bicycles of New York. What differentiates Volata is the focus on smart bicycle technology and IoT. From its headquarters in the San Francisco Bay Area, Volata sells directly to customers over the Internet, offering delivery worldwide.

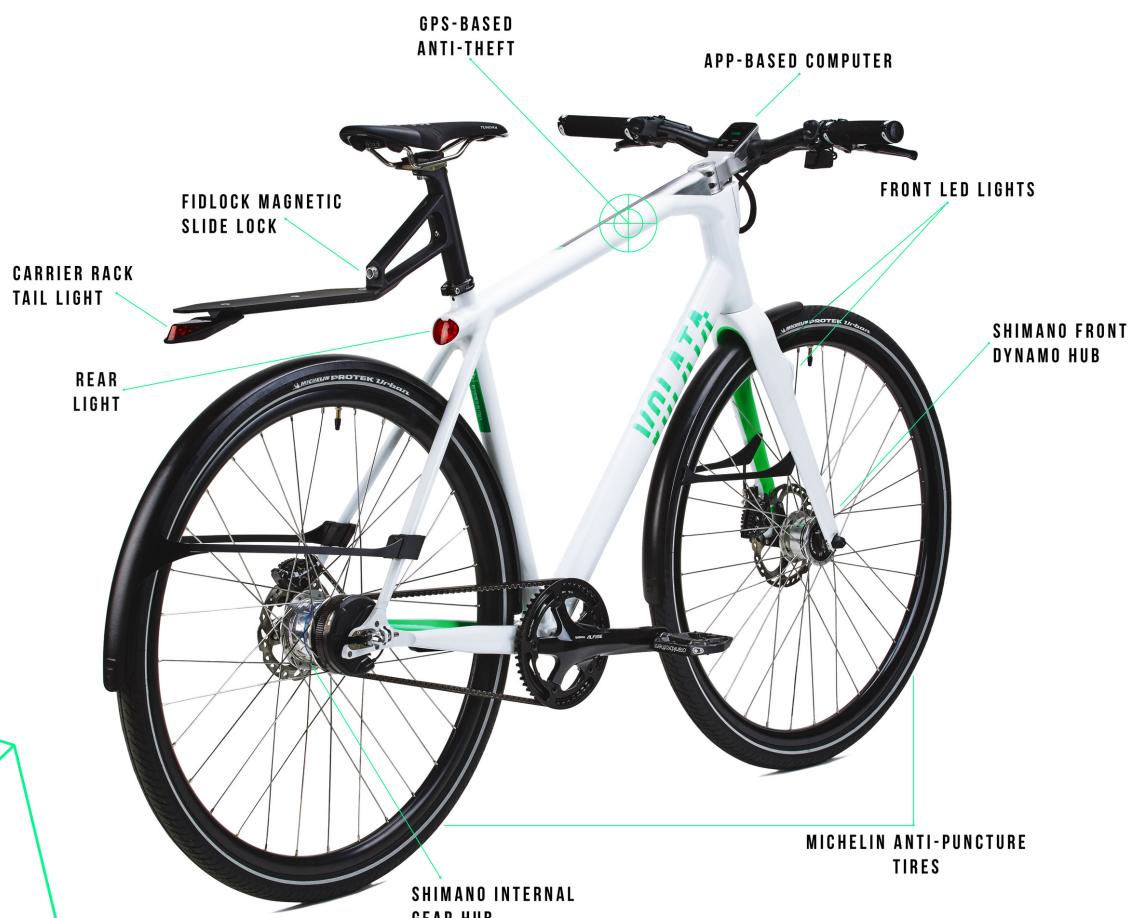


Figure 8: Volata bicycle technologies

Volata makes a complete bicycle, designed and engineered to provide each user with all the hardware and software features needed for safe and enjoyable commuting or recreational riding. Volata seamlessly integrates digital features into its bikes, including: a built-in computer for navigation and to record performance data, GPS tracking for geolocation, automated lights, horn and an anti-theft system. These features are not accessories - they are built into the frame.

Volata's hardware is state of the art, using a belt instead of a chain, and an internally geared-hub instead of the traditional derailleurs. This benefits the riders with indexed shifting for hills and push-button ease of use around town. It translates into a huge reduction in maintenance costs, which is especially important to fleet operations. Smart bikes require an electrical system.

Volata bicycles include a hub dynamo (with a small electrical generator built into the wheel hub) to power the CPU alarm system and integrated lights.

Volata leverages the electrical system to provide an electronic dashboard. The rider can: receive navigational updates (eg- turn left in 500m), check speedometer and odometer, review fitness activity (eg- pedal RPMs), and more. When the rider parks the bike, the anti-theft system can detect motion, set off an alarm or simply locate the bike if someone has stolen it. When the rider returns the bike to the service provider or owner's location, the GSM system will know that the ride is finished.



Building on this network interface, the Volata bike will have 3 onboard accelerometers and be able to detect when there is a strong shock or accidental impact and it can directly communicate with emergency services, the closest hospital, or a family member. This safety feature will be implemented in a future version of the Volata bikes.

We believe that retail sales will complement the bike sharing model, where potential buyers will use rental to try-before-buying.

3.2 BikeCoin Fleet Services

Fleet service operations are important because they put bikes in urban locations where riders can easily engage the service, as well as providing insurance and maintenance. A decentralised fleet operation will make it possible for different fleet service operators in different cities to leverage a common platform. BikeCoin will work with Volata to develop the first fleet services, as a model for others to follow.

Fleet service operators strike up relationships with retail service providers: hotels, resorts, co-working spaces and town councils. Retail service providers have a custodial function and promote responsible ridership. They set pricing according to local market conditions, and share revenue with fleet service operators and bike suppliers. This overcomes one of the major flaws in the current dockless bike sharing market - centralised control. In addition, there will be network effects as bike suppliers work with multiple fleet service operators and riders realise that they can use the same platform to hire rides from different retail service providers in different cities.

BikeCoin fleet services are supported by a Decentralised App (DApp). The retail service provider also uses a DApp to conduct rental business on the platform. For this model, the rider does not require a DApp, need not understand crypto, and enjoys the convenience of making payment in fiat currencies.

We have included a series of 'entity diagrams' to illustrate how things work. The first diagram, 'Asset Management & Partnering Features in Fleet Service' shows how various actors in the BikeCoin Fleet Services ecosystem manage the bike assets and establish relationships. On the left are icons for each of the actors. On the right are the main technology components of the project. The connectors show procedures that the actors perform using the technology stack.

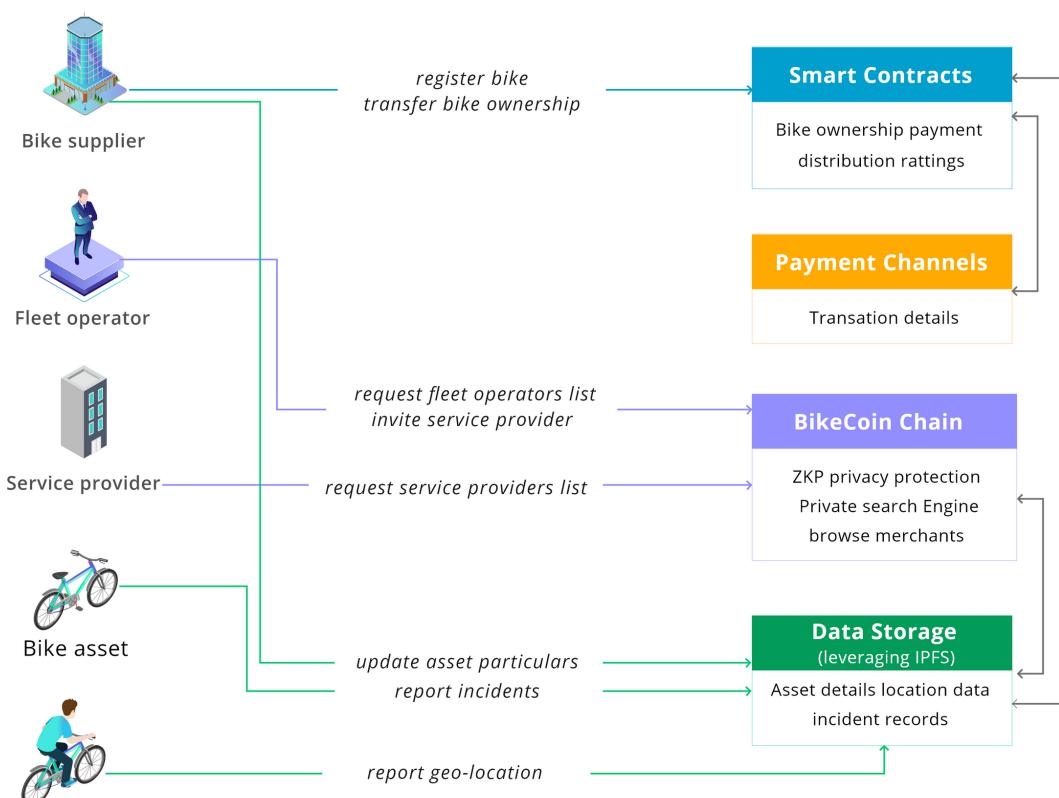


Figure 9: Asset Management & Partnering Features in Fleet Service

The next diagram 'Transaction Support Features in Fleet Service' shows how various actors in the BikeCoin Fleet Services ecosystem transact on the blockchain. The essential part is that the service provider collects payment from a rider, eg- at the concierge desk in a hotel lobby, and later distributes revenue share to the fleet operator and bike supplier.

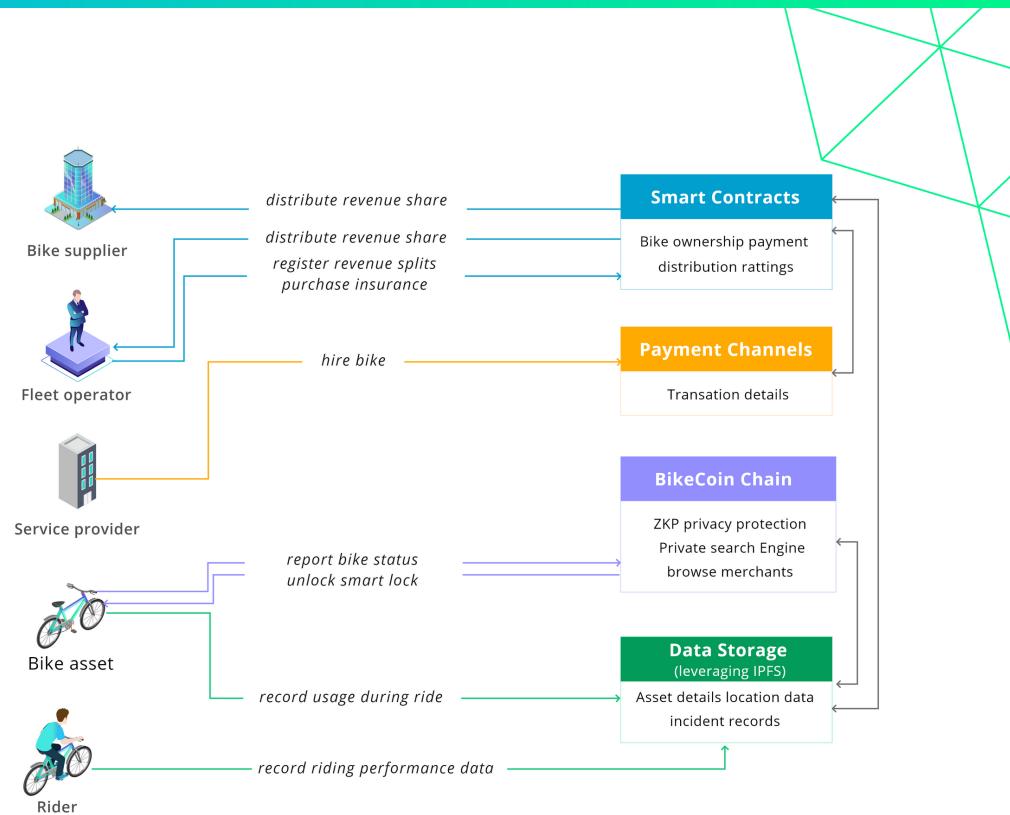


Figure 10: Transaction Support Features in Fleet Service'

Remember, BikeCoin is an IoT network. This diagram 'Data Sharing Features in Fleet Service' shows how various actors in the BikeCoin Fleet Services ecosystem share data on the blockchain. The essential part is that the rider reports their ride satisfaction, and the other actors report operational, transactional and usage data. This data can later be shared (without compromising privacy) for a holistic view of fleet bike sharing.

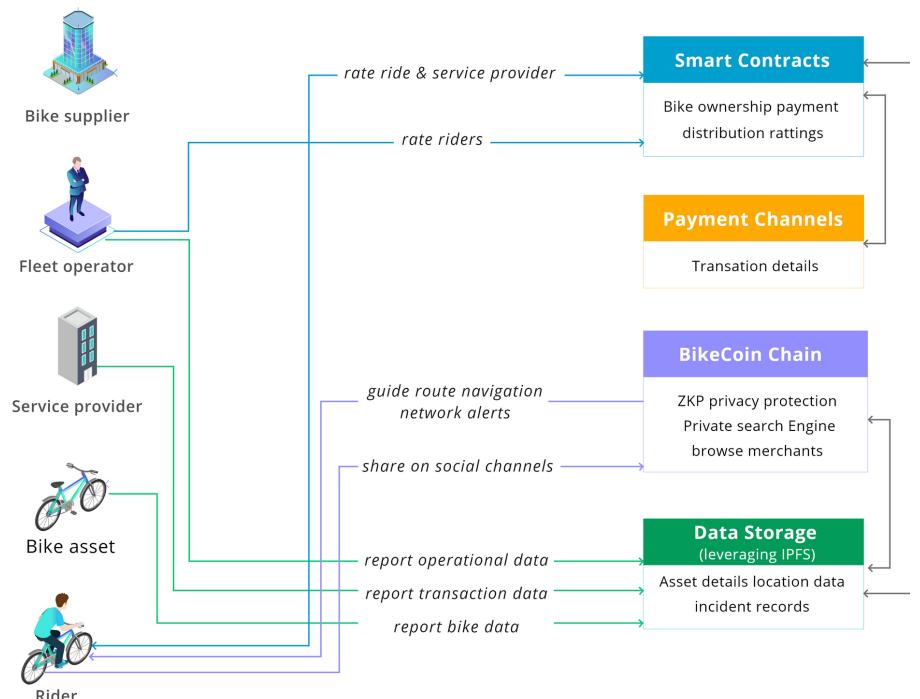


Figure 11: Data Sharing Features in Fleet Service

3.3 BikeCoin Decentralised P2P Services

BikeCoin also supports Peer-To-Peer (P2P) services where the rider hires a bike directly from an owner. This is similar to how AirBnB operates, but it is blockchain-based. The owner lists their bike(s) and the rider uses a BikeCoin P2P DApp to select a bike meeting their preference for location, features, availability and price. This works as a fully decentralised platform which can support any number of owners, bikes and riders.

Like the fleet services, BikeCoin P2P service is only available for round-trip rides. It is not a competitor for one-way rides such as the 2nd Generation Bike Sharing services. This is because the bikes have a high value, must be returned to the owner's designated location. BikeCoin promotes responsible ridership.

4. TOKEN MODEL AND DISTRIBUTION

BikeCoin is preparing to launch a token sale to fund development and marketing of the BikeCoin platform, including both the underlying blockchain technology and the operation of a fleet of premium bicycles supplied by Volata Cycles. In a token sale, a project offers to investors units of a new cryptocurrency (their token) in exchange for cryptocurrencies such as bitcoin or ethereum¹⁵.

Our project's investment unit (symbol: BKC) is a utility token developed using the Ethereum ERC20 token¹⁶ standard. This token fulfills the following currency-related functions:

- As an accounting unit for service fees and micro-payments
- As a medium of exchange within the platform
- As a store of value for incentivising and rewarding platform contributors



Using BKC tokens to make purchases on the platform entitles users to concessions at the discretion of the BikeCoin team, to encourage the use of tokens on the platform. Another primary use of the token is to incentivise individuals who make available their computing resources for the platform.

15. "ICOs, Token Sales & Compliance", Medium post by Unibright.io, April 2018, <https://medium.com/@UnibrightIO/icos-token-sales-compliance-76992ab57028>

16. The BKC token shall not and cannot be considered as shares or securities in any jurisdiction as they do not give any rights to dividends, interests, profits or to participate in the general meeting of the company. They will not be listed on any regulated stock exchange. The offering of BKC tokens on any trading platform is done in order to allow their use as utility tokens on the platform and are not for speculative purposes. Such offering does not change the legal nature of these tokens, which remain as a simple means for the use of the platform and not security.

4.1 Our Tokenomics

Tokens are created by pre-mining prior to the token sale. They are then divided into allocations for sales (50%), reserves (35%), and block rewards for block validators (15%). The purpose of the block rewards is to incentivise participants who contribute computing resources to the platform.

The viability of a token is based on liquidity and demand. To provide liquidity, the team will use its best efforts to ensure that BKC is accepted by reputable but centralised coin exchanges as well as on the increasingly popular Decentralised Exchanges (DEXes)¹⁷.

To generate demand, BikeCoin will be investing in the service operation to promote use of the platform, and will be working with partners such as Volata Cycles to drive demand. The sharing economy is a growth industry, and with BikeCoin, for the first time premium bikes can join the multi-billion dollar sharing economy.

Here is a list of monetary policies we will use to further increase demand for the token:

- On the platform, transactions are not limited to the BKC token. Customers will be able to use popular cryptocurrencies such as Ether and other Alt-coins. This helps to attract users to the platform, and they will be encouraged to use BKC tokens.
- Customers will be able to use stable coins, such as USD Tether or Digix, as an alternative to other cryptocurrencies. This is useful in the case that they plan to make a large purchase and want price stability, ie- to avoid the potential volatility of BKC.
- Customers who do make purchases on the platform using BKC tokens will get a discount relative to those using other forms of payment. This is to reward loyalty and encourage use of the BKC token

These policies are discretionary and do not violate any securities regulations. They are simply tools with which we encourage use of the new BKC token.

4.2 Use Cases

Utility tokens provide users with two things: (a) future access to a blockchain-based service, and (b) a medium of exchange to pay for that service. Utility tokens, also known as 'access tokens' or 'app tokens', can be offered as incentives to encourage participants to actively engage in a project. Here is a common list of uses for utility tokens:

- **Cryptocurrency:** Tokens are circulated and used as payment in all DApps built on top of the blockchain platform.
- **Purchase vouchers:** Tokens can be used as vouchers for the purchase of assets on the platform.

17. "State of Decentralized Exchanges - 2018", Medium post by Nathan Sexer, Chief Commercial Officer of Variabl, a business unit of ConsenSys Media, <https://media.consenSys.net/state-of-decentralized-exchanges-2018-276dad340c79>

- **Block rewards:** Users are rewarded with tokens if they contribute computing or storage resources to the platform.
- **Community rewards:** Tokens are awarded to community contributors such as third party developers and those reporting bugs.
- **User incentives:** Tokens can be earned for community-building activities such as recruiting more users and partners.
- **Value-added services:** Tokens can be used for payment of API services.
- **Transaction fees:** DApps developers need to use Tokens to pay transaction fees.¹¹
- **Block Validation:** With Proof Of Stake algorithms, block validators need to deposit Tokens to an escrow account.

This all begins with a successful token sale. By purchasing utility tokens during a token sale, investors contribute to funding blockchain projects. Once the service is operating, they can either use their tokens to purchase services, or sell them to other customers of the service. Utility tokens are not shares; however, many investors buy them with the hope that their value will increase as demand for a company's services increase.

The following table details how, once the platform is fully operational, BikeCoin tokens will deliver useful benefits to each participant in the ecosystem.

PARTICIPANT	USE CASES
RIDER End consumer	<ul style="list-style-type: none"> • Pay for hiring of bicycles. • Receive loyalty discounts for hiring bicycles with token. • Receive loyalty discounts on purchase of bicycles and other cycling merchandise with token. • Receive incentives for sharing data.
RETAIL SERVICE PROVIDER Hotel, Resort or Co-Working Space	<ul style="list-style-type: none"> • Receive payments for 'Rider Pays' transactions. • Receive incentives for promoting bike sharing. • Distribute payments for 'Merchant Pays' transactions, ie- share revenue earned from rides hired at the service counter. • Receive incentives for sharing data.
FLEET SERVICE OPERATOR Distribution partner operating in a city or other specific territory	<ul style="list-style-type: none"> • Pay Bike Supplier for purchase of bicycles. • Pay for insurance of bicycles and riders. • Pay for maintenance services. • Provide incentives to promote bike sharing. • Receive payments (i.e.- revenue share) for hiring of bicycles. • Reward or incentivise third-parties to integrate their DApps into BikeCoin ecosystem (for example: online booking, etc.) • Receive incentives for sharing data.
BIKE SUPPLIER Manufacturer, assembler or capitalist	<ul style="list-style-type: none"> • Receive payments (ie- revenue share) for hiring of bicycles. • Receive payment for purchase of bicycles. • Issue incentive to those who purchase bikes. • Receive incentives for sharing data

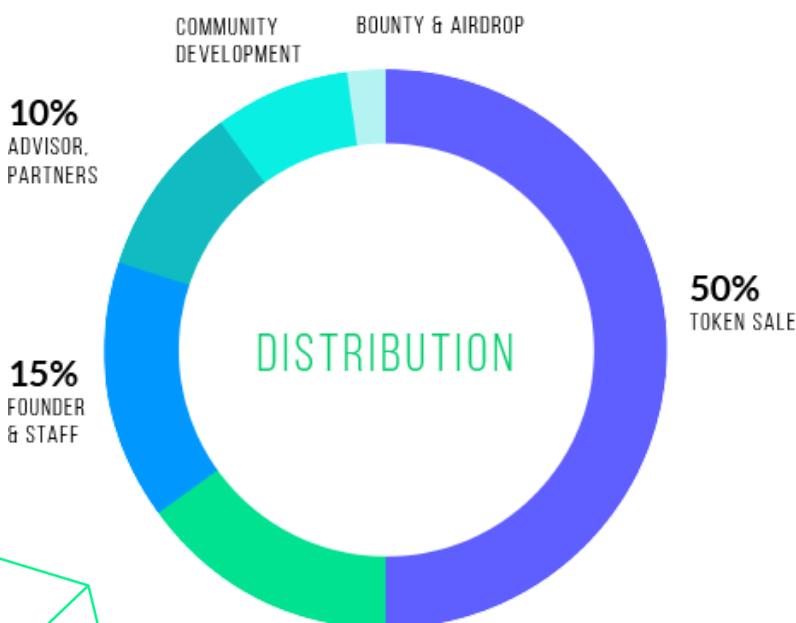
4.3 Token Sale & Distribution

Following are some of the key features of the BikeCoin token sale, distribution and use of proceeds. There will only be one Token Generating Event and we plan to distribute 75% of the issued tokens to the public. This generous distribution will ensure long term growth of BikeCoin platform, and will support development of the ecosystem as a whole.

TOKEN SALE DETAILS	
Token Symbol	BKC
Issue Size	800,000,000 (Eight hundred million)
Schedule	To be confirmed (refer to website for updates)
Token Price	1 BKC = 0.05 USD (token price in Ether will be fixed 72 hours before start of the public sale)
Fundraising Target	USD 20m (hard cap)
Minimum Target	USD 5m (soft cap)

DISTRIBUTION

Following is the token distribution plan. The team (including founders and seed investors) will get 15% with another 10% going to advisors and partners. That's 25% in total.



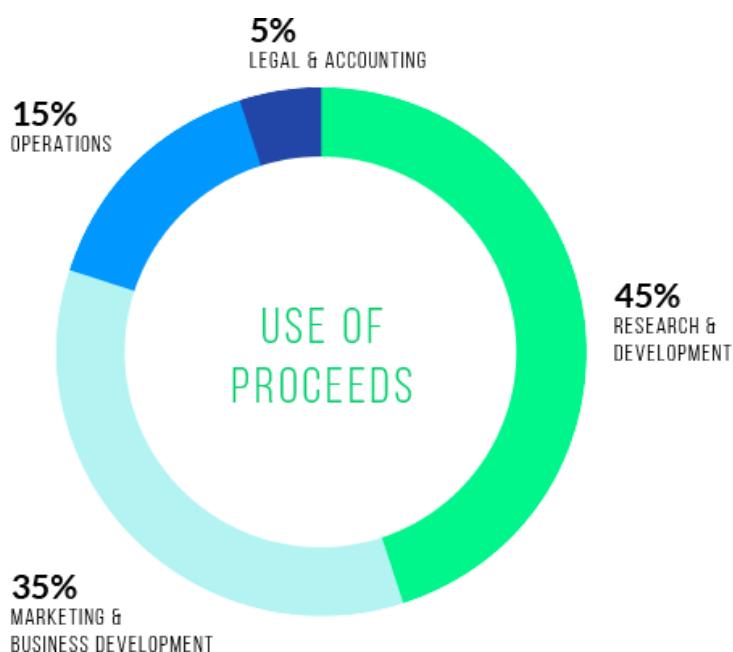
The other 75% is distributed to the public. We will offer 50% of our tokens for purchase during the token sale. This includes presale bonuses. Then, 15% of the pre-mined tokens will be set aside as block rewards for those providing resources used by the platform and acting as validators. Another 8% will be retained as a reserve for community initiatives, business development, standards-promotion, education, and market expansion. Finally, 2% will be set aside for bounties and airdrops, to drive token adoption.

Ether received during the sale will be held in a multi-signature wallet. The vesting period for the team is 2 years, in equal quarterly installments, subject to a cliff of 6 months. This is to align incentives to our long range plans.

PROCEEDS

The largest category of expense is 45% for Research and Development. The project is quite tech-heavy, as can be seen from the Technical Whitepaper. Another 35% is for marketing, to recruit partners and expand the ecosystem. For operations we budget 15% and the remaining 5% covers legal, tax, and accounting.

The figures given here are budgetary and subject to discretion of the team. Development costs will increase to the extent we need to: (a) integrate with other technologies and (b) add new functionalities for payment processing. Marketing costs will increase as we promote BikeCoin in new markets such as US, EU and Latin America. The BikeCoin platform will be competing against both non-blockchain and blockchain-based incumbents.



POST-ICO STRATEGY

The following table shows our planned market expansion based on the amount raised in our token sale. This is consistent with our Go To Market strategy explained in section 2.5 above.

5 MILLION USD Building of BikeCoin Ecosystem with a focus on premium bikes from Volata Cycles in North America market.	15 MILLION USD Expanding marketing and business coverage to Europe. Supply firmwares to accommodate to a wide range of shared bikes with blockchain-based smart locks and bike computers.	20 MILLION USD Expanding to Asia. Develop firmwares for other mobility devices (eg- eScooters).
--	---	---

5. COMPANY AND TEAM

Following are some of the key features of the BikeCoin token sale, distribution and use of proceeds. There will only be one Token Generating Event and we plan to distribute 75% of the issued tokens to the public. This generous distribution will ensure long term growth of BikeCoin platform, and will support development of the ecosystem as a whole.

5.1 Corporate Structure

Following are some of the key features of the BikeCoin token sale, distribution and use of proceeds. There will only be one Token Generating Event and we plan to distribute 75% of the issued tokens to the public. This generous distribution will ensure long term growth of BikeCoin platform, and will support development of the ecosystem as a whole.

5.2 Management Team

The founding team and key management are all serial entrepreneurs and veterans with diverse experience in the technology, internet, and blockchain industry.

FABRIZIO MARTINI

Co-Founder, President & Chairman

Mr. Martini is an innovator, investor, serial entrepreneur with a passion for sustainable transportation. Over his career, he covered the positions of Director of R&D as well as Principal Investigator and Program Manager of several U.S. government-funded and successfully completed programs for the Department of Energy, Department of Defense, and NASA managing over \$10M. He has contributed to the accomplishment of six world records related to energy storage technology and was in charge of the commercialization of the first-of-its-kind high-temperature ultracapacitor for oil and gas and geothermal applications. He is an author of 17 patents, including 3 from Volata Cycles.



MATTIA DESANTIS

Co-Founder & Chief Technology Officer

De Santis holds a degree in mechanical engineering from Polytechnic of Milan, one of the top university in Italy. He is a master in bicycle technologies, and he has developed over 20 bicycles models from scratch over his career. He has over 10 years experience in design and manufacturing of consumer products, FEM and CFD analysis, prototyping of mechanical systems and CNC machines programming.



ERIC BUI

Co-Founder & Blockchain Chief Architect

Eric holds a Bachelor's degree with Honours in Computer Science (Intelligent System & Entrepreneurship) from NTU, Singapore. He was a founder and tech-advisor to AEvice Health, an asthma monitoring device and a winner of the SWITCH 2016 pitching competition. Eric has experience working on various blockchain technologies such Bitcoin, Ethereum, Hyperledger, Zero-Knowledge Proof, Homomorphic encryption and other cryptography. He is also a technical advisor for several blockchain startups and is one of the founders of the largest Vietnam Blockchain Developer Community. Most recently, Eric was the blockchain lead of Electrify.Asia, which completed a successful token sale raising an equivalent of USD 30m.



WILLIAM CLAXTON

Operations Director

Bill Claxton is a seasoned technology entrepreneur. He holds a certificate in BlockChain For Technical Executives and Analysts from B9Lab Academy in the UK and has spoken at various blockchain events. Bill has been active in the IT scene in Singapore for more than 20 years, was an early Bitcoin investor and most recently served as Operations Director of fintech startup KYC Chain.



TUAN NGUYEN

Blockchain Lead

Tony Tuan Nguyen has 10 years of experience in IT industry with various positions, including web developer, mobile developer, software architect, technical advisor, CTO and CEO. With his passion for cutting-edge technology, he masters in web application, mobile application, clouds computing and now blockchain. With his deep knowledge of healthcare industry and his experience in solutions development like ERP, CRM.

Tony is consistently recognized as a trusted leading advisor for his vision, passion and commitment to his customer's missions.



5.3 Our Advisors

We have assembled a panel of world class industry advisors who are passionate about the industry, the application of blockchain technology and the open source community. They not only help advise on Go-to-Market strategies but also evangelize our platform to help drive adoption among industry leaders.

ASSOC PROF NG WEE KEONG

Technical Advisor

Dr. William K. NG works in the areas of machine learning, privacy-preserving techniques, query-permissible encrypted databases, blockchain systems, and data security. He contributes to companies and industries as technology consultant on projects involving data analytics, artificial intelligence, data privacy and security, and blockchain. In recent years, he was General Chair of the 18th International Conference on Information and Communications Security (2016).



KATIE NOBLE

Product Manager Advisor

Katie has worked for Tesla Motors for over 8 years covering position from System Engineer to Product Engineer. She has a deep experience in Automotive, Consumer Test & Measurement as well as the Aerospace & Defense industry.



SHERWIN LEE

Singapore Legal Advisor

Sherwin is a partner of TLB law firm in Singapore and holds a Masters in Law (Distinction) in International Banking and Finance from The University College London in 2008. Sherwin currently focuses on advising companies within the financial and emerging technologies space and particularly on the application of distributed ledger technologies (DLT), token generating events / ICOs / ITOs as well as set up and design of blockchain ecosystem players.



DANIEL CHAPMAN

Senior Artist for Volata Design Concept

Dan Chapman is Curator of the CITRIS Tech Museum, as well as Senior Artist for CITRIS and the Department of Mechanical Engineering at UC Berkeley. He also serves as a Lab Manager in the CITRIS Invention Lab. Daniel is a Senior Artist with extraordinary capabilities to connect Art and Tech.



ROBERTO ROSSI

Finance and Operations Advisor

Roberto is an expert in the financial aspect of the bicycle worldwide sector. He currently serves the position of Finance and operations director at Crank Brothers Inc. - Selle Royal USA Inc. He previously worked for Maschio Gaspardo Spa and for Ferrari Spa. Roberto has a strong experience in budgeting and forecasting, especially for the bicycle sector where he has been working for the last 6 years of his career.



GASPARE LICATA

Management and Strategy Advisor

Gaspare is an experienced entrepreneur and leader with strong experience as CEO of CrankBrothers, manager of P&L at Selle Royal,USA Sales Manager (Dell, Michael Page, Sell Royal Usa, crankbrothers), Marketing Manager (crankbrothers) Product and branding strategist (crankbrothers) Additional specialties: Negotiation, Human Resources Management, Branding, Marketing.



LUIS MORAIS

Supply Chain Advisor

Luis Morais is an supply chain expert with an extensive international track record. He is currently a CEO and Founder of LM-Supply. Prior to that, he has worked for multinational companies such as Kraft Heinz, Thai Union Group (France) in several roles such as Director of Finance, supply chain, procurement, consultancy and technology, leading numerous multimillion euro projects with successful outcomes.



5.4 our partners



Volata means 'sprint' or 'fly away' in Italian. Volata Cycles is a California-based bike-tech company which makes premium high-tech bicycles, with integrated digital features and standout Italian Design. Volata Cycles is on a mission to accelerate the world's transition to sustainable transport by creating bicycles that will inspire more and more people to ride everyday.

6. CONCLUSION

We see the opportunity for BikeCoin to be the dominant platform for 3rd Generation Bike Sharing worldwide, and thereby tap a billion dollar market. Our business combines state-of-the-art blockchain technology, a fully-decentralised economic model, and a service fleet consisting of the absolute best smart bicycles available anywhere.

Our technology implementation provides open source libraries and reference specifications that will enable bicycle and IoT hardware manufacturers to leverage our platform. This multilayered platform itself affords developers the ability to create their own Decentralised Applications (DApps) and join the tokenised bicycle economy.

In partnership with the innovative bike builder Volata Cycles, we will introduce fleet operations and seek to expand the number of partners. We will introduce DApps for fleet operations and P2P bike sharing. We will launch the service initially in North America and then expand to Europe and Southeast Asia, in bicycle friendly cities with tech-savvy riders having a relatively high disposable income.

BikeCoin has a highly qualified technical team, with an excellent track record writing smart contracts and developing blockchain projects that have held successful token sales. Our team also has lots of IoT and asset token development experience. Plus, we have a number of very qualified advisors assisting with various legal, compliance and operational aspects. On top of that, Volata brings its marketing expertise in promotion of the premium cycling experience, which riders will never forget!

STAY IN TOUCH



BIKECOIN.NETWORK