BRAIN PULSE

Whitepaper

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Executive Summary

Chronic diseases cause 41 million deaths each year (World Health Organization), accounting for 71% of all deaths worldwide, and create a $4 trillion economic burden. Since the global outbreak of COVID-19 in early 2020, the number of mental illness patients has soared worldwide, exacerbating the chronic disease problem. Since the FDA approved the first digital medicine in 2017, digital medicine, characterized by replicability, personalization, and low-cost interventions, have become integral to the prevention, treatment, and management of chronic diseases. However, the complexity of digital medicine research and development and patients' cognitive habits remain challenges to digital drug development.

Brain Pulse is an open, global, community-governed Decentralized Autonomous Organization (Dao) for funding early-stage digital medicine research. Scientists present their research projects, find investors and industry partners. Patients participate in early and clinical studies, receive rewards and create chronic disease profiles. Entrepreneurs, scientists, and patients collaborate to commercialize research into different markets around the world. Investors in different regions of the world collaborate to complete investment research and projects while reducing risks. Our core mission is to accelerate the development of personalized digital medicines for the benefit of chronic disease patients around the world. Today, early-stage research is severely underfunded. The misalignment of the incentive between patients, R&D personnel, and the cooperation caused by the centralized routines has made the biopharmaceutical industry: sacrifice the well-being of patients in a monopolistic manner, makes R&D and investment more expensive. The creation of digital medicine includes intellectual property (IP), core technologies, trade secrets (know-how), research and clinical data, and patient health data. But centralized practices largely encourage bureaucratic monopolies and profiteering, and prevent the opening of research data to more researchers and entrepreneurs, essentially hindering cooperation and transparency, and depriving the public and patients of ownership of biopharmaceutical intellectual property.

In order to empower the development and investment of early digital medicine projects and allow more chronic disease patients around the world to access equal healthcare at a low cost, the Brain Pulse platform infrastructure is built on Ethereum to give stakeholders full access to the Defi ecosystem. It uses the novel approach of intellectual property NFT (IPNFT), personal medical record NFT (EHR NFT), and equity NFT (ENFT), allowing anyone to share the ownership of the project and future outcomes, such as intellectual property, royalties, data, and transaction dividends.

As an open global collaboration, Brain Pulse's goal is to support and fund new personalized treatments and research data. In exchange, Brain Pulse will directly own the intellectual property, data rights, and partial equity in the novel early-stage research. We use these rights to form investment portfolios through the platform to obtain revenue.

The lifeblood of Brain Pulse is its native governance token. Individuals or organizations can earn tokens by contributing work, funds, or other resources such as data and intellectual property. Token ownership allows holders to participate in Brain Pulse’s asset management and governance.

Brain Pulse's starter team comprises experienced investment veterans, healthcare professionals, and WEB 3.0 experts. The team inherits the best resources and experience of a decade of global technology incubation, acceleration, and investment from TMFOX. Starting in March 2021, the team will use offline and online methods to promote Brain Pulse's decentralized R&D collaboration concept in China and North America. Presently, many community resources and ground-breaking experiences have accumulated.

The Unmet of the Market

The chronic diseases is the result of a combination of genetic, physiological, environmental, and behavioral factors. More than three-quarters of global deaths caused by chronic diseases (31.4 million) occur in low- and middle-income countries, generating $4 trillion in annual economic losses and threatening the United Nations' 2030 Sustainable Development Plan, including the goal[1] of reducing the probability of dying from any of the four major chronic diseases between the ages of 30 and 70 by one-third by 2030. For example, mental health and substance use disorders have increased by 13 per cent over the past decade (to 2017), mainly as a result of demographic changes. About 20% of the world's children and adolescents have mental health problems, with suicide being the second leading cause of death for 15-29 year olds. In the post-pandemic setting, about one in five people has a mental health problem[2], as shown in Figure 1.

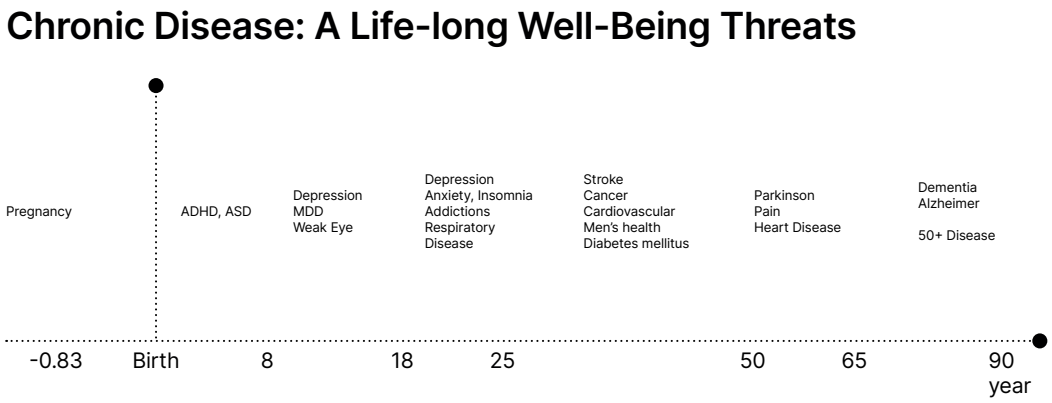


Figure 1: Age and Chronic Disease Distribution

Most chronic diseases occur outside the hospital and patients require ongoing interventions to change behavior and lifestyle. Effective solutions to chronic diseases often require frequent, personalized interventions, such as visits to a doctor every few months, weight loss, and exercise. Continuous intervention has traditionally been impossible due to cost considerations. While current health insurance incentivizes action rather than outcomes, these challenges contribute to the global prevalence of chronic diseases[3].

Challenges of digital medicine R&D

Research has shown that evidence-based digital medicines provide a potential solution for chronic disease management. Digital medicines are reviewed and approved by FDA and can be purchased over the counter or prescribed by a doctor. Insider Intelligence expects the digital medicine market to reach $56 billion by 2025. Due to the role of mobile technology and artificial intelligence (AI) in everyday life, the demand for digital medicines is growing across the healthcare ecosystem. According to McKinsey & Co: Technological developments provide more usable data, enabling advanced analysis and insights. Furthermore, there is growing evidence that digital interventions are effective. For example, a diabetes prevention study using digital therapy found that participants lost an average of 4.7% of their baseline body weight after one year (4.2% after two years) and had a 0.38% reduction in A1c levels over the same time frame. Although more than 5,340 digital medicine are in clinical trials worldwide, more than 40 digital medicine have been approved in the US, and Chinese regulators have accelerated approval of Class II and Class III medical devices, such as the FDA's 2017 Pre-cent program, yet the research and development of digital medicines still faces challenges like lack of funding, inter-agency bureaucracy, lack of clinical data, and lack of patient participation:

1. The complexity of the developing of digital medicine is that it combines clinical medicine, neurology, information technology and other sciences, making the development of digital medicine more challenging than traditional medicine or medical equipment[9].

2. Although universities and other research institutes are still the mainstay of digital medicine, obtaining authorization from universities or commercialization of research and start-up teams is still very difficult. This is because the university's management system has the final say, and currently there is no better solution.

3. Deloitte's study points out that the lack of sufficient patient diversity in drug research is the main reason for the deviations in drug efficacy results, and the current clinical approach or the selection of specific test subjects results in bias

in clinical outcomes.

Therefore, an open global collaborative R&D platform would help break down institutional barriers and allow markets to engage in direct R&D dialogue. Patient involvement in early research will facilitate the research and development of effective medication.

Silent Patient Medical Information

With the rapid development of Web 2.0, more than 70 percent of patients have turned into consumers, and tend to use various convenient tools to personally manage their health and disease and accumulate non-clinical medical data through wearable devices. However, the current mechanisms and techniques for managing health information leave the following issues unresolved:

1. Technology cannot uniquely differentiate between a patient's medical record and related health data.
2. After desensitization, patient data loses its role in product development, because only real-time updated clinical and health data is effective.
3. There is a lack of incentive mechanisms to ensure that patients are financially compensated for their medical data, or that their health, and that of their families, would be supervised on an ongoing basis.

Therefore, individual and family medical records are valuable assets for patients, not only for managing personal and family health but also for trading to facilitate scientific research. Patients actively involved in early research on digital drugs in exchange for the formation of personal (family) medical records (EHRs), can later use them as lasting exchangeable assets.

High-Risk Early-Stage Investment

From an investor's perspective, the amount of capital required for an early-stage project is often considered uneconomical, and for venture capital, the transaction costs for $250,000 and $2.5 million are surprisingly similar. Expense on staff time and legal & due diligence costs are nearly outweighed by fund management income.

For these R&D projects and early-stage projects that can not be financially

modeled, investors can not simply give their vote of confidence on a character basis. Additionally, investing in early-stage projects have long exit periods where investors are exposed to the risks of changing markets, technologies, and entrepreneurial teams. Furthermore, angel investors do not have bargaining power with the project side, and they are co-investors in most cases. Exit is the most troublesome thing for angel investors. Under normal circumstances, an angel project takes no less than 5 years before exit.

A business growth journey with transparent visualization of the whole process and real data can better reflect the investment value than traditional due diligence. Traditional forms of venture capital are discouraging most investors with their high costs and difficulties in exiting. They are looking for a sharing method with open, trusted, simple transaction capabilities.

Our Approach

As mentioned above, the Brain Pulse platform is built on the concept of WEB3.0 and related decentralized technologies, as an open community with transparency,global collaboration, fundraising,and commeralization for scientists, entrepreneurs, patients, and investors worldwide. Scientists can present their research projects, look for investments and collaborations. Patients are rewarded for participating in early and clinical research. Entrepreneurs, scientists, and patients work together to commercialize the technologies into different regulatory markets. Investors and investment funds decentralizes the work into key milestones.

The Brain Pulse platform infrastructure is built on Ethereum, giving stakeholders full access to the DeFi ecosystem. It adopts a novel approach of Intellectual Property NFT (IPNFT), Personal Medical Record NFT (EHR NFT), Equity NFT (ENFT), allowing anyone to share the ownership of the project as well as future outcomes, such as intellectual property, royalties, data, and transactions, as shown in Figure 2.

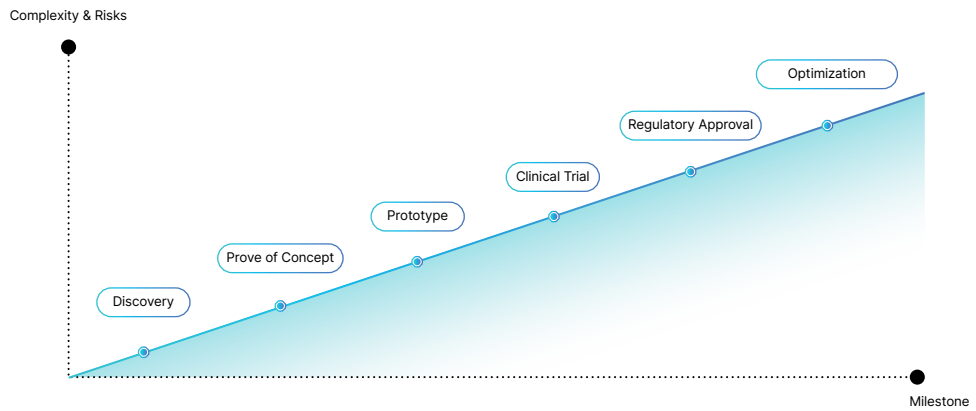


Figure 2：Brain Pulse Project Growth Path

Brain Pulse Ecosystem

Brain Pulse's ecosystem is built on an open platform where everyone involved in chronic diseases can participate. The platform also combines innovation, service,

and capital into the growth path of startups with critical milestones such as technology incubation, growth acceleration, and investment. (as shown in Figure 3).

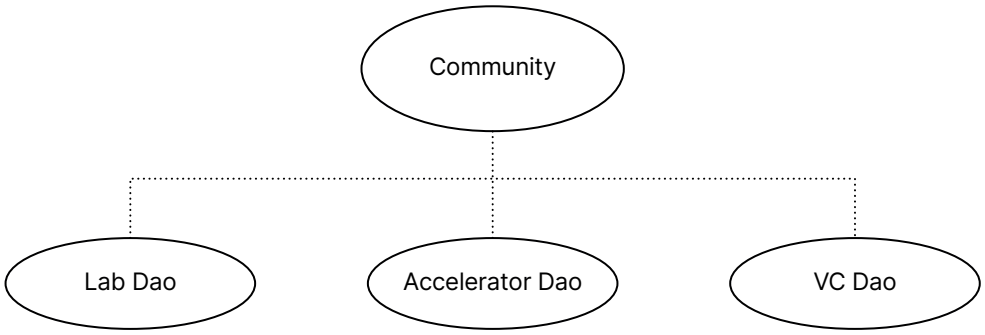


Figure 3: Brain Pulse Platform Ecosystem

All **stakeholders** gather in the community to vote on the governance mechanisms of Brain Pulse. The community is also a linker of global innovation, industrial, and capital resources, eliminating barriers to entrepreneurship and integrating values to serve the chronic disease worldwide. Communities are also venues for patient education, innovative exchange, academic research, and industry advancement.

The goal of **Dao Lab** gives scientists a start to turn their imagation into research proposal, help them organize the team, R&D resources, and funds needed for digital medicine research and development. At **Dao Lab**, scientists submit their ideas for vote, get funding, advance resources, and plan product pipelines.

In **Accelerator Dao** entrepreneurs present their business plans and work with teams of scientists to plan key milestones for commercialization and secure financing.

Small and medium-sized investors around the world focus on V**enture Capital DAOs**, screen projects and growth projects according to their own preferences and investment strategies, initiate investment proposals in the community, and once approved, form teams to complete due diligence and transaction structure design.

Brain Pulse Platform Architecture

The platform infrastructure is built on Ethereum, giving stakeholders full access to the Defi ecosystem. It can achieve full digitization at the key milestone of R&D products. At the same time, the price of the tokens issued by Brain Pulse can be anchored to the value of the legal currency of each key milestone. The Brain Pulse platform includes multilingual DAO communities, decentralized clinical trials, data collection and analysis, and decentralized investment modules (as shown in Figure 4).

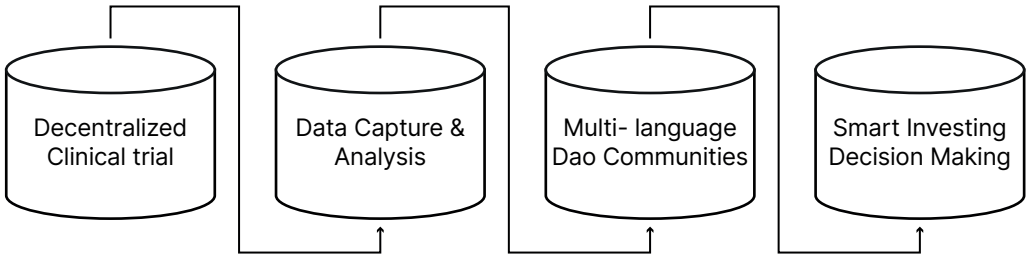


Figure 4: Functional modules

All participants should become members of Brain Pulse through the multilingual DAO community. They not only need to obtain a token pass to interact in the community, but also a variety of health testing tools to build their initial health profiles (EHRs). The **communities** are open markets for researchers, patients, doctors, entrepreneurs and investors to communicate and trade. Members interact through various themed seminars (roundtable forums, theme forums, industry insights, patient education), training, and proposal formation, and earn credit tokens (points) or tokens.

A **decentralized clinical trial** platform that meets different national regulatory requirements will help scientists and businesses continue to provide full-process, low-cost and efficient CRO services for clinical design, patient recruitment, patient relationships, compliance, and outcome reporting.

Data Acquisition and Analysis Module（**EDC**）The data collection and analysis module (EDC) collects clinical data and collects data generated by patients themselves. At the same time, the platform obtains digital marker data of chronic disease-related indications through bulk purchase and then forms the digital medicine development data and chronic disease management data.

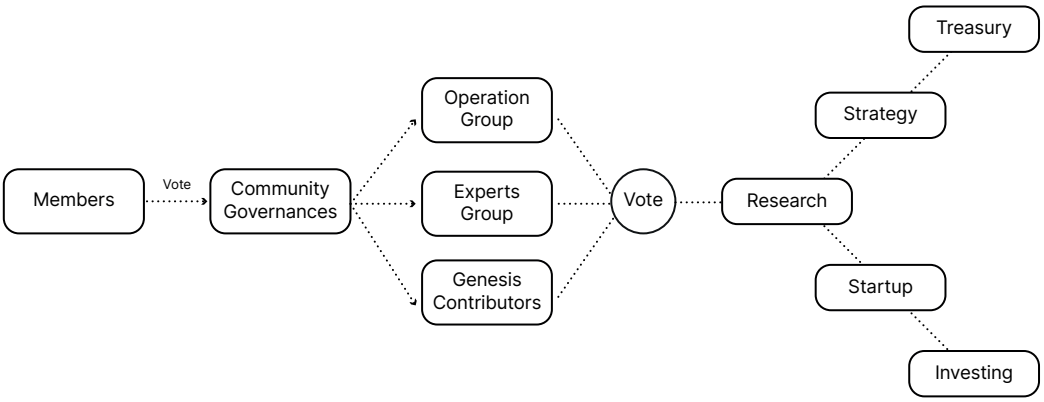
Investors around the world initiate investment proposals they are interested in in the decentralized investment module, and organize investment teams to conduct due diligence and design investment terms. The management before, during and post the investment is automatically completed, and investors can withdraw at any time through the bidding function.

Brain Pulse Governance

Brain Pulse's governance principles are Community-decentralized structures:

- The right to know.
- The right to profit.
- The right to vote.

Community members elect the community governance committee, and the community governance committee nominates the management committee, the compliance and risk control committee, the expert advisory committee, and the talent committee. In the incubation stage of the project, a combination of centralized decision-making and decentralized decision-making for critical issues is adopted, and as the technology and decision-making mechanism continues to mature, it will transition to fully decentralized decision-making.



Brain Pulse Finance

Brain Pulse holds various tokens, blockchain assets, and NFTs.

The $BPS is Brain Pulse's primary currency token, does not have governance voting rights, but has reimbursement rights, and can only be acquired through purchase, as well as using project tokens such as $BPC.

$BPC = Brain Pulse Convertible Token. As a convertible token, it will be converted into $BPS by a smart contract after expiration. $BPC has no governance voting rights and has priority reimbursement rights over $BPS. Eco-participation and contribution rewards, distributed in the form of $BPCs, are awarded for active participation.

$BPV = Brain Pulse Voting Token, as the platform's voting token, has the platform's governance voting function, but does not have the payment function, has the authority to submit proposals to the DAO organization for voting, has the authority to participate in voting, and is distributed by the DAO organization. After voting, $BPV can be converted to $BPC/$BPS/$BPS-X/$BPV (recovery), retrieving the tokens used for voting, or other agreed-upon tokens.

$BPS-X = Brain Pulse Startup – (Project) token, as a project token under the platform, it has full authority over the project, has the right to vote on the governance of the project, but does not have the right to vote on the governance

of the platform. $BPS-X can only be minted after obtaining enough $BPS investment through the project. After the minting is completed, $BPS-X, as a sub-class of project token, belongs to the DAO platform's project.

Brain Pulse NFT is tied to $BPS-X, and each NFT will fall under the management of the R&D $BPS-X DAO.Content with intellectual property rights, no governance voting rights, reimbursement priority second only to $BPC, and ownership of IP and content contained in NFT.

Brain Pulse NFTs are obtained only by uploading the product's results to the platform system through the project being invested.

To mint an NFT, a minting request must be made by the project DAO, which is sent along with the NFT minting request when the results are submitted.

	$BPS	$BPC	$BPV	$BPS-X	NFT
	Platform Token	Convertible Token	Voting Token	Project Token	Project IP Token
Holder	Funding Side	Contributor	Governance Team	Project Team	Project DAO Token
Platform Governance Rights			Can Vote		
Project Governance Rights				Can Vote	
Upward Convertibily		By Default	By Vote	By Proposal	No
Platform Token	Yes	Yes	Yes		

Project Token				Yes	Yes
Intellectural Property			Yes		Yes
Downward Covertibility	No	No	No	No	No
Acquisition Method	Purchase	Task Reward	Award / Invitation	Token Exchange / Task Reward	Results Submission
Function		Conversion	Voting / Conversion	Conversion	Transferability
Supply Cap				100k	1 NFT

Token Technology Stack

- Stage 1: Token development based on Ethereum public chain
- Stage 2: Token Deployment to Other Public Chains

Token Conversion Scenario

- Scenario 1: Smart contract conversion, automatic execution of conversion mechanism according to the contract attributes
- Scenario 2: Voting conversion, by providing voting proposals, the execution time of the contract and the early execution conversion or cancellation
- Scenario 3: Both parties agree to make conversions or to conduct transactions on the open market

Token Authorization Mechanism

- $BPV Voting Rights - Can propose and vote on the governance of the platform
- $BPS-X Voting Rights - can propose and vote on specific details of the project

Brain Pulse tokens are lifeblood of our ecosystem, and the token issued are tied

to each stage of the project and also reflect real market valuations in the capital market. In the first phase, 20 million tokens will be unlocked and serve as proof-of-concept for Brain Pulse.

Token (10k)		Stakeholders
1200	60%	Treasury
400	20%	Operation Group
200	10%	Genesis Contributor
200	10%	Expert Group (Vote)
2000	100%	Brain Pulse Dao

Benefits

Brain Pulse first hopes to create a borderless collaboration space for scientists, entrepreneurs, and investors around the world. The successful execution of the project will help them break through the incumbent cooperation model, allowing technology and industrial globalization to break through time, space, and cost constraints, while confronting project risks generated by geopolitics and ideology.

Brain Pulse also doesn't want community participants to spend more time and money building trust, which will help everyone reduce transaction costs and thus increase their respective marginal benefits.

Brain Pulse's platform supports all stages of technology, from R&D to clinical testing. This feature is not only a cost saving of at least 30% for scientists, investors and entrepreneurs, but also more efficient than the original method.

Token holders of Brain Pulse will benefit from the growing number of platform investment and transactions, including intellectual property (IPNFT) transactions, equity financing (Equity NFT) transactions, token transactions, and data transactions. Token holders will also profit by issuing project-based funds and mergers and acquisitions (M&A) funds through the platform.

Risks

In the current environment, Brain Pulse is only effective for those who have knowledge and awareness of WEB 3.0, and for those who do not, a lot of effort is required. At the same time, the public's perception of Bitcoin, and the impression of cryptocurrency "virtual money" and speculation vehicle can lead to misunderstandings about Brain Pulse and the project's original intentions.

Although the founding team has a long experience incubating cross-border technology projects, this does not mean that the offline centralized model applies to the online decentralized model.The founding team wants to be able to experiment with this new model with people who are brave enough to try and make mistakes.

Brain Pulse Trial & Error Principles:

1. Step-by-step implementation to reduce input costs.

2. In addition to community governance, other community functions are first run offline and then ported online.

3. The Brain Pulse business itself is profitable.

Brain Pulse Trial & Error Key Points:

1. Run through an IPNFT, and then revise relevant protocols and business processes to replicate 1-10 projects, including cross-border collaboration.

2. Run through an equity stake in NFT, then revise related protocols and business processes to replicate 1-10 projects, which also includes cross-border investments.

3. Simultaneously test the Chinese community and the English community.

Brain Pulse Community Co-Building Invitation

Thanks to the pioneers of Web 3.0 for their inspiration and trial-and-error experience. Just like the industrial revolution brought about by the Renaissance that was spawned by the darkness of the Middle Ages, once the wisdom of the masses begins to break through the shackles of centralization, it will inevitably usher in a new era. We are a group of idealists with business acumen in tireless pursuit of medical technology innovation. We hope to work with like-minded people to build an open community of personalized digital medicine and save the lives of tens of thousands of patients with chronic diseases.

Brain Pulse is still in its development stage and can be further improved. We sincerely invite people from all over the world to help us identify problems and make suggestions for improving Brain Pulse's governance mechanism, platform development, technology tools, digital drug development, investment innovation, and community operations.

You can submit your suggestions through the **www.brainpulse.cc** website. Suggestions adopted by the team and incorporated in the white paper will be rewarded with 100k BPC tokens from our incentives fund. Your reward will be confirmed by email and cashing it out will be possible via our digital wallet, once the platform token starts being publicly traded.

Founding Team 2022

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