ELYSIUM

REVOLUTIONARY TELECOMMUNICATION
SERVICE FOR EVERYONE

Abstract

The mobile telecom industry has been dominated by a few large corporations which work together to maintain control of infrastructure, gather consumer data, and set prices. By monopolizing the industry, these corporations have prevented new competitors from entering the market and developing new innovative products and services.

Currently, three major problems exist within the industry. First, private consumer data is at risk of exposure to third-parties who can profit from the data without any compensation to the individuals providing the data. Second, consumers have limited choices when choosing operators or price plans for their mobile devices. Third, passing the marketing and operation costs to the consumers results in expensive price plans.

Project Elysium is a revolutionary telecommunication project that can effectively solve these problems. Project Elysium aims to change the monopolized telecom landscape and provide a better service for all consumers. By partnering with multiple mobile telecom networks, affordable and customizable data package plans will be offered to consumers around the world based on their preferences. Furthermore, consumers will keep ownership and control of their private data. This allows consumers to become a new type of data supplier with the opportunity to monetize and gain profits from voluntarily providing data to interested parties.

Project Elysium will pursue an innovative way of revolutionizing the current industry in order to expand the mobile telecommunication ecosystem, diversify the service area with new technologies such as blockchain, and ultimately provide fair, inexpensive and standardized telecom services to customers around the world.

Please Note: Elysium is a work in progress. Active research is under way, and new versions of this paper will appear at www.elynet.io For comments and suggestions, contact us at support@elynet.io

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1. Introduction

Worldwide mobile telecom operators have 2.5 billion smartphone subscribers with each providing valuable data to the operators. Each year, the focus moves towards connecting everyone through as many smart devices as possible. The explosion of the Internet of Things (IoT) market means consumers can be connected to the internet anytime and anywhere. Furthermore, with the prevalence of applications across our devices, mobile telecom operators can collect mass amounts of data from each user. With the data collected through these devices, they are increasingly able to monitor the activities, preferences, and tastes of every user. Moreover, much of this data collection is conducted without the knowledge of the consumer.

Consumers expose themselves to these risks the moment they enter into a subscription-based contract with mobile telecom operators. The nature of the relationships between the operators and other institutions means that consumer data can be disclosed to these other parties to be used in their marketing or business development plans.

Increasingly, consumers are becoming more aware that their data is vulnerable to leaks but can take little to no course of action. The mobile telecom operators own this data and are not willing to give up ownership rights back to the consumers. For most consumers, it has become normal practice to disclose personal information in return for access to a) the networks of mobile telecom operators and, b) applications offered by service providers. Furthermore, data is being monetized by these corporations with none of the profits returned to the consumers who initially provided this data. Governments are creating regulations to prevent data monopolies, but these regulations only protect national telecom operators from foreign telecom operators and do not protect the consumers.

With the rapid increase of smart device and mobile application users, the mobile telecom industry will continue to be one of the largest collectors of consumer data. The technological advances in 5G networks and the Internet of Things (IoT) also means more data can and will be collected from consumers. Furthermore, mobile telecom operators are finding new marketing strategies to keep their customers locked-in to keep them from switching to more affordable and efficient alternative services.

1.1 Motivation

There are three major problems with the current mobile telecom subscription model.

1.1.1 Exposure of Private Data

By subscribing to a mobile network operator, consumers provide personal information such as a name, address, phone number, and personal ID number and agree to allow this data to be used for marketing or other purposes. After becoming subscribers, they are locked into long-term contracts. Once connected to their network, the mobile telecom operators can begin collecting sensitive data from the daily activities of each subscriber. The data is then used to target specific consumer groups through optimized marketing strategies resulting in increased revenue and profits for the mobile telecom companies.

1.1.2 Limited Choices

Traditionally, the industry has been dominated by a few major players who work together to set prices and plans resulting in limited choices for the consumer. Large investments are required preventing newcomers from entering the market. There are several key factors at work here. First, the infrastructure costs are enormous. New entrants would need to install their network nationwide regardless of the previously installed infrastructure from

existing operators. Second, extensive industry experience is required to navigate the strict industry rules and regulations. Third, the entrant needs to set up an offline retail sales channel. Fourth, complex back-end billing, customer and data management systems are required. Fifth, a powerful and never-ending marketing plan needs to be implemented. All these factors create a high entry barrier resulting in fewer competitors.

Although consumers provide valuable private data and pay monthly usage fees, mobile telecom operators implement complex processes which discourage subscribers from changing operators before the expiration of a contract. Oftentimes, subscribers are required to pay a high penalty fee to change operators.

1.1.3 High Consumer Prices

The high marketing and operation costs of mobile telecom operators are passed onto the subscribers leading to increased price plans. Furthermore, any additional investments into hardware or software are passed onto the subscribers.

1.2 Objectives

The objective of Project Elysium is to create a new mobile ecosystem with a focus on the below:

- Provide innovative, diversified and reliable mobile services through our global network.
- Establish an advanced ecosystem that operates regardless of region and country.
- Improve user experience and satisfaction by offering customizable solutions.
- Enhance customer value through transparency and efficiency on using the infrastructure and service.
- Return ownership and control of private information to individual users.
- Individual and independent users can be a part of a sharing economy and exercise their own rights as data suppliers.

1.3 Key Components

Elysium Network (ElyNet) is the main network of Project Elysium composed of mobile operators. ElyNet enables an unprecedented telecommunication global service allowing users to connect to any mobile operator in the ElyNet ecosystem regardless of region or country.

Elysium Blockchain (ElyChain) stores important consumer information through distributed ledger technology. A three-layer synchronization process enables faster transaction speeds. ElyChain is fully mobile-based so that each and every smartphone user can easily take part in the ElyNet ecosystem.

Crude is a mobile operating system that contains personal information used for authentication. It is essential to install Crude on mobile devices to join ElyNet regardless of user-type (e.g. corporate, individual, groups, etc.). Crude plays a crucial role in the creation and validation of blocks inside smart devices.

Proof-of-Communication is a special consensus algorithm adopted by Project Elysium. With only a few delegates participating in the consensus, faster validation of blocks is possible.

Elysium Port (ElyPort) works concurrently with ElyNet. All ElyNet users including service providers, content providers, and end-device users become active suppliers of data on ElyPort.

ELYX Coin is a cryptocurrency circulated within the ElyNet ecosystem. Users can buy the network infrastructure or many other contents provided on ElyNet using ELYX Coin. ELYX can be bought and sold on an exchange and can also be exchanged on ElyPort.

1.4 Project Overview

Project Elysium will create a new decentralized market structure that is segmented and composed of many nimble smaller operators, allowing them to enter a market under the ElyNet brand and to compete with larger operators on price and data plans. Region-exclusive operators will be able to cooperate together, share their subscriber base, and eventually reduce competition with each other, creating ElyNet, as shown in Figure 1 below. Any Android-based smartphone users can join the ElyNet by installing Crude.

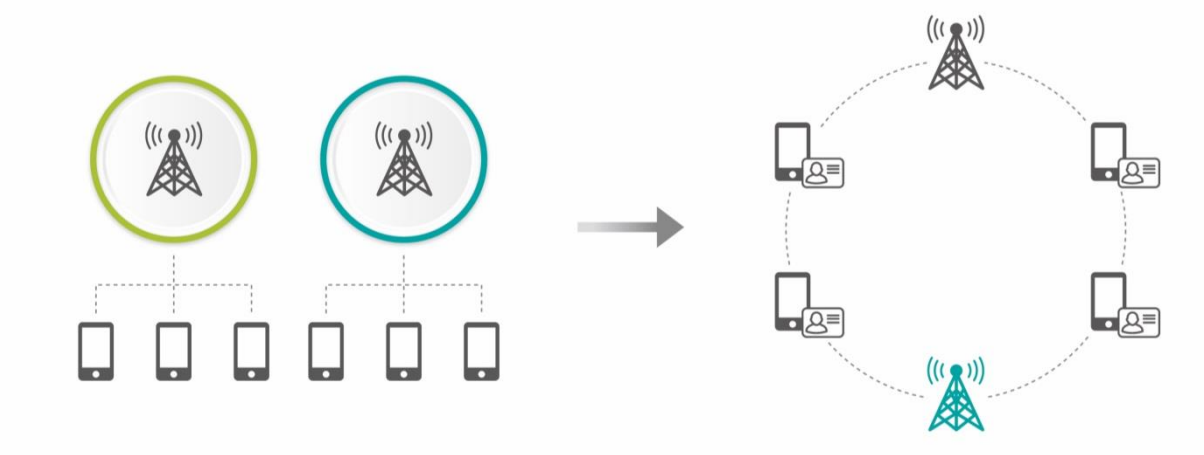


Figure 1. The change in structure of the current mobile telecom industry into ElyNet.

Now that the integrated telecom network is built, ElyNet users can connect to the nearest base station of whichever mobile operator they are subscribed to. For example, all smartphone users are dependent on mobile operators, so they can use only one local network service at a time, regardless of where they are in the world. However, within ElyNet the user can connect to the nearest ElyNet operator enabling the universal network service as depicted in Figure 2.

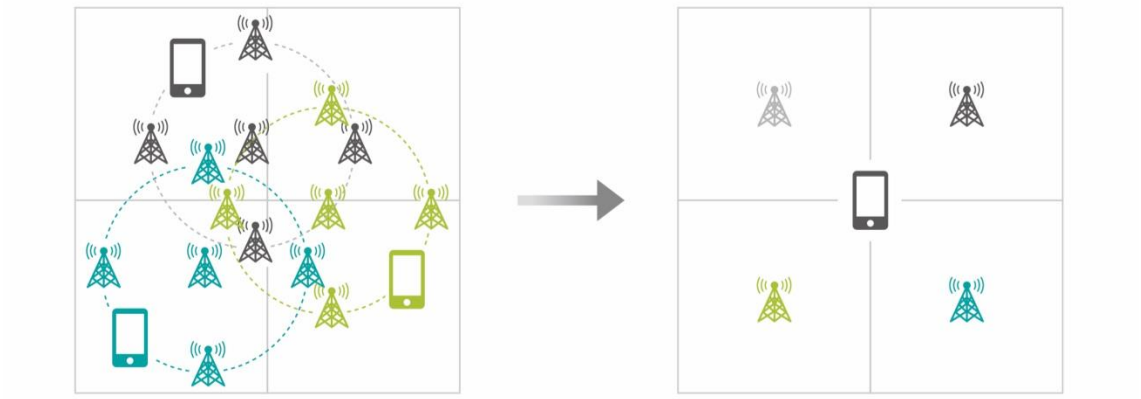


Figure 2. The localized service of mobile operators will become universal with ElyNet.

Whenever an ElyNet user makes a call, sends data, or shares information with other ElyNet users, Crude searches the identity of the receiver from ElyChain and omits the current complex process of searching through database servers of telecom operators. Therefore, the entire connection process is significantly faster than the current model and relies solely on network speeds. Historical communication data, such as sender/receiver ID with the exception of sensitive personal information, is recorded in a block. This block is automatically created when a

transaction is completed. Block creation is validated through the Proof-of-Communication consensus which includes 5 or 7 participants to validate the block and so guarantees fast transaction speeds.
Once the data is securely stored in ElyChain, owners can decide to monetize this data. ElyPort will deal with all kinds of data existing on ElyNet so that users will be rewarded for the provision of their data. The key components of Elysium will be explained in detail from the next section.

2. ElyNet

ElyNet is a mobile network that offers alternative mobile service plans and allows service providers to create and sell their content. Utilizing blockchain technology, it will be a network of end-users, mobile network operators, corporations, and service providers with each having an identification card known as Crude.

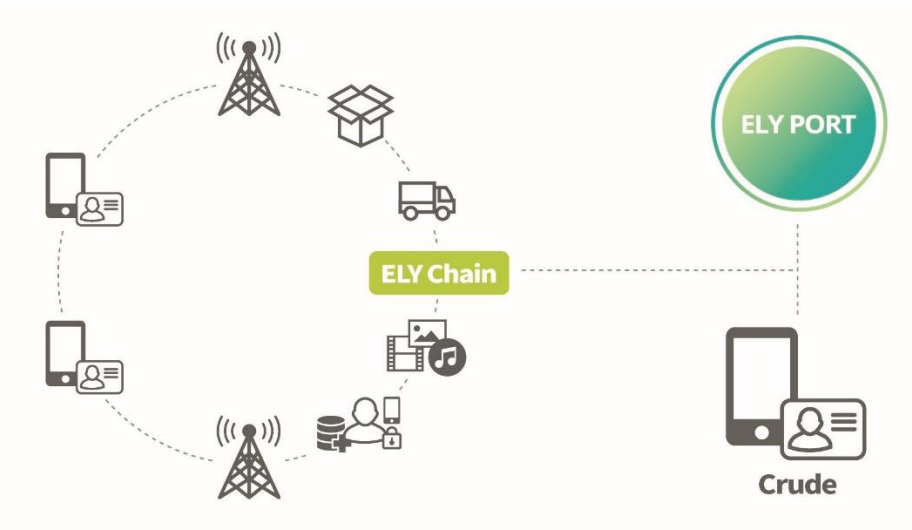


Figure 3. Various types of contents providers and users can participate in ElyNet.

ElyNet will allow users to provide only basic information, choose between their carrier or the ElyNet network, and keep ownership of their private data. After the initial registration process, users will not need to submit more information to use the service in a different region or country.

2.1 Objectives

ElyNet aims to improve consumer satisfaction and user experience levels by providing an efficient mobile network with higher quality services at standardized and more affordable prices. The objectives of ElyNet are as follows:

- Protect consumer rights to their personal information.
- Generalize the use of existing mobile telecom infrastructure.
- Keep information transparent and open.
- Create easy network access.
- Facilitate affordable consumption and transparent transactions.

2.2 Benefits

Through ElyNet, consumers will be able to choose different packages such as fixed or pay-per-usage plans and are charged only for the data they consume. Furthermore, any unused data continues to remain in their account for future use. With the current mobile subscription model, consumers are paying for expensive data packages with a) loss of value occurring when data is not used and b) extra charges for surpassing data limits. Consumers are not compensated for any unused data and this data is not credited back to their accounts.

Reducing investment in telecom infrastructure, offline retail operations, and marketing strategies translates into savings that can be passed onto the consumers. These mobile operators can now focus resources on providing

improved services for consumers who can access these services across the globe with ElyNet.
Operators within the ElyNet ecosystem will be able to:

- Provide affordable mobile and data plans.
- Predict user data usage allowing for efficient allocation of resources.
- Share overall user base.
- Reduce marketing and operation costs associated with attracting new users.
- Focus on improving network quality without heavy investments.
- Expand business through cooperation with other operators.

ElyNet is a user-oriented, and not operator or provider-oriented, mobile service that provides the following benefits to users:

- Standardized pricing plans across regions or countries.
- Freedom to choose between ElyNet or their existing network as it fits their lifestyle and.
- Pay only for services and data they have used.

2.3 Characteristics

2.3.1 User Rights

ElyNet guarantees the following rights to consumers:

- Rights to privacy protection.
- Rights to know which information is collected.
- Rights to use the information.
- Rights to participate in establishing information management and usage policies.
- Rights to access information.

2.3.2 User Protection

Separate policies will be in place to protect user information on one side and user rights on the other. Users will keep ownership of their personal information and data. Mobile network operators within ElyNet will be prohibited from selling this data to third parties and prohibited from making any changes. Furthermore, mobile network operators will not be allowed to dictate the extent of information collected from users during the registration or cancellation stage. Should mobile network operators use personal information and data for other non-transactional purposes, they will be required to compensate users. Personal information and data will not be stored nor managed by mobile network operators. Users will be able to monitor the use of their data.
Below are examples of personal information and data collected:

- Personal Identification (Name) / Credit Information
- Personal Transaction Data / Purchase Information
- Application Usage Data / Personal Content Information

2.3.3 Information Disclosure

There are two different types of information – public and private. Public information will consist of transactional data between consumers and mobile network operators. This data set will be accurate and reliable and cannot be monopolized by any specific group. Opening this information to the public will reduce the information imbalance that exists in the current industry model. Private information will consist of user's sensitive information and data and will be kept secure. Only the user will have full control of his/her personal information and data.

2.3.4 Popularization of Infrastructure Use

Both mobile network operators and service providers will be able to build trust with users through transparent pricing policies whereby users pay based on usage. With current mobile telecom operators, users might face restricted access to certain services based on their user status defined by the telecom operators. With ElyNet, users will get equal access to mobile network operators and service providers. However, restriction of content and services to certain age groups will be implemented based on social standards. This type of equality focused infrastructure management will be prevalent in the ecosystem.

2.3.5 Convenient Network Access

ElyNet will be comprised of large networks connected real-time by numerous sub-networks. Even small network service providers can create lots of sub-networks allowing users a choice in choosing a network which guarantees the highest levels of service quality. The quality of service is guaranteed as many Mobile Network Operators (MNO) and Mobile Virtual Network Operators (MVNO) will participate in creating ElyNet and will concentrate solely on providing high quality networks.

In the future, virtual sub-networks will create other small ecosystems where people can share resources, profits, or even capabilities. These sub-networks with various subjects and purposes will be independently operated with their own standards and rules.

2.3.6 Smart Consumption, Clear Transaction, and Rational Distribution

Transaction information between operators and users are made public and shared through ElyChain to ensure transparency. Therefore, reasonable and affordable price policies can be established by the operators. If a corporation wants to utilize this public data, users will be compensated for any personal information used for marketing purposes.

Users will profit from the data they generate and acquire privileges inside ElyNet, so they have a responsibility to behave properly. If illegal or abnormal activities are detected, users will vote to cast out those bad actors. Corporations selling defective or low quality products or providing poor and slow services can be removed from ElyNet based on users' decisions.

3. ElyChain

3.1 Overview

GSM (Global System for Mobile communications) is now the standard used by 90% of global mobile operators for their cellular networks. The general architecture behind GSM is shown in Figure 4 below.

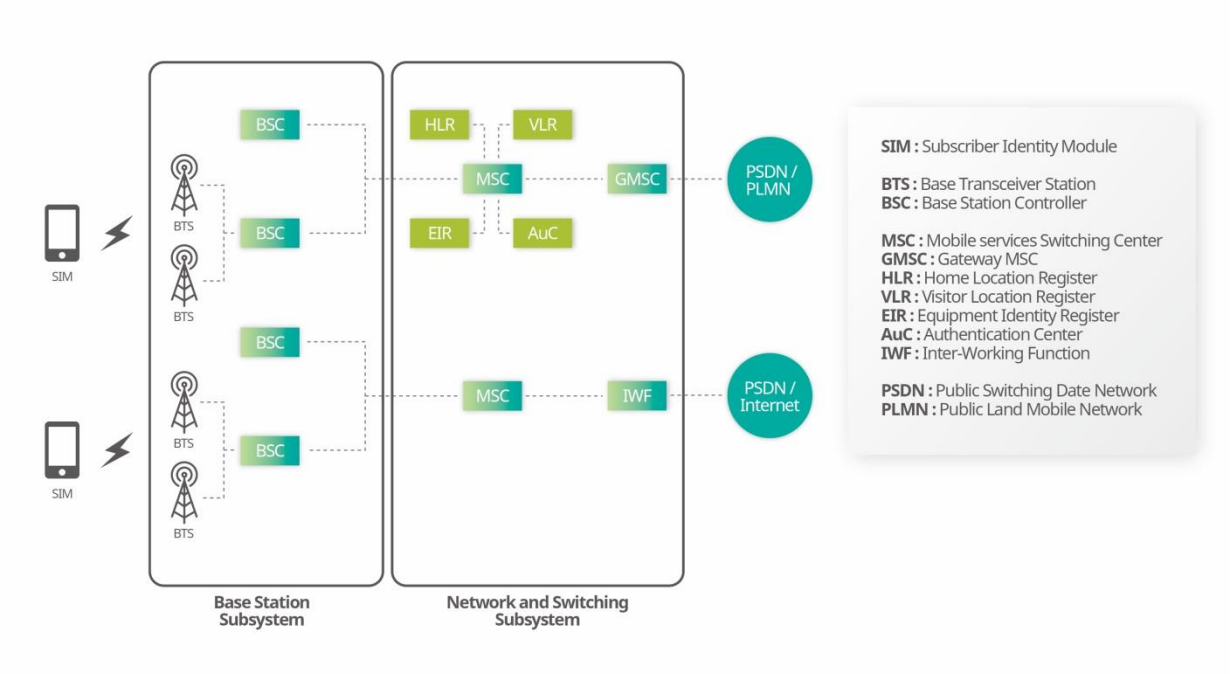


Figure 4. General Architecture of GSM

When a mobile device user makes a call or connects to the web, a data packet follows the route shown in the figure and finally reaches the database of a mobile operator. The complete process includes many steps and the real problem is that the system is centralized and operated solely by the telecom companies. Furthermore, telecommunication services are based on an expensive subscription model, so mobile device users can only connect to the network provided by the company to which they have a subscription.

ElyChain aims to replace this centralized model, specifically the Network and Switching Subsystem, so the complicated process of data inquiry is now simplified with ElyChain. The main component of ElyChain will be the Cellular Telephone Number (CTN) of users. The CTN will enable peer-to-peer communication (P2P) on ElyNet in a much faster and more direct manner. The current GSM structure is now transformed into the new ElyNet model as shown in figure below.

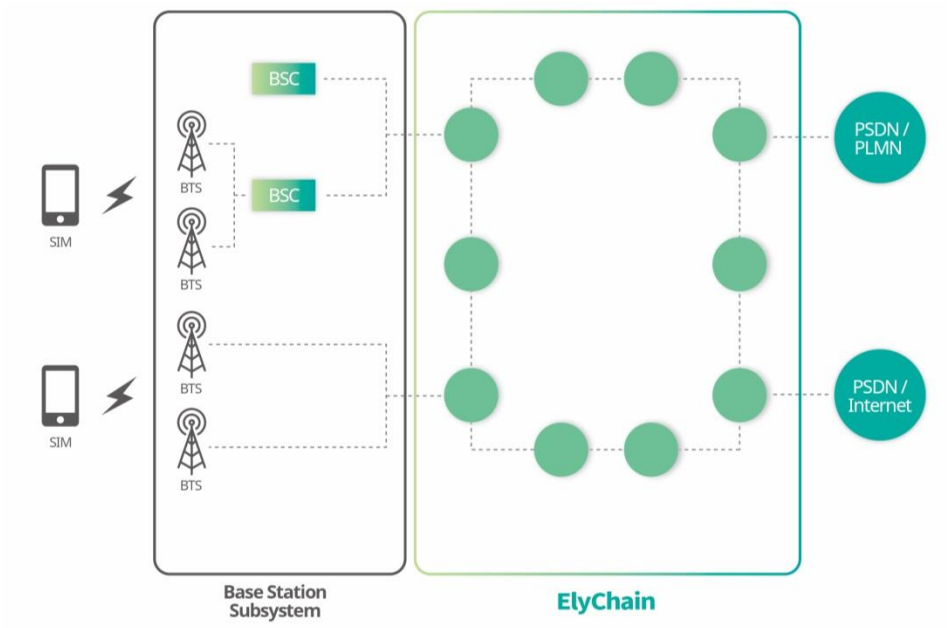


Figure 5. ElyNet Equipped With ElyChain.

3.2 Objectives & Benefits

- Fewer steps to the database thus allowing transactions at network speed.
- Distributed ledger of ElyChain enables the universal provision of the network enabling users to make calls and send data from anywhere in the world.
- Light version of ElyChain will be composed of the most recent two blocks made by the device in the form of mobile blockchain. This is saved directly onto the device. It will enable less battery consumption and also less cellular data consumption during the synchronization of the chain.
- Full version of ElyChain will be maintained and updated by the full nodes participating in the ElyNet ecosystem.

3.3 Block Composition

The composition of a block in ElyChain is not much different from those of other blocks that exist in the world now. The key difference is that transactions will contain the information of a caller and a receiver. This will be limited to non-sensitive information such as CTNs, call duration, and the type/size of data transferred, all of which can be viewed publicly. This transaction information is going to be stored as a cryptographic hash calculated through SHA-256, a hash algorithm that is considered to be the safest of numerous algorithms. Therefore, even though the publicly releasable information is stored, only the block creator will know the exact information stored in the block, and all the other users including the consensus group can only verify the validity of the block by comparing the hashes. If several transactions are made at the same time or during the period before the next block creation, the Merkle hash of the transactions is stored in the block for less consumption of memory space.

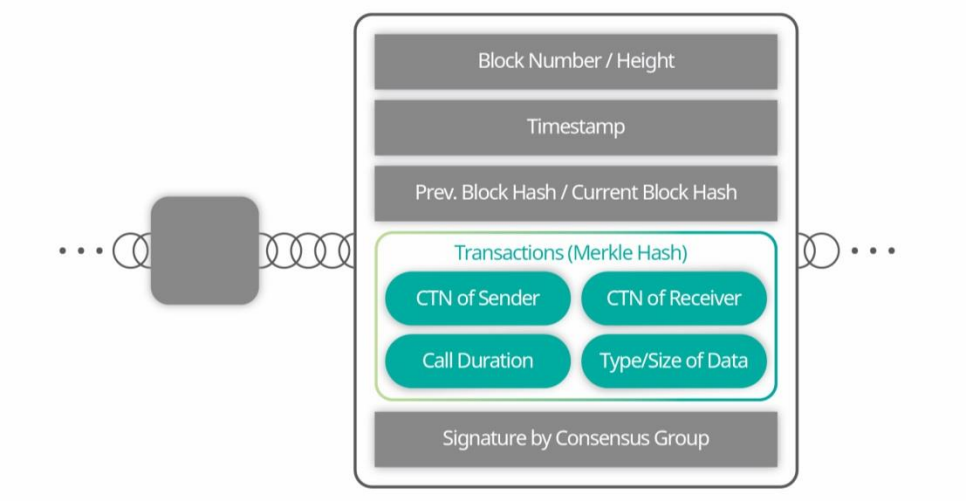


Figure 6. Composition of a block stored in the blockchain.

When transactions are completed and selected for a block creation, a consensus group made of 5 or 7 participants (necessarily odd number) verifies the validity of transactions using Proof-of-Communication and confirms the block by signing it.

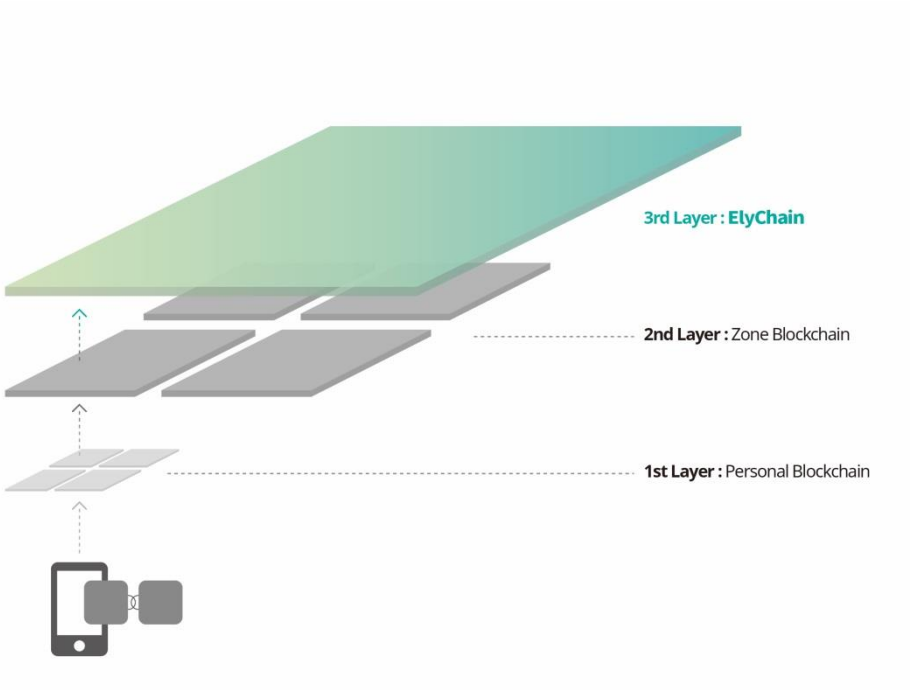


Figure 7. The layers of blockchain synchronization.

Once a new block is created, the synchronization to the blockchain occurs in three different layers. The blocks created by each and every device are uploaded to the first and innermost layer of blockchain called Personal Blockchain. This means that every user has his/her own Personal Blockchain comprised of different data sets. The difference in blockchains is natural and necessary as people create their own blocks with their transactions. Furthermore, an individual might have multiple devices thus owning multiple Personal Blockchains. The second layer of synchronization represents a physical zone of users which will mostly be cities or states based on the

number of people participating in the Zone Blockchain. The third and the outermost blockchain that gathers all the blockchains together is the Elysium Blockchain (ElyChain), and will be the main chain distributed to the full nodes. These three layers of synchronization successfully prevent manipulation of data and eliminate the inequality of distribution while maintaining the full transaction speed layer by layer.

4. Crude

Crude is a mobile operating system based on the android mobile operating system and integrates blockchain technology, distributed data processing, and automatic data collection technology. It works as a personal identification card which manages all personal information as well as any earned assets. Users can store and access personal information with Crude which will support various types of authentication such as biometric and cryptographic authentication systems. Simply put, Crude works as a soft-SIM that can identify ElyNet users.
Crude will operate on each user's smartphone. It will encrypt, store, and safely manage all personal and credit information, purchase history, and all mobile activity data. Therefore, a user's private personal data is securely stored on their mobile device via Crude with only the authorized user having access to the information. Users can easily manage their information through Crude and have control over which information to give to the companies that provide services on ElyPort.

4.1 Benefits

4.1.1 Network Selection

Crude contains basic information about network users. One of these is the cellular telephone number (CTN) that allows users to make phone calls. Users will be able to choose and purchase a plan within ElyNet and gain access to high quality affordable services offered by local networks. Crude automatically receives a local CTN in real-time without the need to change USIM cards when changing mobile network operators. Therefore, Crude enables users to make calls and send data through the network the users are connected to anywhere in the world.
Crude is equipped with an auto-select function which has the ability to choose from multiple functioning networks in the area. These different networks include 5G, 4G, Wi-Fi, WAN, IoT Frequencies and many others. To reduce costs, the function automatically prioritizes free or low-cost networks and moves up to 5G networks as the final option.

4.1.2 Single Sign-On

With Crude, participating companies such as application providers or content service providers (CSP) can immediately get authenticated and start providing their services without any additional authentication procedures. Corporate Crude will be set up for corporations and allow one representative to perform the authentication procedures. Existing service providers can quickly participate in the system by using the provided API or software development kit (SDK).

4.2 Components

Crude has different modules for each function and each module can be individually managed. These modules include functions such as block processing and authentication, consensus algorithm (Proof-of-Communication),

network control, and hardware resource control. All modules interact together once Crude is linked to a mobile network and Crude performs specialized block control functions on the smartphone.

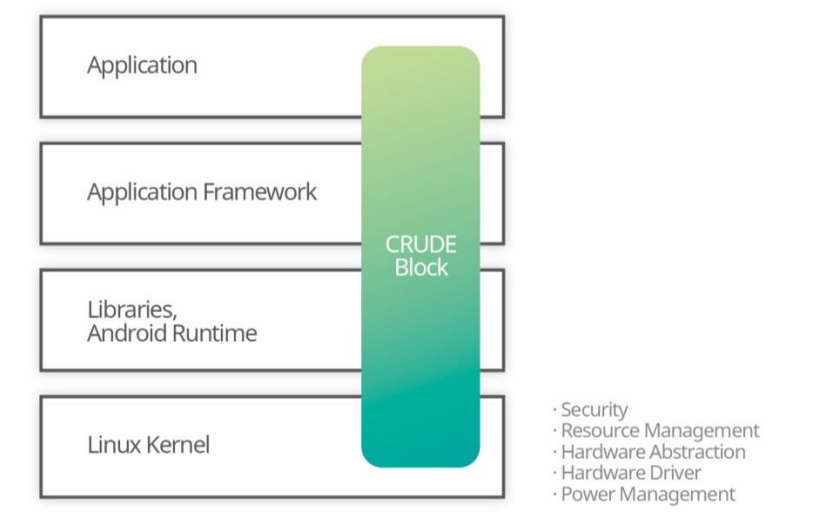


Figure 8. Components of Crude that Create a Crude Block

5. Proof-of-Communication

To maintain a blockchain-based distributed ledger, consensus is needed to achieve agreement among the network participants as to the correct state of data on the system. Most of the existing blockchain networks such as Bitcoin, Ethereum and EOS adopt a consensus algorithm called Proof-of-Work (PoW), Proof-of-Stake (PoS) and Simplified Byzantine Fault Tolerance (SBFT) to ensure that the ledger is the same for all nodes. In Crude, blocks are synchronized in three different steps with each ElyNet user having a personal blockchain, thus eliminating a complicated and resource-consuming consensus algorithm.
ElyNet designed Proof-of-Communication, a new type of consensus algorithm that guarantees faster creation of a block while still maintaining the advantages of PoS and SBFT.

5.1 Overview

Block validation is performed with Proof-of-Communication (PoC) through Crude which is installed on mobile devices. A consensus group is selected to sign the block and there are two types of participants in the group: Base Transceiver Stations (BTS) and Network Nodes. First, mobile device users create transactions that will be included in a block by making calls. Nearby BTSs then confirm that those transactions were actually made. In order to be tolerant of a Byzantine fault, randomly selected full nodes participate as validators in the process. In ElyNet, full nodes will be other mobile devices in ElyNet that keep making blocks. The number of nodes that must reach consensus is 2f+1 in a system containing 3f+1 node, where f is the number of faults in the system. For example, if we have 7 nodes in the system, then 5 of those nodes must agree if 2 of the nodes are acting in a faulty manner.

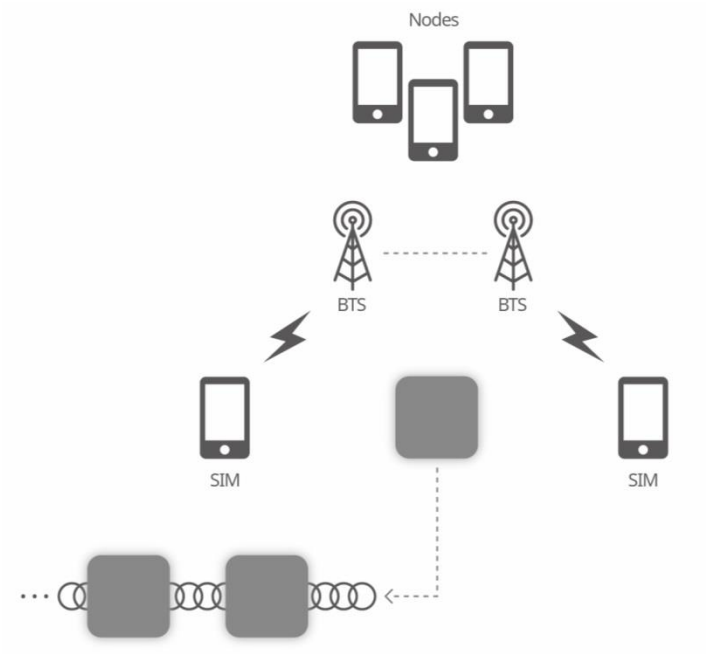


Figure 9. A Consensus Group Creating a Block

As soon as a consensus group agrees on the transactions to be listed in a block, the block is finally signed and confirmed as a valid block.

5.2 Incentive

The total supply of ELYX coin is fixed from the beginning so the so-called mining reward or block reward will not be given to ElyNet users. However, there is a type of incentive given in ElyNet. Network providers will be incentivized for providing services without extra charges to call receivers. Currently, there are two methods used by mobile telecom operators to charge their users. First, both the caller and receiver pay for call charges. This is common in approximately 70% of the global market. Second, the caller is charged and the receiver is not charged. This is common in 30% of markets including Korea. We believe the second method is more reasonable so ElyNet will not charge the call receiver. In markets where network operators normally receive revenue from charging fees to call receivers, sudden loss of revenue would be a disadvantage. The incentivization program is designed to offset this loss by rewarding these operators with ELYX.

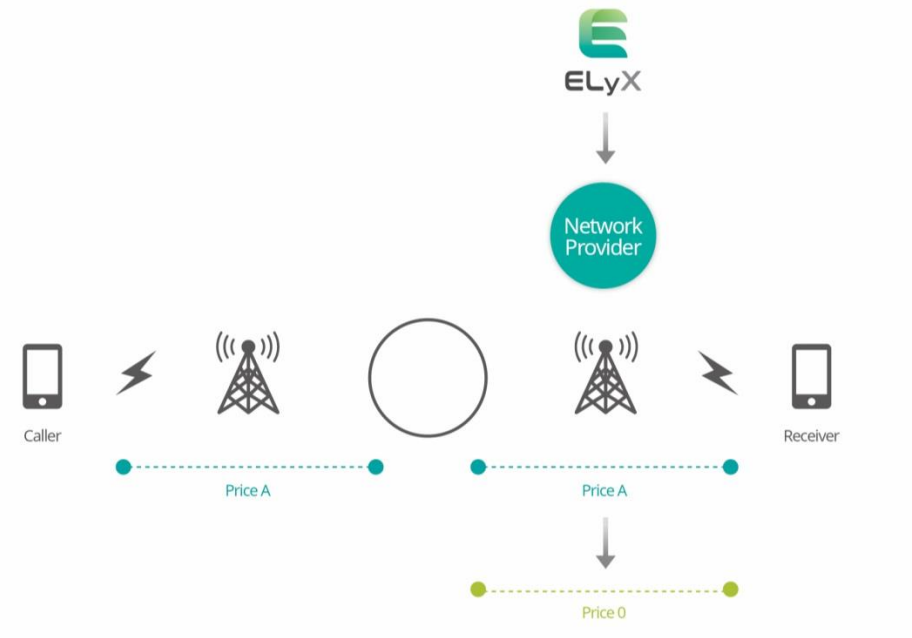


Figure 10. Incentive Structure

6. ElyPort

Elysium Port is a platform where contracts and transactions are made between participants in ElyNet.
Examples of transaction items:

- Access to mobile network infrastructure
- Unused data packages of users
- Digital and physical content purchased by users
- Personal data owned by users

Components of the platform are:

- Peer-to-peer transactions
- Multilateral transactions (co-purchases)
- Donations
- Resale
- Currency Exchange

Transactions and purchases are based on a decentralized peer-to-peer system. Mobile network operators within ElyNet can sell access to their infrastructure in bulk packages allowing for co-purchase and co-consumption between users or corporations. In addition, users can resell unused packages to third-parties.
Therefore, mobile network operators do not need expensive marketing campaigns to attract new users. Their focus can be on selling access to their telecom infrastructure. Users can purchase access to their infrastructure based on prepaid packages or pay-per-usage plans.

Figure 11. ElyPort and the transaction items on the system.

6.1 Transaction Items

6.1.1 Telecom Infrastructure

ElyNet is a fast, smart, and secure network service platform which provides users with affordable and efficient mobile services.

The types of transactions that can be performed are:

- Usage based billing system regardless of period.
- Joint purchase and consumption of data (i.e. 10 people can purchase and share 100GB of data).
- Share purchased data with others.
- Re-sell unused data to others.
- Donate purchased data.
- Use purchased data as a form of payment.

As mentioned above, consumers can connect from anywhere in the world via services provided by mobile operators in the ElyNet ecosystem. Therefore, a fair billing system based on usage is crucial for ElyNet to become a user-based telecommunication network. In ElyPort, users can buy, share, and re-sell as much data as they want with this flexibility guaranteeing that the telecom infrastructure is user-centric.

6.1.2 Digital Media

Digital media traded on ElyPort can be classified into three categories – 1) copyright registered media content, 2) non-copyright user-generated content, 3) copyright registered but no compensation media content. Through blockchain technology, digital content can be resold unlimited times and profits properly distributed to all stakeholders.

For “copyright registered media content,” profits are distributed to stakeholders through a smart contract. Even though the selling price is set by a seller, customers can decide whether to pay monthly or proportionally with usage. As soon as the contents are purchased, the consumer becomes a new type of content provider. Therefore, if a consumer gets approval from a seller, the consumer can re-sell the contents at an affordable price on ElyPort.

For “non-copyright user-generated content” and “copyright registered but no compensation media content,” the content provider can set conditions on the sharing or reselling of the content. In the case of unauthorized use, the provider is immediately notified, and actions are taken to retrieve the content and return it to the original owner.

Any purchase cases besides the three cases mentioned above, such as illegal activities, will be monitored automatically and the ownership returned to the original owner. Thus, digital media contents can be infinitely shared and sold. This benefits the participants, rather than illegal users, with profits for maintaining the ecosystem.

Though ElyPort is a new platform, it will also cover the services of existing platforms providing various digital contents such as music, videos, webtoons, e-books, and images. Based on the content type, various methods of selling are also supported (e.g. setting the ownership period, resale of contents, transfer of ownership, and group purchases). Therefore, problems of profit redistribution and copyright infringements will be significantly reduced.

6.1.3 Physical Goods and Online Shopping

ElyPort handles not only digital media but also physical goods found on existing online shopping platforms. E-commerce has been simplifying distribution channels but the growth of specific e-commerce companies created other problems such as dependency on those companies and limited product choice for consumers. ElyPort will allow the following three parties to be connected directly to each other - manufacturers, consumers, and logistics companies - so that the big conglomerates cannot monopolize the open marketplace. ElyPort users pay a price when purchasing products and the money goes directly to the seller and logistics company as soon as the consumer confirms the delivery. Through this escrow and product order confirmation system, all three parties fulfill their duties and unsolved problems such as fraud, low quality product, and loss during delivery will be finally resolved.

With Crude, consumers will be able to monitor various kinds of information in real-time related to their order including shipping status. With the use of smart contracts, appropriate funds are released to parties once conditions are met resulting in the elimination of price bubbles.

6.1.4 Personal Big Data

In the current mobile industry, smartphone users need to approve or agree to numerous terms and agreements before using specific services. Personal information, credit information, and location information are sent to the service-providing company, but most of the users don't even know why these companies are collecting this private information. However, they must provide it because some companies even block the registration process to those who do not agree to their terms. Then, this personal information is used by conglomerates for their various economic activities such as promoting their new products or sharing this information with other companies or sub-companies to keep these customers for future businesses.

For example, a person in Korea needs to agree to provide personal and credit information to the credit card company to be issued a credit card. This credit card user will never know where his/her information is used because the company never releases this information. Recently, users input credit card information on mobile applications such as Samsung Pay or other App payment services for convenience and linkage. These transaction records are collected not only by the credit card company but also by many other numerous companies in the ecosystem.

Of course, the provision of private information is mandatory for security reasons. However, companies should notify the usage of this information and give proper rewards back to the information providers. Thus, users are consumers and at the same time suppliers, requiring proper ownership of personal information.

In the ElyNet ecosystem, personal information is safely saved in Crude and the owner of this information can use it without any limitation. The monitoring system in Crude will show the usage of the information as soon as the information is provided to the service providers, so if the period of subscription ends, the information is

retrieved and returned immediately back to the user. The personal big data, then, are securely sold and purchased on ElyPort.

6.2 Benefits

6.2.1 Simplified Business Process

Individuals or corporations planning to conduct business through ElyPort will have a streamlined registration process. These parties can also cooperate with each other to create a sub-ecosystem resulting in enhanced services for users.

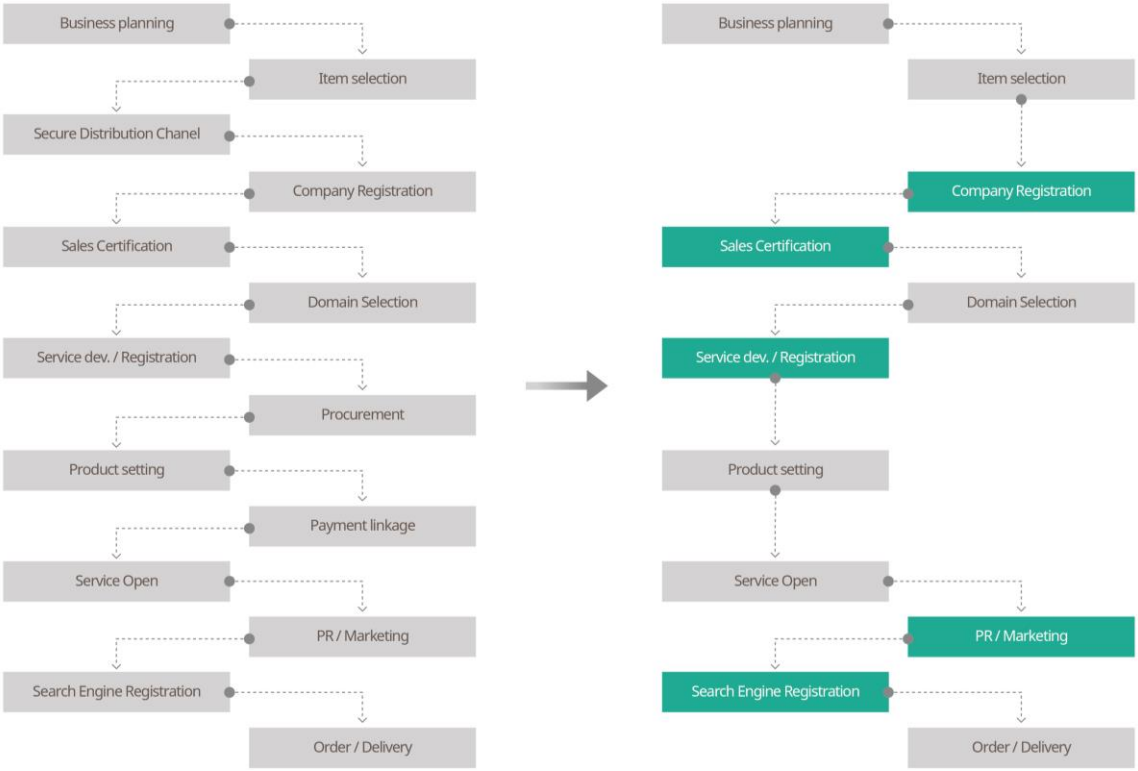


Figure 12. Simplified Business Process Within ElyPort

6.2.2 Business Expansion

ElyPort will support various business types and is easily scalable to accommodate an unlimited number of companies.

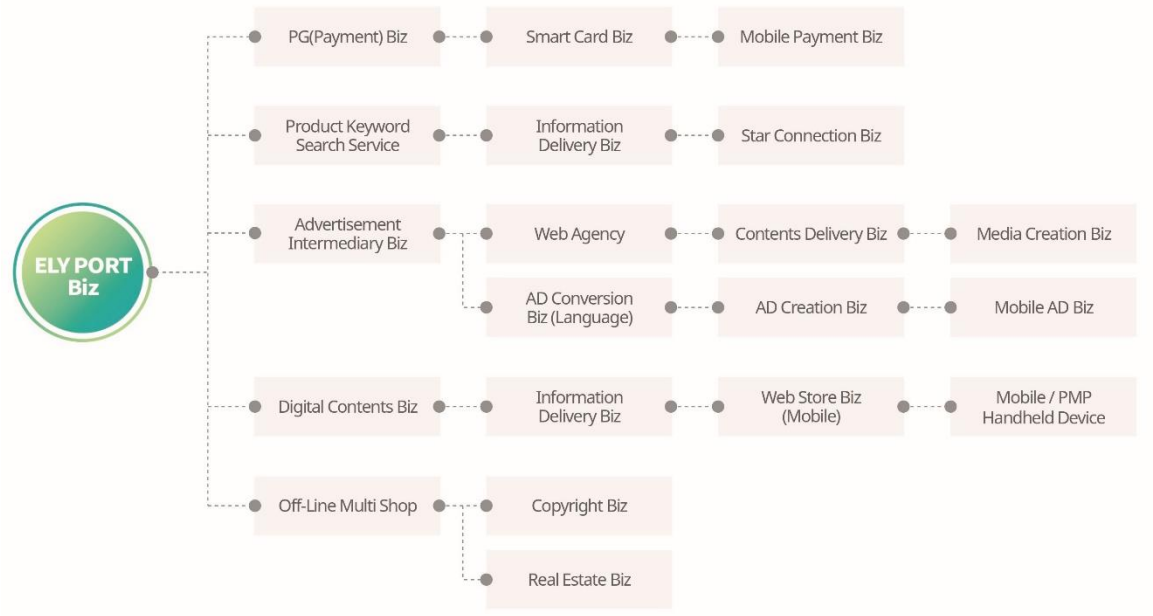


Figure 13. Numerous Business Opportunities in ElyPort

7. ELYX – Coin Used in the ElyNet Ecosystem

All transactions are performed with the use of ELYX Coin. Users can earn ELYX coin by selling their private data to corporations. Examples of such data could be mobile network payment history, digital content purchase history, and donation activity. Coins can be bought on the exchange market or from the ELYSIUM team. Coins can be exchanged and used outside of the ElyNet system.

There will be a hard cap of 2 billion units of ELYX issued allowing for stability in the ecosystem for the next 77 years. ELYX coins are designed to generate profit only when it is in actual use. ELYPORT is also planning on establishing a currency exchange center since ELYX coins are subject to exchange rate fluctuations. Furthermore, ElyNet's own "Coin-Pool" will be established to prevent issues arising due to inflation and enhance liquidity between users, mobile network operators, and service providers. 15% of the total volume will be reserved for the "Coin-Pool."

8. Expected Change in Current Industries

8.1 Digital Contents Industry

Currently, profits arising from the sales of digital contents is unequally distributed between content creators and distributors. ElyPORT aims to change the centralized distribution and management systems with current pricing policies to an unrestricted, decentralized system creating a balanced ecosystem for all stakeholders. Some key features of this system include:

- Distribution structure that directly connects content providers with users.
- Real-time distribution of content.
- Shared ownership between many parties.

Content providers stand to benefit through increased transparency and fair distribution of profits generated

from sales of intellectual properties. Once users make purchases, they will also be granted some ownership and rights from content providers. This will create a cooperative ecosystem and reduce any problems arising from unequal distribution of profits for stakeholders, illegal distribution of content, and copyright infringement.
Furthermore, through the restructuring of the current distribution model from a linear to a nonlinear structure, the life-cycle and resale value of digital content can be increased and lead to maximum profits for content providers.

8.2 Big Data Industry

The rise of smartphones and mobile devices connected to the internet has led to an explosion in the amount of data collected on individuals. Most of this big data is collected in a raw and unorganized form causing major corporations to spend heavily on upgrading legacy systems to incorporate big data analytics. As major corporations look for ways to monetize this data, individuals who have provided this data are not compensated nor given anything in return.
With Crude, users on ElyNet can profit from the sales of their data to these corporations and corporations can attain the rights to use this data for marketing or other purposes.

8.3 Emergence of a Sharing-Based Economy

ElyNET will allow users to create a new sharing economy whereby users can share, resell, or rent unused resources and content. With blockchain technology, trust between users is easily created allowing for this new sharing economy to emerge and new sources of revenue generated for all stakeholders.

8.4 Donations

Through ElyNet, users will be able to donate various resources to NGOs, other users, or charities conducted by Project Elysium. Project Elysium charity initiatives will seek to remove any information gaps that exist in certain regions and provide increased opportunities for individuals and groups to access information by:

- Installing new public networks where a telecom company has monopolized the market with high prices.
- Installing new networks in areas that lack telecom services.
- Establishing distribution channels to guarantee copyrights and ownership of content.

Users who donate to such charities will receive privileges such as free or lower-priced services in areas where their donations resulted in the creation of new networks. These new networks by user donations is called user-contributed networks. User-contributed networks will provide special benefits only to donators. Donations will also be used to incentivize and support network operators in regions with significantly smaller revenue generating populations

9. Road Map

Project Elysium was started to provide more affordable mobile services to consumers and to take the rights of private information and data from the large corporations and return its ownership back into the hands of the users.

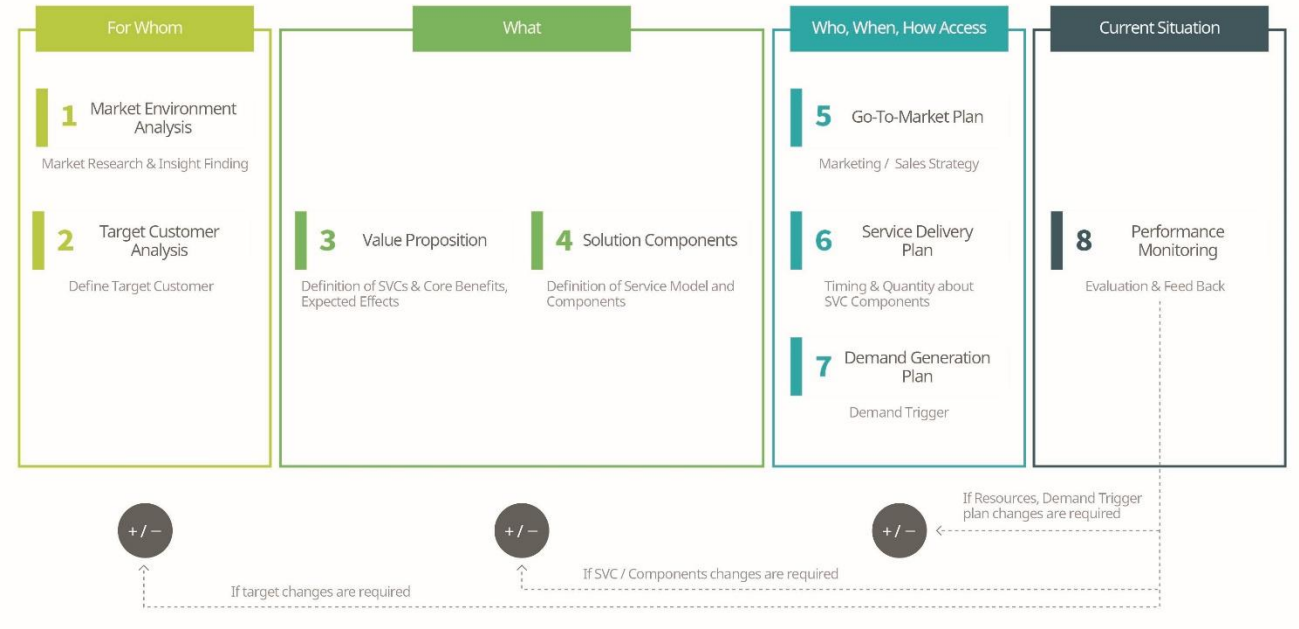


Figure 14. Project Elysium Roadmap

All the steps described above have been carefully considered and designed with support from users and experts in the field. One strength of Project Elysium is that both consumers and suppliers participate and work together. Based on decentralized and distributed ledger technology, the security and flexibility of the project allows for expansion into any region.

The project outlines eight steps taken to understand the problems arising from the current market situation and finding the optical solutions.

Figure 15. Roadmap 1

Project Elysium is currently developing the core blockchain technologies that will power the project. Furthermore, new partnerships are being established with companies and organizations willing to collaborate with Project Elysium.

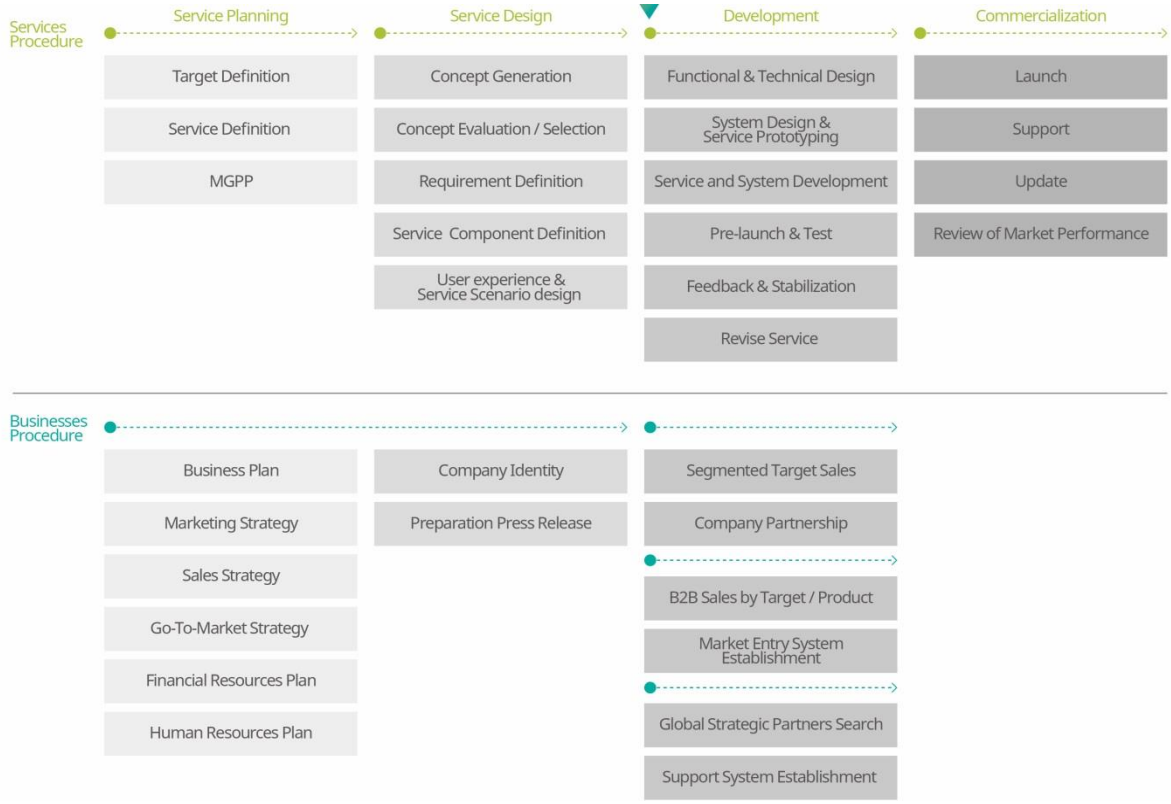


Figure 16. Roadmap 2

Main milestones:

- 2019.3Q : ELYX sales
- 2019. 2Q Alpha Version
- 2020. 4Q Beta Version
- 2021. 2Q Main Open

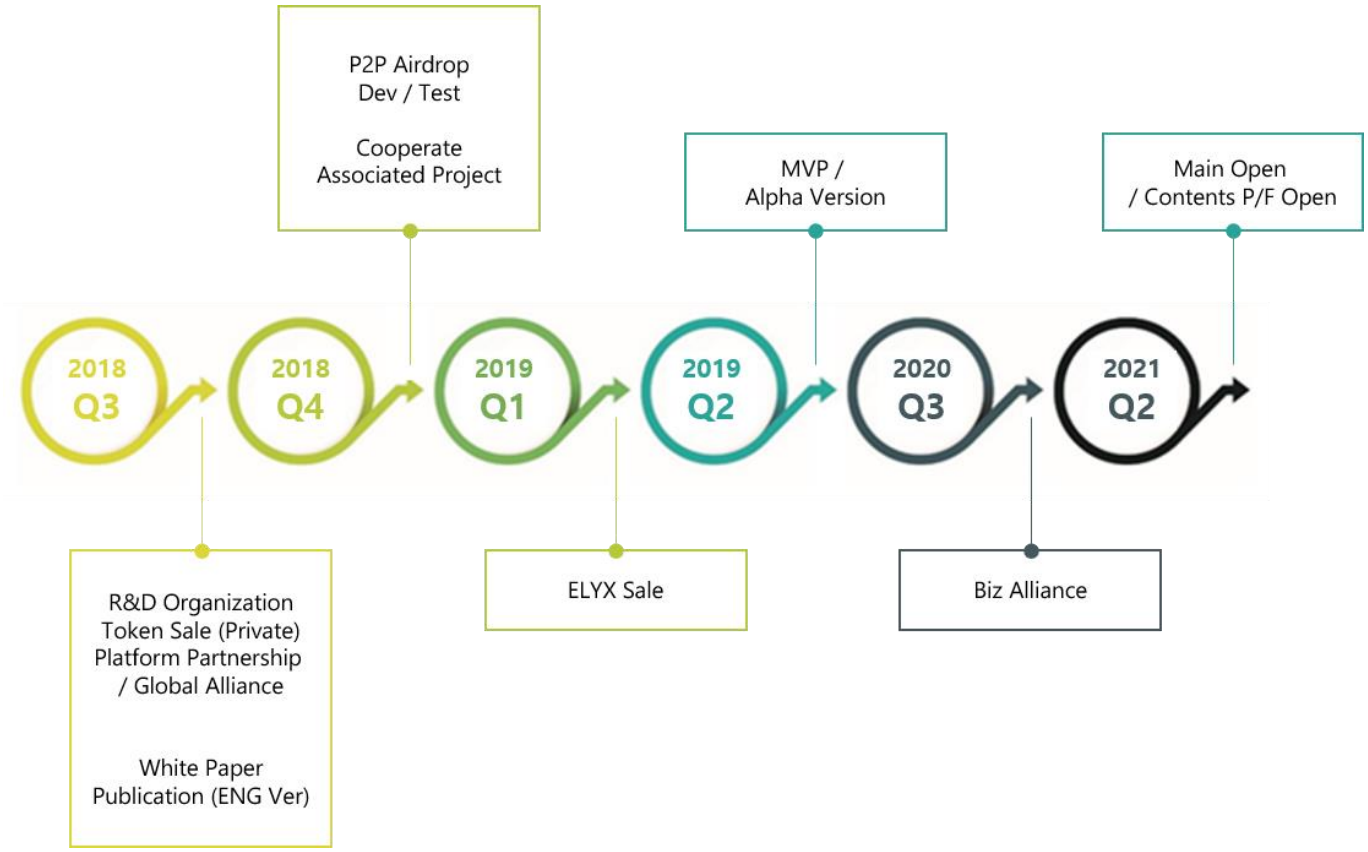


Figure 17. Roadmap 3

10. Token Sales

10.1 Token

- Ethereum-based ERC-20 token with smart contract function
- Token Issuer: MobinX, Singapore
- Refund: Non-refundable

10.2 Token Allocation

- TYPE: Token (ERC20) → MainNET → ELYX (Coin)
- Total Amount Issued: 2 billion (2,000,000,000)
- No Soft Cap

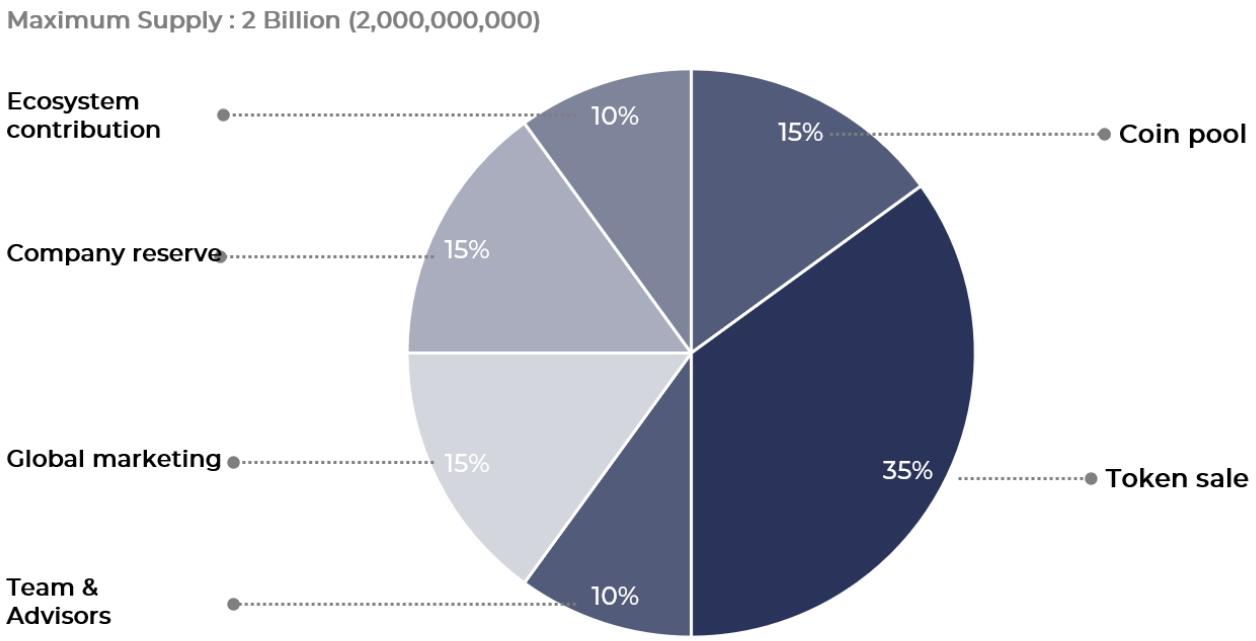
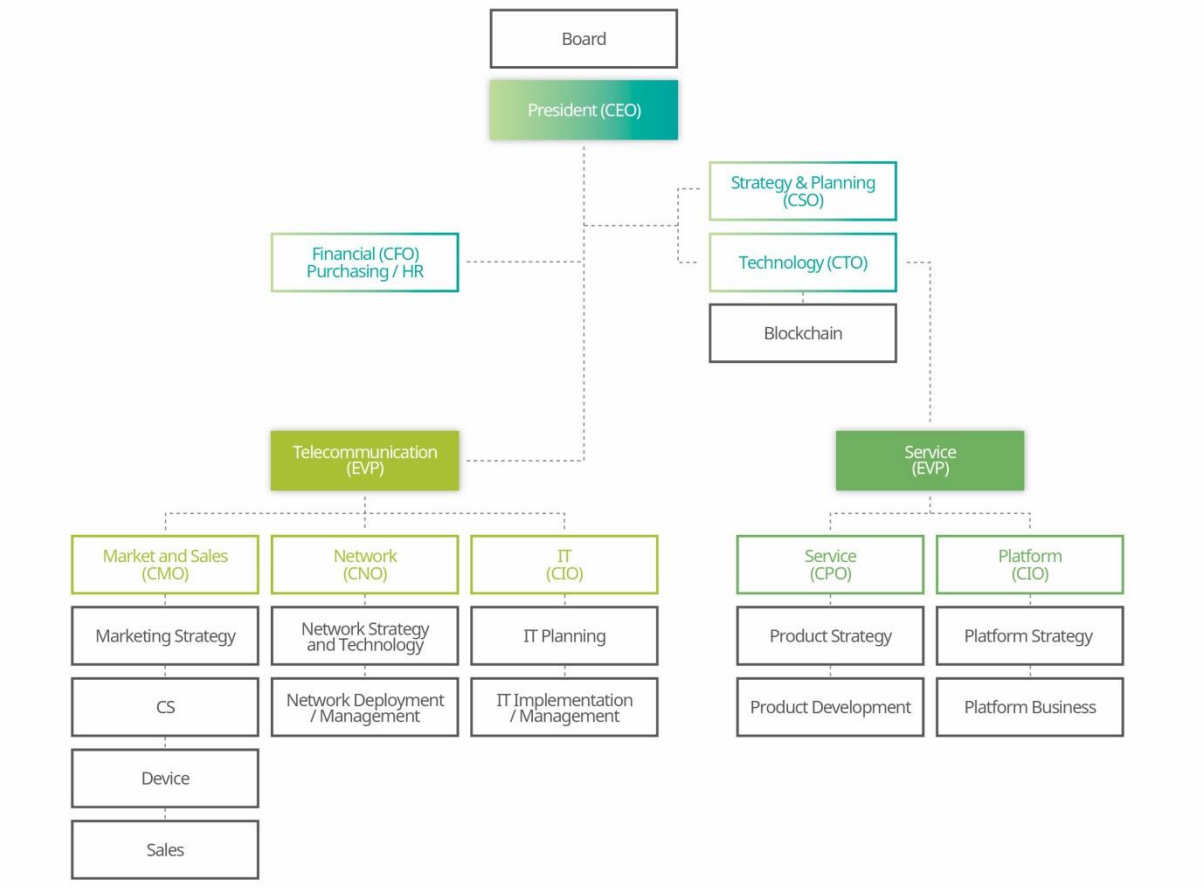


Figure 18. Token Allocation

Organization

ELYNET team's core competence lies in the members' substantial knowledge and hands-on experiences in wireless system implementation. By leveraging our deep comprehension of blockchain technologies, the team is, furthermore, capable of building a blockchain-driven mobile telecom ecosystem. The team is planning to apply for patents for their core technologies.



Partners

BayNex

Digital Multimedia Broadcasting
KOREA DMB, Inc.

ASD Technologies
CLOUDIKE

한국정보공학(주)
Korea Information Engineering Services

VAIIM
Consulting Group

KOBEA
Korea Blockchain Entrepreneur Association

Performance Solution REP
CROSSMEDIA

LEGACY
TRUST

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Forward looking statements are sometimes, but not always, identified by their use of a date in the future or such words as "will", "anticipates", "aims", "could", "may", "should", "expects", "believes", "intends", "plans", or "targets". By their nature , forward -looking statements are predictive , speculative and involve risk and uncertainty because

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Anti-Money Laundering Law

Buyers should agree not to participate in any form of money laundering, illegal currency transactions, and any other limited activities through ELYX. Each participant should be aware that ELYX may not be directly or indirectly sold, exchanged, or disposed of for money laundering purposes.

Adversa

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