Grability

New Paradigm of the Internet

Whitepaper ver 1.3 / English

grability.io

Grability Pte. Ltd.
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Gravity Whitepaper
1. Vision

“New Paradigm of Internet

We strive to shift Internet Paradigm from Centralized to Distributed Network.”

Anyone can share computer resources through already-possessed idle devices such as smartphones, tablets or PCs, and will be able to contribute in building public Blockchain and transform the Internet paradigm from a centralized system to a distributed network.

Grability is a public Blockchain project, for the transformation of the Internet paradigm from centralized network to a distributed network. Current hardware performance has improved dramatically, even enough for smartphones to have better performance than previous servers. However, it does not use 100% of storage space or computing power. Anyone can share computer resources through already-possessed idle devices such as smartphones, tablets, and PCs, and users can receive rewards as much as they provide resources, and DApp developers can use the shared computer resources to operate services at a lower cost. When the Grability project reaches the commercialization stage, anyone will be able to make the use of distributed nodes to switch the Internet paradigm.
2. Introduction

2-1. Intro

Abstract: From the birth of Internet in the 1960s, it took more than 30 years to be commercialized. The Blockchain technology has developed from the start of Bitcoin in 2009, but Blockchain technical-performance still need improvement and be standardized in order to be commercialized. Just as the Dot-Com Bubble of the early 2000s, many IT companies attempted to fuse with many transitional Blockchain technology to create Blockchain businesses. Likewise, Internet businesses cannot grow without the Internet technology, and Blockchain-based business market will be difficult to establish until the development of Blockchain technology.

Grabity is committed to becoming the standard protocol with the priority of developing public Blockchain. Grabity will build a truly decentralized network optimized for P2P communication for commercializing simultaneous transaction processing and distributed storage technology through Genesis Hoisting and Defrag Function technology.

Precautions: The cryptocurrency token (GBT) mentioned to in this paper refers to the tokens available on the Orbits Network main net, not the ERC-20 tokens based on Ethereum Blockchain.

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2-2. The Paradigm of Internet

The current Internet technology of global network built on the TCP/IP protocol, was developed in the 1960s and widely commercialized in the 1990s

The 1960s history of Internet began with the structure of packet-switching network. The first paper on the current computer-mediated communication method of packet-switching theory was published in 1961 by Leonard Kleinrock from MIT. In 1969, a protocol for internetworking was developed where several distanced networks could join together on a single network.

With the appearance of PCs and 1200bps modems in the mid 1970s, a decentralized model of CMC (computer-mediated communication) network emerged. Meanwhile, the development of Ethernet made a big contribution to the expansion of Internet users. This is a kind of Local Area Network (LAN) expansion, and it is the most standardized model of the current Internet network. Until the 1970s, the scale of the network began to expand dramatically from the development of standard systems and applications.

However, since the 1980s, the management and employment of the Internet became a big problem. Accordingly, systems that respond to environmental changes were developed, e.g. DNS (domain name system). Initially, only a single host table was sufficient because of the small number of hosts, but as the number of hosts increased, it became difficult to remember the host’s name and address, and the DNS (Domain Name System) was developed and introduced in 1984 when the number of hosts exceeded 1000. In 1983, the Internet Protocol Suite (TCP / IP) was standardized with two functions: IP for carrying packet, and TCP for controlling the flow and adjusting lost packets.

It has been since the 1990s that commercialization has progressed and expanded in full-scale to the public. The number of hosts exceeded 10 million in 1989 but reached over 30 million in just one year. At this time, the first Internet search engine, Archie, was developed, and for the first time a commercial Internet service provider (ISP) emerged. The decisive moment for the commercialization of the Internet was established when the World Wide Web was developed and distributed since 1991, and the reason for the development of the Web was to provide convenience to users for development of browsers.

Since the mid 1990 ‘s, the Internet has had a great impact on culture and commerce with the increase of users’ easy accessibility of the Web, the spread of low-cost and high-performance PCs, and the expansion and development of communication infrastructure. This emerged the World Wide Web of blogs, social media, online shopping malls but as well as E-mail, instant messaging and video calls.
2-3. Blockchain Technology

Blockchain is a distributed data-storage technology that verify records of transactions that are transparently recorded on the ledger and replicate and store it into multiple nodes so that anyone can access, in order to prevent from hacking.

Blockchain is a distributed data-storage technology that verify records of transactions that are transparently recorded on the ledger and replicate and store it into multiple nodes so that anyone can access, in order to prevent from hacking.

The problem with the centralized financial system was revealed from the Global Financial Crisis in 2007. In 2009, Nakamoto Satoshi proposed the Blockchain technology to deviate from centralized financial capital power of dollar as a mean of fulfilling personal financial transactions in an unreliable P2P environment.

Blockchain, also called the public transaction ledger, is a distributed data-storage technology that connect blocks into a chain format, and replicate and store into many computers at the same time. Instead of keeping a record of transactions on a centralized server, all users participating in the transaction are able to hold the same transaction record, and every participant share the same transaction record whenever a transaction is made to prevent data tampering or alteration.

This Blockchain technology is applied to Bitcoin, and transparently record transaction details on the ledger that anyone can get access, and verify the record every 10 minutes to prevent from hacking. Bitcoin is processed completely anonymously, and anyone with a computer or has access to the Internet can own an address.

With the development of Ethereum by Vitaly Buterin in 2014, the Blockchain underwent a major change. Vitaly Buterin, who forked the Bitcoin and built Ethereum, implemented the Smart Contract, which record contract terms in Blockchain and automatically trigger contracts when conditions are met. The use of Blockchain technology has been enhanced by Smart Contract that can be applied to the overall industry as well as financial transactions.
2-4. The Evolution of Trust on the Internet

Technological trust and reliability are needed for the new paradigm conversion of Internet. Current Blockchain technology will evolve through decentralization to a distributed structure.

Assuming that a new paradigm has been created by development of a particular technology, what elements are needed for the paradigm shift? The power to interchange from old to new is trust. The current Internet is centralized. In addition, forging the Internet is easier than counterfeiting in the real world. But most of use desire fair trade and trust the possibilities of the Internet. Such trust and reliability should not be broken down by some malicious people, and must be established with a more reliable Internet society even with some loss.

Due to the Blockchain technology, the centralized Internet is shifting to a decentralized structure. Typically, cryptocurrency is being applied, and uses the method of storing financial transaction details in a block, sending transactions records to all users participating in the transaction, and using countermeasures against data counterfeiting. In addition to electronic payment and digital authentication, it can be applied to various fields requiring reliability and trust such as cargo tracking system, P2P loan, electronic voting, vehicle sharing, and medical record management. Currently, it is accelerating through the Ethereum platform, but the limitation of increase in platform-usage cost, transaction processing speed and storage space still needs to be solved.

However, the decentralized platform now reverts to a centralized structure in terms of governance, distribution of tokens, project operation and management, and also DApps operate in a centralized server as hybrid structure. The development of Distributed Ledger Technology (DLT), in which each node in a distributed network shares and keeps synchronizing database without the control of a central server or a central manager, will lead to the realization of a truly decentralized network consisting of nodes out of the server-client structure.
2-5. The Future of Distributed Ledger Technology

Nine years have passed since Bitcoin was developed since 2009. How will Distributed Ledger technology evolve in the future? When will it be widely commercialized? This can be predicted by the development and commercialization of Internet technology. By 2020, various Distributed Ledger technology will be developed and DLT will be standardized after 2020, and DLT will be commercialized and used throughout the industry in 2025.

Arpanet that started as Internet in 1969 was standardized around the world at 1983 after 14 years of development in Internet technology with a protocol called TCP/IP. From which 8 years later in 1991, the World Wide Web (WWW) was developed, distributed and commercialized. Since then, the “dot-com bubble” has occurred between 1995 and 2000, and many have started to plunge into the Internet business. However, many IT companies have tried to converge too much into transitioning Internet technology, and many venture companies have gone bankrupt since then.

Currently, the Blockchain industry has experienced a bubble economy like “dot-com bubble”, with technological development and attempting to commercialize it. Without trust and reliability in the Blockchain technology, it is difficult for people to accept the new paradigm, which is also linked to the structure of a market (commercialization). Like the development of the Internet industry in the early days, the Distributed Ledger Technology will go in a similar direction. However, it can be predicted that the Distributed Ledger Technology will progress several times faster because it uses the existing Internet infrastructure. As Internet businesses cannot exist without the Internet technology, businesses that use Distributed Ledger technology can expand only after the development of Distributed Ledger technology in real life. The challenges faced by the commercializing the Distributed Ledger technology are as follows.

First, the transaction processing speed need to be faster (Scaling Issue). The current speed limit can be seen from Bitcoin (7 TPS) and Ethereum (20 TPS). Like the ‘Crypto Kitty incident’, Ethereum has experienced several paralyses of the network due to low throughput speed when traffic is flooded. In order to be used as real life source of Web, it should be accompanied by a more fundamental structural change than additional development of technology such as SegWit, Lightening, Raiden, and Sharding.
Second, the cost of use (gas fee) should be improved. Ethereum is being implemented on the Blockchain, both in the recording of the Distributed Ledger and in the Smart Contract execution. Each time a request is made, you will be asked for gas. Just as, not paying every time for using the Internet, we need to improve our current payment structure in order to commercialize.

The third is data storage efficiency. Constantly generated ledger, Smart Contracts, and junk data are stored forever in the Blockchain, and all full Nodes must store all of the data accumulated from the Genesis Block which is over 1 Terabyte of current Ethereum. As the capacity of the Light Node exceeds 150 GB, the entry barriers increase and the overall network efficiency decreases. It is necessary to store them efficiently. Data integrity is guaranteed, but a more efficient data storage structure is required.

The fourth is to create a fully Distributed DApp structure. Currently, the DApp structure is formed into a hybrid application of App and DApp (decentralized application). DApp’s database is stored in a Blockchain structure, and the executable codes run on the central server which the data can be protected through the Blockchain, but if the central server is disabled, the whole system will crash. Not only the database, but DApp’s source files need to be processed in distributed structure.

The fifth is to create a universal Blockchain development environment. It is difficult for Ethereum to introduce more DApp because of the increased barriers to enter from less-dissolvable language (Solidity) in a limited environment. If you provide a development environment in a more common language, many developers will easily participate and develop a lot of killing App.

Finally, it is multiple integrity verification. The current Blockchain network structure has become somewhat centralized. Projects adopting Proof-of-Work are controlled by the foundation and mining pool operators. The Proof-of-Stake has a capital-based encroachment structure and the Delegated-Proof-of-Stake is not governed properly and is eventually controlled by a handful. In other words, integrity verification and consensus must take place by the majority, so that the Blockchain with the true meaning becomes valid and centralized, and become degraded to the structure that takes over the system. To maintain a true decentralized system, multiple Nodes must evolve into a structure that can participate more to the system.
3. Project

3-1. Orbits Network

Concept

The truly distributed system optimized for wireless communications

The Orbits Network is Grability's decentralized main net that draw a truly distributed P2P network by utilizing all wired/wirelessly connected idle computer resources. Transactions from Orbits Network are managed efficiently through using Genesis Hoisting technology, which can process transactions simultaneously and quickly. In addition, Smart Contract and resource files can be stored in separate portions into each by using the distributed storage technology and Defrag Function technology that can recall each part and execute in a streaming format.
## Architecture

<table>
<thead>
<tr>
<th>Num</th>
<th>Layer</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Network layer</td>
<td>P2P-based overlay network. Verify and then propagate the transactions between nodes through the layer. The principal is to make the most use of basic network bandwidth.</td>
</tr>
<tr>
<td>2</td>
<td>Data Layer</td>
<td>Blockchain data structure and physical storage space. Includes Merkle Tree, Hash Function, Data Block, digital sign and etc. that store blocks and DApp files containing the transaction history.</td>
</tr>
<tr>
<td>3</td>
<td>Consensus Layer</td>
<td>Node that generates a transaction directly verifies its own transaction, and the transaction that has been verified by majority of certain nearby nodes is generated as a block. This is distributed to other nodes, and if there are any nodes that is determined to be malicious attacks, the transaction details are initialized and synchronized to the verified transaction details.</td>
</tr>
<tr>
<td>4</td>
<td>Application Layer</td>
<td>Provide the application interface on top of the Blockchain. Smart Contracts, virtual machines, DApp, etc. are included and directly linked between the data users.</td>
</tr>
<tr>
<td>5</td>
<td>Management Layer</td>
<td>Toolkit and SDK are provided to form the development of ecosystem and located the 3rd Party.</td>
</tr>
</tbody>
</table>

## Nodes

<table>
<thead>
<tr>
<th>Node</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Node</td>
<td>Node that possess all transaction details and resource files. Super node guarantees data integrity, synchronizes the micro node and the macro node, and sends hash codes to the micro node and the macro node to determine whether the file is forged or falsified when accessing the Smart Contract.</td>
</tr>
<tr>
<td>Macro Node</td>
<td>Node that participate in Orbits Network to obtain GBT. Macro node processes and verifies other node's transactions, and stores and provides source files.</td>
</tr>
<tr>
<td>Micro Node</td>
<td>Node that shares transaction history and simultaneously processes and verify its own transactions and others' transactions.</td>
</tr>
</tbody>
</table>
Feature

The main features of the Orbits Network consist of four things: Simultaneous Transaction, Distributed Storage, Genesis Hoisting and Defragment Function.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Process</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ledger</td>
<td>Simultaneous Transaction</td>
<td>Genesis Hoisting</td>
</tr>
<tr>
<td>Source file</td>
<td>Defrag Function</td>
<td>Distributed Storage</td>
</tr>
</tbody>
</table>
3-1-1. Simultaneous Transaction

The sequential transaction-processing structure has limitations in the processing speed that cause problems in scalability. The fundamental way to address scalability issue is to handle simultaneous transactions. The simultaneous transaction processing is to be implemented on the Orbits Network and is in a producer-structure in which a node becomes the transaction generating, processing and verifying user. This solves the problem of scalability because the number of nodes that process and verify transaction also increases as the number of transactions increases, unlike the existing methods in which the network is overloaded as the number of transactions increases. The simultaneous transaction processing structure overcomes the need to collect and process transactions, creating a single block at the same time as generating a transaction and storing it in each node, that is responsible for processing including itself when the block is validated.

3-1-2. Genesis Hoisting

As the current Blockchain structure grows over time, the size of the distributed storage accumulated in each node increases equally, thus reducing the efficiency of the entire network and reducing node scalability. However, it is essential that many nodes participate freely in order to commercialize the Blockchain. Genesis Hoisting was devised for this purpose. Genesis Hoisting is a technology that sets up the distributed ledger and transfer all blocks to the super node when the storage space of the devices of each node reaches a certain amount. The term Genesis Hoisting is used to refer to the process of overwriting file after the calculation of providing a block index number that is one higher than the existing block in the process of overwriting the file after calculation.
3-1-3. Distributed Storage

Current DApps store database in the Blockchain and the source files are stored on a central server. Due to the fundamental limitations of the Blockchain technology and communication technology, it operates in a hybrid structure. This structure can be protected through Blockchain to some extent but is still at a vulnerable state, but when the central server becomes disabled, the whole system will collapse. A truly distributed application should allow source files to operate and store in distribution. However, an efficient storage system and processing system is needed in managing the source files in the Blockchain because the capacity increases exponentially. Unlike the existing structure in which functions are stored in the entire memory and reading the contents of a particular function, the program source on the Orbits Network have their functions hashed and stored in basic units.

3-1-4. Defrag Function

Defrag Function is a technology that can recall distributed DApp source files in real-time streaming format. The distributed storage of the functions, that comprise the program source and the basic unit, prevent modulation by comparing the hash values of the functions with other nodes. Because Defrag function does not need to save all the original source files, it does not need to save functions that are not used or used infrequently, thus reducing the burden on storage space and keeping the network efficient.
3-2. Planet Wallet

Planet Wallet is the node client and official wallet of the Orbits Network. In order to secure the users, Planet Wallet will be released before the launch of the main net with the function of transferring token conveniently through mobile phone number, along with storing and transferring token in the application between exchanges. After the main net launch, node application function and DApp Store will be added.

3-3. SDK (Software Development Kit)

Existing APPs and developers will have time and money to develop and apply the blockchain independently. However, if you use the software development kit (SDK) of the Grabity, you can easily apply the blockchain to existing services. The SDK of Grabity can be applied to more than 90% of existing APP services, and the SDK language provided is as:

- Swift
- Java
- iOS
- Android
3-4. DApps

The value of the main net depends on the number of DApp. Most DApp users come from existing application users, so Grابity provides a familiar DApp Store for existing application users. Since the essential requirement to use DApp is the unrestricted storage space and transaction of tokens, DApp Store will be released on PC and mobile versions associated with other wallets and exchanges. The DApp Store is classified into various categories such as game, finance, social networking, media, health, education, music, etc. and the ranking system is based on an algorithm that comprehensively consider daily average number of users, satisfaction, transaction, and development.
4. Ecosystem

The Grability ecosystem consists of nodes, community, DApp, and platforms, and each institute contributes to the ecosystem based on the token economy. We present the token economy and various requirements for the ecosystem to function and develop as follows.

4.1. Token Economy

**Demand for GBT**
1. Consumers who need computer resources should purchase GBT.
2. Need to purchase GBT to participate the in the ICO on the Orbits Network-based DApp
3. GBT is DApp’s main currency, and if DApp’s users increase, demand can increase.
4. The reward for providing computer resources after the main net launch can be expected to increase the demand for GBT, determined from the additional computer resources and GBT.

**Supply of GBT**
The initial 10,000,000,000 GBT for the development and operation of the project are issued from the Ethereum network. The ERC20-based GBT will be replaced with the Orbits Network-based GBT after the main net launch. In addition, since the main net, GBTs are issued in addition to consideration of the inflation rate for the purpose of compensating computer resource providers. The rate of inflation can be flexible, but will be determined in a way that does not exceed 5% to protect token holders and ecosystem participants.

**GBT ecosystem entry incentives**
The consumers of computer resources can use the Orbits Network using GBT for less than the cost of building or maintaining existing servers, and the provider of computer resources can obtain GBT by providing Orbits Network with idle resources or extra devices of their own devices.
5. Token Sale

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Total Volume</td>
<td>10,000,000,000 GBT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sale Volume</td>
<td>3,000,000,000 GBT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of sales Token from total Token</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard Cap</td>
<td>15,000,000 USD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

※ The GBT distributed to the Grabity Team will be settled through 2 years and we promise to carry out the Grabity project faithfully
※ There is no separate lock-up period after the distribution of tokens, which applies equally to bonus volumes. (Even if you purchase at the same stage, the timing of token distribution may differ depending on the time of purchase.)
※ Each sale stage can be closed early and there may be a change in schedule.
※ Cryptocurrency is not legalized as in reality currency. Cryptocurrency is also available 24 hours a day, 365 days a year, and there are no limits to the price, which can change diversely and dramatically due to changes in markets, economy and regulations around the world. Cryptocurrency Investment does not guarantee gains and losses that are attributed to you, so please refrain from unreasonable investments and make a careful decisions.

<table>
<thead>
<tr>
<th></th>
<th>EarlyBird Sale</th>
<th>Pre Sale</th>
<th>Public Sale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule</td>
<td>2018.11.19~</td>
<td>2019.02.22~</td>
<td>2019.04.19~</td>
</tr>
<tr>
<td>Bonus</td>
<td>20~18%</td>
<td>15~10%</td>
<td>5~0%</td>
</tr>
<tr>
<td>Category</td>
<td>Percentage</td>
<td></td>
<td></td>
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<tr>
<td>---------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Token Allocation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Token Sale Event</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner &amp; Advisor</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grability Team</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EcoSystem</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Use of funds</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EcoSystem</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Development</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Token Allocation**

- **30%** for Token Sale Event
- **20%** for R&D
- **20%** for EcoSystem
- **10%** for Business Development
- **10%** for Marketing
- **10%** for Partner & Advisor

**Use of funds**

- **50%** for Development
- **30%** for EcoSystem
- **10%** for Marketing
- **10%** for Business Development
- **10%** for Partner & Advisor
6. Roadmap

2018 Q4
Winner of World’s First BlockChain Survival “Block Battle”

2019 Q1
Smart contract Deploy ERC20 based Token issue Grabyt Pre-Sale

2019 Q2
Grabyt Public-Sale Listing of exchange

2019 Q3
Planet Wallet Launching Network Layer Development

2019 Q4
Data Layer Development

2020 Q1
Consensus Layer Development

2020 Q2
Application Layer Development Toolkit & SDK Development Block Explorer Development

2020 Q3
Testnet Launching Management Layer Development

2020 Q4
Mainnet Launching

2021 Q1
DApp Store Launching
7. Team

Jangwon Lim
Founder & CEO
Gravity's father. Graduated from Seoul Science High School and majored in biotechnology at Indiana State University in the U.S. as a 10th year entrepreneur in IT security, consulting and trade. “It’s the most attractive art to be good at business,” said Andy Warhol, who dreams of becoming an artist who makes new works with his teammates.

Junho Lee
Co-Founder & COO
Since he was interested in start-up in his early 20s, started his business career when he was a student at Soongsil University. In 2017, joined the company as a founding member of 300celebs, an influence chat app, and was responsible for operation, marketing, and planning. Later, being attracted by the appeal of the blockchain, the Gravity Project was launched, and is now in charge of the overall operation of Gravity.

Eddie Bak
Co-Founder & CTO
Firmly believe that IT services, which are new, meaningful, and fun, are increasing their chances of success based on a number of failure experiences in the startup industry, which has become attracted to changing the world. Always felt a lack of development, so I have feelings of affection and grateful that I can spend a day as a developer today. Participated in the design and development of services such as fashion style suggestions and shared social media (magazine look), emergency notification applications (smart silver lining), and late-night car wash management solutions (washerman) for apartments.
Jacob Park  
Develop Lead  
Majored in medical engineering. Since I was a student, entered the current business and worked as a developer. Possible to develop android apps, IOS apps, java, php, javascript, etc. Main construction was in charge of developing the SK Telecom IOT product Petfit through Android app and heterogeneous communication. Since then, the company has developed Android apps such as cash balls and chiffons, and IOS apps. Currently leading the development team as head of the development team.

Se-il Jeong  
Software Engineer  
Although majored in law, started studying as a developer because curious about the IT industry. Starting with HTML and CSS, focusing on PHP and Javascript. During the process of website and native app development, the company was responsible for developing Restful API server using website publishing and PHP and is currently working on a project using Vue.js and Node.js.

Keunyeong Yun  
Software Engineer  
Graduated from the IT department of the Ministry of Information and Communication. Started as a front-end developer and has experience in creating ERP systems from platform builders. Joined the Grability Team in 2018 with interest in blockchain technology. Retention techniques include HTML, CSS, JavaScript, and Vue.js.

JeongHyun Choi  
Android Developer  
Studied development by myself for two years because I couldn’t solve the question of development by school alone. Mainly developed Android platform and developed Mobile Wallet that can exchange token using testnet because it is interested in blockchain Eiderum platform.
Kyusong Moon
ios Developer

Since I was a student, I have become interested in programming with various experiences such as game programming, media art, 3d modeling, micro controller. I try to develop a single line of code with care - as Grady Booch said, “Clean code reads like well-written prose.” I have experience in developing applications that visualize footprint low-pressure sensor data from a wearable device company.

Donghwa Kang
Design Lead

Majored in Digital Art, a department of media creation. Career in performing media art, stage video, and field operator. Attracted to platform construction and studied UI design and Html /Css /Javascript to build various works for platform company. In 2018, Became a member of Granity. Currently, working on design such as Wallet, Block Explorer, and DApp.

Jack Lee
Chinese Marketing Manager

Three years of experience in the development department of China’s Nike OEM company, and has experiences such as exchange of Korean, Chinese, and other activities. Joined Granity, interested in blockchain technology, and responsible for Chinese and overseas marketing sales. Developing blockchain overseas markets that are part of communication with China.
8. Advisors

Hajin Jhun  
Chairman of the Blockchain Association  
From 1998 to 2001, served as the CEO of HAMCOM, and as the 19th National Assembly member in 2012, and now serves the development of blockchain industry as the chairman of the self-regulation committee of the Blockchain Association.

Leo Liu  
President of IDCM  
Leo was previously an ultra high net worth director at UBS. He has 10 years experience in asset allocation for wealth management, fund establishment and equity investments. Leo holds a DBA from Grenoble École de Management, France. He is currently the president of the IDCM Exchange.

Duksoo Kim  
Founder & CEO  
Over 20 years of experience in IT and security services. Currently in charge of CTO of AMO team that wants to utilize blockchain and establish a platform that shares values of vehicle data.

Minwoo Nam  
Cloudbric  
Over 17 years of IT development experience and is currently the Head of Blockchain Development, Assistant Director of Cloudbrick Project.

Junwoo Kang  
Hexlant  
Samsung Electronics has developed EMS web front and backend, and obtained algorithmic professional rating. As a co-founder of Hexlant, responsible for the development of Token Bank and Hexbp, and is involved in various developments.
**Sunghyun Moon**  
Xblocksystems  
Over 13 years has been in IT-based service and solution business, and has worked for Pentasecurity. Currently, director of strategic business at X Block Systems and is developing multi-dimensional blockchain platform and ASTON Foundation platform.

**Leon Kim**  
Blockmon  
Founder and CEO of Bolt Lab. Partner of BitSonic Labs and is in charge of investor relations on the BitSonic Exchange.
9. Partners
10. Legal Disclaims

Please read this entire section carefully. If you are in any doubt as to the action you should take, please consult your legal, financial, tax or other professional advisor(s).

10-1. Legal Statement

(a) This whitepaper (“Whitepaper”), in its current form, is circulated for general information purposes only in relation to the Grabity project as presently conceived and is subject to review and revision. Please note that this Whitepaper is a work in progress and the information in this Whitepaper is current only as of the date on the cover hereof. Thereafter, the information, including information concerning the Grabity project business operations and financial conditions, may have changed. We reserve the right to update the Whitepaper from time to time.

(b) No person is bound to enter into any contract or binding legal commitment in relation to the sale and purchase of Grabity Coins (“GBT”) and no payment is to be accepted on the basis of this Whitepaper. Any sale and purchase of GBT will be governed by a legally binding agreement, the details of which will be made available separately from this Whitepaper. In the event of any inconsistencies between the abovementioned agreement and this Whitepaper, the former shall prevail.

(c) This Whitepaper does not constitute or form part of any opinion on any advice to sell, or any solicitation of any offer by the issuer/distributor/vendor of GBT to purchase any GBT nor shall it or any part of it nor the fact of its presentation form the basis of, or be relied upon in connection with, any contract or investment decision.

(d) GBT is not intended to constitute securities, units in a business trust, or units in a collective investment scheme, each as defined under the Securities and Futures Act (Cap. 289) of Singapore, or its equivalent in any other jurisdiction. Accordingly, this Whitepaper therefore, does not, and is not intended to, constitute a prospectus, profile statement, or offer document of any sort, and should not be construed as an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment, or a solicitation for any form of investment in any jurisdiction.

(e) No GBT should be construed, interpreted, classified or treated as enabling, or according any opportunity to, purchasers to participate in or receive profits, income, or other payments or returns arising from or in connection with the Grabity project platform, GBT, or products, or to receive sums paid out of such profits, income, or other payments or returns.
(f) This Whitepaper or any part hereof may not be reproduced, distributed or otherwise disseminated in any jurisdiction where offering coins/tokens in the manner set out this Whitepaper is regulated or prohibited.

(g) No regulatory authority has reviewed, examined or approved of any of the information set out in this Whitepaper. No such action has been or will be taken in any jurisdiction.

(h) Where you wish to purchase any GBT, the GBT are not to be construed, interpreted, classified or treated as: (a) any kind of currency other than cryptocurrency; (b) debentures, stocks or shares issued by any entity; (c) rights, options or derivatives in respect of such debentures, stocks or shares; (d) rights under a contract for differences or under any other contract with the purpose or pretended purpose to secure a profit or avoid a loss; or (e) units or derivatives in a collective investment scheme or business trust, or any other type of securities.

10-2. Restrictions on Distribution and Dissemination

(a) The distribution or dissemination of this Whitepaper or any part thereof may be prohibited or restricted by the laws or regulatory requirements of any jurisdiction. In the case where any restriction applies, you are to inform yourself about, to obtain legal and other relevant advice on, and to observe, any restrictions which are applicable to your possession of this Whitepaper or such part thereof (as the case may be) at your own expense and without liability to Gravity or its representatives, agents, and related companies (“Affiliates”).

(b) Persons to whom a copy of this Whitepaper has been distributed or disseminated, provided access to or who otherwise have the Whitepaper in their possession shall not circulate it to any other persons, reproduce or otherwise distribute this Whitepaper or any information contained herein for any purpose whatsoever nor permit or cause the same to occur.
10-3. Disclaimer of Liability

(a) The GBT and related services provided by Grainty and its Affiliates are provided on an “as is” and “as available” basis. Grainty and its Affiliates do not grant any warranties or make any representation, express or implied or otherwise, as to the accessibility, quality, suitability, accuracy, adequacy, or completeness of the GBT or any related services provided by Grainty and its Affiliates, and expressly disclaim any liability for errors, delays, or omissions in, or for any action taken in reliance on, the GBT and related services provided by Grainty and its Affiliates.

(b) Grainty and its Affiliates do not make or purport to make, and hereby disclaim, any representation, warranty or undertaking in any form whatsoever to any entity or person, including any representation, warranty or undertaking in relation to the truth, accuracy and completeness of any of the information set out in this Whitepaper.

(c) To the maximum extent permitted by the applicable laws and regulations, Grainty and its Affiliates shall not be liable for any indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this Whitepaper or any part thereof by you.

10-4. Cautionary Note on Forward-Looking Statements

(a) Certain information set forth in this Whitepaper includes forward-looking information regarding the future of the project, future events and projections. These statements are not statements of historical fact and may be identified by but not limited to words and phrases such as “will”, “estimate”, “believe”, “expect”, “project”, “anticipate”, or words of similar meaning. Such forward-looking statements are also included in other publicly available materials such as presentations, interviews, videos etc., information contained in this Whitepaper constitutes forward-looking statements including but not limited to future results, performance, or achievements of Grainty or its Affiliates.

(b) The forward-looking statements involve a variety of risks and uncertainties. These statements are not guarantees of future performance and no undue reliance should be placed on them. Should any of these risks or uncertainties materialise, the actual performance and progress of Grainty or its Affiliates might differ from expectations set by the forward-looking statements. Grainty or its Affiliates undertake no obligation to update forward-looking statements should there be any change in circumstances. By acting upon forward-looking information received from this Whitepaper, Grainty or its Affiliates’ website and other materials produced by Grainty or its Affiliates, you personally bear full responsibility in the event where the forward-looking statements
do not materialize.

(c) As of the date of this Whitepaper, the Grabbit project platform has not been completed and is not fully operational. Any description pertaining to and regarding the Grabbit project platform is made on the basis that the Grabbit project platform will be completed and be fully operational. However, this paragraph shall in no way be construed as providing any form of guarantee or assurance that the Grabbit project platform will eventually be completed or be fully operational.

10-5. Potential Risks

(a) Please carefully read every piece of information, understand and analyse the risks and related factors before deciding to participate and purchase the GBT. The risks include, but are not limited to:

(i) risk of losing access to GBT due to loss of identification information, loss of requisite private key(s) associated with the digital wallet storing the GBT or any other kind of custodial or purchaser errors; (ii) fluctuations of the value of GBT post-issuance due to the general global market and economic conditions. Such volatility in the value of the GBT may lead to Grabbit not being able to fund the development of the Grabbit project ecosystem, or may not be able to maintain the Grabbit project ecosystem in the manner intended;

(iii) changes in political, social, economic and stock or cryptocurrency market conditions, and the regulatory environment in the countries in which Grabbit or its Affiliates conduct their businesses and operations, and the ability of Grabbit or its Affiliates to survive or compete under such conditions. It is possible that certain jurisdictions will apply existing regulations on, or introduce new regulations addressing, blockchain technology, which may be contrary to the GBT and/or the Grabbit project ecosystem which may, inter alia, result in substantial modifications of the Grabbit project ecosystem and the Grabbit project project, including termination and loss of GBT;

(iv) changes in the future capital needs of Grabbit or its Affiliates and the availability of financing and capital to fund such needs. A lack of funding could impact the development of the Grabbit project platform and the uses or potential value of the GBT;

(v) for a number of reasons including, but not limited to, an unfavorable fluctuation in the value of GBT, the failure of business relationships or competing intellectual property claims during development or operation, the Grabbit project project may no longer be a viable activity and may be dissolved or simply not launched, negatively impacting the Grabbit project ecosystem, the GBT and the potential utility of the GBT;

(vi) the lack of interest from large number of companies, individuals and other organizations for the Grabbit project platform and services and that there may be limited public interest in the creation and development of distributed applications. Such a lack of interest could lead to a lack of funding and also impact the development of the Grabbit project platform and the uses or potential value of the GBT;
(vii) significant changes made to the features or specifications of the GBT or the Grabity project platform before the release or implementation of the Grabity project project and/or the Grabity project ecosystem. While Grabity intends for the GBT and the Grabity project ecosystem to function as described in the Whitepaper, Grabity may nevertheless make such changes;

(viii) competition from alternative platforms that may have been established, which could potentially adversely impact the GBT and the Grabity project platform (e.g. lack of commercial success or prospects caused by competing projects);

(ix) interference with the use of GBT and the infrastructure of the Grabity project platform due to any weaknesses or malware that may be intentionally or unintentionally introduced into the software of the Grabity project platform, whether or not by a third party. The blockchain used for the platform is also vulnerable to attacks which pose a risk to the platform and the performance of related services;

(x) occurrences of catastrophic events, natural disasters and acts of God that affect the businesses or operations of Grabity or its Affiliates and other factors beyond the control of Grabity or its Affiliates. This includes mining attacks, attacks by hackers or other individuals that could result in theft or loss of proceeds of the GBT sale, or the GBT and impacting the ability to develop the Grabity project ecosystem;

(xi) GBT and other cryptocurrencies are a new, untested technology and constantly developing. The full functionality of the GBT are not yet complete and no assurance can be provided of such completion. As technology matures, developments in cryptographic technologies and techniques or changes in consensus project or algorithms could present risks to the GBT, the GBT sale, the Grabity project project and/or the Grabity project ecosystem, including the utility of the GBT;

(xii) GBT confer no governance rights of any kind with respect to the Grabity project project, the Grabity project ecosystem and/or Grabity and all decisions will be made by Grabity at its sole discretion, including decisions to discontinue the Grabity’s products or services, the Grabity project project and/or Grabity project ecosystem to create and sell more GBT for use in the Grabity project ecosystem or to sell or liquidate Grabity; and

(xiii) The tax treatment and accounting of the GBT is uncertain and may vary amongst jurisdictions. There may be adverse tax consequences and independent tax advice in connection with purchasing GBT should be obtained.

In addition to the risks stipulated above, there are other risks that Grabity and its Affiliates cannot predict. Risks may also occur as unanticipated combinations or as changes in the risks stipulated herein.

(b) If any of such risks and uncertainties develops into actual events, the business, financial condition, results of operations and prospects of Grabity or its Affiliates could be materially and adversely affected. In such cases, you may lose all or part of the value of the GBT.
10-6. No Further Information or Update

No person has been or is authorised to give any information or representation not contained in this Whitepaper in connection with the GBT, Grability or its Affiliates and their respective businesses and operations, and, if given, such information or representation must not be relied upon as having been authorised by or on behalf of Grability or its Affiliates.

10-7. No Advice

No information in this Whitepaper should be considered to be business, legal, financial or tax advice regarding the GBT, Grability or its Affiliates. You should consult your own legal, financial, tax or other professional advisor(s) regarding the GBT, Grability or its Affiliates and their respective businesses and operations. You should be aware that you may be required to bear the financial risk of any purchase of GBT for an indefinite period of time.
11. Reference


8. Smart contracts: https://en.bitcoin.it/wiki/Contracts


11. Ethereum Merkle Patricia trees: https://github.com/ethereum/wiki/wiki/%5BEnglish%5D-Patricia-Tree


13. IPFS: https://docs.ipfs.io/