



VYVO SMART
CHAIN

Vyvo Smart Chain White Paper

Vyvo Coin \$VSC

VERSION 1.0.0.9

**A Blockchain powering the World's
First Decentralized Digital Health
Platform**

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1. Abstract

Health and wellness data are currently surreptitiously being collected by large commercial organizations such as Apple, Google (via Fitbit), Samsung, and many others. Unsuspecting users of wearable devices agree to technically dense terms and conditions through which allow these third parties to own the collected data. When these commercial enterprises monetize or sell the data they gather, users themselves are not involved in these transactions, nor do they benefit in any way from the earnings.

Vyvo respects the rights of data producers. Through the creation and implementation of a unique process that will allow wearers to own their data and maintain proprietorship of what is rightfully theirs. Users of our Ecosystem will be able to participate in this multibillion-dollar industry revolving around health data. This will be achieved by employing proprietary encryption chips and standards, data processing practices that protects and guarantees ownership within the Vyvo Smart Chain. This is a radical and innovative step in the design of data collection and storage processing, constructing it in such a way that no one will have access to wearers' data, as it is exclusive to the user.

While users wear Vyvo wearable devices or compatible ones, biometric data will be constantly collected. As the data is collected, anonymized, encrypted, secured, and validated, the users will receive mining rewards. Users of wearable and IoT devices will constantly be collecting data that will provide them access to information associated with this data within Layer2 DApps that allow them to gain a better understanding of their current state of health. Additionally, Layer2 DApps will be able to build tools and services, such as utilizing AI to enable users to receive suggestions based on the data their devices provide. Wearable and IoT devices able to use Vyvo Smart Chain will have to be equipped with an exclusive encryption chip based on 384-bit elliptical curve encryption (VSC-PoSe CHIP) or capable of a compatible encryption standard (EEC). This encryption standard provides the necessary security for the validation of users' data on the Vyvo Smart Chain. Only users will have access to this data, which they can unlock, and give permission to sell anonymized data to buyers via our Decentralized Digital Health (DDH) Big Data Platform and Marketplace. The DDH Marketplace provides users with the ability to sell their anonymized health data to companies. The companies that buy the data can either use filters to aggregate or select data in specific categories and demographics. Through this Big Data Platform, people that use wearables connected with the Vyvo Smart Chain will be able to benefit from the sales of their own health data.

Proof-of-Sensing was created by Vyvo as a validation protocol that ensures that the data is coming from real people, real biosensors, and that it is secure, encrypted and verifiable. Proof-of-Sensing will ensure that the data being sold to companies through the platform is legitimate, immutable, and thus valuable. As individuals wear Wearables and use IoT devices connected to the Vyvo Smart Chain, they will earn Vyvo Coin (\$VSC), which is the native coin of the Vyvo Smart Chain. The data buyers will purchase special Data Credits (\$VDC), which will then be used to purchase data from the Decentralized Digital Health Platform with a “burn and mint” equilibrium.

2. Introduction to Data Collection

Many individuals incorrectly assume that the Health Insurance Portability and Accountability Act of 1996 (HIPAA) protects all their health data. When this law was passed, it called for the creation of federal standards which would protect patients’ healthcare data so that it would not be disclosed to any third party without the patient’s consent or knowledge. The basis of this activity suggests that individuals’ health care data is well protected; however, this is not the case. One caveat of HIPAA is that if patient information is de-identified (meaning that patient names, locations, and phone numbers are removed), healthcare providers can actually sell or give away the data to other companies without ever informing or requesting consent from the patients themselves.

Health data on medical records is immensely important because it reflects society’s health in general. These records show how people got sick, the progression of their illness, and how they were treated. This is very important for those making medical discoveries or even just studying to learn more about the lifestyles of individuals. In addition to health care providers having access to data on health and wellness, there are countless other devices and technologies that individuals allow to record their personal data. Likewise, these same companies are able to monetize it. Many of the users of these technologies are not even aware that this is occurring despite the fact that it is common practice.

One crucial area that negatively impacts consumers is that they are not fully aware of the impact that the terms and conditions that they agree to when registering for a product or service. These terms and conditions are notoriously long and difficult to understand, and the average consumer just clicks “accept” without actually reading any of the legal information. For this reason, consumers are often surprised to find that they have signed away the rights to their personal data.

In this day and age of technology and data, corporations are collecting individuals’ personal data at all times in any way possible. Most consumers have already granted companies access to their web browsing history, social media usage, AI assistants, and

many other forms of data. Furthermore, the introduction of technology into the healthcare industry means that considerable amounts of personal data about health and wellness are also being collected. Some legislative concerns have risen from companies having the opportunity to quietly sell collected information from and about the wearers without their knowledge of it happening. The most egregious aspect is that all the proceeds from the sale of this data end up in their bottom line, and the users that generated the data are neither aware nor do they share in those profits. Majority Leader of the United Senate, Charles Schumer, raised these concerns about major wearable technology companies using this precise type of information. He expressed concern about these companies collecting data about the wearers' health and selling it to other corporations. Some of these company practices are only disclosed in the legalese in the privacy policy and terms and conditions, which users often ignore. Most avoid selling the data directly, claiming their sales are for marketing efforts or utilizing the data through third parties for analytic purposes. The implication is made to avoid describing the potential use that these third parties can have with the information within the data and what they can surmise from it. These third parties can then compile and continue selling the data and contributing to the bottom line of the original company "lending" the data. The rise of wearable fitness trackers has also increased the amount of health data out there. In addition to Fitbit, there are countless other companies (including Apple, which produces the Apple Watch, and Amazon, which produces the Amazon Halo) that are continuously collecting health data. These companies have a right to do this as stated in the terms and conditions that the wearer signs; however, most wearers have no idea. Their health data is actively collected and can be sold without wearers having any real chance of objecting or directly benefiting from it. This is something that should be of concern to patients, device wearers, and consumers.

Once health data has been sold, there is no guarantee of how it will be used. This presents many problems as it could lead to the improper use of health data. This can be more serious than recent security breaches like targeted ads or spam. If others have access to your health data, they could theoretically use it to assess risk when it comes to your health care or life insurance policies. Furthermore, even financial institutions can make use of this information as it will provide them with a more comprehensive risk analysis portfolio.

3. Introduction to the Decentralized Digital Health Platform

Vyvo is one of the key promoters of new models of Blockchain organization to decentralize Digital Health Data. Vyvo aims to partner with several technology talent partners, blockchain passionate security experts, and contributors who want to help the foundation build a thriving Decentralized Digital Health ecosystem. This Ecosystem has

a scope to adapt and leverage these great new emerging technologies to create new scenarios and opportunities in the field of Health and Wellness management. To help people make improvements in their individual state, to fuel scientific research, and to help the vanguard of development in all areas of health and medicine, drugs and treatment discovery.

One of the main working concepts behind the Decentralized Digital Health Platform is to facilitate integrating the benefits of modern technology with people. We aim to do this by empowering users with access to their health data, achieved by integrating devices capable of connecting to the Vyvo Smart Chain to provide benefits to users contributing to building the most diverse and resourceful health data resource with actionable user information. We connect humans to the power of decentralization- rewarding users for their contribution within the Ecosystem, creating a blockchain symbiosis.

3.1. Problems to Address

1. How can consumers protect their health data and benefit from it themselves instead of just agreeing to long and complicated terms and conditions, which in turn may lead to their data being sold to third parties?
2. Decentralized Data Distribution introduces a brand new opportunity for Data buyers, to access to validated and verified Health and wellness data where their origin is certified by the proof of sensing protocol. Today especially health data market is a very niche market with complicated and long audit and validation processes. Buyers have to verify the origin of the data, the collection method, the protection and consistency of them, their quality and availability, so a solid protocol and business model to quickly access to this kind of data is not available at moment.

3.2. Proposed Solutions

Vyvo Smart Chain is a foundation formed by hand-selected industry experts from the areas of blockchain, health and wellness technology, wearables and IoT devices. With the combination of expertise, Vyvo has a strong technological identity that possess

a mission of leading advancements to serve the people of the world. Working with developers of wearables, wireless devices, and pioneers at the forefront of the digital health industry, Vyvo seeks to utilize the strength of this emerging new booming market to create a platform that benefits all participants of its Ecosystem.

In the recent past, our society has seen the digitalization of nearly every field. However, the health industry is still tied to the past. Vyvo aims to incorporate breakthrough technology to revolutionize the sector and create a brand-new economy: the digital health sharing economy. Through these innovations, Vyvo will create a brand-new financial stream based on the communities and parties participating in this economy. In short, Vyvo aims to create a community of people able to leverage technology to live in health and prosperity.

Vyvo Smart Chain aims to create a Platform able to address the two problems mentioned above, Data ownership, data validation and security through a validation protocol and utilization of NFT, providing data security through their decentralization.

The distribution of the Validated and secured data will be possible with the creation of a Decentralized Big Data market place.

Key Concepts

Vyvo will deploy a Decentralized Digital Health Platform based on some key concepts listed below:

3.2.1. Wearables & IoT Sensor-enabled Devices

Wearable technologies, Patches, and IoT-capable devices, are equipped with a set of proprietary biosensors, electrochemical sensors, and environmental sensors developed by Helo Corp.

With the introduction of the Decentralized Digital Health concept, Vyvo is providing wearable or biosensor and IoT users the possibility to exclusively own their collected data with a completely new protocol based on blockchain technology for the distribution and monetization of such data. Vyvo is also creating a new ecosystem based on the sharing economy concept. Users will finally be an active part of a multi-billion dollars business generated by their data, where until today, they have always been left out.

Vyvo has in the past partnered to create a large category of Health and Wellness monitoring devices. Under this umbrella, incorporating a number of different sensors,

Vyvo has gained an understanding about the potential behind smart devices built with IoT capabilities. This capability allowing the device to provide real-time data collection as well as data communication with the cloud, is the vehicle that allows a platform to be built where the benefits of data transactions in health and wellness do not need to continue operating in centralized environments.

These sensors collecting data from biomarkers in people's readings, are abundant, and stemming from peoples from all around the world, potentially creating the most diverse group of actionable information. Vyvo expects these to eventually ubiquitous, beyond fitness, and patients in doctors' offices, but rather individuals assessing their own bodies and health. These real-time readings provide more information and allow people to make more educated decisions and choices about their life, and within a Decentralized Digital Health Platform receive rewards for their contributions.

3.2.2. Data-NFT

An integral part of the DDH Ecosystem is a utility non-fungible token, The Data-NFT. Vyvo Smart Chain uses ERC-721 standard NFTs for its Data-NFTs, to be associated and connected to IoT Device responsible for the measurements and gathering data, as well as the data sets it produces. As a key component to the Proof-of-Sensing protocol, the Data-NFT must be held in an individual user's Wallet guaranteeing that the data can be validated, authenticated, and subsequently issue the appropriate rewards to the owner

The Data-NFT allows the DApps developers to manage a number of dynamics attributes associated with the NFT and part of confirming data ownership, suitable for the implementation of GameFi, SocialFi, and programs that can introduce additional possibilities and features to the data collection and reward plans.

The Mint of the Data-NFT is possible with DApps users' chosen cryptocurrency, contribute to the burn of up to 35% of the correspondent value of \$VSC.

3.2.3. Vyvo Smart Chain

Vyvo Smart Chain is a Blockchain infrastructure derived from an Ethereum fork and developed by introducing the proprietary Proof-of-Sensing protocol for Data Validation.

Why is the Blockchain needed?

Blockchain is used to validate data instead of having to audit the data like in traditional companies.

Data is anonymized and hashed on the Blockchain making it immutable, chronological, and consistent. Maintaining the integrity of the data is imperative to justify its value and credibility, which blockchain encryption aids in sustaining.

Give people access and control to their health data, along with the ability to monetize it through our Big Data Platform.

Ownership of data with a Data-NFT and by signing data with a private key of the user that generated the data.

3.2.4. Proof-of-Sensing Validation Protocol

Proof-of-Sensing Validation Protocol: combines software and hardware to enable wearable devices, smart devices, and IoT devices to be compatible with the Vyvo DDH platform and Ecosystem. Vyvo will implement the Proof-of-Sensing protocol to validate the data blocks produced by the devices equipped with VSC-PoSe Encryption Chips or devices capable of compatible encryption standards. Only devices enabled by the Proof-of-Sensing Validation Protocol can be connected to Vyvo Smart Chain, DDH platform, and generate a reward of Vyvo Coin (VSC).

Vyvo has created a new approach to the Digital Health sharing economy based on a reward protocol, 'mining', that uses a unique and proprietary 'Proof-of-Sensing' protocol as a new method used by a brand new blockchain 'Vyvo Smart Chain.' The 'Vyvo Smart Chain' is used to verify and validate the origin and generation of Health, wellness, environmental, and any bio-sensor data collected via purpose-built hardware such as Wearable Smartwatch and bands or Biosensor patches and IoT sensors.

Today, the data market faces a considerable challenge: origin, validation, and data consistency. For the data to be accepted and validated, especially for scientific and research purposes, a complex auditing process is required. That process is usually not affordable and requires extensive knowledge.

The Proof-of-Sensing Validation Protocol introduces a robust protocol to address all the above issues. It provides a secure and safe reward system, that facilitates these processes while it also prevents the Ecosystem from being violated by malicious actors who want to improperly acquire the rewards via the manipulation of data. Most notably it provides a reliable validation tool for the data for its distribution and monetization.

4. Tokenomics

Vyvo Coin

Vyvo Coin is the native coin and the protocol token of the Vyvo Smart Chain. The Vyvo Coin symbol is \$VSC.

The Genesis Block of the Vyvo Smart blockchain is composed of 10,014,165,805 \$VSC, of which 50% of \$VSC will be initially distributed to Investors, Treasury, Ecosystem Development and Marketing, Team, Community Private Sale, and Grant Funding.

This section details how the Vyvo Smart Chain token ecosystem functions and how all the interrelated processes are organized. The different subsections define all the aspects of the model and functioning and how the Vyvo Smart Chain and DDH ecosystem is designed to create and facilitate the exchange of valuable data while maintaining equilibrium in its platform.

Initial Supply	10,014,165,805
Target Supply	20,014,165,805

Max Supply

With the launch of the genesis block on May 1 st , 2022, the DDH Platform targets minting approximately 100,000,000 \$VSC per month, amounting to 1,200,000,000 in Year 1 and the same again through year 4. As the Vyvo blockchain uses a four-year halving schedule, 600,000,000 \$VSC per year are expected to be minted in Year 5 to Year 8, and so on, until maximum \$VSC supply is reached.

The minting schedule follows the following schedule:

Year	Total \$VSC at the start of each year	Total \$VSC minted during that year
1	10,014,165,805	1,200,000,000
2	11,200,000,000	1,200,000,000
3	12,400,000,000	1,200,000,000
4	13,600,000,000	1,200,000,000
5	14,800,000,000	600,000,000
6	15,400,000,000	600,000,000
7	16,000,000,000	600,000,000
8	16,600,000,000	600,000,000

9	17,200,000,000	300,000,000
10	17,500,000,000	300,000,000
11	17,800,000,000	300,000,000
12	18,100,000,000	300,000,000
13	18,400,000,000	150,000,000
14	18,550,000,000	150,000,000
15	18,700,000,000	150,000,000
16	18,850,000,000	150,000,000
17	19,000,000,000	75,000,000
18	19,075,000,000	75,000,000
19	19,150,000,000	75,000,000
20	19,225,000,000	75,000,000
21	19,300,000,000	37,500,000
22	19,337,500,000	37,500,000
23	19,375,000,000	37,500,000
24	19,412,500,000	37,500,000
25	19,450,000,000	18,750,000
26	19,468,750,000	18,750,000
27	19,487,500,000	18,750,000
28	19,506,250,000	18,750,000
29	19,525,000,000	9,375,000
30	19,534,375,000	9,375,000
31	19,543,750,000	9,375,000
32	19,553,125,000	9,375,000
33	19,562,500,000	4,687,500
34	19,567,187,500	4,687,500
35	19,571,875,000	4,687,500
36	19,576,562,500	4,687,500
37	19,581,250,000	2,343,750
38	19,583,593,750	2,343,750
39	19,585,937,500	2,343,750
40	19,588,281,250	2,343,750

Data Credits

Data Credits or VDC are VEP20 tokens pegged to S\$1(SGD) and are used to pay all Health Data fees on the DDH Platform. Data Credits cannot be bought with FIAT or any other currency. Data Credits can only be produced by burning VSC. As the market price of VSC changes, the number of VSC required to produce a Data Credit will fluctuate.

This VSC to Vyvo Data Credit (VDC) relationship is based on a design commonly called a burn-and-mint equilibrium and is intended to allow for the supply of VSC to respond to Data purchase trends such that, when equilibrium is found, the amount of VSC that exists remains static month on month. The amount of VDC produced by burning VSC will move up and down based on the USD price of VSC.

Burn-and-Mint Economics

The Vyvo Coin (VSC) to Vyvo Data Credit (VDC) relationship is based on burn-and-mint equilibrium. This relationship's intent is to allow for a supply of VSC to respond to Data purchase trends such that, when equilibrium is reached, the amount of VSC that currently exists remains static month-to-month. The amount of VDC produced by burning VSC will fluctuate based on the USD price of VSC.

In order to illustrate how this works on-chain, in two given scenarios:

Example 1

Based on SGD to USD exchange value at the time of writing: S\$1 = \$0.71

- As always, the price of one \$VDC is S\$1.00
- The current \$VSC price is \$0.14 USD
- Burning 5 \$VSC would produce 1 \$VDC

Example 2

A DDH Platform user requires 20,000 \$VDCs per month of health data for their research activity on Covid-19.

To acquire these 20,000 \$VDCs per month, they would burn 100,000 \$VSC using the following math:

- As always, the price of one \$VDC is S\$1.00
- The current \$VSC price is \$0.14 USD
- Burning 100,000 \$VSC would produce 20,000 \$VDC

Net Emissions

Through Net Emission, the Vyvo Smart Chain monitors the amount of VSC burnt to mint VDC in a given epoch, adding them to the number of VSC to mint during that same epoch. In an exemplary scenario, given that 10 VSC are burnt for VDC in an epoch, the system would mint 10 more VSC than were expected in that given epoch.

Net Emissions counteracts the desired deflationary effect of Burn-and-Mint economics. If the system replaces all the VSC burnt to create VDC, there is no resulting reduction in Max Supply.

In order to facilitate the understanding of the Net Emissions concept, we pose a hypothetical scenario. If the VSC supply is capped at 20,014,165,805 and the DDH Platform is constantly burning VSC to mint Data Credits to enable bio-data purchase, won't the Smart Chain run out of VSC?

Yes. This is where the idea of Net Emissions comes in. Along with Max Supply, Net Emissions gives the protocol enough VSC to reward IoT bio-sense device users and validator group members in perpetuity.

- Using Net Emissions, the Vyvo Smart blockchain monitors how many VSC were burnt to mint Data Credits in a given epoch, and it adds them to the number of VSC to be minted during that epoch. For example, if 10 VSC were burned for Data Credits in an epoch, the system would mint 10 more VSC than were expected in that given epoch.
- Any VSC produced via Net Emissions do not add to the total outstanding, and consequently, they do not violate the Max Supply.
- However, Net Emissions counteract the desired deflationary effect of Burn-and-Mint. If the system replaces all the VSC that are burned to create Data Credits, there is no resulting supply reduction.
- Consequently, when Net Emissions is implemented, there is a cap of 5% on the number of VSC that can be created via Net Emissions per epoch. When the VSC burned to mint VDCs exceeds this cap, there will be a reduction in supply.

Mining Difficulty Factor

The VSC amount that can be mined by Vyvo Lifewatches and IoT devices varies depending on the current difficulty rate. The difficulty factor determines the amount of VSC mined by a device with each block of data produced.

Considering the maximum amount of VSC that can be supplied on a given epoch, the number of devices actively mining in that same epoch, the difficulty increases or decreases in response, allowing a device to be rewarded by a variable amount of VSC. The difficulty can also be affected by a Net Emissions cap requiring a decrease in the supply of VSC.

To illustrate the Difficulty Factor, two examples are provided:

Example 1

During the current epoch, the monthly supply of VSC is: 20,833,000 The Active number of IoT Bio-Sensing Devices mining: 150,000

- Bio-Data Block \approx 12 measurements
- Average Bio-Data Block per device per day: 140
- Average Bio-Data Block per device per 30 days (month): 4200
- Bio-Data Blocks per month: 630,000,000
- Vyvo Coin Reward per Bio-Data Block: 0.033 VSC

Example 2

During the current epoch, the monthly supply of VSC is: 20,833,000 The Active number of IoT Bio-Sensing Devices mining: 230,000

- Bio-Data Block \approx 12 measurements
- Average Block per Day: 140
- Average Block per Month: 4200
- Bio-Data Blocks per month: 966,000,000
- Vyvo Coin Reward per Bio-Data Block: 0.02156 VSC

4.1. Mining (Reward) of the Vyvo Coin

Mining of the Vyvo Coin: All Proof-of-Sensing purpose-built hardware can participate in the 'Mining' of Vyvo Coin as a reward and incentive system for participating and collecting the data. The mining is based on a difficulty algorithm approach that considers the number of devices actively mining, the max supply of the Vyvo Coin, and its current availability.

Data Mining (Phase 1 -- No VSC-PoSe Chip & Third-Party Vendors)

When a device generates health data, they are stored on a central database (which undergoes a quarterly qualified security audit) without any personal or sensitive information and with no references to any user profile other than being linked to the owner's Wallet and Data-NFT.

A reward system designed to mint Vyvo Coin will distribute VSC rewards to users based on the quantity of Data points created and regulated by a difficulty algorithm that will keep the maximum supply and net emission of the Vyvo Coin stable throughout the epoch.

The Reward system will assign rewards to the users from a pool of pre-mint Vyvo Coin. For each specific segment of the Data Block produced by the device, a new block will be created on the Blockchain containing the hash of such data segment, preserving so the integrity of the Data and its consistency against manipulation, tempering, or corruption of the data.

All the Data points stored on the DB will contain the reference to the originating device Data-NFT to validate its origin, ownership rights, and authenticity.

Data Mining (Phase 2 -- VSC-PoSe Chip-enabled)

When a device generates health data, the information is stored in a central database without any personal or sensitive information, without references to any user profiles. However, it will only be linked to the owner's Wallet and Data-NFT.

The Data block produced by the sensors will be encrypted on the device hardware using a specially designed encryption chip VSC-PoSe. The Encryption will be based on an Elliptic Curve Cryptography (ECC) at 384bit. (See Description of the Validation protocol). When the selected validation group validates the block, it is created on the Blockchain, and the user will receive the Vyvo Coin reward. Part of the reward (35%) will go to the validation group, which has consented to the mint of the new Vyvo Coin.

4.2. The Value of VSC

The value of a VSC is contingent on the volume of data sales in the DDH Marketplace, Exchanges, Liquidity, and other factors, and it benefits hundreds of thousands of users of wearable & IoT devices with BioSensors and VSC-PoSe Encryption Chips or ECC capability collecting data every second and securing it within the DDH Platform using Vyvo Smart Chain.

4.3. Validator Nodes

Validator nodes are future entities on the Vyvo Smart Chain that perform Validation group work, including verifying Data validity. In return for staking, validators contribute to the Data security and integrity and earn \$VSC rewards.

4.4. Use of the Vyvo DDH Platform

The community members and any enterprise or third party can use the Vyvo DDH Platform in multiple ways. Members can use the platform by benefiting from the usage of the Wearable and IoT products that enable the Proof-of-Sensing Technology.

The DDH Providers platform allows enterprises and third parties to access a variety of data categories, such as Health and Wellness, Environmental data (AQI and Pollutants), Macronutrients, and Nutritional data.

The platform's "USE" will create the Ecosystem's sustainability and value, supporting the BME (burn-and-mint equilibrium) concept where increased platform usage means increased Vyvo Coin value.

The proposed solution to the problem of maintaining equilibrium involves the development of the Vyvo Decentralized Digital Health (DDH) Platform. The introduction of the Decentralized Digital Health approach is based on blockchain technology. This concept gives way to brand new and unexplored scenarios which aim to give total control of personal data management to the users themselves by shifting the paradigm of how data is used. Specifically, this new technology will make a user's personal data completely

private and proprietary. This will limit those who could benefit from monetizing such data and make it so that users themselves are in the position to monetize off of the data.

For the first time, a ground-shifting revolution in the digitalization of the health and wellness industry will not be just another business move for a Tech Giant. With Vyvo, it will generate a shared economy where everybody can participate. Every member that participates in the project, by simply taking care of their health with the DDH platform, will receive the chance to contribute to the global mission of creating the largest Health and Wellness Big Data AI platform completely based and secured on Blockchain technology. By participating in this mission, they will also share in the economic benefits coming from the value of Big Data and the company's global sales.

4.5. Big Data Platform

We will have a big data streaming platform for data buyers. The development process is ongoing, but the goal is to streamline the sale of user data to data buyers. The data platform will host the data collected by the wearable device. Users have many incentives to wear devices connected to the Vyvo Smart Chain, in addition to the mining rewards. By having their devices connected, they are securing their data on the Vyvo Smart Chain, taking complete control of their health and data.

Once the data is encrypted and secured, it will be made available for purchase on the DDH Big Data Platform, namely on the Decentralized Digital Health Marketplace currently under development. The DDH Marketplace allows third parties, such as Universities, Hospitals, Pharmaceuticals, Research Centers, and others, to acquire health and wellness data from varied demographics and lifestyles, allowing a diverse pool of metrics that have been largely unattainable without an infrastructure to facilitate this process. These institutions must pay with Vyvo Data Credit Token (\$VDC) to buy data blocks.

Simply put, the healthcare analytics market size alone is projected to reach USD 80.21 billion by 2026. This is all considering the healthcare analytics market was valued at USD 11.59 billion in 2018. Given that the health and wellness data market and our target go beyond this single space, the growing market of companies that use health and wellness data is worth over \$500 billion. We anticipate that we will have many buyers willing to purchase our data. We expect our target market to be made up of pharmaceutical companies, research institutions, universities, and other Health & Wellness focused businesses that require this data to research new drugs, develop treatments, and prevent the spread of diseases.

Big data business models are the way of the future. Many large and mature companies are looking for ways to either buy or monetize big data. For many companies, collecting the data firsthand is burdensome, and so they prefer to purchase it. Given the growing nature of the health data industry, it makes sense to facilitate the exchange of data. Furthermore, through the technology provided by Vyvo, we will essentially be able to cut out the middleman in that the users of the wearable who create the data can sell it directly to the buyers.

4.6. Big Data API

We will provide on the DDH platform a set of **APIs** where if you are a buyer of the data, such as a pharmaceutical company, and you want to access your data, you can just do it by plugging into the DDH platform. It will be a simple model where you will be able to plug into the API. We provide documentation on how to access the features and tools in our platform and all the necessary information about what kind of set of data you can get by using our API.

You can get presets of data preselected data, and you can have as many filters as you need. For example, you may want to have access to blood pressure data from males from ages 35 to 45 of a specific country, from a specific ethnicity, or based on a specific medical condition. We can provide filters for your data needs in countless ways.

The DDH Big Data platform is going to provide a one-stop-shop for any kind of health and wellness data that pharmaceutical companies, researchers, institutes, universities, doctors, and whoever wants to access this data. They will plug in the platform, pay with **VDC (Data credits)** token, and then create, propel, and stimulate the economy within the Ecosystem.

5. Roadmap

The Vyvo Smart Chain and DDH Platform Roadmap to begin in 2022 with the deployment of the Vyvo Smart Chain. The Q1-Q3 2023 establish the launching pad of the initiative and prepare the infrastructure to welcome hundreds of thousands of pre-existing members and new users into the Ecosystem.

Q4 2023 onwards expands on the projected expansion and solidifies the platform as a leader and pioneer in bringing value for users and data to buyers in a decentralized manner while upholding the standards of privacy and efficiency.

2022

- Deployment of the Vyvo Smart Chain (Ethereum Fork).
- Whitepaper 1.0 published.
- Genesis block is minted and first issuance of \$VSC.
- Installation of 21 validation nodes.

Q1 - 2023

- Initial Distribution of \$VSC
- Onboarding of the first Layer 2 DApp, inPersona.
- 500,000 existing Members with connected devices enabled.
- \$VSC Private Sale - Exclusive to Community Members.
- Initialization of Proof-of-Sensing validation protocol.
- Seed investment - 5 million USD.
- Fintech partnership adds first On-ramp solution to VSC Ecosystem.

Q2 - 2023

- Publication of list of 300+ devices compatible with VSC. (April)
- \$VSC Burn Mechanism Initialization (April)
- \$VSC Mining Rewards (April)
- \$VSC redemption at fixed price (April)
- Staking capability available for users (first 4 validators already verified) (june)
- Opportunity for community members to become PoS Validators (june)
- Launch of Web based portal to send, receive, stake, swap, bridge native tokens (\$USDV, \$VSC) (May)
- Fintech partnerships add On/off ramp solution to VSC Ecosystem (May)

Q3 - 2023

- Adding a level of support for Fitbit, Apple Watch, Garmin and 300+ others into the network (june)
- Major Exchange Listing Application process (july)
- Open Validation Nodes to Community (july)
- Expected Public Listing (august)

Q4 - 2023

- Expected Milestone: 200 Nodes migrating to Mainnet.

Q2 - 2024

- DDH Platform Initialization
- Monetization on DDH starts using \$VDC and burning \$VSC
- API & SDK Open Data Stream Deployment Institutional DDH Onboarding

Q4 - 2024

- Open Data Stream capability for Data Buyers with the deployment of API and SDK to pull data from the DDH Platform.

Q3-2023

- Private Sales to Institutional Investors.
- Deployment of Proof-of-Sensing Protocol, and Validation on Testnet.
- First group of Community nodes on Testnet.
- Milestone: 200 nodes move to Mainnet.
- Public Sale.

Q4-2023

- Deployment of Proof-of-Sensing protocol, and Validation on Mainnet
- Connect the first IoT Device with ECC. Chip-Capability.
- Mining migration to Proof-of-Sensing.

Q2-2024

- Open Data Stream capability for Data Buyers with the deployment of API to pull data from the DDH Platform.
- Onboarding first data buyers to DDH.

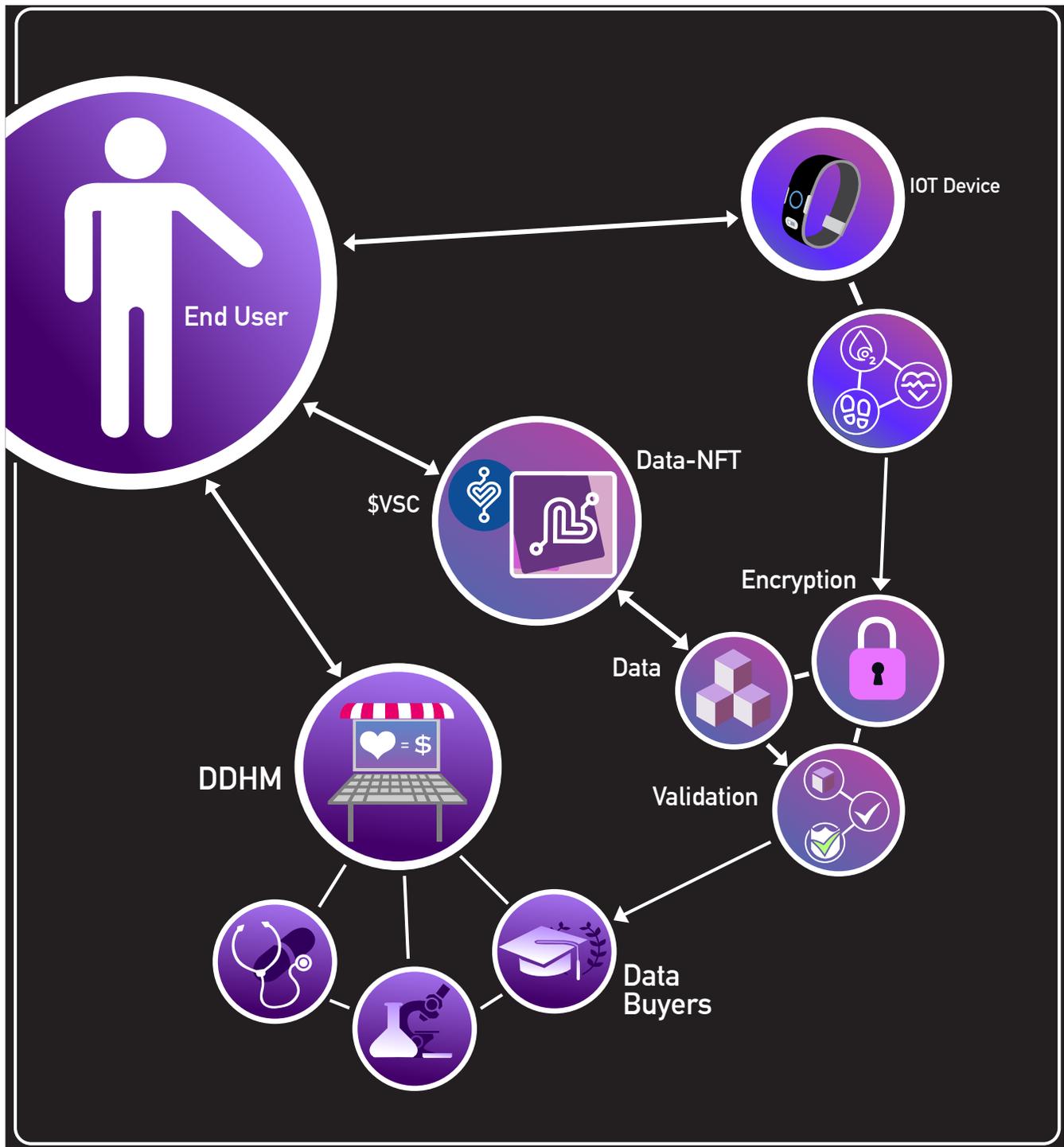
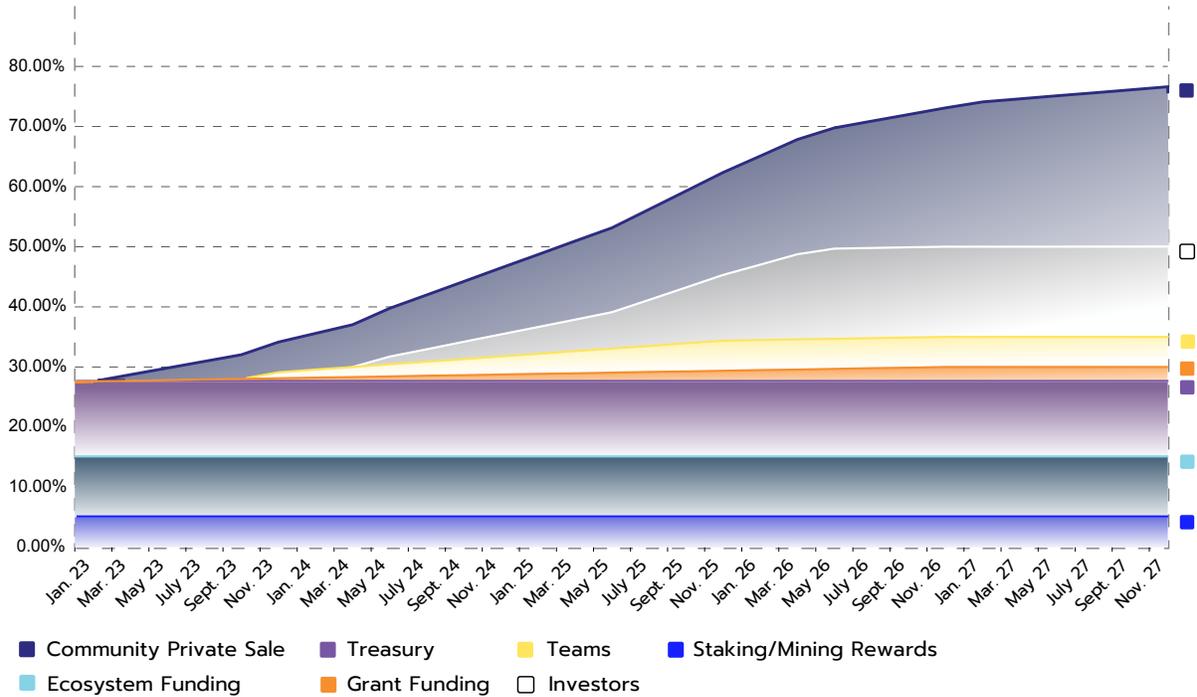


Fig. 1. Illustrating the Ecosystem of the Vyvo Smart Chain and the DDH Big Data Platform.

6.VSC Distribution



The Genesis Block of the Vyvo Smart blockchain is composed of 20,014,165,805 \$VSC, of which 50% of the max supply is allocated to the Rewards system over the next 40 years, and 50% to the initial distribution on investors, private sales, marketing, development programs, and Treasury.

Here is a breakdown of the distribution:

Rewards : (PoS, PoSe)

Initial distribution

20% data-mining (PoSe), 17.5% validation (PoS), 10% IoT, 2.5% Foundation Operations

Total: 50% dedicated to rewards

Initial distribution

25% investors, 5% ecosystem funding, 5% Team, 12.5% Treasury, 2.5% Grants

During first 4 years, 3,3M per day have been distributed since April 14, 2023 and will continue until the first half-ing event happening on April 14, 2027.

7. VSC Foundation and Team

Vyvo Smart Chain, or VSC, is a foundation based in Singapore with a core belief in building a future where data generators should retain ownership over their data and its value. With the aspirations of materializing this belief, VSC is creating a new digital sharing economy.

VSC redesigns how people’s health data is shared and monetized, giving back control to the people by providing the means for individuals to claim data ownership and its value, creating an environment that enhances trust and security. VSC can deliver sustainable, real-world impactful solutions by collaborating with its community and partners. With the opportunities to stem from this new digital sharing economy, VSC aims to remove unnecessary third parties and friction from these processes while unlocking human potential.

The Team

VSC's team wields a strong foundation made up of experts in their fields and future visionaries, leveraging their expertise to shape the future of data ownership, value, and innovation.

CEO & Co-Founder	CTO & Co-Founder	COO & Co-Founder	Chief Software Architect & Co-Founder
			
Fabio Galdi	Ivan Crnkovic	Mariana Krym	Hakan Kozakli
Head of Blockchain Development	Head of Systems & Network Security	Data Scientist	Advisor / CTO Vechain
			
Dorijan Jelinčić	Lijeesh Sd	Alan Kelly	Antonio Senatore

8. Conclusion

The value of the data we collect is enormous for the whole medical, research, and scientific community at large.

This data is collected from millions of people around the world of all different backgrounds, ethnicities, and lifestyles, all in real-time at any moment of the day. These data sets are rich with detailed insights into habits, locations, and environmental context in relation to the impact of measurable physical impacts, creating an unprecedented level of diverse data points to provide a global view of people's daily and over-time health and wellness measurements.

This is a massive amount of information that can be used for research purposes, discovery purposes, creating treatments, and following up on the performance and impact of changes by internal or external adoption of treatments and lifestyle changes. One of the main initiatives that a lot of pharmaceutical companies are working on is drug discovery platforms. This kind of platform uses a vast amount of data to have a fast-track path, to discover the viability and impact of new drugs and treatments.

We believe this is the future: the collection of health data in real-time with innovative sensors to provide immediate service to the individual user. Concurrently these efforts are providing a huge amount of knowledge and valuable information about millions of people around the world in different conditions for the scientific community to properly advance into the discovery of new treatments and new drugs and help people improve their health, all while maintaining rights of privacy and creating financial benefits for the original source of the data, the individual users.

Vyvo Smart Chain is to change the game when it comes to health and wellness with this new world approach of health self-management through wearable technology and the utilization of blockchain technology to ensure that the data being collected is owned and controlled by the user themselves.

It's how all the other sectors are already going, such as Finance going to DeFi, (decentralized finance), Corporations going to the DAO model (decentralized autonomous organizations) HealthFi is going to the Vyvo Smart Chain.

All this new focus on decentralization and ways to manage data are creating and defining our new future. We are on the verge of a big digital shift. And this is not just about technology. It's about society at large, the way we do things, and the value of our contributions to the betterment of society. There will be a great and big transformation in

many of the concepts that we are used to seeing every day. Even social networks with the introduction of Web 3.0 will not be the same as we experience today. The digital landscape is making its way into our daily lifestyles, but with the sole intent of bettering our living standards and serving our best interests.

The scenario for big corporations will change dramatically. We will see new players. Decentralized Autonomous Organizations and the communities behind them are going to really take control of the whole game. And so, we want to be at the vanguard of this revolution. Vyvo Smart Chain and the Decentralized Digital Health platform is going to be one of the big players in this movement.

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