



ZK-Rollups, Scalability and dApps

CARMIN LABS

Last Updated on Jan 2024



Blood is Essential to life

Blood circulates through our body and delivers essential substances like oxygen and nutrients to the body's cells. It also transports metabolic waste products away from those same cells. There is **no substitute** for blood. It **can't be made** or manufactured.

Generous blood donors are the **only source** of blood for patients in need of a blood transfusion.



[Carmine: A Rich and Vivid Red]

피(Blood)의 색을 가장 잘 표현할 수 있는 단어는 [Carmine]입니다

CARMIN은 블록체인 생태계에서 피처럼

- 1) 반드시 필요하고 2) 대체할 수 없으며 3) 관대한 기증자(generous donors)와 같은 메인넷이 되고자 합니다.



Market Trend

한국 메인넷의 현주소

- 아직까지 합의 알고리즘의 원천기술을 가진 대기업은 없음
- 클레이튼, 람다**256**: 이더리움 엔진 기반의 기술 사용
- 삼성 **Nexledger**, LG **Monachain**, KT **Gigachain**: 하이퍼레저 기반의 기술 사용
- **CARMIN**은 독자적으로 개발한 블록체인과 합의 알고리즘의 원천 기술을 보유
 - **CARMIN Mainnet 1.0**은 ETRI가 제시한 대부분의 요건을 충족
 - **dApp** 확보를 통한 글로벌 진출

메인넷 비교

OS	Finality	Speed	Consensus	Virtual Machine	Demonstration	Architecture
CARMIN	1~5초	<ul style="list-style-type: none"> • 1,000 TPS(Global) • 3,000 TPS(Asia Pacific) • 8,000 TPS(Local) 	PoS	CARMIN Commit Engine	Mainnet	Layer2-Blockchain
Ethereum	1.5분~	15 TPS	PoW	EVM	Mainnet	Single-Blockchain
COSMOS	3~7초	1,000 ~ 3,000 TPS	Tendermint(PoS)	-	Mainnet	Cosmos Hub
HYPERLEDGER	N/A	N/A	PoET(Elapsed Time)	Various	No public use case	Modular complex architecture
EOS	1초 미만	<ul style="list-style-type: none"> • 100,000 TPS • 3,800 TPS(Proven) 	dPoS	EOS VM	Main-net	Parallel processing
Klaytn	1초	8,000 tps(In Cloud)	PoW	EVM	Klaytn	Based on Ethereum
Nexledger	3~7초	800~1,500 tps	PoA	Hyperledger VM	Nexledger Universal	Based on Hyperledger
GIGACHAIN	3~7초	400~1,000 tps	PoA	Hyperledger VM	GiGACHAINBaaS	Based on Hyperledger
Monachain	3~7초	N/A	N/A	N/A	LG CNS Blockchain Platform	N/A
Lambda256	1초	~2,000 tps	PoA	EVM Hyperledger VM	Luniverse Platform	Based on Ethereum & Hyperledger



Vision & Mission Statements

World's Dominant OS by Platform

Blockchain



Desktop

Mobile

Mission Statements

2022

Global Top 10을 향해 순항 중

CARMIN 메인넷 개발과 안정화, 그리고 DAPP 보급

3세대 블록체인 개발 성공 및 안정화 / 최적화 (2022년 상반기)

CARMIN Mainnet 보급 (2022년 하반기 DAPP 5종 출시 예정)

- 블록체인의 높은 기술장벽으로 어려움을 겪는 기업을 위한 저비용/고효율 모듈 솔루션 제공
- CARMIN의 생태계 확장과 우수성에 대한 시장 입증
- DAPP을 통한 강력한 유저기반 확보
- 높은 효율성의 노드 구성을 통해 High TPS 구현

CARMIN의 디지털자산 거래 서비스 (2023년)

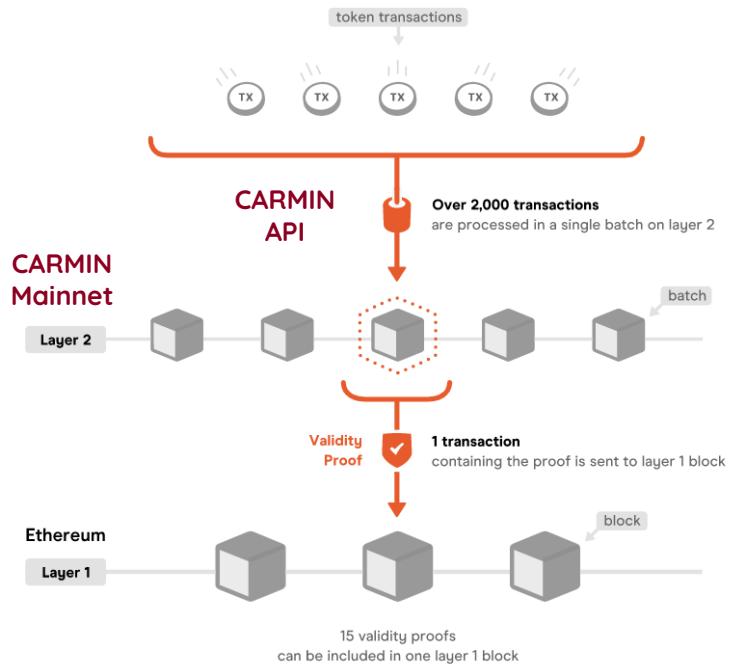
- 자체 개발한 합의 알고리즘에 따른 다양한 가상자산, 지적 재산권의 거래 안정성 제공
- DEX 를 활용한 교환 서비스 제공 : 기존의 DEX와는 다른 간편한 오픈형



Technology Summary

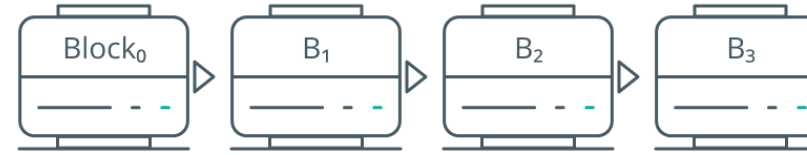
ZK-Rollups

- Layer 2 Scaling Solution (Off-chain computation / Post minimal summary data to Mainnet)
- 독자적으로 구현한 강력한 Rollup 기능을 통한 낮은 수수료와 빠른 속도를 구현
- Layer 1 Blockchain을 통한 높은 보안성 확보



How do rollups work

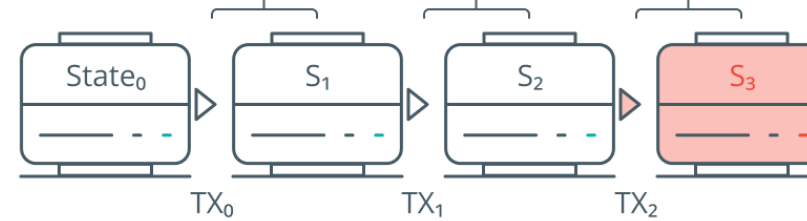
Ethereum



Rolled up Rolled up Rolled up

`proveFraud()`
`execute_L2_tx(s2, tx2) !=s3`

Rollup



ZK-Rollups vs. Others

	Withdrawal Time	Required Trust	Privacy	Throughput	Gas Fee	Cross-chain interoperability
Channels	Instant withdrawal	High	High	Very High	Very Low	No
Plasma	7 Days	Medium	Medium	High	Low	Yes
Optimistic Rollup	7 Days	Medium	Medium	Medium	Low	Yes
ZK-Rollup	Instant withdrawal	Low	High	High	Medium	Yes

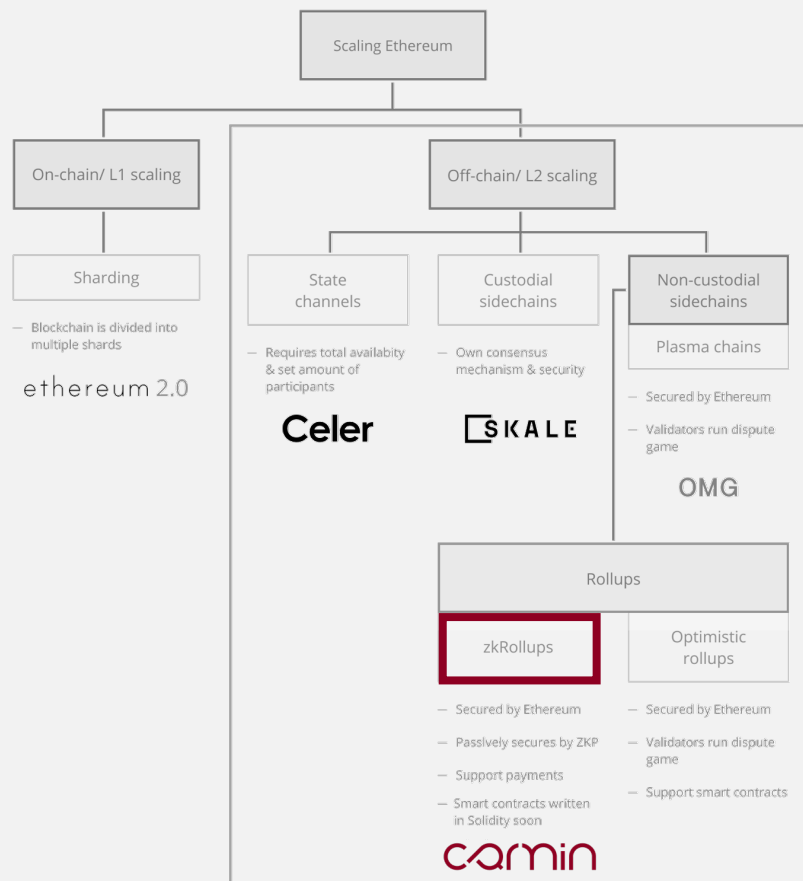
where are we in Q4 2021

↓

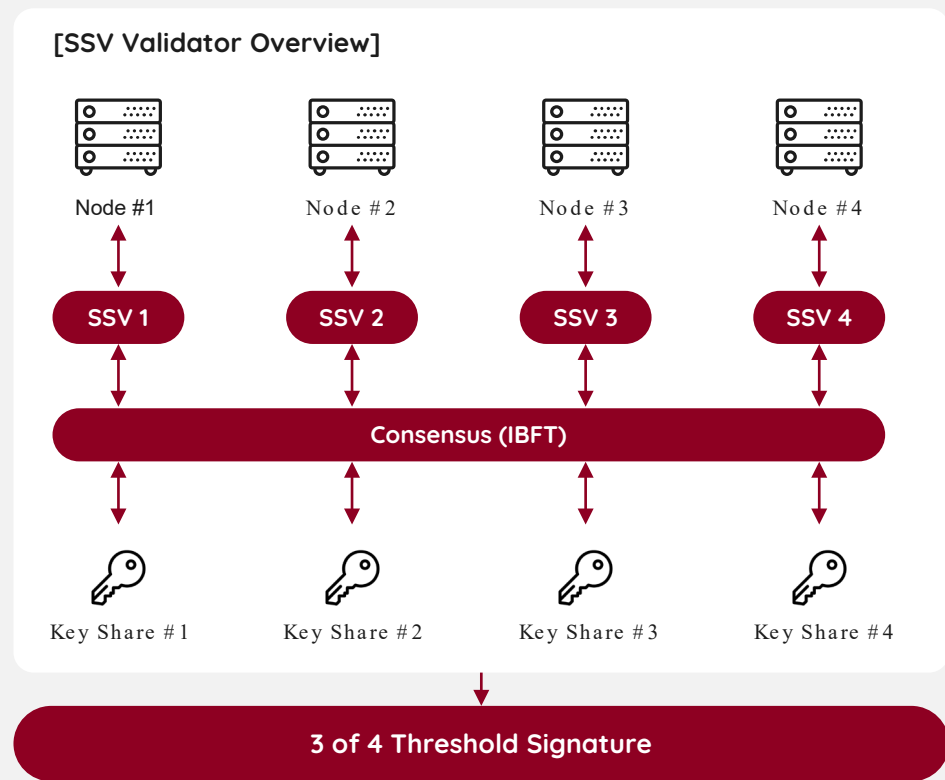
Technology Complicacy: Easy -----> Hard

	State Channels	Plasma	Rollups	
Description	Payment channel is the most obvious form of state channel.	Ethereum's native child-chain secured by the Ethereum mainnet but operate on its own consensus mechanism and its own token. Plasma	Rollups scale Ethereum by executing transactions on a separate EVM-compatible chain before batching, compressing, and posting to Ethereum Mainnet. There are 2 types of rollups Optimistic Rollup and Zero Knowledge proof rollup.	
			Optimistic Rollup	ZK-Rollup
Main Technology	Smart contract	Smart contract Merkle Tree	Smart contract Merkle Tree	Smart contract Merkle Tree Zero-knowledge proof cryptography
Limitation	1 Don't support open participation <i>(Need to know the participants ex ante and can only perform transfer with another party which is in the channel already, changes of participants requires a change of the smart contract code)</i>	Solved <i>(can send fund to people who are not in the plasma chain)</i>	Solved	Solved
	2 Application purpose <i>(cannot run all type of smart contract like EVM, smart contract)</i>	Application purpose	Solved - Support general purpose smart contract <i>(can run most of the smart contract like EVM on Ethereum)</i>	not yet fully support general purpose <i>(StarkWare is working on general purpose EVM for ZK rollups in Cairo, will explore further in the next post)</i>
	3 Someone must stay online to keep the channel alive and monitor the transaction within the channel	Require plasma operators to stay online and send hash to Ethereum root-chain at regular interval	Require rollup sequencer to stay online to monitor rollup block to prevent fraud	Solved <i>(less downtime risk if sequencer is not operating properly)</i>
	4 Must have a logical owner <i>(cannot be used in AMM e.g. Uniswap)</i>	Must have a logical owner	Solved - DeFi-friendly solution	Solved - DeFi-friendly solution
	5 Can transfer ETH directly	Require to use a ERC-20 token to perform the transaction not ETH e.g. wrapped ETH (WETH)	- Optimism use WETH - Arbitrum can transfer ETH directly	Can transfer ETH directly

IBFT2.0 적용과 Rollup Position

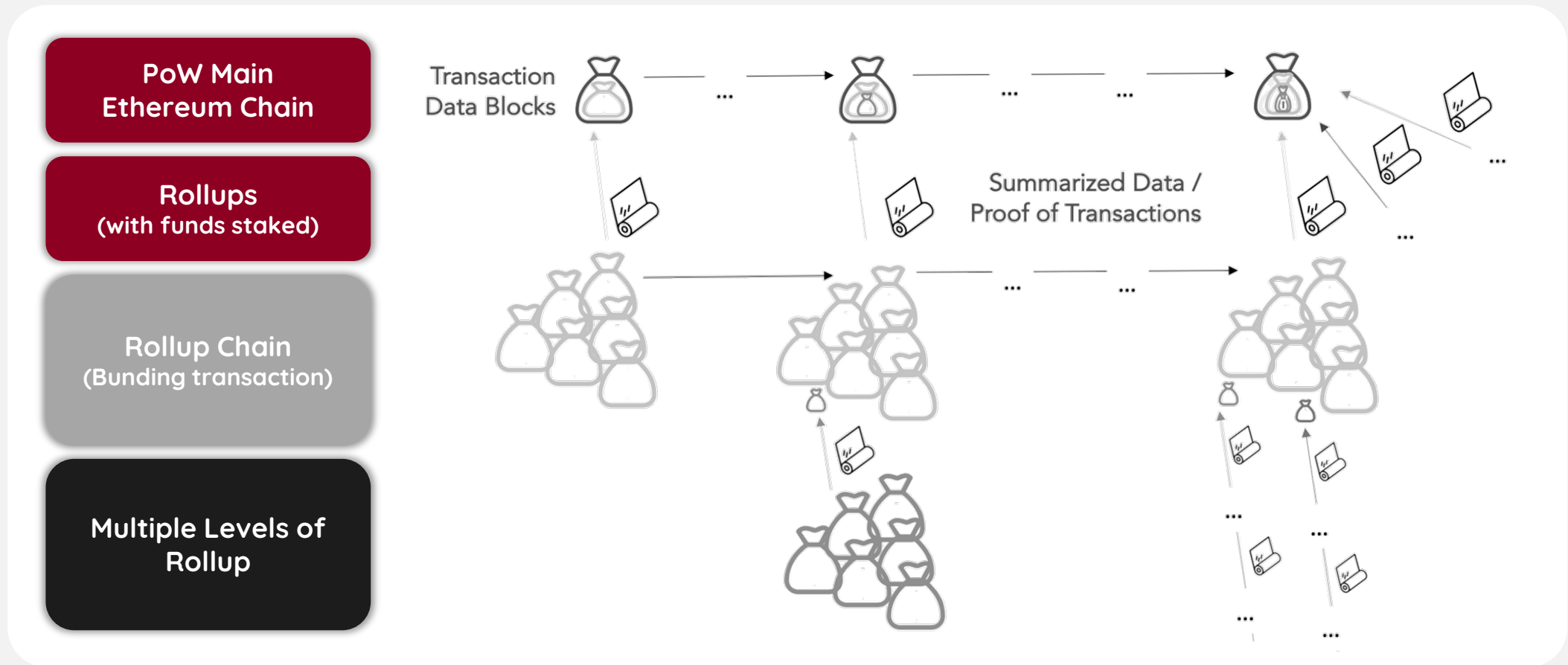


CARMIN IBFT 2.0의 구현 방식



대용량 데이터 처리를 위한 Multi-chain 기술 Data 보안을 위한 Generation-Rollup 기술

- 대용량 데이터 처리를 위한 다이나믹한 Data Block 생성 가능
- Generation Block의 보안을 위한 Side chain으로 확장 가능
- 추가적인 Layer 확장을 통한 Cross chain 및 Data Block의 확장 가능





Go-To-Market Strategy

사업분야

01



Exchange & Payment Public DEX

- ❑ 블록체인 기반의 분산 거래소 제공
- ❑ 고객의 모든 거래내역 및 입출금을 블록체인으로 관리
- ❑ 결제는 CARMIN만으로 가능
- ❑ 고객의 사용 데이터는 블록체인으로 관리되며, 자금세탁 방지법에 따른 KYC, AML은 외부 서비스와 연동되어 검증

02



Trading NFTs NFTs

- ❑ 디지털 작품, 콘텐츠, 지적 재산권 등의 NFT 마켓
- ❑ NFT MOA 서비스
- ❑ 현재 BITMIC 갤러리와 공동사업계약 체결
- ❑ 자회사 NFT MOA Service 오픈 완료 (22. 7. 24.)
- ❑ Opensea와 Block data 연동

03



dApps P2E / M2E

- ❑ M2E Platform LetsMove와 전략적 파트너십 체결
- ❑ P2E Contents Puzzle Fantasy와 전략적 파트너십 체결
- ❑ Token을 활용한 WEB3 결제 서비스 제공
- ❑ Mainnet Token / NFT Minting 제공
- ❑ B2B 전용 dAPP도 제공

※ CARMIN에서 개발된 솔루션은 모두 Github를 통해서 오픈되며, 다양한 Sub Dapp / Exchange의 API 서비스를 지원합니다.

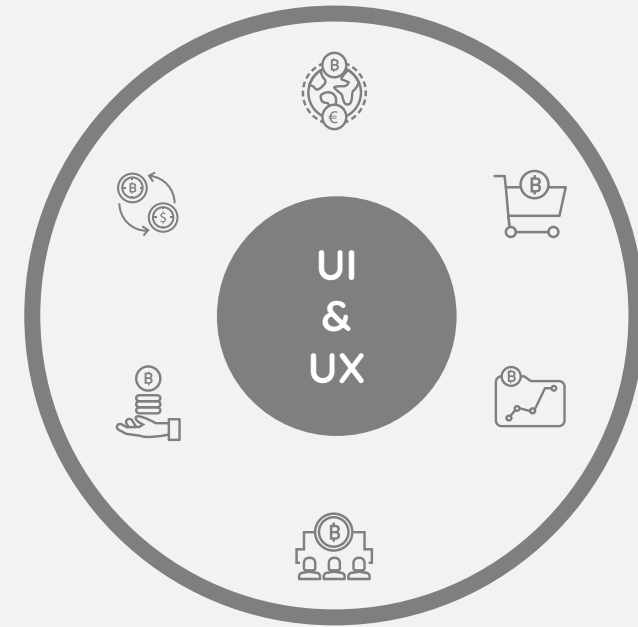
블록체인 기반의 분산거래소 DEX

- Uniswap 등 일반 DEX가 가지는 문제점을 해결 (Starting Price / Slippage / Liquidity)
- 포인트 및 결제 시스템, DID 및 암호화폐 결제 모듈 제공
- 블록체인 DEX 거래소 서비스 예정, 다른 DEX를 위한 Open API 제공
- 두바이, 아부다비를 중심으로 가상자산 거래소 인허가 진행 중

다양한 DEX Exchange를 위한
Service Option 제공



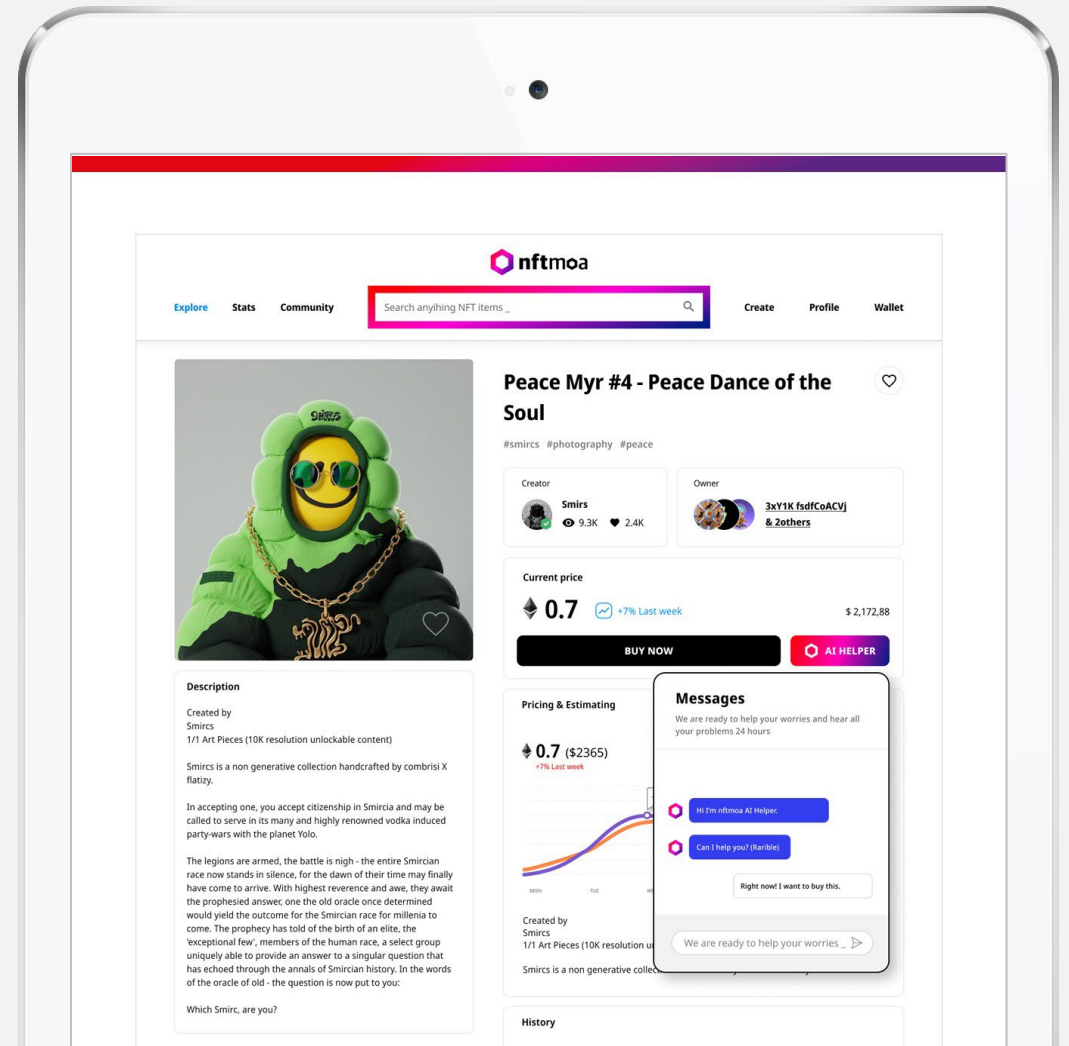
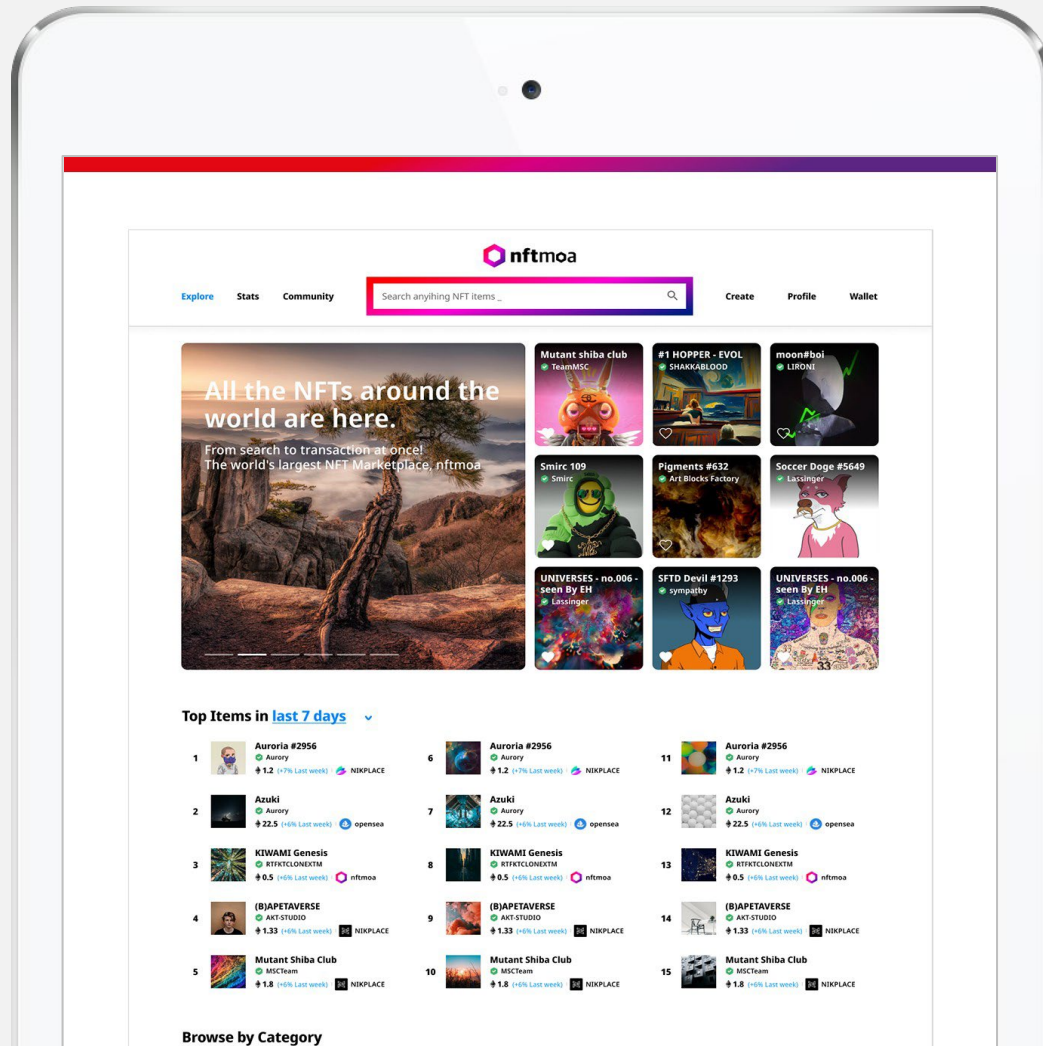
일반적인 Crypto Exchange와
유사한 UI/UX 제공



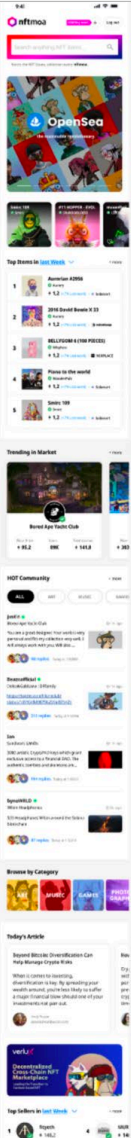
NFT MOA (NFT Portal Platform)

"NFT MOA 에서 거래되는 작품에는 가짜가 없다."

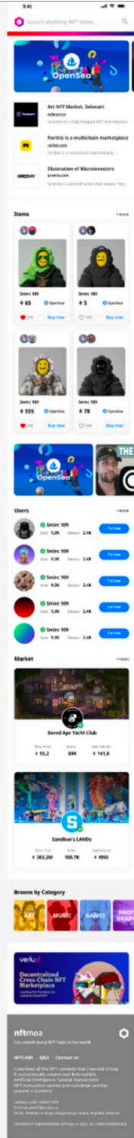
상용 서비스 도메인 : <https://nftmoa.io/>



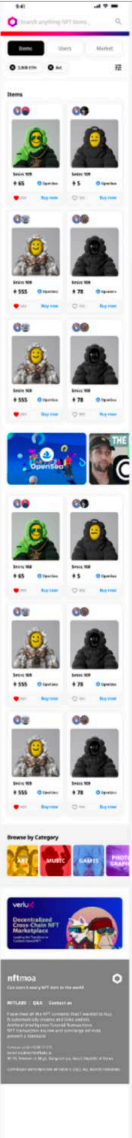
1.Hom



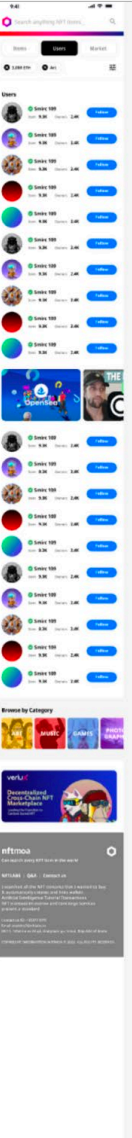
2.Searc



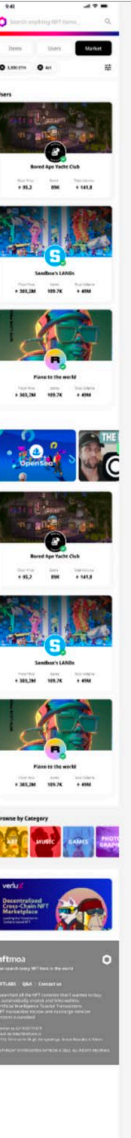
3.Items



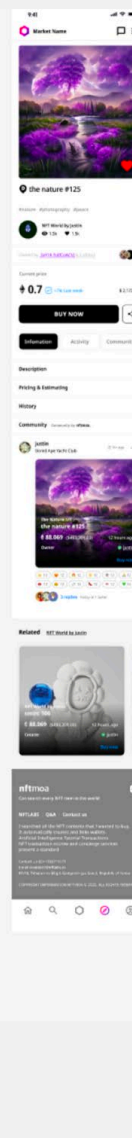
4.Users



5.Items



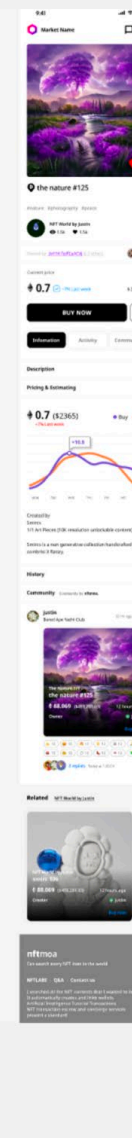
6.Item



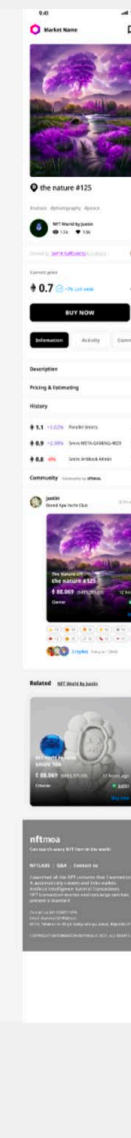
Detail



Detail



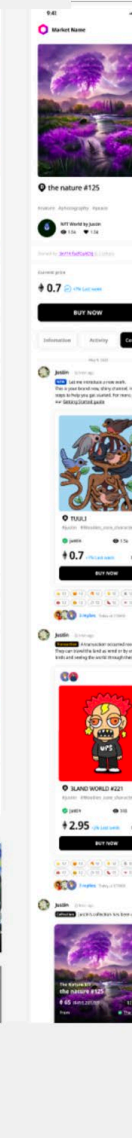
Detail



Detail



Detail



7.Communit

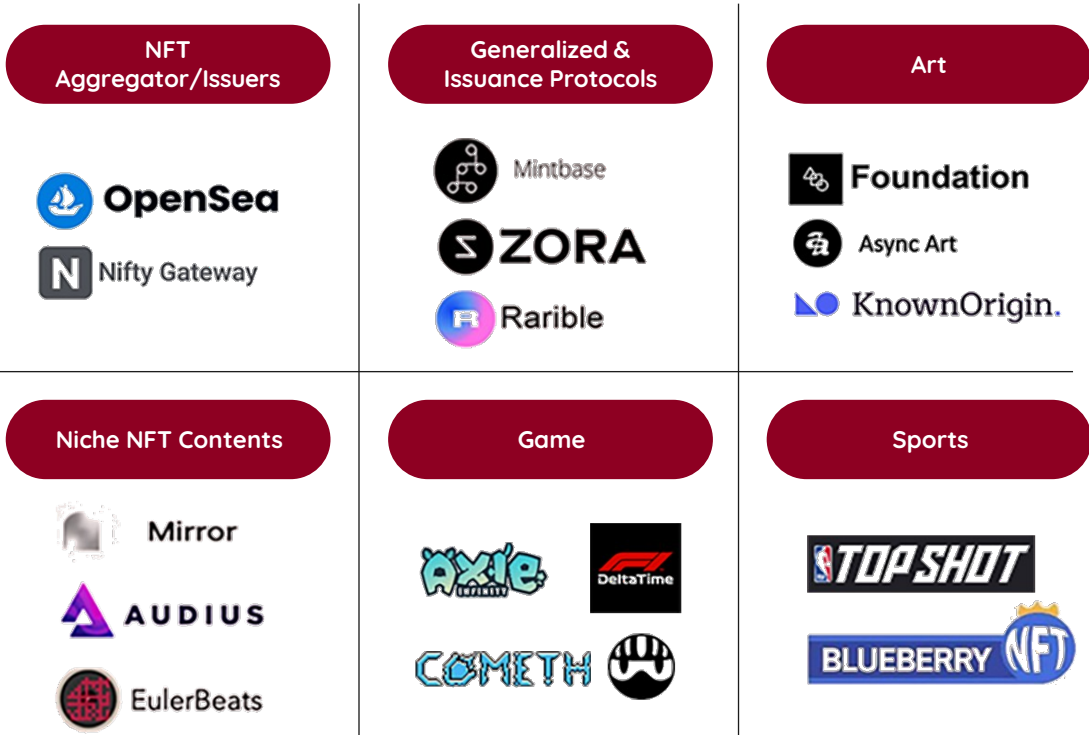


y



NFT MOA의 확장

NFT MOA가 지원하는 NFT 마켓 플레이스



NFT MOA Main Business Model



dApp: BITMIC의 독점적 콘텐츠



배우 하정우 작품 NFT 서비스



Opensea 매출 1위 Supernormal
콜라보레이션



김재중 & 조세호의 포토피플 NFT

BITMIC Gallery를 통한 NFT METAVERSE Service



BITMIC NFT Online Gallery ▶

M2E Platform "Let's Move"



달리기, 바이크 타기, 수영, 등산 등
모든 움직임의 행위를 탄소중립 포인트로 제공



Application을 통한 Token 수입 및 관리 가능

P2E Platform "Puzzle Fantasy"

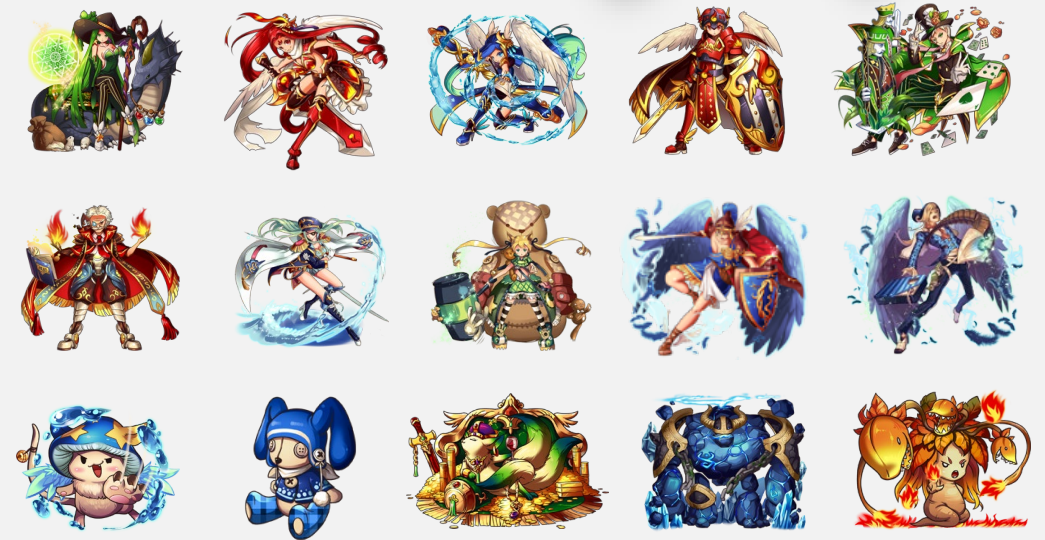
- <https://puzzlefantasy.io>
- <https://discord.gg/jJMYcv5qM>
- Q
- 공동 서비스 : Bitforex

▼ 성장형 퍼즐 RPG 구현



 BitForex

NFT Market을 통한
캐릭터 판매 및 거래 ▶





Revenue Stream

01



코인거래소 및 지급결제
분산화 거래소

02

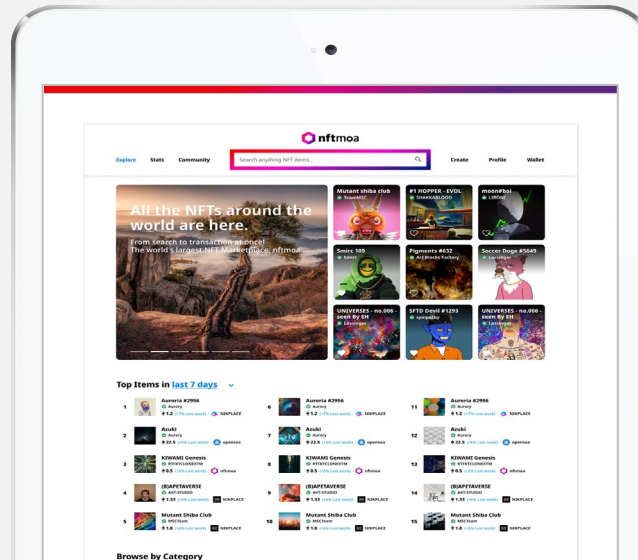


NFT 거래 수수료
NFTs

03



디앱
Play/Move to Earn





**What Is So Special About
CARMIN?**

5nm Chipmaker for SHA -256



LKconvergence

Promotion & Marketing



Software Engineers

No Outsourcing!
CARMIN's established
powerful IN-HOUSE
Alliance.

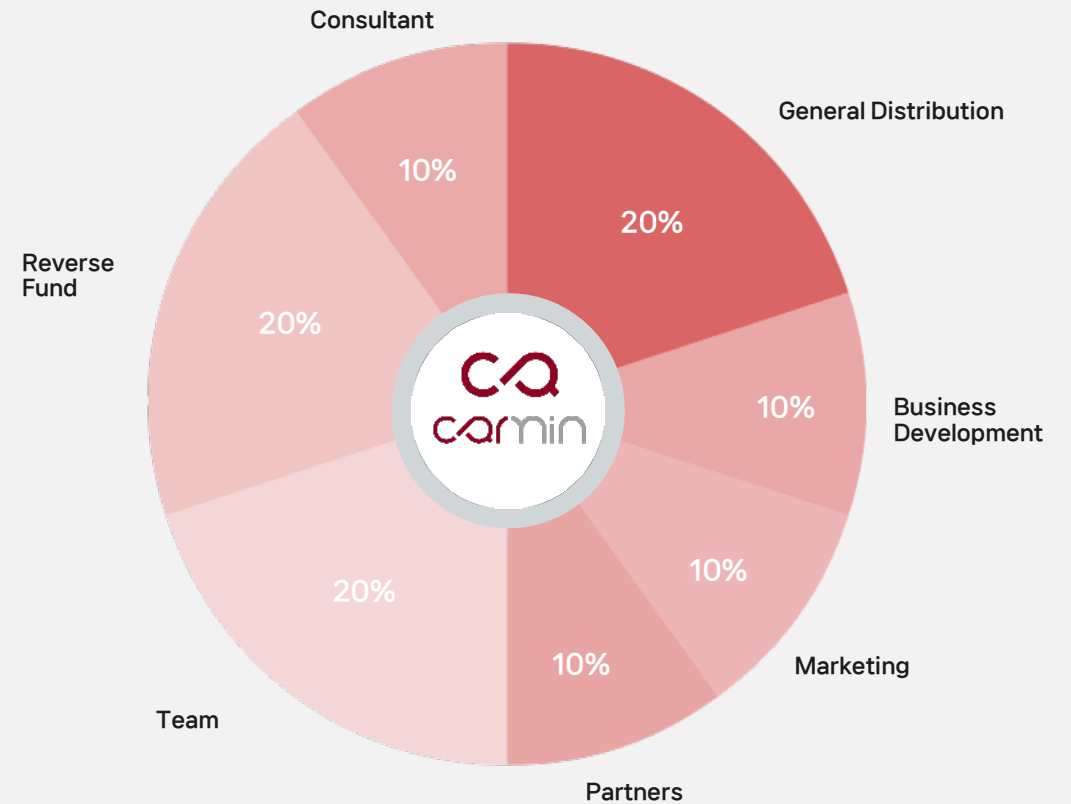


Team

Token economy

CARMIN Token was developed based on various platforms such as BSC Chain, ETH, and Klay. In particular, the first circulating BSC Chain-based token will be the first public token. Token details are as follows.

Item	Amount	%
Total Coin Issued(Coin)	2,000,000,000	100%
Public(General Distribution)	400,000,000	20%
Market Development (Business Development)	200,000,000	10%
Marketing	200,000,000	10%
Business Partners	200,000,000	10%
Team	400,000,000	20%
CARMIN Fund(Reverse Fund)	400,000,000	20%
Advisor(Consultant)	200,000,000	10%



Roadmap

CARMIN will invest, provide technical support, and grow together to attract various dApp contents on its own platform. This CARMIN Platform will be opened in stages according to the service perfection and customer response.

2022. 04

- Token Build
- Mainnet Design

2022. 06

- NFTMOA Testbed open
- Mainnet Transaction Test

2022. 08

- Angel investment completed
- Completed the establishment of the head office

2022. 10

- Opened NFTMOA service

2022. 12

- Open NFT Metaverse Gallery
- Dedicated wallet service open

2023. 04

- Global wallet service open
- dApp integration service open

2023. 07

- Global DEX Open
- Global NFT DEX Open

2024. 01

- Q2 Layer2 Token Bridge Service open
- Q3 2024: CARMIN DEX & CARMIN Mainnet 2.0

Management



Stuart S. Lee Co-Founder & CEO

- CEO, CARMIN Labs
- COO, AIQ Blockchain
- Co-Founder & CEO, ALFA DLTA Inc.
- Co-Founder & CEO, Things Video
- Co-Founder & CEO, SPORANK Technology
- CEO, Posing Technology
- Stanford University



H. Peter Kim Co-Founder & Chief Advisor

- Co-Founder, CARMIN Labs
- CEO, AIQ Network
- CTO, AIQ Blockchain
- Washington University in St. Louis

Promotion & Marketing



Ryan Lee Co-Founder & CSO

- Supreme Finance CTO
- TONE Foundation & DEVISOFT, CEO
- Atomic Idea Singapore, CTO
- LK Convergence, CSO
- Korea Telecom & Samsung SDS Cloud Architecture
- Master of Engineering, Yonsei University



Junseok Kang cco

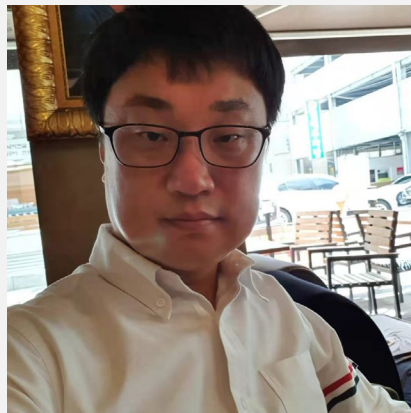
- KTH Paran Contents Team
 - Publisher (from Dec 2006 to present)
- YNK Contents Team
 - Consultant & Publisher (from May 2001 to Nov 2004)
 - Crypto Mining & Analyst , Promoter

Promotion & Marketing



Jina Park CMO

- NFT Planner & Marketing (BITMIC, BTSC)
- NFT Art Curator (BITMIC, BTSC)
- Hana Financial NFT Art Director
- O2O Marketing expert
 - G-Fair Korea
 - Zannotta
 - Artemide
- Motorsports Marketing Planner
 - Audi R8 LMS Cup
 - Ferrari Challenge
 - Porsche Carrera Cup
 - Lamborghini Blancpain Super Trofeo
 - Asian Le Mans Series, etc



Aiden Song Co-Founder & COO

- CEO, CoinBene Vietnam
- Advisor, Symverse Vietnam
- CEO, Golden Pacific Vietnam
- Senior Private Banker, IBK Investment & Securities
- Senior Private Banker, Samsung Securities
- Kyunghee University



Cris Lee Senior Engineer

- Neowiz Enc Member Contents Developer & Project Manager, Blockchain Mainnet developer
- KT Cloud, SDS
- Cloud.com, Samsung S-Cloud Service PM
- International Database Analyst
- Bigdata Database (Mongo), SQL DBA
- Hongkong & Veitnam International Exchange, crypto currency developer

Software Engineers



Seongsik Kim
CTO

- Dongguk Univ. Information Communication Engineering (20 years in IT Development)
- CEO & CTO, ST Unitas SLG
- CTO , FEELWAY
- CTO, Bithumb & Huobi Korea
- PMO, NAVER corp. & TMON corp.
- Development of SK Telink platform for payment and charging , calculation system
- Development of Backend for Shinsegae I&C

and Shinsegae mall



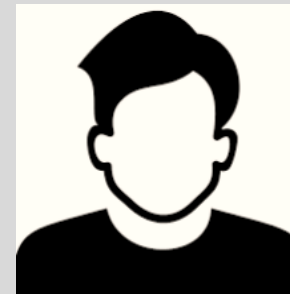
Eojin Lee

- 8 years in Development for Blockchain
- Development for Bridge Chain & Contract Factory Scanning Engine
- Development for NFT Marketplace
- Development for mainnet of ADA Cardano Hard Fork
- Development for ERC integrated Payment system
- Development for Mobile Wallet Gateway



Yeonseong Shin

- 18 years in Development for overall Blockchain
- Development for Multi(Cross) Chain & Contract Factory Scanning Engine
- Development for NFT Marketplace
- Development for mainnet of Ethereum L2 Hard Fork (ZK-rollup)
- Development for ERC integrated Payment system



Myeongho Chou

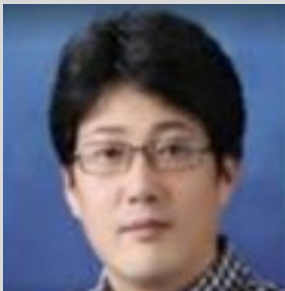
- Development for Mobile Wallet Gateway
- 6 years in Development for Blockchain
- Development for Bridge Chain & Contract Factory Scanning Engine
- Development for NFT Marketplace
- Development for mainnet of ADA Cardano Hard Fork
- Development for ERC integrated Payment system
- Development for Mobile Wallet Gateway

Software Engineers



**Seonghoon
Park**

- 19 years in Development for AI & Searching
- Director of Megazone platform Development team
- Director of WITHinnovation Development team
- Director of BALAAN FrontEnd Development team
- Director for searching engine development of YAHOO Korea
- Director of Plus-MX Development team



Youngjun Seo

- Director of Happyrising technical laboratory
- 20 years in Development for payment and billing system
- Director of INVENTURE Technology Development team
- Development for overall middleware in ST Unitas EDU-Tech laboratory
- Director of KT Pay Development team
- Director of Pay Letter Development team
- Director of Hanafos.com's Membership Development team
- Senior Developer in Microsoft Web Billing Development



**Janghyuck
Cho**

- 20 years in Development for overall Server
- Senior Developer in Bungaejangter platform laboratory
- Director of ST Unitas Development team
- Director of Megazonecloud Development team
- Director of WITHinnovation Service Development team
- Director of TMON Development team
- Director of NAVER PWE Development



Jaehyun Kim

- laboratory
- 17 years in Development for overall E-Commerce
- Director of NHN / NTS Development team
- Development for dictionary service of YAHOO Korea named information and future platform
- Development for digital asset platform of KT Alpha
- Development for personal emoji marketplace utilized META engine
- Development for AI-based commerce optimization server distribution solution
- Development for virtual society-based Instagram mapping interworking

Software Engineers



**Jaewook
Jeong**

- 20 years in UI & UX overall Design
- Director for service planning and overall UI/UX design of "S" Company
- Director for UI/ UX design of Daum Communication-UX LAB (News & Mypage section)
- Director for service and mobile UI/UX design of Megastudy
- Director for overall UI/UX design of SkyEdu



**Junphil
Hwang**

- 13 years in Development for overall FrontEnd
- Development for Frontend of FEELWAY
- Development for React of Huobi Korea
- Development for personal emoji marketplace utilized META engine
- Development for AI-based commerce optimization server distribution solution
- Development for virtual society-based Instagram mapping interworking



Jeasun Lee

- Director for Mecaverse platform service of UINetworks
- Director for service planning of ST Unitas SLG
- Director for service planning of Bithumb & Huobi Korea
- Director for service planning of NAVER corp. & TMON corp.
- Director for service planning of SK Telink platform
- Director for service planning of Shinsegae I&C and Shinsegae mall



**Wonseok
Choi**

- 21 years in charge of Business Strategy
- CMO, Director for New business department of "N" Company
- CMO, Director for Marketing department of Bithumb
- Director of TMON Marketing and W/G Group
- Director for Marketing of Samsungwelstorymall
- Director for Marketing of Shinsegae online mall
- Director for online Marketing in charge of



Company

Headquarters in Singapore

ACCOUNTING AND CORPORATE REGULATORY AUTHORITY (ACRA) *bizfile+*

INFORMATION RESOURCES

WHILST EVERY ENDEAVOR IS MADE TO ENSURE THAT INFORMATION PROVIDED IS UPDATED AND CORRECT. THE AUTHORITY DISCLAIMS ANY LIABILITY FOR ANY DAMAGE OR LOSS THAT MAY BE CAUSED AS A RESULT OF ANY ERROR OR OMISSION.

Business Profile (Company) of CARMIN LABS PTE. LTD. (202222726W) Date: 01/07/2022

The Following Are The Brief Particulars of :

UEN : 202222726W

Company Name : CARMIN LABS PTE. LTD.

Former Name if any :

Incorporation Date : 01/07/2022

Company Type : EXEMPT PRIVATE COMPANY LIMITED BY SHARES

Status : Live Company

Status Date : 01/07/2022

Principal Activities

Activities (I) : MANAGEMENT CONSULTANCY SERVICES (70201)

Description :

Activities (II) : INFORMATION TECHNOLOGY CYBERSECURITY CONSULTANCY (62022)

Description :

Capital

Issued Share Capital (AMOUNT)	Number of Shares *	Currency	Share Type
100000	10000	SINGAPORE, DOLLARS	ORDINARY

* Number of Shares includes number of Treasury Shares

Paid-Up Capital (AMOUNT)	Number of Shares	Currency	Share Type

COMPANY HAS THE FOLLOWING ORDINARY SHARES HELD AS TREASURY SHARES

Number Of Shares	Currency

Authentication No. : 022517174K

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THE COMPANIES ACT (CHAPTER 50)
A PRIVATE COMPANY LIMITED BY SHARES
CONSTITUTION OF
CARMIN LABS PTE. LTD.

- The name of the company is CARMIN LABS PTE. LTD.
- The registered office of the company is situated in the Republic of Singapore.

**111 SOMERSET ROAD #06-01C
111 SOMERSET SINGAPORE
238164**
- The liability of the members is limited.
- The share capital of the company is:

Currency	Amount of Issued Share Capital
SINGAPORE DOLLARS (SGD)	100,000
- We, the persons whose names and occupations are set out in this Constitution, desire to form a company in pursuance of this Constitution and we each agree to take the number of shares in the capital of the company set out against our respective names.

Name of Subscribers	Occupation of Subscribers	Number of Shares Allotted	Class of shares	Currency
KAN			Ordinary	SINGAPORE DOLLARS (SGD)
KIM			Ordinary	SINGAPORE DOLLARS (SGD)
LEE			Ordinary	SINGAPORE DOLLARS (SGD)
KIM PET			Ordinary	SINGAPORE DOLLARS (SGD)

Partners

Investors



Hardware / Chipmaker



AIQ Blockchain, Inc.



Alliance



Software Dev.

CARMIN Offices





Muchas Gracias!

slee@carmin.inc