



LIUM

Liberation from Intermediates
Unchained Merit

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Abstract

“

The business value of the blockchain technology will increase exponentially, reaching \$3.1 trillion (3,515 trillion won) by 2030

Reference : Gartner(2018), Digital Disruption Profile ”

In 1990, Tim Berners-Lee stated as below on the first day he created World Wide Web.

“Once we link the information on the web, fact check, idea generation, product sales, relationship formations, and others that were impossible during analog generations will happen in unimaginable speed and scale.”

Berners-Lee predicted the rise of web-searching, e-commerce, email, and social media only through such concise statement, and something of which soon became reality. The internet and the World Wide Web induced computer and internet-based third industrial revolution. Politics, culture, society, economy and other aspects of people's daily lives have transformed around the internet, and traditional transaction methods connecting consumers and sellers also changed drastically.

Also, spatial limitations were overcome with smart-phones. Among 10 top companies with highest global market capitalization, 6 were IT companies with internet. From among these, the market capitalization of 'Amazon', known for e-commerce, reaches up to \$7.8 trillion (830 trillion won).

How would blockchain technology and cryptocurrency engender immense value in the near future?

In 2008, an anonymous individual or association named Satoshi Nakamoto released an article called "Bitcoin: A Peer-to-Peer Electronic Cash System," predicting the impacts of blockchain on the future. Now, ten years from the release, the paper proved that P2P transactions are possible only with the network's own trust certification without central or financial interventions.

According to the World Economic Forum, blockchain is regarded as one of 10 most important technologies for the fourth industrial revolution, and gained international attention as the price of Bitcoin skyrocketed during the second half of 2017. Currently, global corporations as UBS, IBM, IBRD, Mastercard, and Microsoft are developing blockchain technology for application in services such as finance, distribution, payment, wire transfer, receivables, and others. Governments of countries like the United States, England, Denmark, Dubai, and Estonia are also spurring to blockchain development for services such as voting, e-government, medical data, immigration control, public services, and etc.

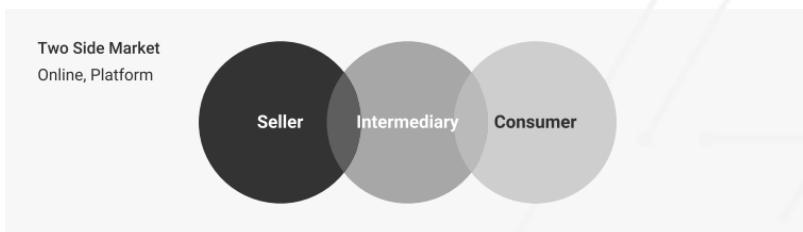
Blockchain is not constricted as a mere payment method of cryptocurrency. As internet transforms the traditional business model and structure, blockchain technology is also predicted to incur great changes to internet-based webs or web-related businesses. Surely, Blockchain technology is advancing faster than imagined. What we need right now is the infinite imagination as to how the world can be changed from this new technology.

1 Introduction

The Importance of an Intermediary



The act of a seller and a consumer dealing in person is called 'direct transaction,' or the 'One Side Market.' Us visiting stores or markets to purchase vegetables or fruits is an example. It is a traditional and safe way of dealing as consumers can directly see the products and sellers can directly receive cash before the trade. However, although direct transactions do not require intermediaries, two parties having to meet in person can be inconvenient.



The advent of distribution services such as internet shopping and parcel delivery were revolutionary. Nowadays, people can confirm product information and make payments online. However, trust issues among sellers and consumers arose as products still cannot be verified in person and as the danger of not receiving the payment still exist. Therefore, intermediaries have appeared to connect both parties and to ensure transaction prices. Nowadays, those intermediaries have expanded into mega-corporations as Alibaba, Amazon, Uber, and Airbnb. They contributed immensely to the expansion of the Two Side Market, providing payment method and escrow services and answering consumer inquiries regarding delivery and refund. It is not an exaggeration to state that safe transaction environment has been constructed thanks to intermediaries.

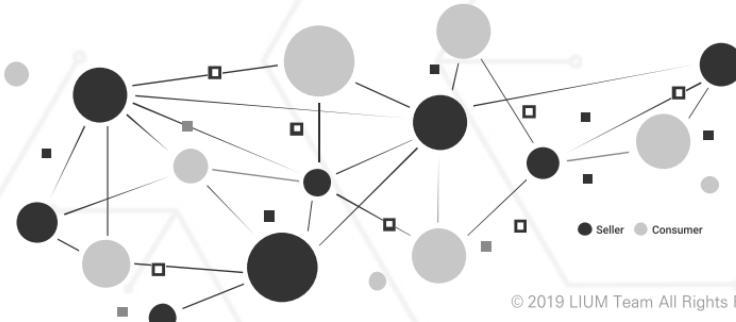
Problems Incurred by Intermediaries



Intermediaries hold absolutely subordinate position (minor) in the beginning of the market, putting immense efforts to expand seller and consumer groups through various promotions (free commission, entrance, registration fee, providing information, etc) and service policies free of charge. As two groups expand and the business is on a stable track, however, the power concentrates on the intermediaries. Especially when they become monopolistic business operators, both sellers and consumers lose their autonomies against the framework of the intermediaries. This at last causes monopoly and corresponding problems of large intermediary platforms.

Blockchain Technology and LIUM Service Needless of Intermediaries

The essence of blockchain technology is ‘the technology that adopts distributed systems for data storage and operation.’ If blockchain technology is aptly applied to intermediary services (platform), counterfeit and falsification of information can be prevented and fast record sharing becomes possible. Also, Because there are no intermediaries, no commission fees are required, and counterfeit and falsification are absolutely impractical. LIUM plans to eliminate unnecessary intermediaries and devise a platform that can contain all transactions of the world.



2 Market Analysis

2-1 Types and Profit Model of Intermediary Services

	Service	Profit Model	Revenue (2015)
Commission Fee	App Store	30% commission fee of total app selling price	\$20 billion
	Uber	20 ~ 30% of drivers' sales	\$1.5 billion
	Airbnb	Brokerage for host and guests	\$ 900 million
	Alibaba	Brokerage for product sales	\$457.6 billion
Subscription Fee	LinkedIn	4 types of subscription charge	\$3 billion
Advertisement	Facebook	Advertisement sales for users	\$17.9 billion
	Google	AdSense, AdWords advertisements	\$74.5 billion
Licensing	Amazon AWS	Expenses based on service usage hours	\$7.9 billion
Item Sales	Kakao	Character, item sales	

Commission Fee

Amazon, Alibaba, Uber, Airbnb, App Store

Advertisement Revenue

Facebook, Google

Registration Fee

Job Korea

Subscription Free

LinkedIn

Licensing

Amazon AWS

Item Sales

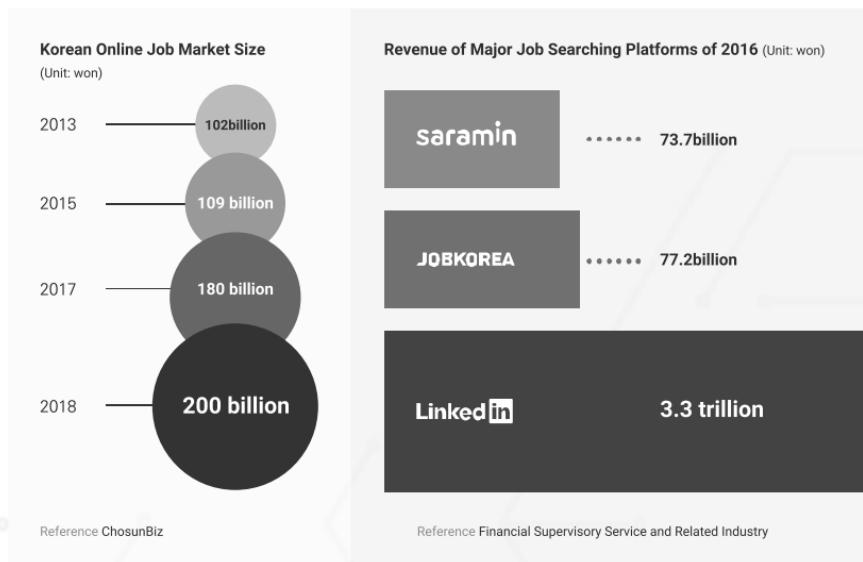
Kakao, Line

2-2 Untrustworthy Information: Job search

Intensified Unemployment Crisis vs. Booming of Job Information Market

The role of job searching sites is to mitigate mismatching between job hunters and corporations looking to recruit talented employees. Of 50 million people in the Republic of Korea alone, about 10 million people use job searching sites, and this is because not only the ones seeking new job opportunities but also the ones wishing to change jobs use the sites as information channels.

Online job-hunting market started after year 2000 with the development of the internet and the rise of the youth unemployment rate, and the size has been steadily increasing since then. 83% of Korean university students spend average of 35 minutes a day on the internet and mobile, searching for job-related information, and 13% of them use paid services. The job market in Korea has grown to more than 200 billion won, and it is expected to expand into portal services by providing additional services such as customized announcement, recommendation, and resume consulting along with the convenience of mobile services.



Corporations use job sites and pay for registration, searching for employees, and advertisement for smooth exposure. For job seekers, although they generally use the service for free, they have to use paid services to embellish their resume or to receive private consulting.

Job Sites that Do Not Verify Corporate and Individual Backgrounds

Most job seeking sites, which exert strong influences on the connection between companies and job seekers, have no system to validate the registered information such as company descriptions and resume of applicants, and their efforts to verify such information are very passive as well. Despite the significant amount of revenue engendered from the payments corporations paying to search for employees, job seeking sites abdicate responsibility for problems caused by falsified information from companies and job seekers.

Corporations Wasting Time and Budget

Among 10 job seekers scheduled for interviews after arduous searching and contacting of the corporation, only 2~3 people show up. Lost time due to interviewees not visiting on time leads to loss of notable opportunity costs. However, although interviewees break appointment schedules, no penalty can be subjected by the job seeking sites, and they will cause same damage to other corporations as well.

Job Seekers Suffering from Fraudulent Employments

For job seekers, being in harm from falsified information and fraudulent employment is commonplace. In fact, even if employment conditions are false, companies present additional qualifications other than stated, fail to fulfill conditions after proper recruitment, or force to sell or operate in multi-level sales business, there is no way for employees to punish the job searching sites nor have a place to complain about such matters.

Essentially, these unfortunate events will only be repeated if there is no measure to ensure accurate information and hold both corporations and job seekers responsible for falsified information or failure to fulfill promises.

Incidences of Fraudulent Employment

53.8%

False and exaggerated employment conditions (ex. annual salary)

43.7 %

Require qualifications other than specified

36.7 %

Failure to keep recruiting promises

20.1 %

Force to sell or operate in multi-level sales business

15.6 %

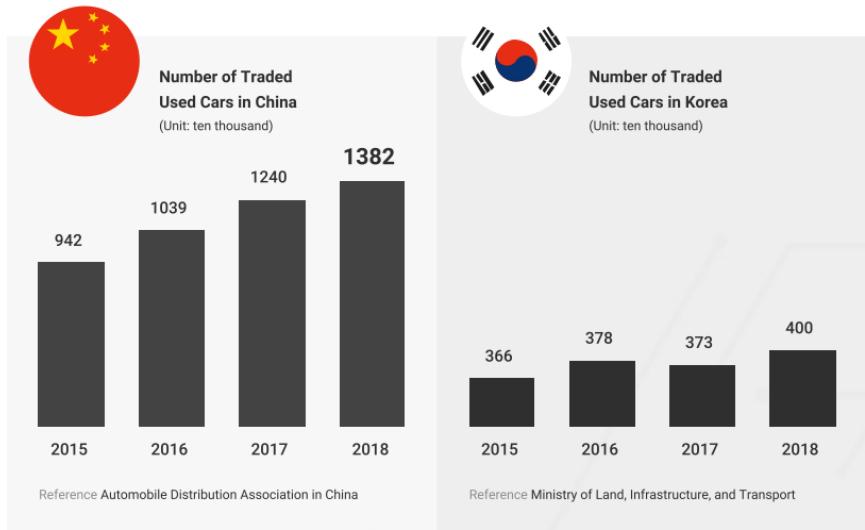
Request personal information before recruitments

Reference Saramin HR

2-2 Untrustworthy Information: Used Car Trading

'China,' a Huge Used Car Trading Market Worth 142 Trillion Won a Year

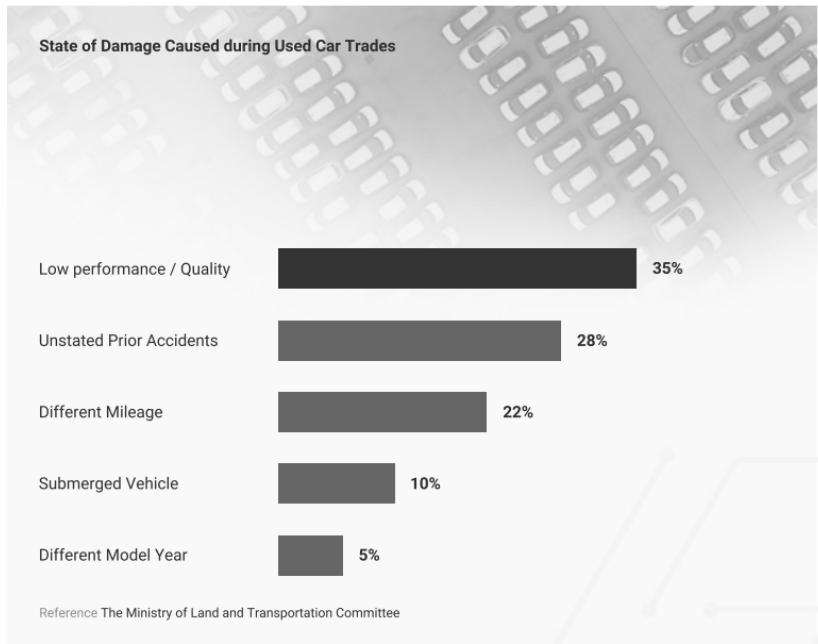
According to the Ministry of Land, Infrastructure and Transport's data on the status on automobile transfer registration (used car trading), the number of cars registered in Korea in 2018 was estimated to be around 4 million, the highest in history. China, the world's no. 1 automobile market, also has an outstanding scale in trading used cars. The total number of used cars traded within China in 2018 was 13.82 million, and the transaction amount reached 860.57 billion yuan, which is about 142 trillion won. Other than markets of China and Korea, used car trading in general is growing globally, and this is due to the consumption trend that values causality, increased preference for imported cars, and improved quality of the cars.



Although some do the legwork for used car trading, most of the people first search information online or use their mobile phones, then conduct transaction after checking the product in prior by contacting dealers or the car owners.

The reason lies on the convenience of car brokerage sites in providing various information about the cars (type, model, mileage, any occurred accident, price, pictures, etc). Also, most people trust the validity of the information provided by the brokerage sites. Some brokerage sites work to increase reliability of information by verifying properties and authenticating information when customers make extra payments.

However, despite the efforts of brokerage sites and the government, damage incidences are steadily in rise in the used car market comprised of about 10 million people each year.



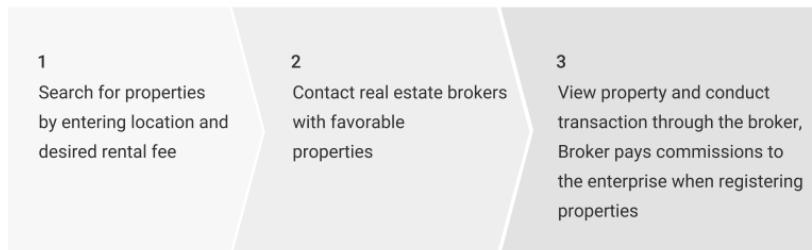
Used car sellers posting falsified information to bait customers is universal, but there exist no legal regulations for brokerage sites to charge them. Not only that, because reported sellers can simply recreate accounts by changing names, it is highly challenging to control fraudulent practices.

Fraudulent practices of used car deals are a serious problem, for those not only waste time and cost and risk the drivers themselves, but also put lives and safety of fellow passengers at stake.

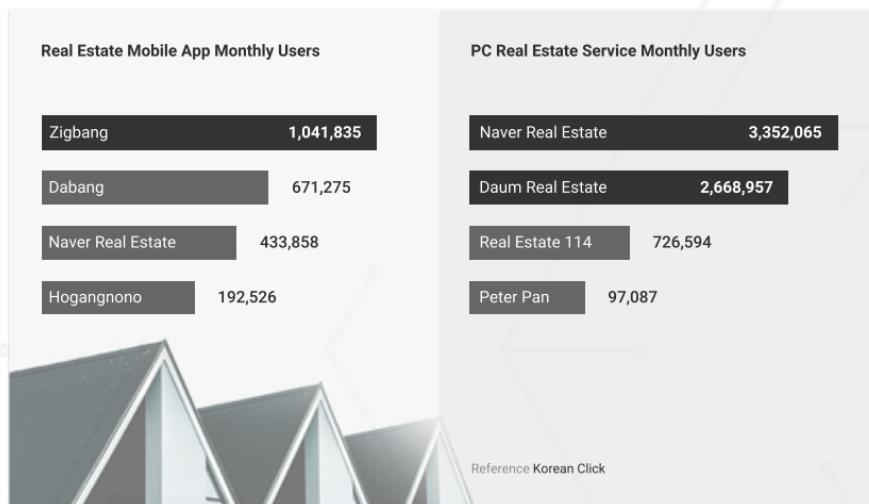
2-2 Untrustworthy Information: Real Estate Transaction

Nowadays, people can search apt information about properties via PC or smart phones without having to visit in person.

The process of transaction in online brokerage sites is the following:



Online real estate brokerage is a representative example of O2O (Offline to Online), along with the food delivery system. As for the online estate market, Naver, Daum and Kakao are growing rapidly on PC and Zigbang (직방) and Dabang (다방) on mobile apps. The reason for their growth is provision of customized options for one-room, two-rooms, studio lease markets. Also the market coverage has expanded steadily by providing information on the apartment market.



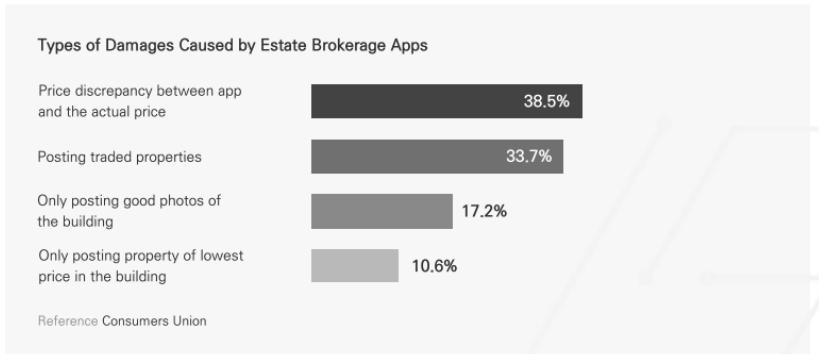
The reasons for choosing online estate brokerage services



Estate brokers have to pay to use online estate brokerage services while customers and users can enjoy them free of charge. (Zigbang: 165 thousand won for 10 transactions, Dabang: 110 thousand won)

4-5 Out of 10 Properties Are False Offerings

The convenience of the estate brokerage service also causes problems. The discrepancies between provided information and the actual properties often cause consumers to waste their time and money.



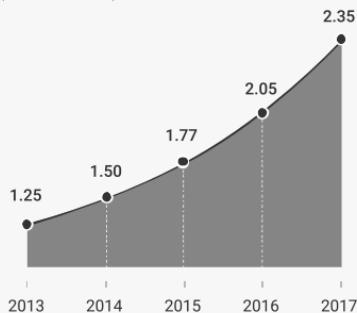
In Seoul, more than 40% of the properties have price discrepancy between the app and the actual price, and brokerage sites rarely respond to reports declaring such matters. Although the brokerage sites have introduced – reliever agent, real-name system for property advertisement, 'fool's errand compensation system' (Zigbang: 30,000won), 3-strikes-out policy for falsified properties, etc - they are reluctant to have a stern crackdown.

The phenomenon can be attributed to the strong competition and apprehension for possible breakaway of real estate brokers and decrease in registered properties. Therefore, all the damages caused by untrustworthy information are directly passed down to the consumers who are trying to save time and money by readily obtaining information from the sites.

2-3 Excessive Commission Fee: E-commerce

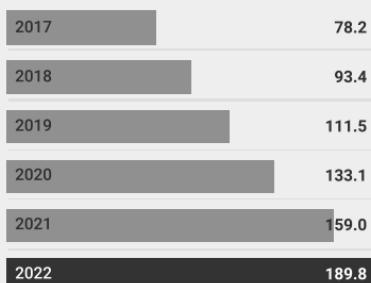
According to the National Statistical Office, the total amount of transactions in the Korean e-commerce market in 2017 is 91 trillion won. Just four years ago in 2014, it was 45 trillion won, which is not even half the price of 2017. In 2019, the Korean e-commerce market is expected to exceed in value of 100 trillion won for the first time in history. The trend suggests a wide range of industries from commodities to food entering the online and mobile e-commerce market.

The Global E-commerce Scale Trend
(Unit: trillion dollars)



Reference Ministry of Trade, Industry and Energy

Prospect of Korean E-commerce Market
(Unit: trillion won)

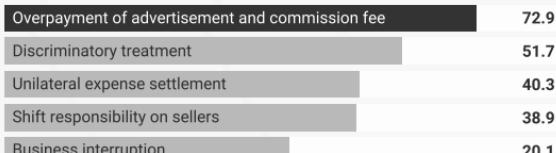


Reference Korea Information Society Development Institute

The aim to provide products with lower price and higher convenience causes sellers to suffer. Sellers with lower revenues due to excessive commission fees try to lower the quality of their products, or ones who sell through social commerce sell products for advertisement purposes despite the cumulative damage sellers must endure. Some intermediaries attempt to raise brokerage commission in response to the government's pressure to lower credit card fees, refuse to disclose exact settlement details of the merchandise sales, or delay the payment of price, increasing the burden for the sellers.

Major Unfair Trade Practices in the Open Market
(Unit: %, multiple responses)

Reference Korea Federation of SMEs



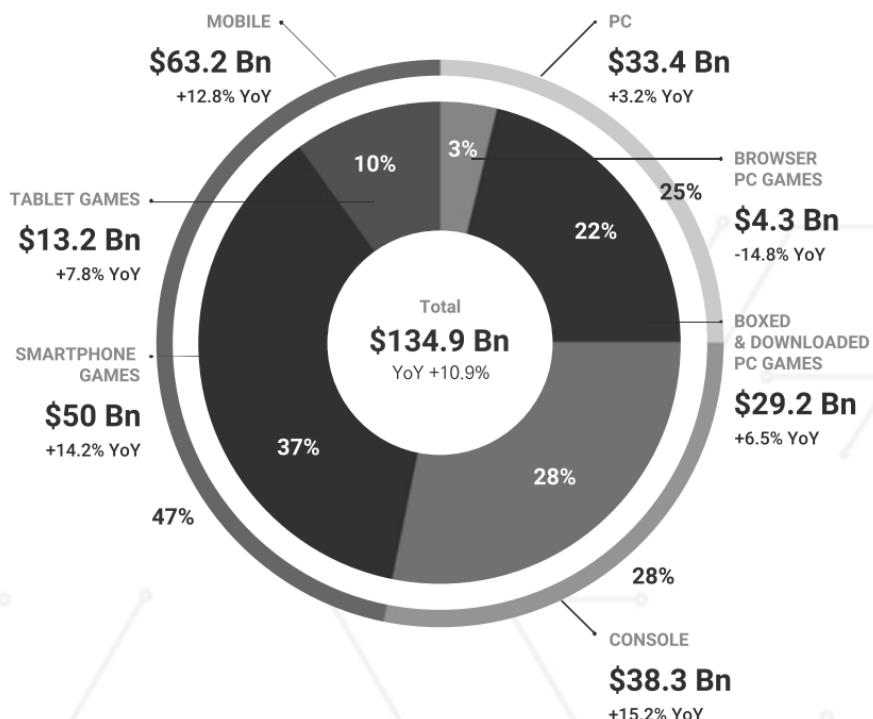
2-3 Excessive Commission Fee: Game Market

Korea's Game Market Value of 13,142.3 Billion Won in 2017

According to the '2018 Korea Game White Paper' published by the Korea Creative Content Agency on January 24, 2019, the Korean game market size was 13,142.3 billion won in 2017, mobile games 6,102.2 billion won (47.3% share), PC games 4,540.9 billion won (34.6% share), and console games 372.4 billion won (2.8%). The global game market currently worths 151 trillion won, mobile games of which take up about 50%.

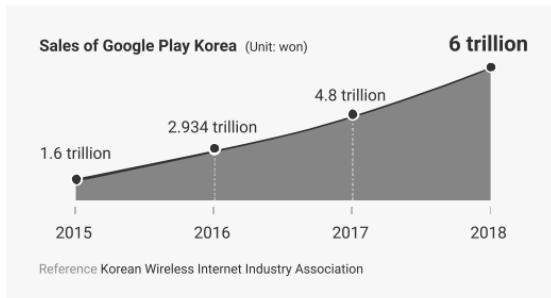
Global Game Market Value of 2018 (*Bn : Billion dollars)

Reference Newzoo



Google Play Store Sales of 6 Trillion won in 2018

The annual sale of 6 trillion won is not the global sales of the Google Play Store. It is the sales occurred only in Korea in 2018. Considered that Korea is ranked third or fourth in the world by Google Play sales, the global sales of the Google Play Store is estimated at over 20 trillion won.



Google Play's selling concession is 30%, and the majority of the sales (84%) occurs from games. Although digital contents are more profitable than those of general industries, 30% of selling concession is a huge burden for developers considering the enormous development and advertising costs, along with around 5% of the average payment commission of existing payment methods (mobile phone, bank transfer, credit, card, etc.). In other words, developers directly providing services only gain profit of 70%, and the profit of developers working with publishers sharply decreases to 35% to 40%.

Direct Service from Developers	Developers 70%	Google 30%
Accompanied by Publishers	Developers 35%	Publisher 35%

Also, in the case of online games, the intermediary platform 'Steam (<https://store.steampowered.com>)' accounts for an absolute portion, and a well-known game called Battleground is also sold within Steam with selling concession of 30%.

Other than the Google Play Store, there are App Stores provided for iPhone, and One Store, a Korean mobile market. The sales commissions of these markets are not showing signs of a downward trend despite the annual rise in sales and the request from developers. Only One Store with the lowest sales recently announced a cut in sales commissions.

One of the reasons for the worsening of 'rich-get-richer and poor-get-poorer' phenomenon may be the excessive amount of the commission fee. But could there be a future for intermediaries without sellers? For this reason, developers are trying to find new breakthroughs such as direct services in order to avoid excessive commission fees.

2-4 Leakage of Personal Information

Entering personal information (name, email, address, phone number, bank account, etc) is compulsory for purchasing products or services through intermediaries. Although intermediate platforms are obliged to protect such information of the customers, information leakage has been a reoccurring problem due to hacking or poor management of the insiders. In fact, it is easier to locate banks, shopping mall, portal sites, game industries, cryptocurrency exchange platforms that are not hacked yet. Information leakage not only causes monetary damage, but also secondary damages such as voice phishing. In 2018, the amount of damage caused by voice phishing was estimated at 440 billion won, the highest level in history.

Because most small and medium-sized businesses lack a standardized system as well as designated people in charge, security is high fragile.

Year	Company	Number of Victims	Route of Information Leakage
2008	Auction	10 million	
2011	Nexon	13.2 million	Hacking by APT attack
	Nate	35 million	
2014	KT	11.7 million	Artificial information capture of service companies
	Lotte Card	26 million	
	NH Nonghyup Card	25 million	
	KB Kookmin Card	53 million	
2016	Interpark	10.3 million (Estimated)	Hacking by APT attack



2-5 Summary of Mediation Service Problems

Untrustworthy Information

Accurate information crucial for services as real estate, used cars, used-good transactions, and job hunting is untrustworthy. Intermediaries in fear of competition and exiting of market by sellers show passive responses. Then the damage lies on the customers who wish to save time and money due to falsified properties and products.



Excessive Commission Fees



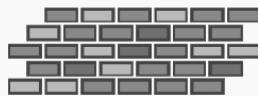
Excessive commission fee is a major cause of the unhealthy commerce ecosystem and the damages suffered by sellers are inevitably transmitted to the customers.

Personal Information Leakage



Personal information of the customers is leaked through ways as hacking, incurring further damages.

High Entry Barriers



Despite favorable ideas for intermediate services, people find it difficult to enter the market due to the burden for service development and escrow services.

Pursued Profit, Avoided Responsibility



People benefit from various profit models such as commission fee, registration fee, and advertising costs from the information gained from customers while avoiding liability in cases of accidents and disputes.

Absence of Compensation for Information Providers



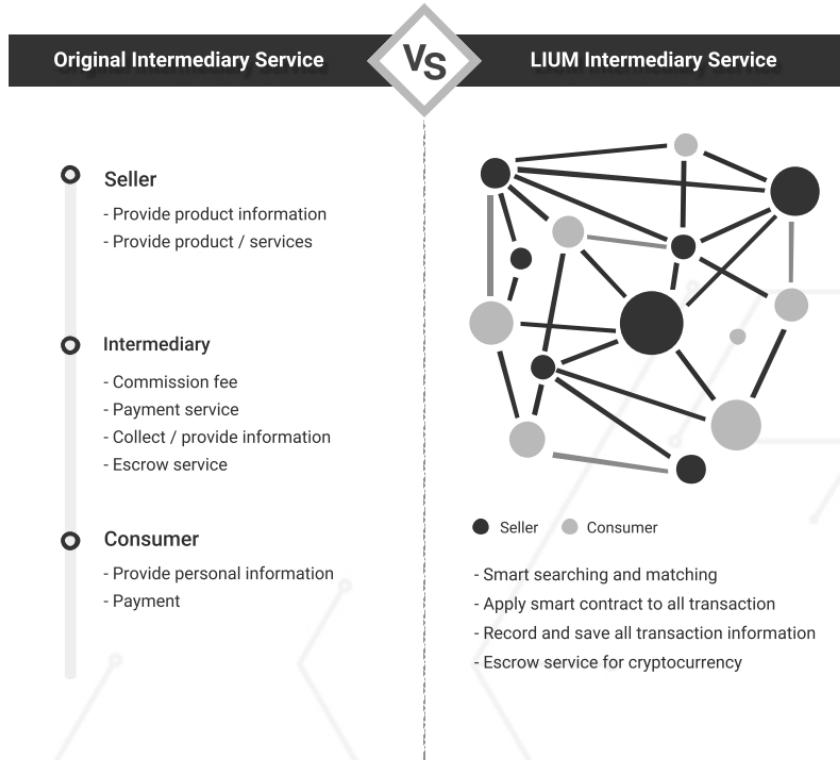
Although intermediary platforms generate revenues from information provided by the customers, information providers gain no financial benefits.

3 LIUM Solution

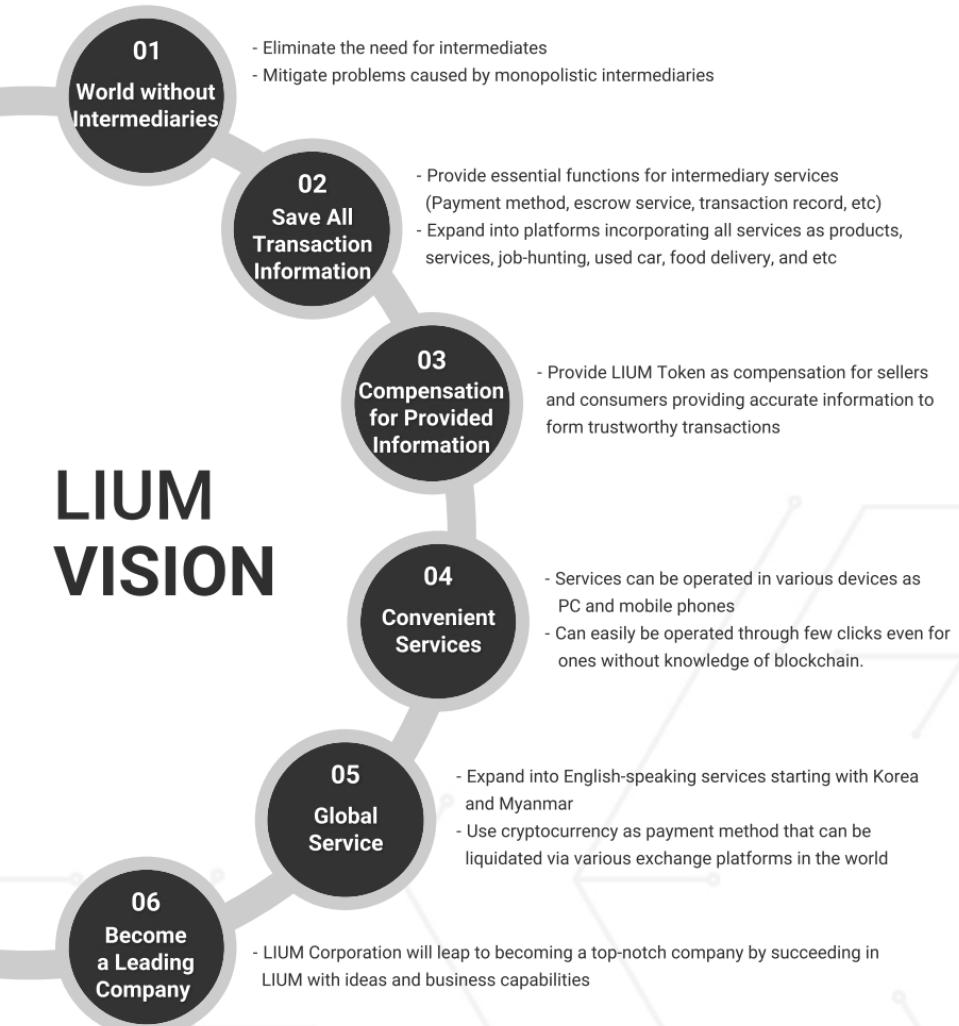
3-1 Concept

LIUM, as a blockchain direct transaction service, mitigates the need for intermediaries and provide necessary functions for the transaction.

- ① Payment
- ② Escrow service
- ③ Smart searching and matching
- ④ Super smart contract

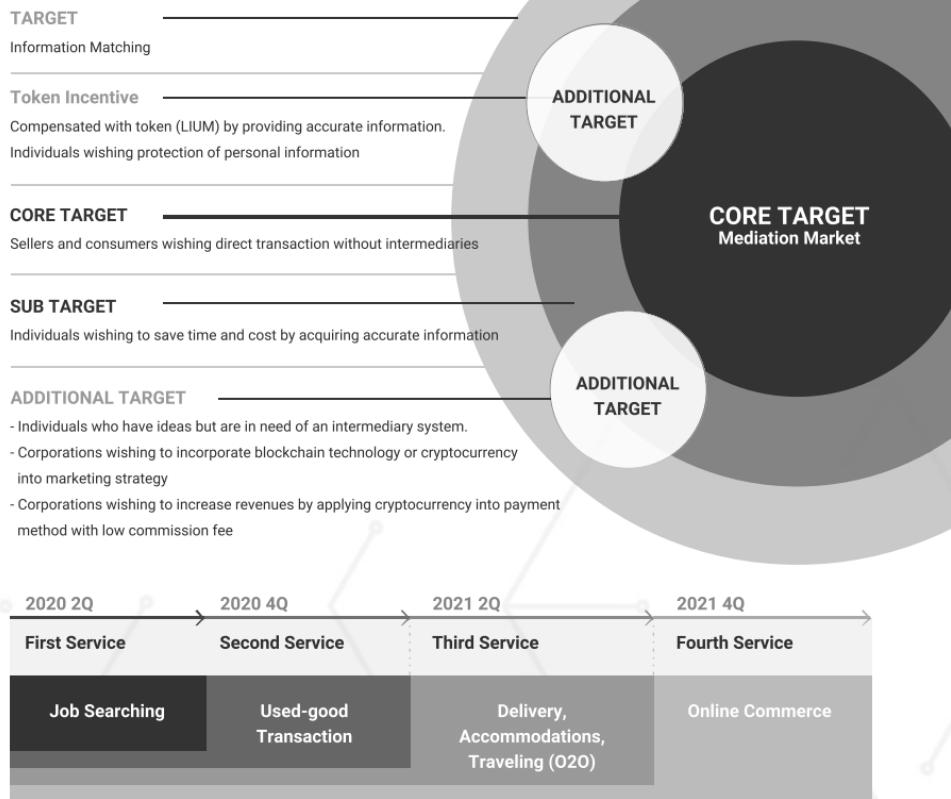


3-2 Vision



3-3 Target

- Individuals or corporations wishing to provide products or services with low commission fees
- Individuals or corporations wishing to have their personal information protected
- Individuals or corporations wishing to engender profits only by providing accurate information
- Corporations lack of development capabilities although wishing to apply blockchain technology into existing services
- Individuals or corporations enable to formulate system despite having business ideas
- Corporations wishing to incorporate blockchain technology or cryptocurrency into marketing strategy

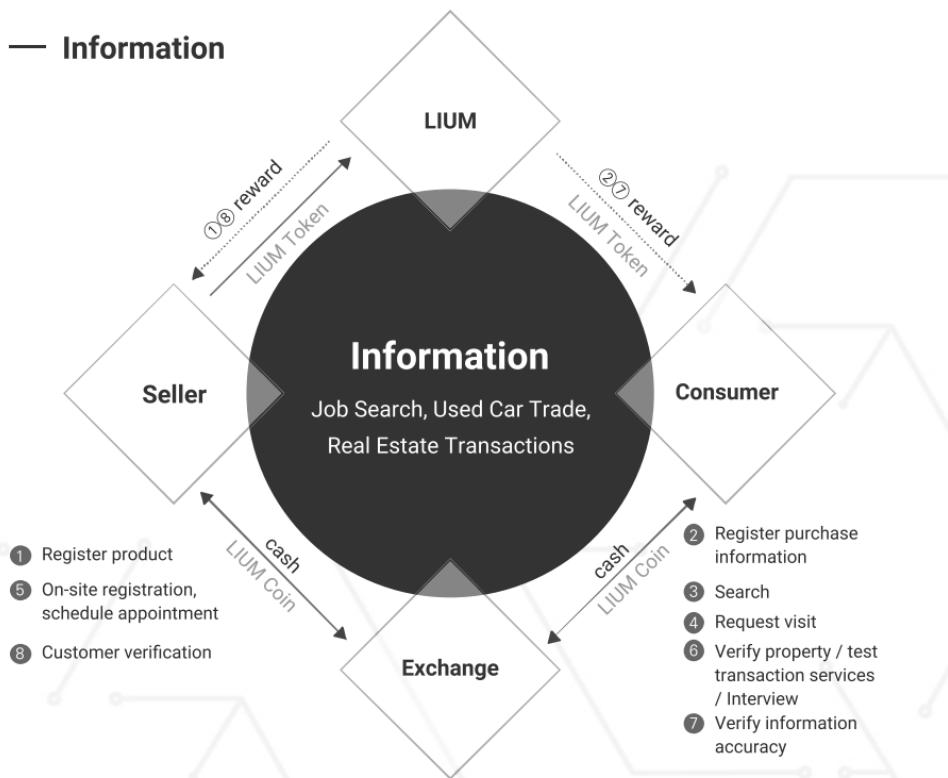


3-4 LIUM Operation Structure

The most important thing of information-based transaction services is provision of trustworthy information for both consumers and sellers. In terms of job searching services, information provided by corporation and job seekers in the resume should be accurate. And once the information is verified, LIUM Token is provided as compensation. Sellers wishing to operate with accurate information may set a price with LIUM Token for particular information, which will be recorded in the smart contract. If the product is purchased after confirming such information and recommending to an acquaintance, LIUM Token is also provided to the recommender as compensation.

The original way of sales promotion that requires excessive advertising fee can be substituted with cryptocurrency and smart contract, attracting customers with a cheap and effective transaction system. A distinct characteristic of information-based transaction services is that those people to contribute accurate information by providing compensations.

— Information



3-4 LIUM Operation Structure

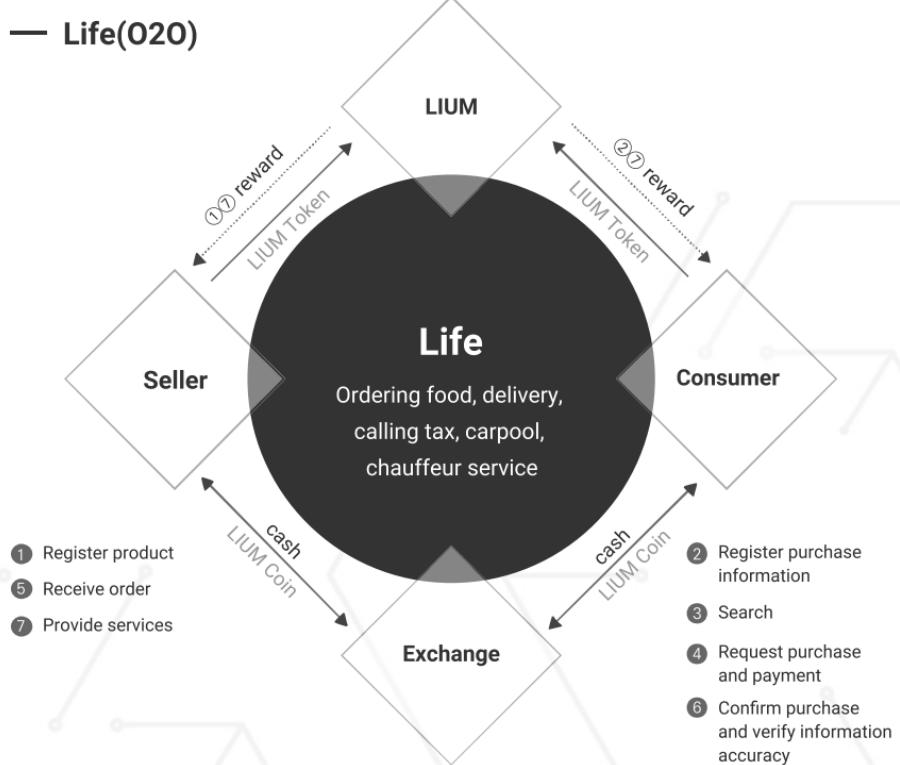
For intermediate services that exchange actual products, accurate information of the product along with quick transaction, payment service, and escrow service is essential. The fast speed of LIUM platform is verified to be 300,000 TPS and depending on the actions of the consumers and sellers, cryptocurrency stored within the escrow service is transferred to the seller. Convenient product registration (text, image, video) is supported for the sellers, and fast and convenient purchase information is provided through smart searching and matching services for the consumers.

Also for commerce, using excessive advertising fee for original way of sales promotion can be substituted with cryptocurrency and smart contracts to attract consumers with a cheap and effective transaction system.



3-4 LIUM Operation Structure

'Life service' provides necessary functions for services we often use in our daily lives (ordering food, delivery services, calling taxi, carpool, chauffeur service, etc). Those necessary functions include payment service and escrow service, and low commission fee will contribute to increasing the quality of the products and services. Also, application of compensation policy for users introducing services and products to acquaintances provides benefits for both consumers and sellers. Just like mileage policies, token compensation policy also motivates users to stay in the LIUM platform.



3-5 Service Features and Strengths

01 Accurate Information

Compensation awarded for accurate provision of information. For fraudulent information, penalties are applied. All transaction details are recorded in the blocks.

02 Protection and Management of Personal Information

Absolute blockchain security is applied to protect personal information. Individuals can select the scope of information disclosure.

03 Low Commission Fee

The commission fee is unconventionally cheaper than when intermediaries are intervened. Also, no commission fee is required if the transaction is not concluded.

04 Convenient UI

With just a few clicks on PC or mobile, users can create the type of transaction service they wish.

05 Super Smart Contract

Without coding of the developers, smart contracts are automatically structured by the type of transactions.

06 Fast Processing Speed

Fast processing speed is secured for convenient transactions.

07 Global Service

The platform enables global service, starting from Korea.

08 Immense Market Size

Targets large-scale markets occupied by existing intermediate services.

09 Provision of Diverse Transaction Services

All transaction services including job searching, used car trading, real estate transaction, used-good transaction, delivery, and shipping are provided.

10 Optimal Organization of Members

Members are constituted with best members to succeed in business.

3-6 Profit Model

Commission fees, arising from the exchange of goods and services with money, are charged.

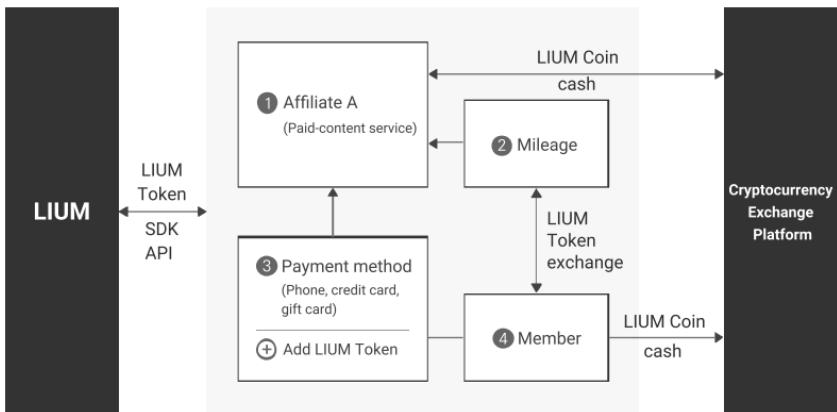
E-commerce, carpool, chauffeur service, accommodations, food, delivery, parking, laundry, car wash, game platform, rural residence construction, E-sports data, digital track, publication, design, images, consulting

Registration fees occur for information registration.

Job searching, real estate intermediary, used car transactions, car repair, traveling, social dating, moving service, cleaning service, used-good transaction, translation/interpretation service



3-7 Service Expansion through Affiliates



① Acquire service affiliates for paid contents (above 18)

Example) Webtoon, webhard, internet café, games, etc

② Affiliates enable members to exchange free or paid 'mileage' or 'points' to LIUM Token.

Members register membership and KYC to exchange mileages (point) to LIUM Tokens.

LIUM Tokens can be exchanged to LIUM coin, which then can be liquidated in exchange platforms (Only available for members above 18).

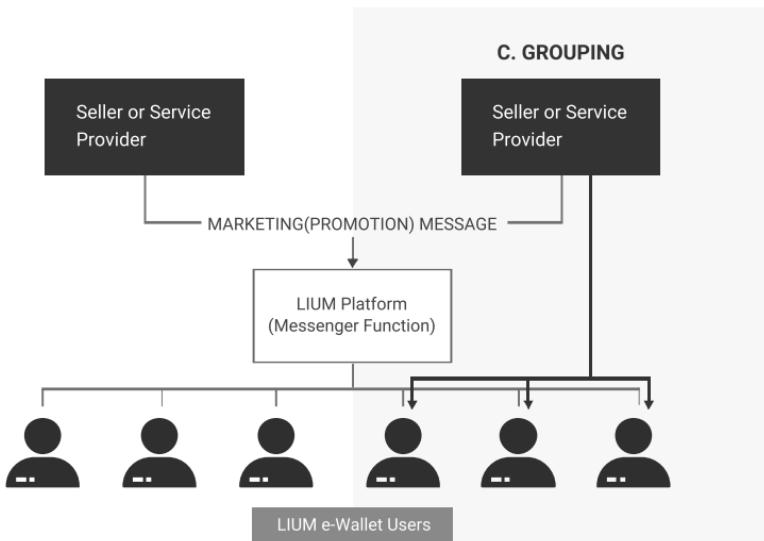
③ Affiliates add LIUM Token as a payment method

The average PG commission fee for existing payment methods (credit card, phone, gift cards) is 7~8%. Revenue increase is expected as lowest commission fee of 1~2% is applied to LIUM Token. Induce payment through providing more benefits when paid with LIUM Token (benefit for the company) apt for corporations wishing to incorporate cryptocurrency into distinguished marketing strategies

④ Needs & benefits of members

Apt for members who are reluctant to disclose personal information their use of existing payment methods (credit card, phone, gift cards, etc) or who are unable to use existing payment methods (credit delinquents).

3-8 Push Marketing Using e-Wallet



- LIUM's e-Wallet has an app push function, which is planned to be used as a marketing tool. Sellers or service providers can target customers (age, location, preference) for marketing, and send push notifications in text and image forms to customers who agreed to receive app pushes.
- If needed, consumers can enter their personal information by choice, and set the type of push advertisements (commerce, real estate, used cars, job searching information, travel, accommodations, etc) in prior. If people see the push advertisement after checking the compensation for the corresponding push advertisement in advance, they receive the amount of coin that the seller or the service provider has set in advance.
- App push marketing using smart contract will provide a cheaper and more efficient way of advertisement to sellers and service providers. Also, consumers suffered from undistinguished advertisements without any compensation will be able to obtain both desired information and token compensation. And this will become a profit model for LIUM services.

3-9 Technology

■ Smart Searching and Matching

Technology that links sellers to customers in need of product information. AI-based technology is used to match search terms and images, and as data accumulates, buyers are sellers can effectively be matched.

■ Simple Registration

Interface that simply registers seller's goods and services. Only through a few clicks, users can choose sales category, payment method, and usage of escrow service. This technology enables a convenient service without an additional need for planning.

■ Big Data Storage and Processing

Technology that stores and processes data used in LIUM services. The importance of technology that stores and processes big data is enormous.

■ Personal Information Protection

Service that decides on the extant customers choose to reveal their personal information. The amount and depth of information and level of compensation are proportional.

■ Fast Formation of Blocks (TPS)

Fast formation and processing of blocks are an essential technology and condition of the LIUM service.

■ Super Smart Contract (SSC)

Without developers having to fill in (coding) additional smart contracts, all transactions occurring through mobile and PC interface are automatically recorded and stored in the blocks.

■ Validation of Information Effectiveness

Service that regularly checks if the information about goods and services is effective. This raises credibility of the goods and services such as real estate, used cars and job searching.

4 Generic Technology

4-1 Platform Development and Hyperledger Fabric

Internal discussion has been conducted for platform and dApp development for the LIUM Project. Although developing and securing LIUM's own platform would be optimal, substantial amount of time and budget is required for self-development and testing. Considering that ideas and business capabilities are essential for the LIUM Project, the timing of the service is highly important as well. Therefore, whether to self-develop the platform or to incorporate already-verified and active platforms as 'Ethereum Platform,' 'EOS Platform,' 'Ripple Platform,' 'Tron Platform,' and 'Hyperledger Fabric' requires contemplation.

We are interested in the 'Hyperledger Fabric' among numbers of candidates for platform formation. Although the Hyperledger Fabric occupies a rather complicated structure in comparison to the Bitcoin Platform or the Ethereum Platform, it seems to have notable advantages. Through modularization, Hyperledger Fabric may be able to incorporate wider arrays of services and faster processing of each transaction. Also, development process would be easier considering that general programming language will be adopted.

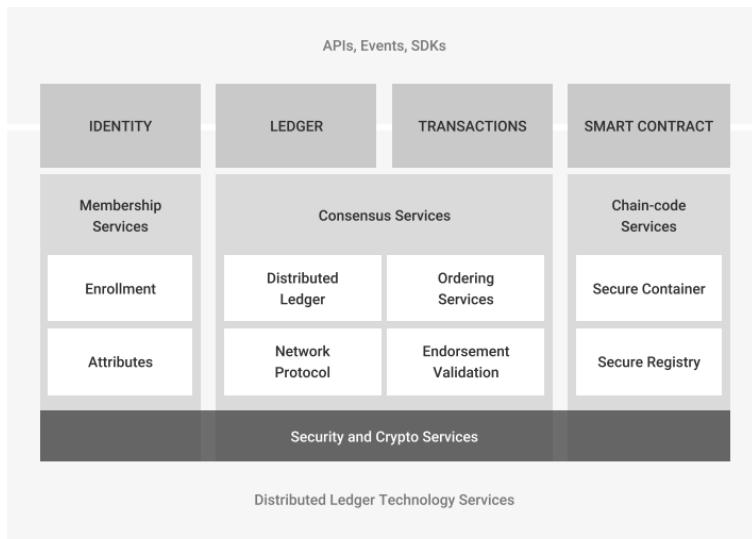
Hyperledger Fabric

Hyperledger Fabric is the first project of Hyperledger suggested and started as an open source by the Linux Foundation in December of 2015. It aims to develop blockchain and distributed ledger that fulfills various business requirements such as higher performance, reliability, resource efficiency, and participant management than the existing blockchain systems. Also, numbers of ICT enterprises as IBM and Intel, financial enterprises as J.P. Morgan, and business software industries including SAP are participating in the development.

Features of the Hyperledger Fabric

- 1 - Permissioned blockchain
- 2 - Usage of the general-purposed programming language
- 3 - No internal cryptocurrency
- 4 - High performance
- 5 - Pluggable modular architecture
- 6 - Provision of multi-blockchain

Features of the Hyperledger Fabric

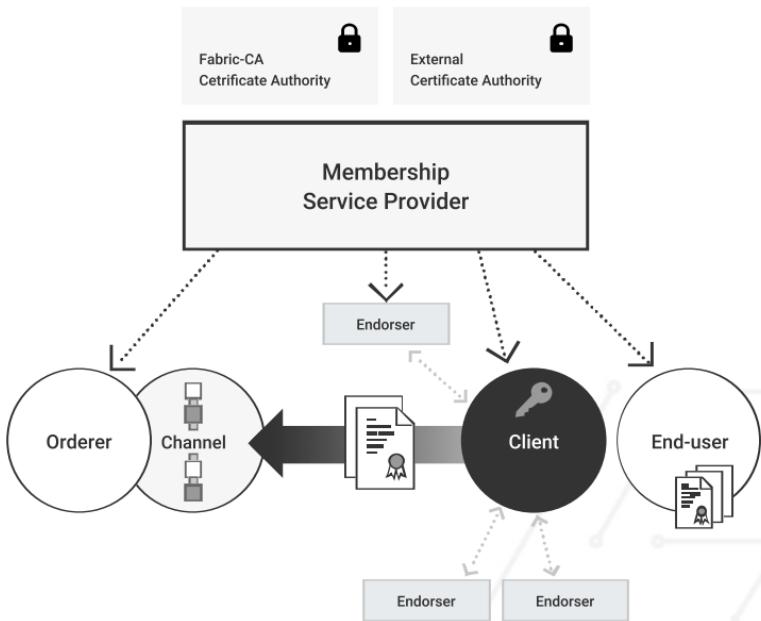


The architecture is vaguely comprised of Identity / Ledger / Transaction / Smart-contract (Chain-code) / APIS, Event, SDK. Identity is in charge of the audit function for Pluggable, Membership, Privacy, and other transactions, and Ledger / Transaction is a distributed transaction ledger that is continuously updated by corresponding agreements of the concerned parties.

Smart contract (chain code) provides a function to conduct business logic for blockchain called "Programmable Ledger." For API, Event, and SDK, developers use multilingual native SDK to enter DLT application program.

LIUM membership is a crucial component for customer participation and maintenance of users. In this case, Hyperledger Fabric is predicted to provide desired functions of LIUM in great resemblance that can be applied in the near future.

Membership Service Provider



Abstract Descriptors of the Identity Provider

- MSP.ds, MSP.sign, MSP.verify, MSP.validated, MSP.admin
- Application, endorser, orderer identities management

Used as Access Control Unit

- System label (read, write access on system controls, and channel creation)
- Channel label (read, write access)
- Chain-code label (invocation access)

LIUM Platform will incorporate various programs such as job searching, real estate and used car transactions, commerce, payment, O2O service, and others, as well as governance that stabilizes fluctuating value of cryptocurrencies.

If LIUM Platform is implemented through Hyperledger Fabric, it will be connect with Bitcoin, Ethereum, Ripple, and other various cryptocurrencies. Also, usage of Oracle may be considered for data input and output from outside sources. Private blockchain can also be formed for stability and security of the platform. All the necessary data are classified by the distributed ledger, which then sent to be stored in the distributed storage.

Because all participants can be trusted in the permitted blockchain platform, individuals who can be yielded corresponding value are recruited. In other words, they get to decide on a node that can form blocks, constitute committee organized by the nodes, and create and diffuse a block through consensus within the committee.

Hyperledger Fabric used for LIUM Platform is implemented to simulate security controls, making software operation easier and to endure BFT (Intel, 2014). Because EVM can be used without further development once if Hyperledger is adopted, time required for development can be shortened by utilizing original type of smart contract and Oracles.



5. LIUM Token

5-1 Token Ecosystem

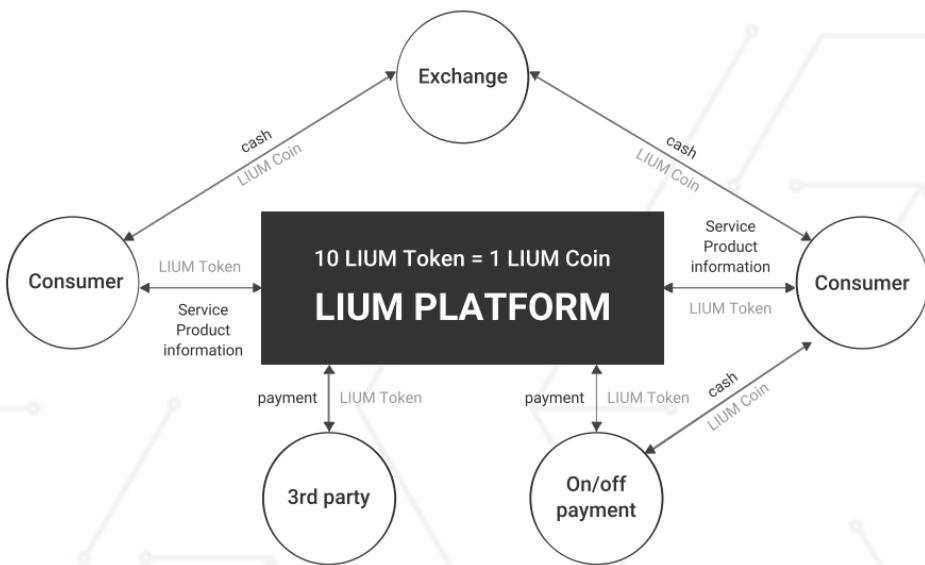
In order to use LIUM service, LIUM Tokens should be utilized.

LIUM Tokens can be exchanged with LIUM coin in a fixed ratio, which can be liquidated through cryptocurrency exchange platforms all around the world.

The exchange of LIUM coin and token is conducted in the digital wallet provided by LIUM.
(The ratio will be decided upon in the near future)

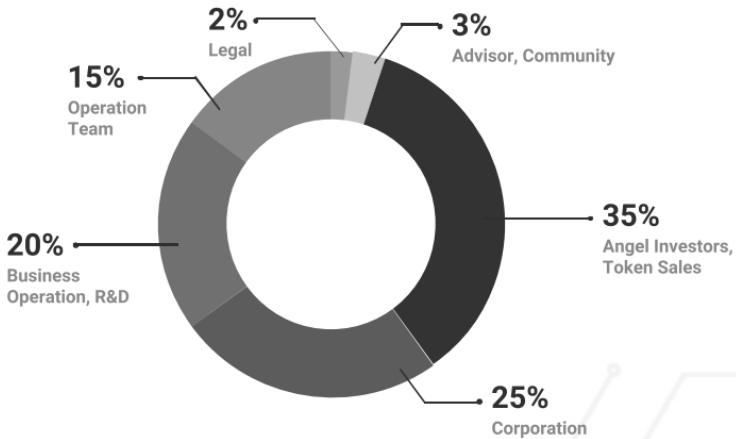
LIUM Token is planned to be used not only within the LIUM service, but also as a payment method for other services online and offline.

Third parties wishing to implement their own services within the LIUM platform may do so through released API and SDK, and also by receiving technical assistance if needed.

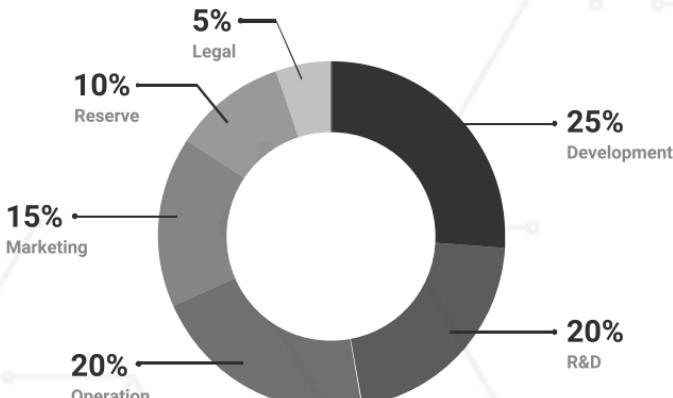


5-2 Token Distribution

- Token name : LIUM Token , LIUM Coin
- Issued amount : 9,900,000,000
- Infrastructure : ERC20
- Value : 1 LIT (LIUM Token) = 0.00002210 ETH (Aug. 21st / coinmarketcap.com)



5-3 Fund Management



6 Token Sales

A total of 9.9 billion (9,900,000,000) LIUM tokens will be issued, and no new tokens will be issued after the distribution. 3.465 billion tokens, 35% of the total amount, will be issued through private sale and Pre-Sales. The collection, sales price, distributed amount, and bonus rate are the following:

Stage	Collection	Sale Price	Distributed amount (LIUM Token)
1st Private Sale	6.93 billion won	5 won	1,386,000,000
2nd Private Sale	6.93 billion won	5 won	1,386,000,000
1st Pre-Sale	6.93 billion won	10 won	693,000,000

Exact dates and details of the token sale and distribution will be informed through the official website and LIUM community. Also, a partial of 6.435 billion tokens, 65% of the total amount, will be reserved for incentives for the team members and advisers. Mostly, LIUM tokens will be used for ecosystem operation and vitalization of the community.

7 Roadmap

2018	4Q	LIUM Concept Plan Market Analysis
2019	1Q	Team Member Formation Whitepaper v1.0 Plan E-Wallet Specialized for LIUM
	2Q	Complete Official Website Whitepaper v2.0 Commence E-Wallet Development for LIUM
	3Q	Establish LIUM Corporation & Issue Tokens Whitepaper v3.0 Complete E-Wallet Development for LIUM Plan LIUM Platform Server
	4Q	Plan Dapp Service Search for Partnership Opportunities Examine Mainnet Development Plan Architecture for LIUM Portal
2020	1Q	1st Dapp Service Test (Job Hunting) / Ethereum-based Commence Developing Architecture for LIUM Portal
	2Q	Launch 1st Dapp Service Extend 1st Dapp Service Partnership Test LIUM Portal
	3Q	2nd Dapp Service Test (Used-good Transaction) / Ethereum-based 1st Dapp Service Enhancement
	4Q	Launch 2nd Dapp Service Extend 2nd Dapp Service Partnership Plan 3rd Dapp Service (Undecided)

8 Team



CEO
Taihoon Kim

- PhD in Public Administration, Sung Kyun Kwan University
- Former Secretary at the diagnosis center Ministry of Public Administration and Security Organization (5th Grade)
- Former Researcher at the Korea Policy Review
- Former Vice Chairman of Free Korea Council
- Former Chief of Staff of a Member of National Assembly, National Assembly
- Current Consultant of Research and Research Advisory Committee



CMO
Hojun Park

- BA in Tourism Management, Kyunwon University
- ROTC 33 (Lieutenant General)
- Former Team Manager of Korea Marketing, Gravity Corp
- Former Staff at New Business Division Staff, SK C&C
- Former Marketing Director, Deck Story Corp.
- Former Chief Marketing Officer, Block Chain Partners
- Current Director, Korea Game Developer Association
- Current CEO, Social Guru Corp.



COO
Dongmyeong Shin

- Former CEO, Production
- Former CEO, Seokyeong Corp.



CTO
Sangkil Hong

- Dankook University Animal Resources Science dropout
- Former Producer and Development Director of Ragnarok, Gravity Corp
- Former Gobiz Korea Development Executive Director
- Current LIUM Team

8 Team



Domestic Marketing

Hyunmin Im

- BA in Business Administration, BAekseok University
- Former Online Marketing, IMC Cube
- Current LIUM Team



MARKETING

Luo BeiBei

- Bachelor of English Language and Literature at Shanghai University of Political Science and Law
- Master of English Education at Korea University
- Former Counselor at Chuangzhi Overseas Co. Ltd.
- Former Interpreter and assistant at Spa Ceylon Korea
- Former Sales and assistant at Banila Co.
- Current LIUM Team



MARKETING

Dong A Shin

- BA of Business Administration in International Hotel Management with Hospitality Entrepreneurship at Les Roches Blucne
- Diploma in international hotel management at Les Roches Jinjiang
- Former Management Trainee in Hilton Hongqiao
- Former Management Trainee in Rooms Division Honcta hotel Shanghai, A Luxury collection
- Current LIUM Team



MARKETING

YeonJung Yeo

- BA in Russian of Hankuk University of Foreign Studies with a minor in International Management
- Current LIUM Team

8 Team



SERVICE PLANNING

YeHee Hong

- BA in International Studies at Hanyang University
- Current LIUM Team



COMMUNITY MANAGEMENT

Kapci Selen

- BA in English at Cheonnam National University International Studies
- Current LIUM Team



DEVELOPER

Jihoon Shim

- Web Developer
- Web Back-End Development
- Web Server Network Engineer



DEVELOPER

Minkyu Song

- Platform Developer
- Front-end Solution Developmen

8 Team



DEVELOPER
JeongTae Park

- Department of Information & Communication Engineering at Myong-Ji University
- Former Co-Founder, Jaem Developer Corp
- Former Research Team Lead, Bitrust
- Former Research Director, Gloscosy Corp.
- Former Team Leader, GoldMining
- Former Developer, Francosy Corp
- Former Developer, Edipse
- Current Development Team Leader, DOMINANT LAB



DEVELOPER
InYong Choi

- Department of Computer Science at Myong-Ji University
- Former BITHUMB EXCHANGE Development Team, BTC KOREA.COM Corp.
- Former IT Headquarters Development Team, S COIN Corp.
- Former Development Team, KOIWARE Corp.
- Current Development Team, DOMINANT LAB



DEVELOPER
YoungSeuk Lee

- Former Front-end Developer, Bitrust
- Former Front-end Developer, IG LAB
- Former VanillaCoding BootCamp Tertiary Member
- Former Researcher, Clarus Korea Corp.
- Current Front-end Development Team Leader, DOMINANT LAB

8 Advisor

**Uhn Lee**

Advisor

- Former Chief of Gacheon University Gil Hospital Neurosurgery
- Former President of The Korean Neurosurgical Society
- Former CEO of BRC Stocks Company
- Current Promotion Leader of Gacheon University Gil Hospital

**TaeSeok Choi**

Advisor

- Former Commissioner of Speciality in Aging Seoul Stem
- Former Director of Center of the HJM International Medical Center
- Current Medical Director of May Clinic

**ByungChul Park**

Advisor

- Former Specialist at Bureau of Public Information
- Former CEO of Incheon Smart City (Co)

**SukJoon Cho**

Advisor

- Former Parian Haneul Corporation Chairman
- Former The 9th Administrator of Korea Meteorological Administration
- Current Climate Change Journalist
- Current Secretary General at the Korea Coloum Sharing Foundation

8 Advisor

**GeunChun Lee**

Advisor

- Current CEO at the Sharing Economy Association of Korea
- Current CEO at the Association of Socioeconomic of Korea
- Current CEO at the Busan Economic Promotion Agency
- Current Director at the Federation of Voters of Korea

**YongTak Song**

Advisor

- Current CEO at SaramnSaram Co.
- Current CEO at Searchfirm SMI
- Current CEO at Honest Funds Korea

**SangGyu Lee**

Advisor

- Graduate of International Economics at Seoul University
- Former DACOM
- Former Interpark CEO
- Former I Market Korea CEO
- Current Interpark Biz-market Chairman of the Board of Directors

8 Partner



SaramnSaram Co.

Partner



Awesomepia Co., Ltd.

Partner



UTOPIA Group

Partner



Tong In Express

Partner

9 Disclaimer

The purchase of LIUM coin may be linked with high degrees of risk. To protect the profit of potential consumers of the token, LIUM Corporation analyzed and enumerated possible risks. It is important to note, however, that the risks may be displayed in other forms than specified in this paper. All token buyers are advised to purchase after assessing possible risks through thorough examination of all relevant information.

The company shall not be liable for any unforeseen circumstances such as bugs, malicious behaviors, incompatibility or government intervention, and does not guarantee compensation to the token owners. If the platform and tokens are illegally or compromised due to regulatory measures, the company may stop development or / and operation.

9-1 Technology

9-1-1 Ethereum

Tokens are distributed within the Ethereum blockchain. Therefore, the Ethereum platform may limit the usage of tokens or transform functions within the platform due to any kind of malfunctioning in the protocol. Since the Ethereum platform is an open source, the smart contract may contain access to bugs or malicious scripting that could adversely affect the token or cause an access losses.

9-1-2 Malicious Attack

Malicious groups, such as hackers, can attempt to disrupt smart contracts or to manipulate tokens through attacks such as viruses, DOS, DDOS, and malware.

9-1-3 Compromised Identity

When purchased, tokens can be stored by the token holder that requires password, digital key or key combinations. If the key connected to the wallet is lost, access to the token may also be lost. Also, if a third party gains access to the key through hacking, owner negligence, or other methods, he or she can use the token.

9-2 Regulation

9-2-1 Uncertainty

The regulations of the government have yet to catch up with the technological development of cryptocurrency, digital asset and blockchain. In the future, such technology may restrict activities of owners and users. Such can have a negative impact by tokens being classified as a financial instrument requiring registration and legal compliance.

9-2-2 Taxation

It is the responsibility of each token owner to determine whether each exchange platform is subject to taxation in its own country or other jurisdiction and to comply with all tax laws by paying the necessary amount.

9-2-3 Licensing and Permits

At current stage in devising the Whitepaper, corporation is not obliged to acquire licensing or permits for the distribution of tokens. Details regarding distribution and usage of tokens may be adjusted as the legislation is processed.

9-3 Business

9-3-1 Extenuating Circumstances

There always may be unforeseen circumstances that may interfere with company and platform operations. In such cases, the company may suspend, terminate, or delay progressions. The unforeseen circumstances include natural disasters, wars, armed conflicts, civil disturbances, industrial actions, epidemics, long-term shortages or suspension of energy or telecommunication services, acts of government agencies, or other situations beyond the control of the company.

9-3-2 Token Value

LIUM Token has no intrinsic value outside of the LIUM ecosystem. All the examples outlined above are solely used for illustrative purposes. Because those only designate a long term potential, the information cannot be used as any financial prospectus now or in the future.

9-4 Disclosure

Corporation may be obligated to disclose personal information (Example: amount of token owned, wallet address or other related information) of token holders to law enforcement agencies, government officials, or other third parties. And the corporation shall not be liable for any disclosure of such information at any time.

9-5 Future Reports

Although mentioned prospects align with current predictions at this stage, those may frequently be altered due to the experimental nature of the technology, and thereby be regarded as unstable. The corporation does not hold responsibility to report all details regarding platform and token development. Therefore, although upmost effort would be put into update information, such may not be comprehensively available at all times.

10 Glossary & References

■ API

Application interface, tool set for software implementation

■ Block

Link to blockchain, stores data

■ Consensus

Consensus among all nodes regarding the status of system or data

■ dApp

Distributed application program – application implanted within P2P network instead of the single-system network

■ ERC20

Technology for smart contract transactions for token formation within Ethereum

■ Smart Contract

An automatic program carried out when a series of conditions are fulfilled

■ Escrow

A reliable neutral third party intervening in commercial transactions between seller and the consumer to trade money or goods

- Gartners(2018), Digital Disruption Profile : Blockchain's Radical promise Spans Business and Society
- The Definition of Two-sided Market and its Conditions : 2010 Sang Kyu Rhee
- Online Shopping Market Forecast : KISDI
- Cyber Hacking Damage Case : KISA
- Used car transaction status data
- Age of context : book, Robert Scoble, Cell Israel
- Game white paper
- Hyperledger Fabric : <https://hyperledger-fabric.readthedocs.io>