


Kalima

Blockchain & IoT

Collect.Protect.Monetize

WHITE PAPER

Kalima Vision

By 2025, 80% of the processing and analysis of data will take place in smart connected objects, such as cars, home appliances or manufacturing robots, and in computing facilities close to the user.

Smart city, supply chain, healthcare industry, automotive industry,... all these sectors use connected devices networks to collect, manage and analyze data, it's the IoT.

Kalima protocol ensures the integrity of the data transmission and the immutability of the data storage and the possibility to monetize the data collected.

More generally Kalima is a new way to interconnect objects, people and services with trust and to bring new possibilities to monetize data.

Blockchain demand for industrial applications DApps will rise in the coming years. Industrial players will need to have strong scalability and will require to have client-side smart contracts instead of on the cloud. The Kalima protocol is particularly well designed for industries and companies using IoT data collection and storage with edge computing facilitated by client-side smart contracts.

Major companies have already been using Kalima for a few years.

André Charles Legendre
CEO of Kalima

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Summary

Kalima Blockchain

Everyday, massive amounts of sensitive data are collected and transmitted by IoT, Internet of Things, in the major industries.
Smart city, supply chain, healthcare industry, automotive industry... all these sectors use connected devices networks to collect, manage and analyse their data, it's the IoT.

Kalima was built to secure, facilitate and accelerate the data collection, transmission and storage of the industries using IoT systems.

Kalima Blockchain ensures the integrity of the data transmission and the immutability of the data storage and the possibility to monetize the data collected.

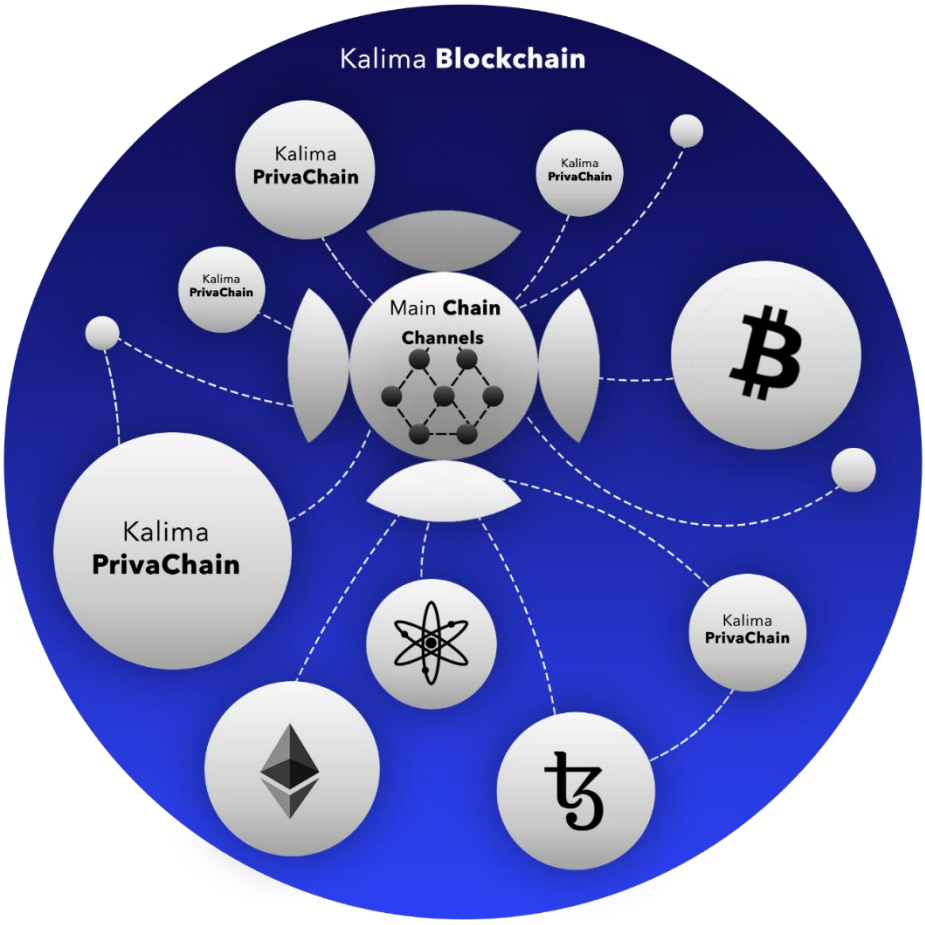
KALIMA ECOSYSTEM FOR INDUSTRIAL PLAYERS

Kalima Blockchain is composed of the **Kalima MainChain** and a decentralized network of **independent permissioned blockchains** called **Kalima Privachains**. It's a third generation of blockchain like Cosmos and Polkadot proposing blockchain interconnection as a new paradigm to solve the decentralization objective and achieve scalability.

The **"Kalima MainChain"** is a network of **"Channels"**, each Channel is a blockchain that forms together a network of blockchain, called the Kalima MainChain. The KLX are stored in the **Kalima MainChain.**

Each **Kalima Privachain** is independent with **its own governance and can be interconnected, or not**, with another Kalima Privachain or with Tezos and soon with Lightning networks, Polygon and Cosmos hubs.

The interconnection of blockchains is for us the way to help developers and businesses to adopt blockchain technology at an industrial level. Blockchains on **Kalima Ecosystem** are either **permissioned blockchain**, where only predetermined nodes can see the ledger and participate in the consensus.



This multichain approach aims to solve transactions speed issues and bring smart contract on the edge for blockchains.

This opens an all-new world of possibilities for combining blockchain and IoT.

END-TO-END BLOCKCHAIN COMMUNICATION

Designed for industries needs

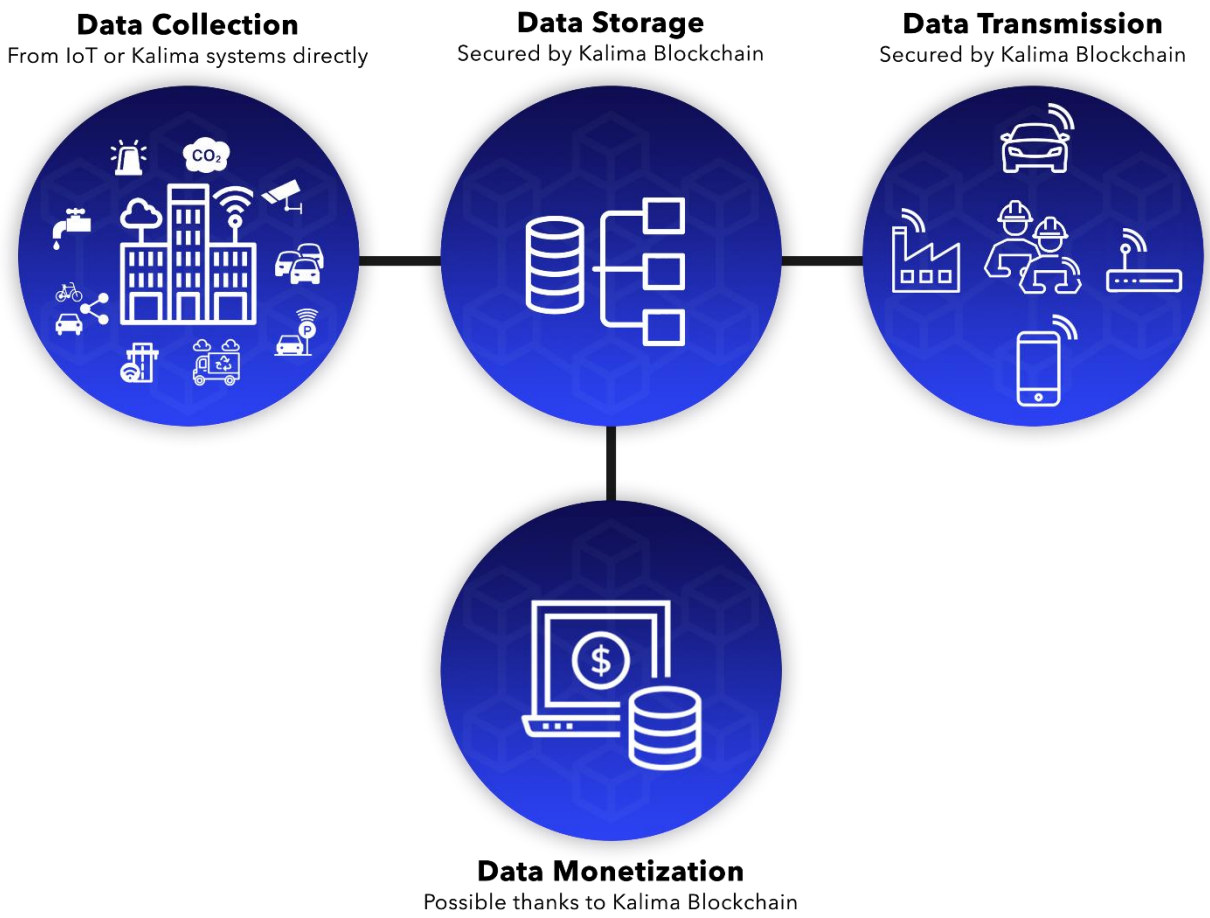
Kalima was built to secure, facilitate and accelerate the collection, transmission, storage and the monetization of data for industries using IoT systems.

Thanks to the possibility of building its own private blockchain, a Privachain can independently secure its data from collection to transmission for any industry using IoT.

Examples of Kalima blockchain classical use case :

1. An alarm is triggered in a nuclear site which has its own Kalima Privachain
> The information is immediately collected and secured on the blockchain.
> The information is quickly transmitted to a computer or worker connected to this alarm to allow a very rapid intervention thanks to Kalima low latency.
> All the important and confidential data are secured from end-to-end by Kalima.

2. A smart building company wants to monetize its data thanks to Kalima
> The building is equipped of gateways to collect environment related data.
> These connected gateways transmit the data to the blockchain and store it.
> From here the company can monetize its data using Kalima MainChain and token.



KALIMA IS CURRENTLY THE MOST POWERFUL IOT BLOCKCHAIN

Mature & Scalable

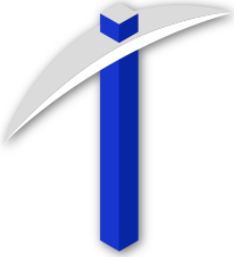
Kalima blockchain is already used and approved by many industries since few years.

Client Side Smart Contract

Guarantees more scalability, safety and freedom to the parallel chains.

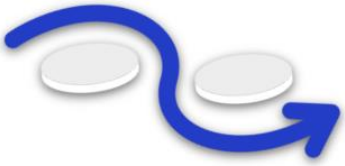
Fast & Secured

Optimized to reduce delay.
Latency lower than 1s.
1000 tx / second / blockchain.



Low Energy

Memcached, heartbeat, a unique tx/block are developed to reduce energy consumption.



PrivaChains

Kalima Ecosystem is composed of independent public chains and private chains, the PrivaChains.

KALIMA PROTOCOL

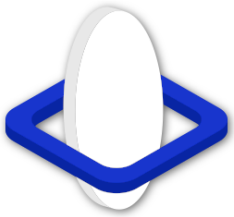
An ecosystem of decentralized parallel blockchains

Kalima Blockchain has been **designed from scratch to meet the requirements of modern data**, including data from the Internet of Things.

Kalima provides **client-side smart contract** to all these networks and can run AI models in smart contracts. We believe that the future of blockchain applications relies on a multichain approach.
Kalima blockchain provides real time data for an exceptionally **low environmental impact** with a **very low transaction cost** combined with **low latency**.

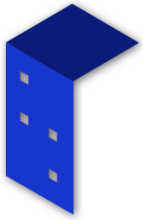
With a very small memory and CPU footprint, **you can embed Kalima in small IoT devices**. Kalima smart contracts are executed at the Edge. Kalima acts as a second layer blockchain for Tezos, Lightning network, and will implement Cosmos Inter-Blockchain Communication Protocol (IBC).

Kalima Blockchain provides data lakes which expose authorized data from one or several blockchains to run different types of analytics, dashboards, visualizations, statistics, big data processing or machine learning to have a clear vision on your data.
Kalima client nodes can run in mobile device and in small form factor IoT gateways.



Embedded

Embedded Kalima Blockchain in small IoT devices for an end-to-end blockchain communication.



Open SDK

Allows developers to build Dapps in simple languages: Java, C#, C, Java Script, Python...

Multichain

Kalima Blockchain is interconnected with major blockchains: Tezos, Ethereum, Bitcoin, Cosmos.

Build a decentralized IoT network with gateways powered by Kalima Blockchain

Kalima Blockchain is installed on IoT gateways including LoRaWAN gateways around the world to create a new decentralized IoT network providing real world qualified data to the Kalima ecosystem.

Join Kalima and take part in this new decentralized IoT network to provide and monetize your data to the world.

Use Cases & DApps

The fund raised by the ICO will allow Kalima to recrute and assist developers, creators and companies around the world to develop their own DApps on Kalima, thereby contributing to the growth of the Kalima ecosystem.

To launch and boost this ecosystem Kalima built three companies in charge of creating sector-based DApps:

Kalima Inc in the United States, which will develop Dapps in the energy, automotive, industry 4.0 and Food&Beverage sectors.

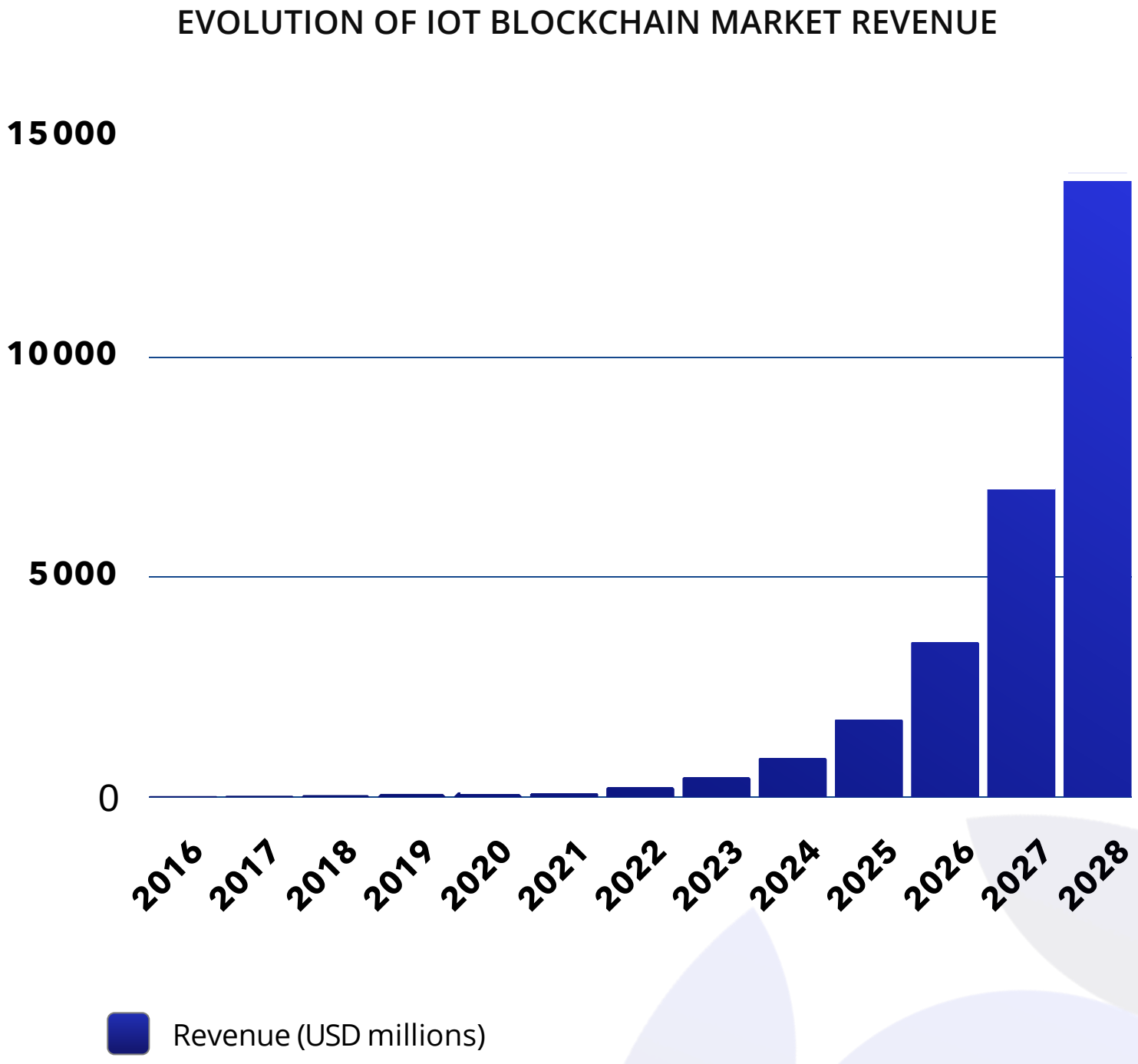
Kalima Middle East, which will take care of developing Dapps in the nuclear and oil industries.

Kalima Systems in Europe, which will develop Dapps for the new economy, the luxury sector and smart cities.

IOT MARKET PROJECTION

"In terms of revenue, the global demand for Blockchain IoT market stood at USD 62.39 Million in 2019 is expected to reach USD 14,165.87 Million in 2028 at a CAGR of 86.5% between 2020 and 2028."

Zion Market Research



KALIMA IS A MATURE TECHNOLOGY

Used by many industries everyday

Kalima is **safer, faster, cheaper** than the traditional industrial data-managing tools. Kalima develops its own DApps dedicated to the Industry and has a **very efficient development API** which allows all independent developers to develop DApps as well as parallel chains.

Major industries are already using Kalima :

- **Enedis** 1st electricty distributor in France.
- **ArcelorMittal** The world's leading steel and mining company uses Kalima LoRaWAN devices
- **Tenneco** One of the world leaders for automotive products.
- **Spie** European leader specialized in electrical, mechanical and climatic engineering, energy and communication networks.

Interconnected objects and networks are used in the most important industries globally. The potential market for Kalima is therefore substantial and grows each and every day.

- **Industry Supply Chain** Automotive, aeronautical...
- **Healthcare Industry** Hospital, specialized medicine.
- **Energy Industry** Nuclear, gas, oil, electricity ...
- **Financial Industry** Payment system, payment apps.
- **Connected Infrastructures** Smart city, smart buildings.
- **Identification System** Recognition systems, identification apps.

Kalima will be used by all these industries in a few years.

SPIE ArcelorMittal Tezos ENEDIS TENNECO

WHERE DAPPS CAN TAKE ADVANTAGE OF KALIMA CLIENT-SIDE SMART CONTRACTS

Kalima's functionalities allow developers to develop DApps dedicated to IoT industries, for **a multitude of use cases** based on the **integrity of data transmission** and the **immutability of data storage**.

Kalima enables companies and developers to create applications by building bridges between the physical and the digital world including the possibility to **monetize the data collected.**

Digital passport

A digital passport of your equipment is primarily an authenticity certificate or NFT, completed by a temper proof and secure storage of all data history of your equipment. Applications exists in the Healthcare, Pharmaceutical, Luxury, Building, City, Aggrotech, Food and Beverage industries.

Digital twin

A digital twin of your equipment give you a real time image of your equipment. Applications exists in Supply Chain, Healthcare, Infrastructures, Insurances, Building, City, Aggrotech and smart economy industries.

Pay per use, utility token

Manufacturers and Users of machines receive transparent information through Kalima to allow pay per use. Use measurement is translated in utility token quantity.

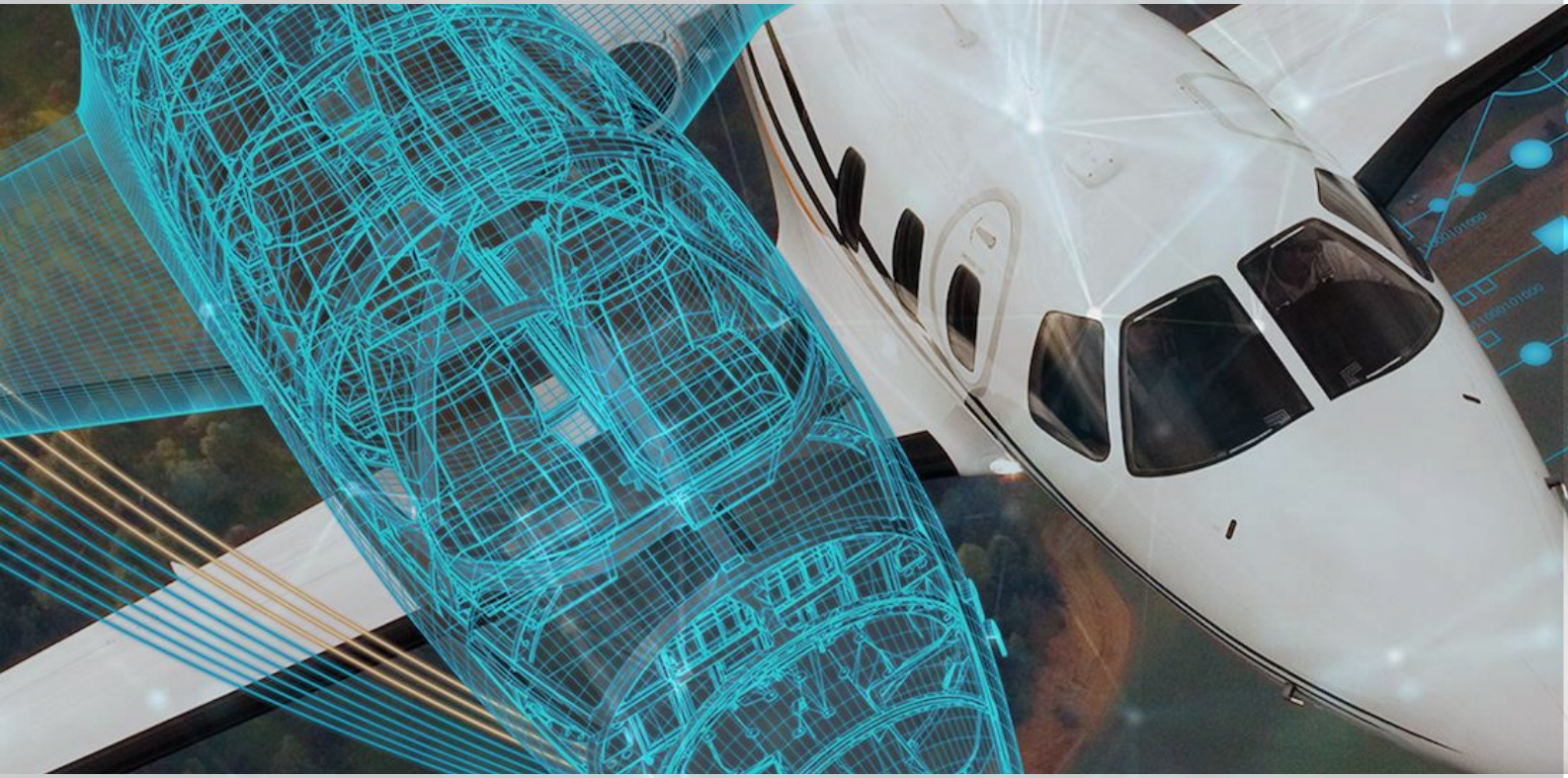
Asset tokenization

An asset tokenization platform bringing together sellers and buyers. It provides an automated processing with the use of Smart Contracts. Asset tokenization opens doors to many new business models. Applications lie in Arts, Movies, Luxury, Metaverse, Infrastructures, Real Estate, new mobility and smart economy industries.

Payment token

"Payment tokenization" is now synonymous with ease, trust and security, since it is one of the best data protection strategies that can be integrated into the different payment ecosystems. The benefits it brings to sellers and consumers have enabled it to spread quickly with low transaction costs.


NPK
36.2
°C
Humidity

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A NEW POSSIBILITY TO MONETIZE DATA

Kalima's initial goal is to create a new standard for Blockchain IoT applications. More generally, Kalima is a new way to interconnect objects, people and services with trust and to bring new possibilities to monetize data.
Kalima empowers enterprises and developers to build the next generation of sustainable Blockchain applications building bridges between the physical and the digital world. Kalima client nodes can run in mobile devices (Android an iOS) and in small form factor IoT gateways.
Kalima provides real time data for a distinguishingly low environmental impact along with a very low transaction cost.

TOKENIZATION OF THE INTERNET OF THINGS

We want to help developers create their own token designed for their business model inspired by their ideas.

Kalima will allow to deploy your own custom token to monetize your business models converting physical data into a liquid token tradable in the community. All smart contracts created by the community of developers will use the technical standard token form of Kalima Ecosystem known as "KL20". This standard defines a common list of rules for all Kalima tokens such as the name, symbol supply and how transactions are approved and how they can be transferred.

NFTs ON KALIMA ECOSYSTEM

Kalima will provide tools to create NFTs and build unique digital assets that represent a proof of ownership. From art and digital collectibles to real estate, NFTs can extend physical assets.

BUILDING DAPPS ON KALIMA ECOSYSTEM

Giving you the tools you need to build your DApps on Kalima Ecosystem

OPEN SDK USING STANDARD LANGUAGES

The Kalima SDK is the tool to build and test DApps on the Kalima ecosystem. Kalima SDK uses standard languages Java, C#, C, Java Script, Python and is compatible with Linux, Windows, Android, iOS and Mac OS.

INTERCONNECTION WITH PUBLIC BLOCKCHAIN

Kalima MainChain is interconnected with Tezos and in near future to Bitcoin, Ethereum and Cosmos public Blockchains to offer a hybrid private/public blockchain solution.

TOKENIZATION PLATFORM

The Tokenization platform is our tool to deploy your own token on your Kalima Privachain. This will help entrepreneurs to develop new business models and financing methods by creating custom token dedicated to their own project.

MOBILE PAYMENT APPLICATION

The mobile payment application is a mobile app to transfer fiat money or Kalima Token between users of the ecosystem allowing to transfer value in an easy and secure way.

DEPLOY YOUR OWN KALIMA PRIVACHAIN

Launch your own Privachain quickly and easily for a low cost. Build a next generation multichain network scalable for business and industrial applications.

CREATE YOUR OWN GOVERNANCE FOR YOUR NETWORK

You have full control on your governance choices.

INTERCONNECT (OR NOT) WITH OTHER BLOCKCHAINS

You can connect with other galaxies of blockchain and public blockchains. Bring network together and create value with interconnection.

KALIMA API: APPLICATION PROGAMMING INTERFACE

Kalima, APIs are designed to be extremely usable, so that a relatively unskilled developer can write code on top of Kalima Blockchain without too much trouble.

API are open source to warranty the openness of the project. . Core of Kalima technology source code is available only to "Consortium Members" now as a way to protect against uncontrolled forks which could complexify the governance and create security Issues, but its governance, "Kalima Blockchain Consortium", could change this in the future.

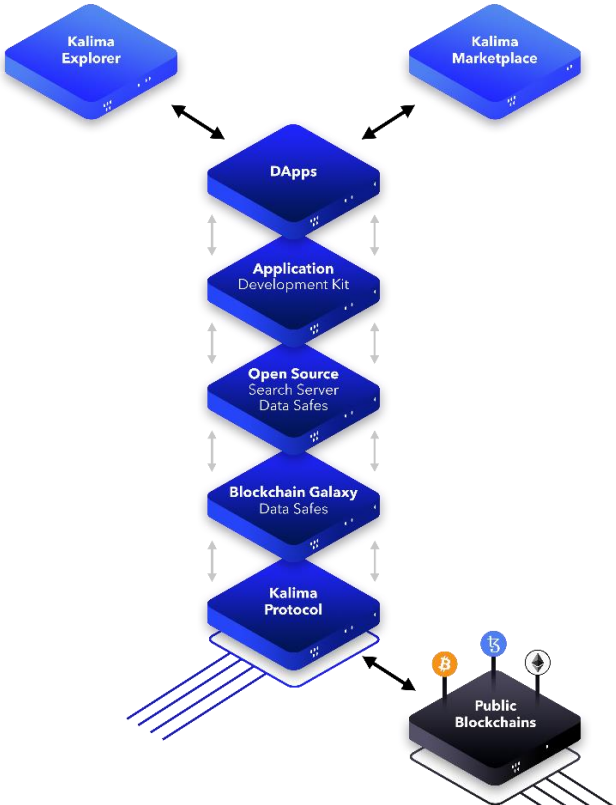
DAPPS STORE AND ECOSYSTEM PRINCIPLES

The Kalima ecosystem aims to enable the development of multiple DApps. Each developer can use the Kalima tools to develop their application based on a Kalima Privachain, interacting or not with Tezos, Lightning network, Polygon and Cosmos networks.

KALIMA MARKETPLACE

DApps developed on the Kalima ecosystem can be published on the Kalima marketplace to make them available to the community. This Marketplace will be used to browse through the DApps created by Kalima DApps developers.

Creators of DApps can create their own economic model; they have the choice of offering free or paid services.



AREAS WHERE DAPPS CAN TAKE ADVANTAGE OF THE KALIMA PROTOCOL

Where the client-side smart contract has an important utility

- Mobile Worker
- Connected Infrastructure
- Asset's Digital Passport
- Supply chain
- Blockchain for the new mobility
- Blockchain for the automotive industry
- Industry 4.0
- Blockchain for real estate platform
- Blockchain for City traffic analysis
- Asset's Tokenization
- Blockchain for smart Cities and Smart Grid
- Blockchain for Smart Economy
- Pay-per-use solution
- Identity management
- Smart Building & Smart Home
- The 3.0 construction site
- Blockchain IoT for Healthcare
- Blockchain for Agrotech & Food & Beverage
- Blockchain for Insurance Companies
- Blockchain for Luxury products

Tokenomics

To power this ecosystem, we designed the Kalima KLX token. This token is the native currency of the Kalima ecosystem and can be considered as the cryptographic fuel of the ecosystem. It is the key for developers, companies and investors to build and participate in project development and funding of DApps on the ecosystem.

The KLX token will be used on the Kalima Store Marketplace to use DApps and purchase community-developed services.

Users will be able to transfer their KLX with Kalima's mobile payment apps and exchange them with Tez, BTC and ETH. KLX holders will have active participation in the community by being able to participate in project development, purchase services and vote for project funding.

TOKEN, ALLOCATION AND VESTING

The Kalima Coin, **named KLX (ERC20)**, is the backbone of the network. The KLX is the currency on Kalima ecosystem use to monetize Dapps built on Kalima network and to pay transaction fees. The KLX will be first an ERC20 Token during the ICO and will become a native KL20 when it will be bridged with the Kalima MainChain.

KLX LAUNCH

The number of KLX tokens, the initial value of the ICO, as well as the market capitalization, are initialized according to the means required for the implementation of the ecosystem related to the growth hypotheses and priorities of the project.

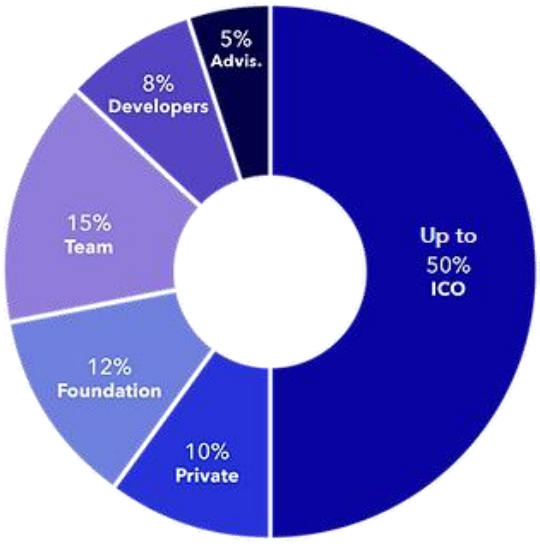
Token : Kalima Coin – KLX (ERC20)

Total Supply : 480.000.000.000 KLX

ICO Price : **0,00025€**

ICO Vesting : **No Vesting**

ICO Hard Cap : **20 millions €**



Allocation of the first 160.000.000.000 KLX

The rest of the supply, 320 billion, will be produced during KLX lifetime by validators.

Allocation	%	Vesting
ICO	Up to 50%	No Vesting
Private Sales	10%	12 months from listing
Team	15%	24 months from listing with 12 months of Cliff
Foundation	12%	12 months from listing
Developers	8%	24 months from listing with 12 months of Cliff
Advisors	5%	18 months from listing with 6 months of Cliff

GOVERNANCE

- **Master Nodes** : Nodes in charge of validating and coordinating the validation of transactions
- **Validation nodes** : Nodes elected to validate and timestamp transactions

The KLX tokens are stored in the “Kalima MainChain”, a network of “Channels”, each Channel being a blockchain. The MainChain is managed by members of the consortium. For the beginning of the project there will be 5 members within the consortium. Each member of the Kalima consortium will have the option of owning a master node. Each Channel in the MainChain requires a minimum of 50 validators with at least 5 master nodes for the MainChain. Privachains require 5 master nodes.

Rewards for Kalima MainChain validators

Validators, including master nodes will be rewarded in KLX for every transactions they validate in the network. Validation rewards will be divided by 2 after every halving, occurring every time 16 billion KLX tokens are emitted, up until the maximum limit of 480 billion KLX is reached.

At the time of the KLX launch, the reward per validated block will be of 10 KLX. The first halving will take place after the emission of 16 billion KLX tokens, whereby the reward per bloc will be divided by 2 and become 5 KLX per bloc.

Delegates

Members of the ecosystems can candidate as a validator or can delegate their vote by pooling their tokens into a staking pool and linking those to a candidate. Holders do not physically transfer their tokens to another wallet, but instead stake the tokens in a staking pool with a minimum lock-up period of 1 month.

Elected candidates (validators) will receive the transaction fees from the validated block, and that reward is then shared with users who pooled their tokens in the successful delegate’s pool. The more you stake, the higher the share of the block reward you receive. The rewards are shared proportionally based on each user’s stake. For example, if your stake represents 10% of the total staking balance, you will receive 10% of the block reward.

DIFFERENT TYPES OF NODES

Kalima ecosystem consists of 5 different types of nodes

1. Master Nodes (full nodes)

Master nodes are the main element in charge of validating transactions in the Kalima blockchain, they ensure traceability, integrity and immutability of all transactions. You can install as many master nodes as you need to set up a Kalima Privachain with a minimum of five of them. Master nodes store blockchain data and they publish them to the client's node after validation. Master nodes are the only nodes with administration nodes that are authorized to access all the data contained within the blockchain, including authorization data.

2. Validation Nodes

Validation nodes participate in the consensus to elect the Leader Node in charge of timestamping and hashing of all transactions. Validation nodes and master nodes are in charge of controlling transactions integrity and blockchain data immutability

3. Administration Nodes

Administration node give authorizations to the client nodes. All nodes benefit from strong device identification. Devices must be authorized before any connection is made. Authorizations can be limited to a subset of data.

4. Voting Nodes

Voting nodes enable validators to vote for governance management choices and to confirm loging access to administration nodes in a multi signature way. They are also used by "Stakers" for "Staking" purposes. Each "Validator" owns one "Governance voting node". Each "Staker" owns one "Staking voting node".

5. Client Nodes

Client nodes synchronize data to which they are authorized from Master Nodes, create new transactions and execute smart contracts. Client nodes can add and receive data to and from the blockchain depending on their authorizations. Smart contracts are executed in the client nodes on data arrival. Smart Contracts must have been controlled and authorized by Validation nodes before being executed. Client nodes can be developed by our users and partners with the help of Kalima SDK. Kalima SDK provides tools to develop java, C#, C, NodeJS, Android and iOS client nodes.

Data lake and Data safe Nodes

Data Lake and data safe nodes are Client nodes which collect data of one or multiple blockchain, depending on the authorizations, to compile and publish them to facilitate data search, machine learning, statistics or to provide a highly secure storage.

STAKING MODEL

Staker

- A « **staker** », is a KLX holder willing to stake their KLX tokens.
- A minimum of 100.000 KLX is required in order to stake (250€ of initial value).
- Each Staker choses the pool in which they want to stake their KLX.
- The staking lock-up period is of **1 month**.

Validator

- Every holder possessing over 0,2% of KLX in circulation can create their own staking pool so as to candidate to become a validator.
- A « **validator** » is a candidate who has accumulated at least 1% of circulating KLX tokens in their staking pool. There will be a minimum of 50 validators.
- Every candidate wanting to become a validator can stake their own KLX.

Master Node

- A « **master node** » is a Kalima consortium member and must hold 2% of circulating tokens at a minimum. The Kalima consortium elects a minimum of 5 master nodes.
- A master node is also able to stake their own KLX.

Rewards

Each validated transaction within the Kalima MainChain emits 10 KLX. These KLX are then distributed to validators, including master nodes. Each validator receives rewards based on the proportion of their stake within any given staking pool.

Each validator is able to determine their own distribution ratio. This ratio determines the portion of the reward distributed to the stakers having voted for (or staked to) the given validator. The rewards will be distributed in a weekly fashion.

Penalties

In a situation where a validator isn't able to validate a given block in the allotted time, they will receive a temporary participation penalty. Their right to candidate as a validator will be suspended for a duration of 3 months as a mean of promoting the smooth functioning of the network. In the case of purposeful harming of the network from a validator (network attack, lack of bounty conformity) the validator will see their 3 months suspension be extended depending on the severity of their action.

The staking model is subject to future changes based on decisions made by the Kalima consortium.

KALIMA MAINCHAIN TRANSACTION FEES

Transaction fees on the Kalima MainChain

Each transaction carried out on the Kalima network will generate transaction fees. These fees remain very low within the Kalima ecosystem and have an essential role.

- Provide compensation for network validators for the necessary resources required for validating transactions, as well as storage
- Reduce and prevent network spam by introducing a real cost for transactions.

Transaction costs will stand at 1 KLX per transaction at the KLX launch.

Transaction fees will be distributed as follows :

- 20% are attributed to the Kalima foundation to guarantee the safety and smooth functioning of the network.

- 20% are attributed to master nodes to cover storage costs.

- 60%, or the remaining part, is allocated to a special fund used to give out grants for Dapps and Privachains creators and developers to encourage network development.

This transaction fee distribution is designed to guarantee the security and sustainability of the network as well as encouraging the developer community to grow the Kalima ecosystem.

The transaction fee amount, as well as the way they are distributed are subject to future changes carried out by the Kalima consortium as a mean of supporting the ecosystem by guaranteeing a fair revenue for validators alongside a small enough cost for users.

Burn mechanism on the Kalima MainChain

A 10% burn will apply on each transaction fee occurring on the Kalima MainChain so as to compensate halving effects as well as controlling inflation.

An additional burn mechanism will be implemented on the Privachain model described on the following page.

PRIVACHAINS

Conditions for deploying a Privachain

To deploy a Privachain on the Kalima, a user must hold a minimum of 50 million KLX. This amount can be staked.

The Privachain owner can hold over 50 million de KLX for their Privachain so as to benefit from reduced frequency of payments of transaction costs on their Privachain. This mechanism is described below.

Transaction fees for Privachains

Each transaction on a Privachain will entail a fee of 0,1 KLX per transaction, or 10 times cheaper than a regular transaction carried out on the Kalima MainChain. The distribution ratio of these fees is identical to the one of MainChain transaction fees.

A payment will have to be made by the Privachain owner every 1000 transactions occurring on it. This payment to the Kalima MainChain will entail a cost of 2 KLX.

The payment frequency will be divided by 2 every time the minimum required amount of tokens held for owning a Privachain is doubled.

For example, if the amount held is of 200 million KLX (4x the minimum required amount), the payment frequency will be of 1 every 4000 transactions (4x base frequency).

A minimum of 1 such payment will be implemented per day to the Kalima MainChain in the case where a Privachain realizes less than 1000 transactions on a given day.

Burn mechanism on Privachains

The two burn mechanisms on Privachains are as follows:

- A 1% burn will be implemented on transactions carried out on Privachains, after which the rest will be distributed in an identical manner to the ones carried out on the MainChain.
- The payment for transactions fees (occurring every 1000t) to the Kalima MainChain entails a cost of 2 KLX. Half of these KLX will be burned each time, or 1 KLX.

Rewards for Privachains

As a mean of bootstrapping the Kalima network, the first 1084 Privachains will benefit from obtainable rewards once deployed.

For this, 10 reward levels have been put in place, rewarding further earlier Privachains, and will work in the following way:

Level	Number of Privachain	KLX Reward / Privachain	KLX Total Reward	Vesting
1	10	200 000 000	2 000 000 000	No Vesting
2	15	133 333 333	2 000 000 000	6 months
3	22	90 909 090	2 000 000 000	12 months
4	33	60 606 060	2 000 000 000	18 months
5	49	40 816 326	2 000 000 000	24 months
6	73	27 397 260	2 000 000 000	24 months
7	109	18 348 623	2 000 000 000	24 months
8	163	12 269 938	2 000 000 000	24 months
9	244	8 196 721	2 000 000 000	24 months
10	366	5 464 480	2 000 000 000	24 months
TOTAL	**1084**	**20 000 000 000**	**20 000 000 000**	**24 months**

Each Privachain can obtain 100% of the reward of from its respective level.
It is by realizing transactions on its Privachain that rewards will be unlocked.

For every 100 transactions realized on a Privachain, 1 KLX will be emitted, until that reward ceiling is reached for that level.

A reward level is unlocked only if the number of active Privachains goes past the required threshold for that reward level.
A Privachain is considered active when a minimum of 1000 transactions are realized on it per day.

For example, for the reward level 1 containing the first 10 Privachains, 1 single Privachain can realize 200 000 000 000 transactions so as to obtain the total of rewards available for the level in which it finds itself.

For every level, apart from the first one, the emitted KLX will be subject to a vesting period specified above.

KALIMA MAINCHAIN RULES

We have listed below the initial governance rules of the Kalima MainChain. Theses rules are subject to change in the future by vote of the KLX ecosystem :

Client nodes connected to KLX platform will be either Privachains or exchanges.

Each Privachain has its own address or channel and will be initially limited to 99.900. The maximum number of exchanges will be initially set to 100. Each Exchange will have a maximum number of 1.000.000 addresses.

Theses limits are fixed to protect KLX platform against deny of services attacks.

Validation nodes on cloud platforms

Validators can run a voting and non-voting machine on a cloud computing platform or on premise. Client nodes can take advantage of small memory footprint of Kalima and its capacity to run in small devices, IoT gateways or smaller.

Also note that egress internet traffic usage may turn out to be high.

- **Docker**

Running validator for live clusters (including mainnet-beta) inside Docker is not recommended. This is due to concerns of general Docker's containerization overhead and resultant performance degradation unless specially configured.

- **Software**

Prebuilt validators binaries are available for x86_64 CPUs
(Ubuntu 20.04 recommended).

- **Networking**

Internet service for validators should be at least 300Mbit/s symmetric, commercial. 1GBit/s preferred

HOW TO BECOME A KLX VALIDATOR ?

Any user can aim to participate in the consensus if a reserve of KLX is held by that user to receive the associated remuneration. Only validators chosen by the network itself will become validators for the Kalima MainChain. This election ensures a sufficient level of rewards for the validators elected. The first validators will be the consortium members, among the early investors who have made it possible to finance development of the network during the pre-sale.

Every validators elected will be subject to a security Bounty to make sure that they have a sufficient level of security for their infrastructure.

Any validator hurting Kalima security would be added to a blacklist and will not be able to be a candidate anymore.

Hardware recommendations

CPU : 6 cores / 12 threads, or more 2.8GHz, or faster
AVX2 instruction support (to use official release binaries, self-compile otherwise)
Support for AVX512f and/or SHA-NI instructions is helpful
GPU : not necessary at this time
RAM :16 GB, or more
Disk NVME SSD, or better
Accounts: 100GB, or larger. High TBW (Total Bytes Written) suggested
Ledger: 500GB or larger. High TBW suggested
OS: (Optional) 500GB or larger. High TBW suggested

Testing has shown better performance with the ledger on its own disk. Due to high IOPS it is not recommended to store Accounts and ledger on the same disk

RoadMap & Team

Kalima's experienced team is growing day by day and has already reached important milestones in its evolution.

We are more than ever ready to impose Kalima on the international IoT market.

TOGETHER TO AN INTERNATIONAL ADOPTION

The Kalima Team has a strong experience in IoT and Blockchain

2009
Release Kalima Distributed Ledger
Java & Android SDK

2012
1st industrial application of Kalima by Tenneco
Kalima Blockchain Launch
Smart Contract
JS SDK

2015
Smart Building PoC
1st Secure Gateway LoraWAN with Kalima

2018
C# SDK Launch
Digital Twin app for 4.0 Industry
Smart Infrastructure Applications

2020
IOS SDK
NodeJs SDK
Digital Passport

2021
Python SDK
Kalima brings Client Side Smart Contract to Tezos as 2nd Layer

Q1/Q2 - 2022
Kalima Mobile Payment app (DApps)
Data Safe
Data Lake
c SDK Launch
Pre-ICO
Marketing Campaign

Q3 - 2022
ICO
Kalima Consortium Launch
Dapps Marketplace
Lightning Network interconnection
Security Audit

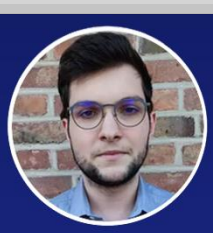
Q4 - 2022
Listing on DEX
Polygon Interconnection
Opening Kalima Consortium
Kalima Foundation
Blockchain Certification

2023
Listing on CEX
Bridge KLX ERC20 to Native token KLX
Go SDK Launch

2024
Development in all IoT sectors

André Legendre
CEO & CTO

Jérôme Delaire
Lead Blockchain Dev.



Pierre Calon
Blockchain Developer

Louis Germanicus
Blockchain Developer

Léo Maurice
Business Developer

Prisca Déméa
Community Manager

Audrey Blondel
Communication Manager

Julian Leue
Blockchain Business Developper
Europe

Sébastien Choukroun
Financial & ICO Advisor

Yannick Delibie
ICO Advisor

Oscar Lhoste
Financial & ICO Advisor
US

Basile Jannoun
Blockchain Business Developper
Middle East

Kalima Partners & Users

Tezos

INATBA

SBA
SMART BUILDINGS ALLIANCE FOR SMART CITIES

mov'eo
Imagine mobility

La FRENCH TECH
PARIS SACLAY

ArcelorMittal

GICAT
Groupement des industries françaises de défense et de sécurité terrestres et aéroterrestres

SPIE

TENNECO

Schneider Electric

ENEDIS
L'ELECTRICITE EN RESEAU

RS Components

Follow The Future
IoT Blockchain Leader.

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Kalima
Blockchain & IoT
Collect.Protect.Monetize