ATHENA

ATHENA BLOCKCHAIN FRAMEWORK

A decentralized marketplace of services based on new kind of blockchain

White Paper

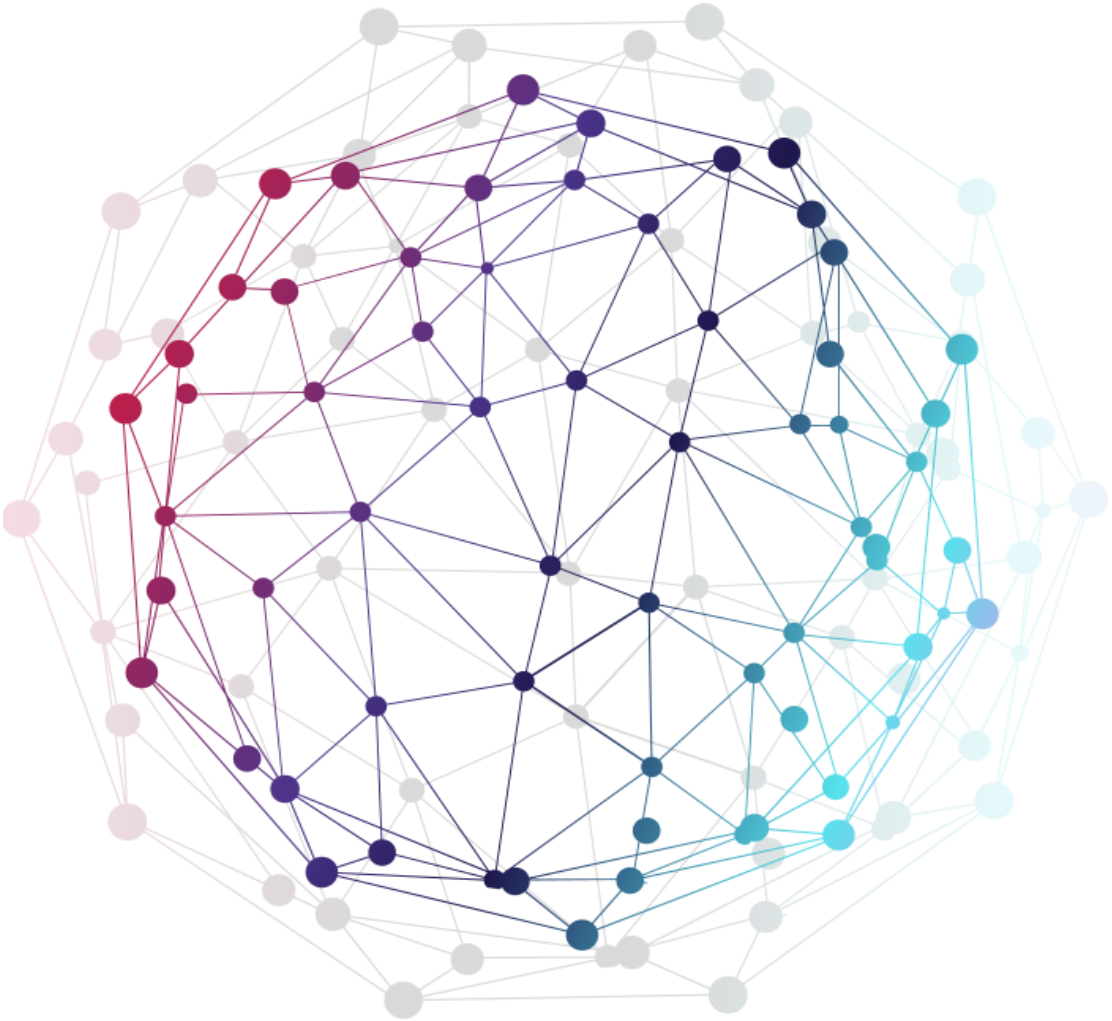

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Table of Contents

1 Introduction

All over the world, the utilization of the blockchain and cryptos is increasing every year. It is thought in the next years the blockchain will arrive inside our journeys where we will able to pay bills or to buy something at supermarket with cryptos. But at the moment only the 20% of blockchain utilization is used by people around the world. The main blockchain are been developed to perform in a financial trading sectors, the most utilization use of the blockchain is for trading or speculation, but this technology can be used also to improve others processes in different fields such as insurance, real estate, energy, retail, legal, publisher, payment receipt and so on. On the other hand after we have tryied different blockchain, we have noticed some common problems:

- **Price highly instable for global economic adoption:** It is very difficult adopt cryptos for global economic purpose because the price can change continuously. A lot of people do not want use blockchain as investment or for trading reasons. To understand what I mean below there are few sentences of an early adopter user:

  "I charge the wallet for certifying my documents, why the price after one day is changed?"

  "I bought this service to certificate my documents not for trading my money"

  "Why the price of fee change every time that I try to certificate my documents?"

  "Why the price continues to change, and the price is decreased/increased?"

  These are only few sentences told me by early adopters when I have developed some applications based on blockchain. Many of them do not trust in this technology because they don't understand the mechanism behind the blockchain. They use blockchain as a service and at the moment there isn't a blockchain "as a service" based.

- **Mainly used for trading or speculation:** Now a days blockchain are adopted only for a trading use and it is not used to give a service to the people. Although the blockchain has many use cases, there are few projects created to improve a process or giving people a new kind of service.

- **Public nodes mean more problems:** Many *"blockchain guru"* told me that a blockchain if it is private, it will be not a real blockchain. All people can run a node of the blockchain. This thinking introduces a lot of problems because if I run the node of the blockchain I will have access to the code and an hacker could compromise the execution of the entire blockchain system. In the past many blockchain have been hacked with different malicious nodes falsifing transactions. If you search on google you can find some developers like me who explain how hack blockchain. In this video for example a guy hack an ethereum smart contract: https://www.youtube.com/watch?v=P8LXLoTUJ5g. For this reason we want create a *public blockchain* where only *secure and reliable entities* can run the nodes of our blockchain. e.g. cyber security companies or IT companies, because these entities don't hack the blockchain, they protect the blockchain from hackers.

- **Blockchain designed to eliminate intermediaries:** We understand the blockchain are based on the anonymity, guaranteeing privacy. However there are not only good people in the world, and with these kind of blockchain is impossible, for authorities, understand which people are doing illegal actions. We think could be better create an environment where authorities are inserted as entity but they can't access, control or manage the wallets of the people. At the moment, all the blockchain have been created to eliminate the entities of the real world but this is a use case for a dystopic world, it is not thought for the real world needs. We think should be improved the integration between the entities of the real world (real estate agency, insurance companies,

authorities, governments and so on) with the blockchain ecosystem, continuing to maintain the anonymity of all people who want join in our network.

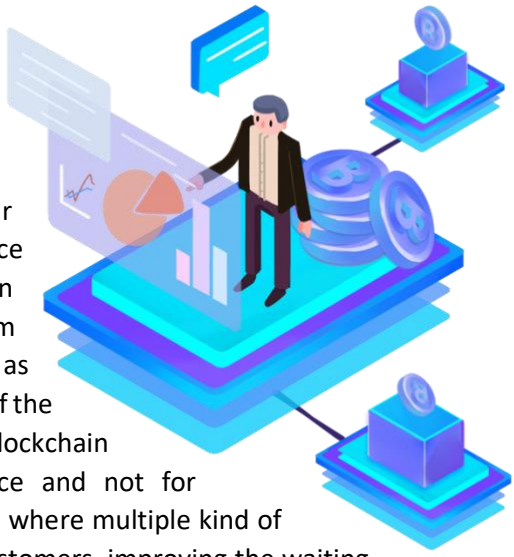
1.1 What is Athena Blockchain?

Athena is a new kind of blockchain 4.0 developed to integrate entities and real life processes with blockchain ecosystem. Athena Blockchain has the native coin with a stable price associated to the value of dollar. Before the launch of our blockchain we want create the token on Binance Smart Chain to fundraise the project creating the liquidity and the market cap. Our blockchain is the first blockchain thought to be as a service and not for trading or speculation purpose. Through our decentralized marketplace, the entities of the real world can sell their services directly to the final customer optimizing and reducing the waiting time of every single process. The our new consensus algorithm has been developed to accelerate the transaction's time validation. In the next chapters will be explained all the technical parts of our blockchain.

1.2 Our vision

Athena is more than a simple blockchain. All people on earth, live under the same sky and each of us have to think decentralized for the sake of humanity. Our project wants bring the blockchain inside the people's journeys paying taxes, bills, insurance and improving the use of the services between entities all over the world guaranteeing privacy for all people of the community.

1.3 Our solution



We have developed a new blockchain framework to create a new kind of blockchain as a service. Thanks to the complex architecture and structure of this blockchain, we support millions transactions for second and a high scalability. Throught our decentralized marketplace people can use blockchain technology to buy services from companies using a blockchain as a service with a stable price of the coin. This is the first blockchain thought to be as a service and not for speculation or trading utilization, where multiple kind of services can be bought from customers, improving the waiting time of every single process and optimizing the process itself. As services, for people, we offer: real estate agency, insurance, payment receipt, electricity and gas payment, loans and mortgages with super subsidized rates, multi signature documents, publishing industry and at the end, to manage multiple millions of data, the supply chain management.

2 Athena blockchain framework

In the next paragraphs it is explained how Athena blockchain framework works. It wil be explained the entire architecture of the software precising the functionality of all microservices, the consensus algorithm, the nodes of the blockchain, the marketplace and the solution.

2.1 How Athena works

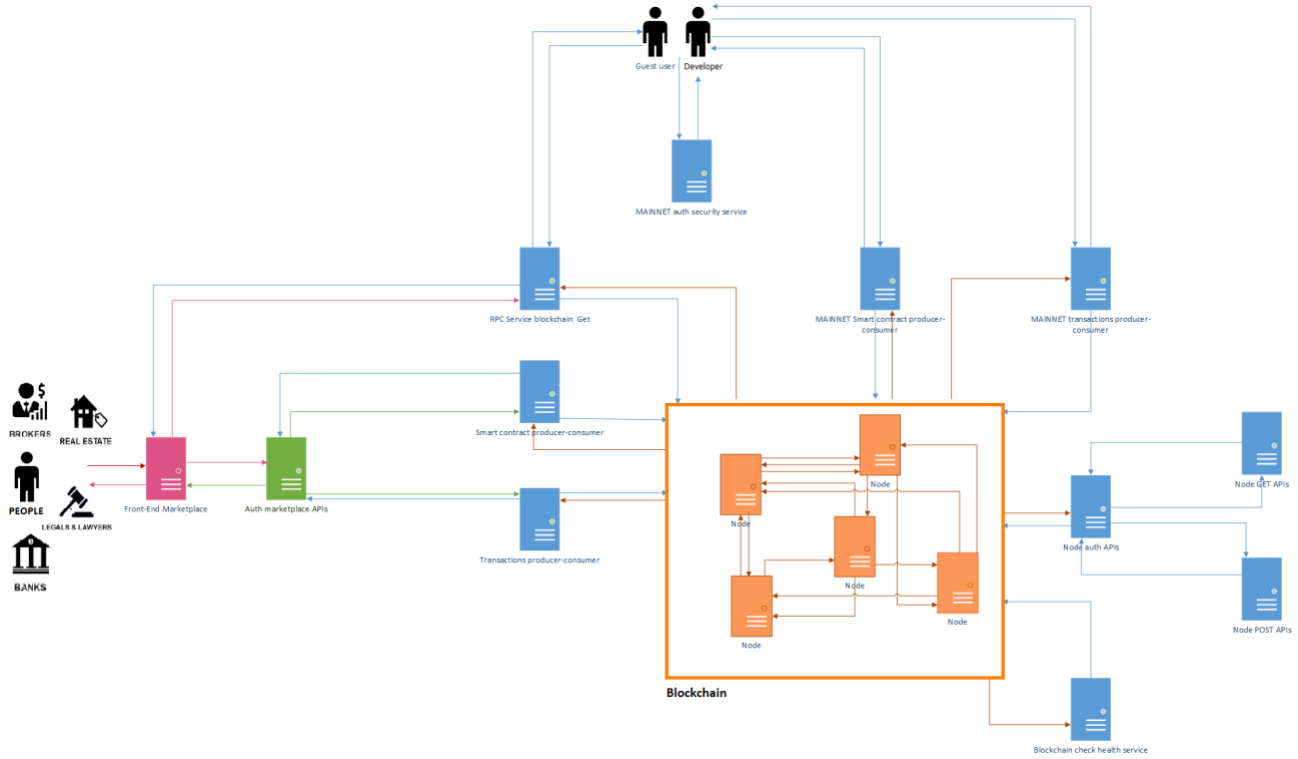


Fig. 1

Athena has a complex microservices architecture as is showed in figure 1. The BLUE servers are all microservices which interact with the blockchain. The GREEN servers are the microservices of the marketplace and the ORANGE servers represent the nodes of the blockchain. Each microservice could has more then one service. Below are explained all the structures of the microservices used by architectures.

Each group of microservices, is deployed used a kubernetes cluster with the docker containers associated. The architecture is subdivided in three main parts:

- **Marketplace microservices architecture:** in this architecture there are all the services used by marketplace platform.

- **Blockchain microservices architecture:** here we have a complex structure. Inside it, there are others three substructure. All microservices of this area, communicate with the nodes of the blockchain creating the layer 2 of the blockchain.

- **Blockchain nodes:** The nodes of the blockchain, are built with four different programming languages. This choise because each language performs in a specific area of the software improving the interoperability and scalability.

2.1.1 Blockchain microservices architecture

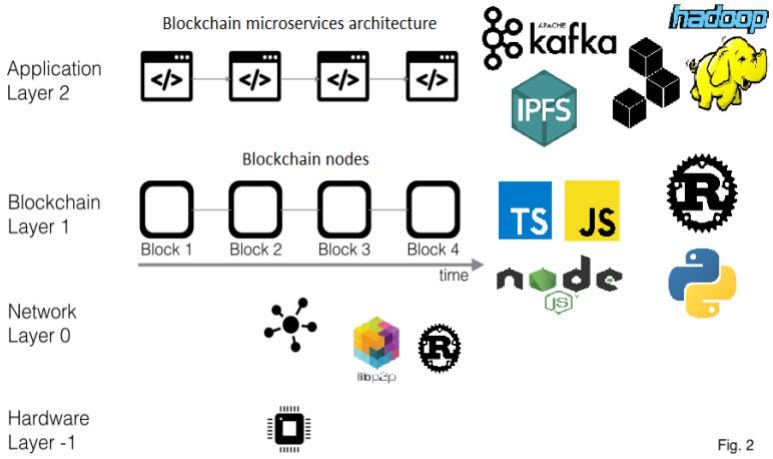
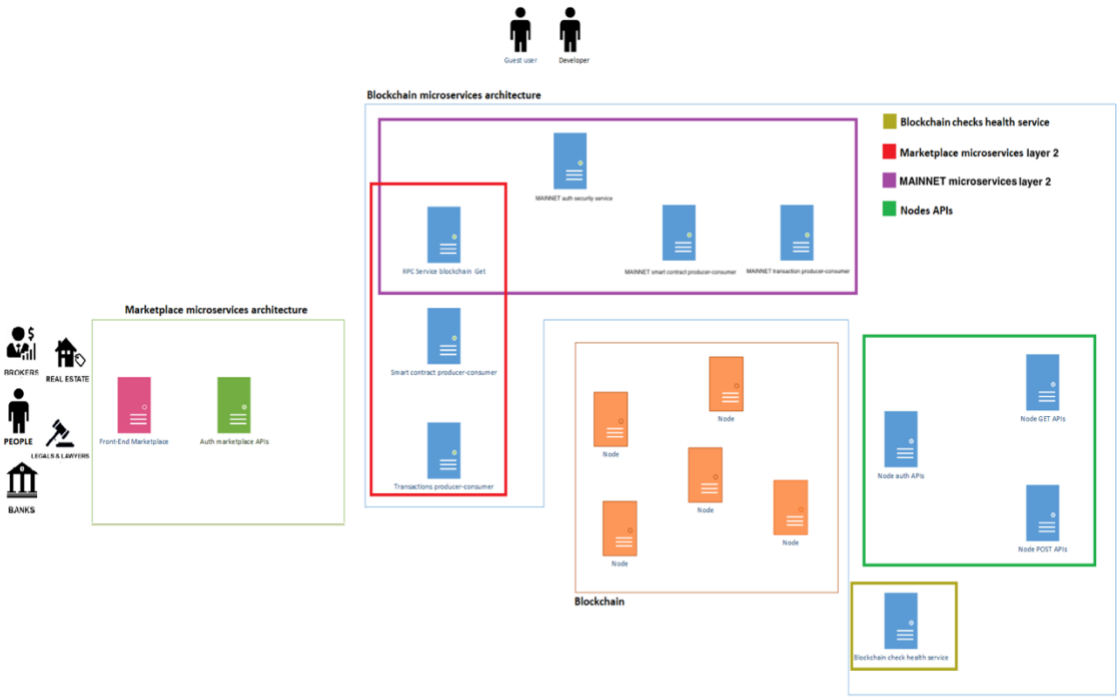


Fig. 2

After the figure 3 are explained the microservices of blockchain architecture as layer 2. To resolve better the blockchain trilemma of decentralization, scalability and security we have thought to use as layer two different systems of message broker using kafka. That to give more scalability to blockchain instead of use a sidechain as layer two. Using kafka message brokers to manage transactions, we can have a lot of scalability because this kind of message brokers can support millions transactions for second and if a transation failed for some error, it can be added again in the message broker topic. Instead to resolve the problem of security, we believe is important maintain the network of the blockchain based on *trust* between *nodes and entities*, for this reason only secure and reliable entities can host a node of our blockchain. Many people in the game don't like this because they say *"you can manipulate data or tracking people".* But we are sorry for them, that is not true. Personally we have created this blockchain to integrate the entities of the real world, inside the ecosystem of the blockchain because we want to protect people receiving all the good benefits from the blockchain. On Athena all the transactions are anonymous only the address and the publickey are registered in blockchain to sign and verify the transactions. We don't register any data of the users inside blockchain. The wallet of our blockchain is generated using the same logic of other blockchain, we have used the ECDSA algorithm. So our blockchain has the same core-functions of the others blockchain, but to provide a solution on the security problem we have thought which this solution can resolve the major part of the blockchain security problems. We don't want centralized all the nodes inside a kubernetes cluster (many blockchain do that at the moment) because centralizing the nodes you lose all the advantages of decentralization. For this reason each entity can have a maximum of five nodes. Kubernetes clusters are only used in layer two by microservices to improve the scalability of blockchain. With this last affirmation, we continuing to provide the decentralization necessary to improve the network blockchain nodes. In figure 2 is represented the framework implementation.



[Fig.3]

2.1.1.1 Blockchain checks health service

This service is used to check the conditions of the blockchain to keep trace of the errors sending directly to our development team the error. This tools is useful for us because if an error occurred on the blockchain, we can intervene quickly correcting any errors. So we can guarantee a 24h 7/7 the intervention if an error appear. This software follow the logic explained in figure 4.

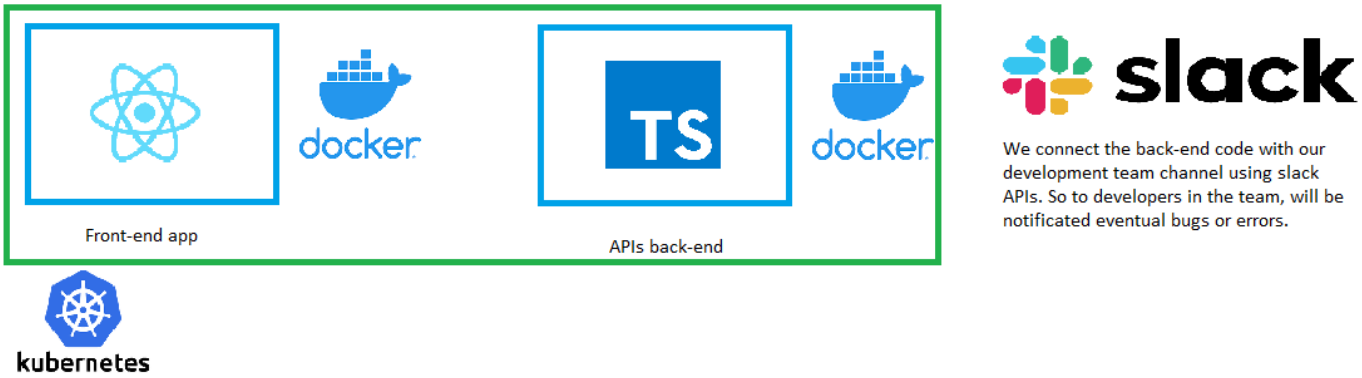


Fig. 4

2.1.1.2 Marketplace microservices layer 2

Below is explained the structure of all marketplace microservices (the same are used for the public mainnet):

- **RPC service blockchain get:** This microservice is used to consume the GET requests of the blockchain using the standard service used by others blockchain.

- **Smart contract producer-consumer:** Here we have the microservices with kafka and one producer and one consumer used to queue transactions. In this case, these microservices are built to manage smart contracts and NFTs. So beyond kafka there are also some framework as Hadoop or decentralized protocol such as hyper or IPFS to handle users file management.

- **Transactions producer-consumer:** This service is used to manage transactions made by users of blockchain. e.g. send cryptos between users. Here we have only kafka with one producer and one consumer.

2.1.1.3 MAINNET microservices layer 2

These microservices are used as layer 2 instead of use a sidechain. This because increase the scalability of the blockchain. Using kafka message brokers for transactions, smart contracts and NFTs we are able to manage millions transactions for second. This structure is the same of "*2.1.1.2 Marketplace microservices blockchain APIs"*. We have dedicated a producer-consumer services for users of the marketplace. The functions are the same of the MAINNET layer two microservices for developers and people who want integrate their services with our blockchain. Throught our auth security service, developers and people can choose to make more secure the transactions type of smart contracts generating a token auth to call your smart contract functionality if you want add more privacy to your smart contracts or NFT. e.g. you want create a smart contract with some functionality making these functions available only with token auth adding more security and privacy. So in the next figure (number 5), you can see the structure of microservices explained previously. All the transactions validate by nodes of the blockchain will be showed on explorer of athena blockchain like the others blockchain implement.

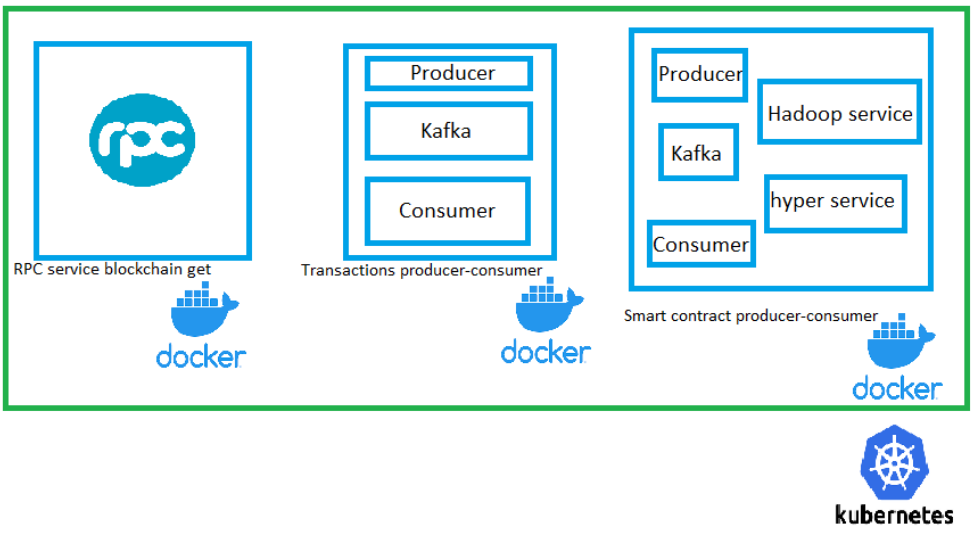


Fig. 5

Now think about destructure and decentralized the blockchain microservices architecture and the blockchain… This kind of structure it is thought to get a lot of scalability and decentralization as well.

2.1.1.4 Nodes APIs

These APIs are used from blockchain node to notificated a notify to an user of the marketplace after some actions similar to opensea when an user receives a notify when he/she sells an NFT. This structure it is composed by an auth APIs to authenticate the nodes, and subsequently with two microservices for POST (notification) or GET for configuration data nodes.

2.1.2 Marketplace microservices architecture

Here there is the front-end application of the marketplace with a wallet app built in. But before to acess, you can choose also to connect your wallet with metamask or others wallet providers, without fill in the registration form (as guest user). But if you want buy a service on the marketplace where is required your data, you have to copile the form to buy the service. e.g. you want buy an insurance for your car, you can enter in the marketplace without insert your data (such as opeansea or solanart) but in the real life, you have to compile the application form to register legally your car insurance. So if you want buy only an art NFT, you can buy it also without your personal informations. But for others services of the real life world, you have to compile the application form service with your data. There are two type of user in our marketplace. Basically we understand that some people don't want fill in the registration form for the anonymity, so below are explained the users types:

- **Registered user:** These types of users, are the users who are registrated to the marketplace application creating their own wallet as metamask do. These users can be subdivided in two category: *companies* who sell their services throught NFTs and smart contracts on our marketplace and *customers*, the users who want buy services in our platform. All these users will be authenticated with the auth service of marketplace. Only the users registrated will have a layer two specific to handle requests from the marketplace. It is thought for people who don't know blockchain mechanism, helping them to create a wallet in app inside marketplace. So they can move easily throught the mechanism behind blockchain and understand better how it works. We don't registered inside any database the informations of the wallet. We create a new one as metamask do, with a

password for your wallet and then if you lose the password, will be impossible recover your wallet. We follow all the standard rules of the others blockchain systems and blockchain services.

- **Guest user:** On the other hand, the users who do not want fill in with registration form, can access with their own wallet as user guest. In this case users have only to compile the form with an username and a password (email oprtional) and every time that they want buy services from the marketplace have to sign transactions connecting their wallet (how happen in the others decentralized marketplace). In this case, all the transactions will be done in the MAINNET layer two microservices, because the users guest are not registered on the platform. For some services as insurance or real estate, each user have to fill in the application form of the service with the personal data. You can't buy an house without your personal informations in real life!

2.1.3 Blockchain nodes

Below is illustrated the architecture of every single node of the blockchain (Fig. 6):

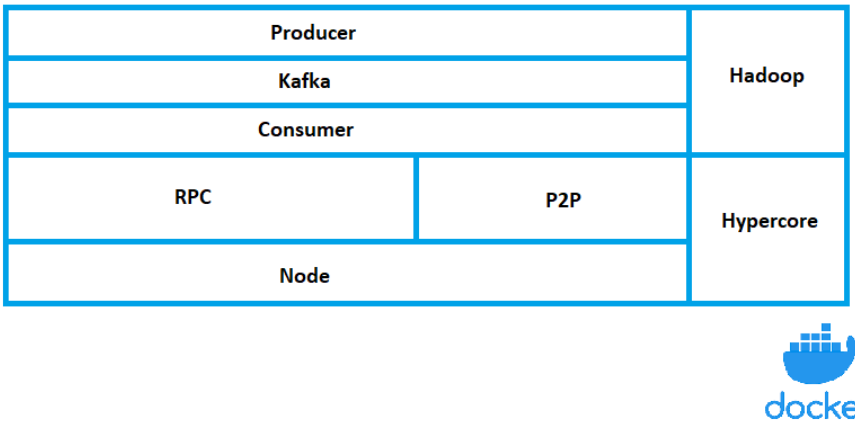


Fig. 6

- **Producer:** It is used to getting the transactions to validate on the blockchain, creating an optimizing environment for transaction time execution.

- **Kafka:** Inside message broker of the node, all the transactions to validate are queued inside the topic of the kafka.

- **Consumer:** When a transaction is added to the kafka topic, a consumer get the transation to elaborate eand send it to the node class to elaborate transaction, validate it and sopread to the others nodes of the blockchain the block to add, using a peer to to peer socket communication.

- **RPC:** This is the "*Remote Procedure Call*" functions of the blockchain node, to get the data from the blockchain to the final users.

- **P2P:** This is the service is used for the socket communication between the nodes of the blockchain. After that a new block is added to the blockchain, the node which validates the block have to spread to the others nodes of the blockchain the new block added. Beyond that the P2P class is used to request the new blocks of the blockchain from nodes. Our P2P network is built using rust and the library associated libp2p, used by others blockchain or frameworks such as polkadot, ethereum 2.0 and substrate (https://github.com/libp2p/rust-libp2p).

- **Node:** Inside the node class there are all the core functionality of the blockchain such as the block class, the wallet class, the transaction pool, the blockchain class, the transaction class and the account model.

- **Hadoop:** Hadoop is used to handle transactions type of smart contracts or NFTs. Hadoop is used for storing and processing big data. In Hadoop, data is stored on inexpensive commodity servers that run as clusters (each node of the blockchain has a Hadoop service). It is a distributed file system that allows concurrent processing and fault tolerance. Hadoop MapReduce programming model is used for faster storage and retrieval of data from its nodes. Thanks to this architecture the nodes of the blcokchain have a high scalability bringing an improvement in terms of interoperability. In the future with the athena blockchain framework, you are able to create your own supply chain as your own layer 2 to store the data of your supply chain process. The node of the blockchain will be able to get your data throught this service. The cost of transactions inside your own supply chain are totally free. Thanks to athena smart contract you can deploy a service to communicate with your private supply chain authenticating the requests of your service throught a token authentication to add more security and privacy on your data.

- **Hypercore protocol:** We use hypercore protocol to handle the deployment's smart contract functionality and for NFTs repository. This kind of protocol it has been developed to be adaptable in a blockchain environment, creating an optimized integration with the apache suite environment used to manage smart contract and NFTs of the blockchain. Thanks to hypercore protocol we can deploy and execute the code of your smart contract, creating a service callable in a file system shared between the peers of the blockchain (https://hypercore-protocol.org).

2.1.3.1 Blockchain nodes functions

Each node of our blockchain have multiple functions, but we can subdivided these functions in three mainly categories:

TRANSACTION: This type of function is used by nodes to execute transactions inside the blockchain. Inside blockchain there are subdivided in category and type, for the TRANSACTION category the types are:

- **EXCHANGE:** When an user charge his/her wallet.

- **TRANSFER:** When an user transfer the coin from a wallet to another wallet.

- **NFT:** This type of transaction indicate when an user make a payment to buy an NFT from another user.

- **STAKE** *(removed in production, using our proprietary PoP consensus algorithm)*: When a node put in stake some token to became a validators. This implementation is the first implementation of an old POC developed in March 2021. In the new release, the consensus algorithm, will be rewrited with a new one developed by us based on PoP (Proof Of Partecipation) algorithm.

SMART_CONTRACT: Our smart contract are built different from the typical smart contract. Thanks to docker and hypercore protocol you can create, with different programming language (at the start we think only JS and python but we want integrate also many more languages as much we can), your smart contract and subsequently, publish your code. A container docker will be run with your smart contract published. In this manner developers are able to execute code inside the blockchain improving the smart contract functionality and giving more functionality to dApp. Below are explained the types of smart contract category:

- **MULTI_SIGNATURE:** This type of smart contract have been thought to resolve the problem of multi signature of the document. With this kind of smart contract all the services where is required the multi-signature documentation can be integrated with this type of smart contract.

- **CODE:** All the back-end functionality or lambda functions to link your services directly with the blockchain. How it has been explained in the previous paraghraps, using kafka, hadoop and hypercore-protocol we can manage millions transactions for second and using their functionality we can deploy in a file system, shared between the nodes of the blockchain, your own code written in the smart contract, developing also lambda functions or RPCs services written in the smart contract itself (not using solidity, but your favorite language. At the moment it is supported python and javascript, but in the future all the main programming languages will be supported).

NFT: The NFTs types are subdivided for the category of the service:

- **ART:** This type of NFT is the usual NFT sold in other blockchain usually an image or video.

- **PAYMENT_RECEIPT:** This is the more useful functionality of our smart contract. With this kind of NFT, people can pay the bills for the gas for example. And after the payment, an NFT of the payment will be released to you and will be available on the wallet app of the marketplace. This NFT can be used also by merchants to exchange their products with the customers, e.g. in a shops or pub.

- **CONTRACT:** After you buy an insurance or a contract with gas company, will be generated the related NFT document own by you on the wallet built in the marketplace platform.

- **TICKET:** This type of NFT can be used for concerts or public event.

- **REAL_ESTATE:** All the properties such as house, land or commercial buildings have this type of NFT.

- **PROJECT:** This type of NFT is used to fundrise a project or sell it on the marketplace, e.g. a mechanical engineer build a new prototype of engine and he/she want sell or fundrise the project throught a blockchain. The NFT in this case contains the releted project to fundrise or sell.

- **PUBLISHER:** This type of NFT is used for the publishing industry for music, intellectual property, books and for patent projects. In this case to protect the contents, all the data are crypted and only the owner can have access. Also if someone try to access to this data, the data are offuscated and crypted.

- **LOANS & MORTGAGES:** We can provide loans and mortgages through cryptos with subsidized rates for the users.

2.2 Consensus algorithm

Our blockchain has a propetary consensus algorithm for transaction's validation, below is explained how the algorithm works try to simplify the actions done by the algorithm.

The process of validation is subdivided in separated thread explained in the next paragraphs. But the main function of the algorithm is based on three main points:

- **Looking for the nearby node:** Using the shortest path problem dijkstra's algorithm, is searched the node nearby to resolve the request (https://en.wikipedia.org/wiki/Dijkstra%27s_algorithm).
- **Time availability:** The algorithm controls how long the node has been available.
- **Equity:** The algorithm is based on the number of transactions made by the node, favoring nodes with fewer transactions. So to obtain an equal environment.

2.2.1 Main thread which reads transactions from layer 2

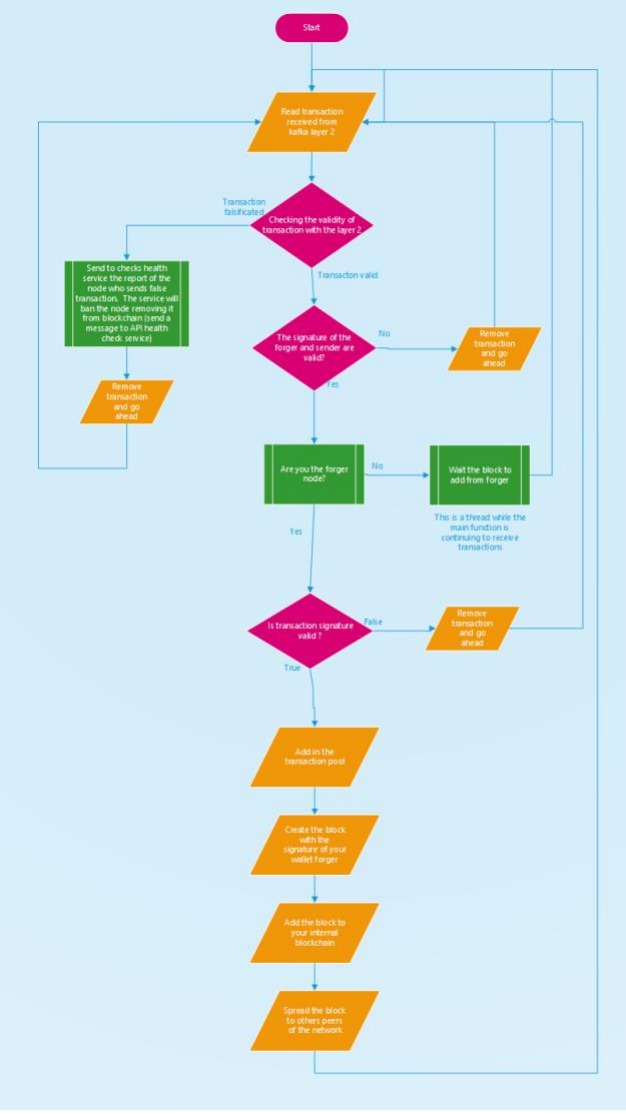


Fig. 7

After that a node receives a transaction from layer 2, there is the choise of forger node. If the node is not choosen will continue to read transaction from layer two, instead if the node is the forger, it have to create the new block of the blockchain and then spead a new block to others peers.

Our POP algorithm, thanks to the shortest path problem dijkstra's algorithm, get the nearby node to resolve the transaction. After that, the algorithm chacks the number of transactions made by the node. If there is another node nearby, with less trransactions done, the algorithm chooses the algorithm with less transactions to create an equal environment. After that, the transaction will be validated by the forger node choosen, and the node will add and then spread the new block to the others peers of the blockchain. Each forger receive part of the fee after the transaction validation in the blockchain.

2.2.2 Child thread to receive new blocks

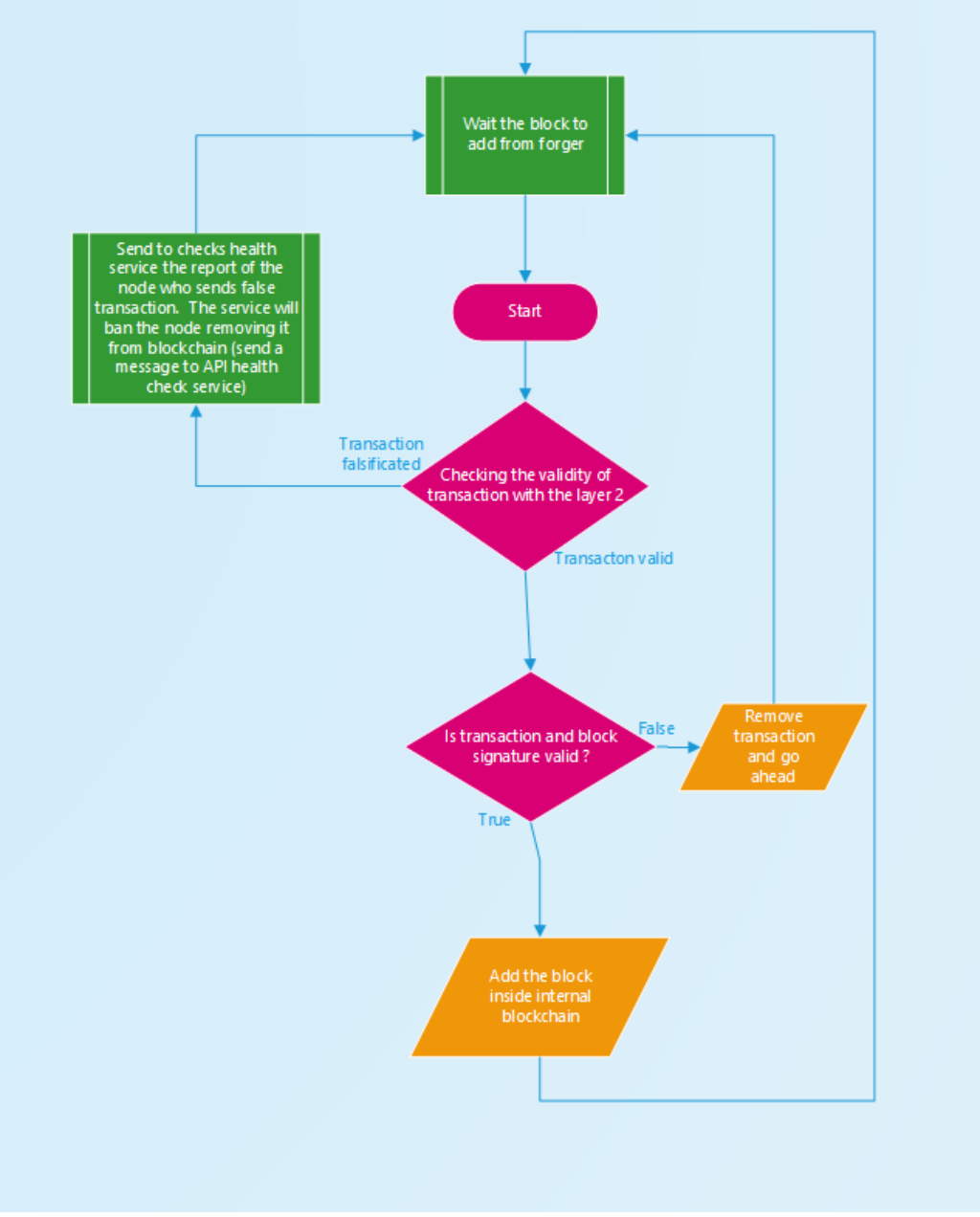


Fig. 8

Another thread is listening to the port of the node to receive new blocks to add to the blockchain. Before to add new block to the blockchain, always will be checked the transaction inside the block received, with the transaction in th the layer 2. If the transaction is not the same, resulting falsificated, the node call an API (from blockchain health check service) to report the node who has sent the false block or transaction, so the service can remove the malicious node from blockchain adding it to the black list (list of the nodes banned from blockcahin for fraudulent actions). At the end, if transaction is ok with layer 2 and the signature of forger and sender are valid, then will be added the new block to the blockchain.

2.3 State of art

At the moment it is developed only the 35% of the project. There is an huge work for only few people. For this reason we decided to create an entrepenurial project creating a company to fundrise the project and complete all the tasks of the project. There are different main parts to be finished:

- **P2P network improving (10% completed):** Improving actual p2p functions with libp2p library written in rust.
- **Rust integration (10% completed):** Improving the core engine functions written in python with rust.
- **Consensus protocol integration (20% completed):** Integration of the new consensus protocol in the athena blockchain framework.
- **Layer two (60% completed):** Implementing the layer 2.
- **NFTs & Smart Contarct (50% completed):** Integration with hyper protocol and smart contract management & deploy.
- **Marketplace (20% completed):** Creation of the web app marketplace and IOS & android app.
- **SDK Athena (5% completed):** For developers
- **Blockchain core engine framework (100% completed):** Core engine framework of the blockchain.

We need of two years more or less to finish completely all the parts of the blockchain. But during these two years, the marketplace and the core functions of the blockchain can be released in production. Initially we thought to release only the wallet basic app where users can send cryptos and smart contract basic functionality and then during the next year, will add the services of the marketplace inside the our blockchain. At the end of the first year we will have a beta and the testnet of the blockchain. During the second year we go forward release in mainnet the athena blockchain framework following the go to market and sales strategy.

3 Use cases

3.1 For business & services

REAL ESTATE

Through our marketplace a real estate agent can manages the buying and selling a house between multiple entities. We want insert all the possible entitities inside this process for the the multi-signature of the documents. Beyond the buyer and seller, can be integrated more entities such as real estate agent, lawyers, legals, banks and many more. Using a timeline UI, al the entities of the process can visualize in real time the status of the process, monitoring in which phase of the process all the entities are.

PAYMENT RECEIPT

Using this type of NFT shops, pub, bar, restaurant, ecommerce, can provide a payment receipt. This is the more useful functionality of our smart contract. With this kind of NFT, people can pay the bills for the gas through our decentralized marketplace from company which sells the service. And after the payment, an NFT of the payment will be released to you and will be available on the wallet app of the marketplace.

INSURANCE

Companies insurance can sell their insurance services through our marketplace, but this is not the only benefit got, a blockchain insurer can rely on greater efficiency in settlement processes throughout claims management with a significant reduction in costs and time needed to handle claims. The spirit of blockchain application to this industry is to be read in the transformation of the insurance industry value chain that reduces or eliminates the number of transactions thanks to the logic of Smart Contract. Companies are addressing the possibility of implementing Smart Contracts to automate the most frequent and repetitive tasks with significant benefits in terms of resource management, time and dispute resolution costs.

GAS, ELECTICITY AND WATER

Blockchain technology can play a leading role in the digitisation and in the sustainable renewal processes of the Energy & Utilities sector, contributing to the transition towards more efficient business models with a greater degree of automation. In a context in which the operators in the industry are increasingly driven towards investing in new architectures to optimise their processes and to expand the range of services offered, blockchain technology can be used to track and certify accurately in an immutable way all the information that these platforms and processes are required to manage and, at the same time, contribute to the disintermediation of the market, limiting inefficiencies linked to complex bureaucratic procedures and interactions among a multitude of actors.

LOANS & MORTGAGES

Thanks to blockchain mortgages and loans can be released with a subsidized rates for the customers. What blockchain brings to the table is the ability to store all of the myriad paper documents that need be conveyed between players onto a distributed network that is more secure than the status quo. The data would be easier to access, with current steps in the process that take weeks happening in a matter of seconds. For example, potential buyers could already be fully vetted regarding their loan status. This information could be accessed at the moment an offer is made on a property, which would cut weeks off the process.

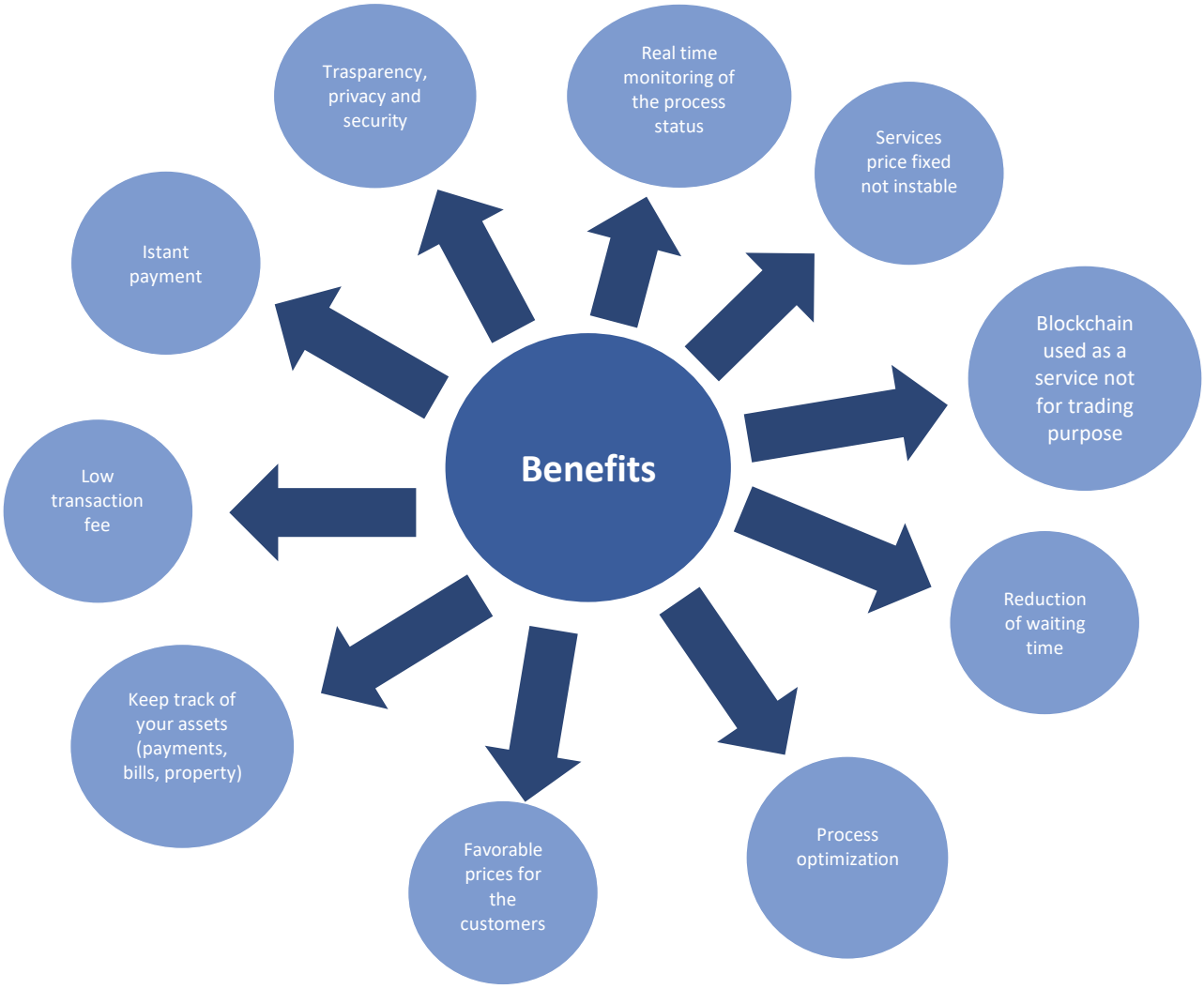
MULTI-SIGNATURE DOCUMENTS

Thanks to kafka, Hadoop and hypercore protocol, we are able to deploy smart contract where is required the signature of multiple entities. With our smart contracts, this process is optimized to perform an high level. During the process of signature, the blockchain keep track of the process evolution, showing the status of the process on the timeline. Inside the smart contract people can indicate the conditions required to execute the contract. e.g. Before to buy an house, is required the signature of the preliminary contract. In this manner the waiting time are reduced at minimum bringing an improvement in terms of execution.

PUBLISHING

The blockchain can disrupt the digital publishing industry by solving the issues that publishers and content creators face. The blockchain can simplify content distribution and can make the monetization process more effective. This technology in publishing can bring a lot of benefits to the publishing industry with its characteristics. Authors or content creators always need to depend on a third party service provider for content distribution, payment gateways, and transactions. Distributors of digital content take a chunk of the revenues that were meant for the authors. By using blockchain, publishers and authors retain their share using the platform or blockchain as a distributors of digital contents. This technology will enable readers to create micro-payments and authors will be able to track their eBooks' distribution.

3.2 For people



3.3 For supply chain

Businesses can improve their supply chain management through more transparent and accurate end-to-end tracking. Over 90 percent of consumers surveyed list food product transparency as a critical factor impacting their purchase and expect manufacturers to provide the necessary information. An estimated 55 percent or more of consumers will pay a premium for services from companies promoting social responsibility. With blockchain it is possible to digitize physical assets and create a decentralized, immutable record of all transactions, making it possible to track. The asset from production to delivery or use by the end user and provide greater product history and transparency. This provides more visibility to both businesses and consumers into the products they consume. Blockchain's transparency may also help reduce fraud for high-value goods such as diamonds and pharmaceutical drugs. According to the Organisation for Economic Co-operation and Development, counterfeit goods account for over $450 billion in trade annually. Furthermore, an estimated 10–30 percent of medicines sold in developing economies are counterfeits, leading to hundreds of thousands of deaths and billions of dollars in revenue losses globally.

Supply chain in logistic

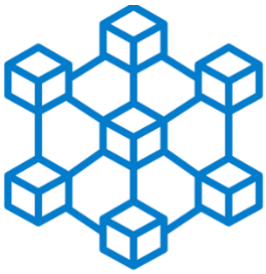
Blockchain in shipping logistics A shipping company used blockchain to manage freight tracking, providing buyers, sellers, and officials with a mechanism to track goods shipped around the world. Products traveling across borders may require review and approvals from up to 30 parties before arrival, creating a large amount of paperwork and creating opportunities for fraud at multiple points in the process—leading to billions of dollars in maritime fraud each year. Through collaboration with customs authorities, the shipping company streamlined the approvals process by creating a secure record of transactions and approvals and reduced the time needed to transport goods. Similar use cases illustrate blockchain has the potential to reduce administrative and logistics timelines in shipping by more than 85 percent from more than one week to less than one day.

Supply chain in pharmaceutical

Another promising area for blockchain solutions is provenance (tracking of assets across a supply chain) within the pharmaceutical industry. Tracking active pharmaceutical ingredients during the manufacturing process is difficult and faces increased challenges from the widespread and lucrative counterfeit drug operations around the globe. Blockchain's immutability provides a basis for traceability of drugs from manufacture to end consumer, identifying where the supply chain breaks down. There is potential not only to reduce the $200 billion in losses each year but also to increase public safety and prevent some of the estimated one million deaths per year from counterfeit medicine.

Supply chain in luxury manufacturing

Diamonds are held to strict certification requirements to ensure they are sourced ethically, but fraudulent certificate reports and insurance claims can disrupt the safeguards set in place. To combat this, the company uses over 40 diamond characteristics including color and clarity to create unique diamond IDs. The blockchain solution allows for immutability and security for the supply chain data and provides the necessary transparency between diamond certification houses and global diamond suppliers for the certification process. So far, the company has digitized more than one million diamonds.



Athena blockchain framework

Athena is the main framework where all the development are based. Our others services are based on our blockchain. Athena is a new blockchain framework thought to be as a service with a native coin called Athena coin. Our blockchain is a stable coin where the price of the coin is associated to the value of dollar. This blockchain has been developed to be used as a service selling products from companies directly to the customers using all the functions of the blockchain: wallets, smart contracts and NFT. Our blockchain can be used as another blockchain and the layer 2, which communicate with the nodes of blockchain, it is open to developers who want try our functionality for dApp development. Beyond that when the blockchain will be completed 100%, can be used also as a supply chain, where transaction are free for your company, and if you want get data from your private supply chain, you can deploy a smart contract to get these data.

Marketplace

Throught our decentralized marketplace people can use blockchain technology to buy services from companies using a blockchain as a service with a stable price of the coin. This is the first blockchain thought to be as a service and not for speculation or trading utilization, where multiple kind of services can be bought from customers, improving the waiting time of every single process and optimizing the process itself. As services, for people, we offer:, insurance, payment receipt, electricity and gas payment, loans and mortgages with super subsidized rates, multi signature documents, and at the end, to manage multiple millions of data, the supply chain management.

Wallet

The wallet app wis developed to integrate others cryptos and use also our coin and ecosystem. Throught wallet app people can acess to the marketplace and the farm applications, and then also make transactions between the wallets. The wallet app is divided in three parts: browser extension, web app and mobile app ios & andoid. Inside the mobile app, beyond the main functions of the wallet is integrated also the farms and the marketplace.

Swap

The swap is integrated inside the wallet app in mobile (ios & andoid) subsequently there is also the relative web app. Through the swap platform, people can exchange the ares token with our native coin. The native coin it is used to pay a service on our platform.

Yield Farming

Thorugh our Yield farms, people are able to hold the ares token generating the native coin of athena to buy services on the decentralized marketplace. Yield farming is a method of generating cryptocurrency from your crypto holdings. It has drawn analogies to farming because it's an innovative way to "grow your own cryptocurrency." The process involves lending crypto assets for interest to DeFi Decentralized Finance (DeFi) takes the decentralized concept of blockchain and applies it to the world of finance. Build platforms, who lock them up in a liquidity pool, essentially a smart contract for holding funds. The funds locked in the liquidity pool provide liquidity to a DeFi protocol, where they're used to facilitate trading, lending and borrowing. By providing liquidity, the platform earns fees that are paid out to investors according to their share of the liquidity pool.

4 Token economics

4.1 ATHN the athena coin (future native stable coin of the blockchain)

Athena initially, is the utility coin native of the athena blockchain. We will transform, after the first year, this utility coin in a true coin through an ICO to generate liquidity. At the moment there is only the tokenomics of the tradable token ares, written with solidity. When we change the athena utility coin in a real coin, we provide the tokenomics for it. At the moment we are in a early stage and before to convert the utility coin in a real coin, we have to develop the testnet and the mainnet. This coin is a stable coin (associated to the value of the dollar) used to pay services through the marketplace, but in the future we want expand the functionality of the coin using it as payment method, for this reason we want use it as real coin in the future, also externally to the marketplace, integrated it as a real coin on the exchanges.

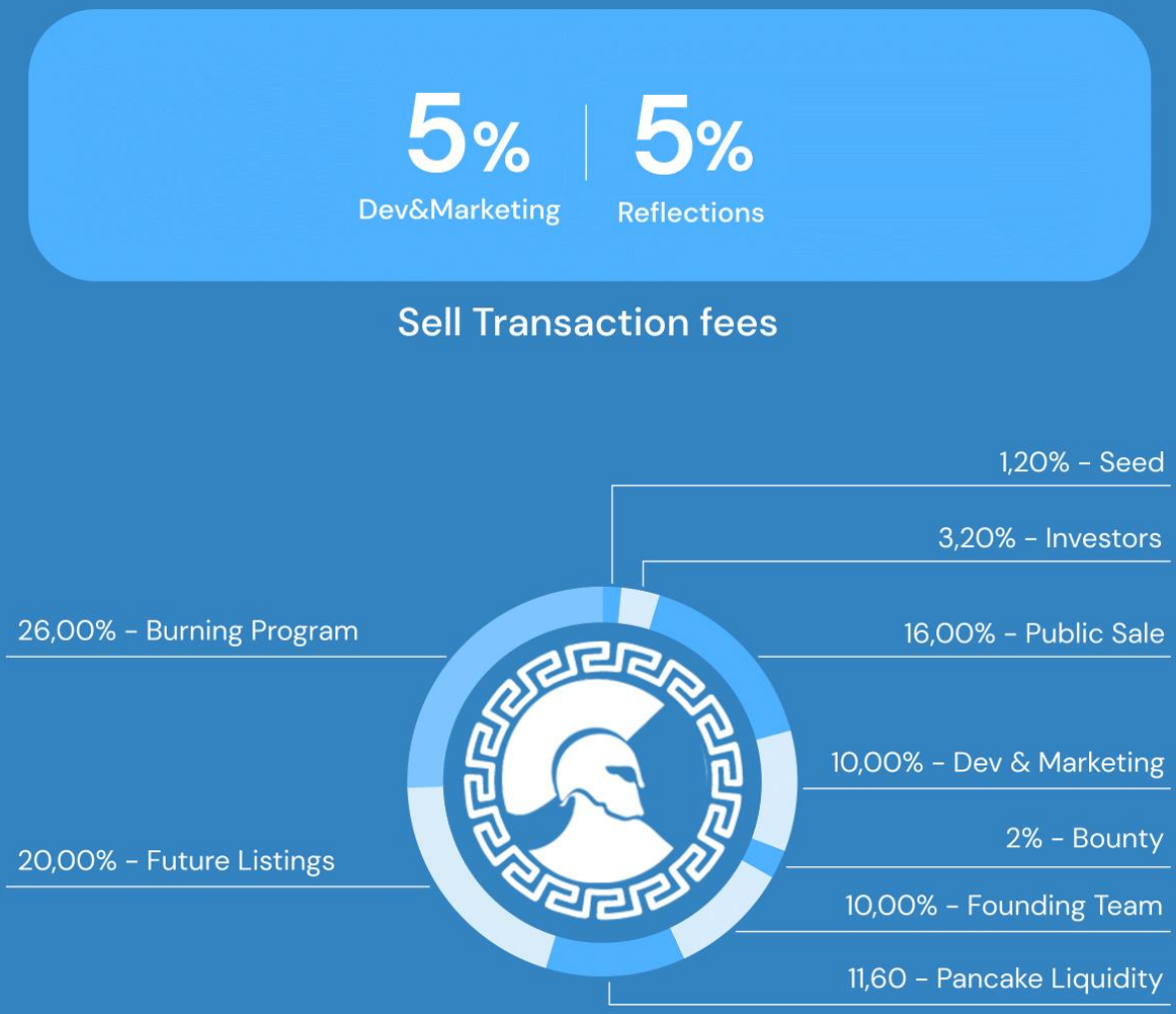
4.2 ARES the tradable token

The tradable token is the ares token, there is a contract written in solidity which will be deployed on BSC. This token is used to raise funds through an IDO. This coin can be put in stake in our farm, to generate the coin of our marketplace.
Ares token contract address: https://bscscan.com/token/0x503a3140ac06ca13181c14697a24dc9a792ec6bf

ATHENA

ARES

4.3Ares tokenomics



Wallet	Tokens	Bonus	Vesting
Seed	1,20% - 3.000.000	150%	20% at start + 20% each month
Investors	3,20% - 8.000.000	65%	20% at start + 20% each month
Public Sale	16,00% - 40.000.000	-	-
Dev & Marketing	10,00% - 25.000.000	-	-
Bounty	2,00% - 5.000.000	-	-
Founding Team	10,00% - 25.000.000	-	6 month
Pancake Liquidity	11,60% - 29.000.000	-	-
Future Listings	20,00% - 50.000.000	-	-
Burning Program	26,00% - 65.000.000	-	-
Total Supply	**100,00% - 250.000.000**	-	-

4.4 Allocation

- **Seed:** In this phase, through IDO, we sell the token with a discount of 150% to the firsts people who want invest in our project, releasing the 20% of the token during the year.

  DevOps Methodology
  Our development team, uses DevOps methodology to implement all the code tasks. Thanks to this methodology there are continues release of the software. We want fell secure all the people who want invest in our project. For this reason, the firsts people who invest in the project can access directly to the development team slack channel, to see the status of the development and speaking with the developers of the team. Beyond that you will have all the privileges of the early adopter, testing in live all the features and new developments we will release during the years. You can try in advance the last features of our products (if you are interested to understand better this methodology ref. the book: https://itrevolution.com/wp-content/uploads/files/PhoenixProjectExcerpt.pdf).

- **Investors:** Some token sales are reserved to the investors who want invest a certain quantity of token. We sell the token with a discount of 65% to these people, releasing the 20% during the year. Also here, people can get all the advantages of the early adopter communicating with our team and testing in live the last features released.

- **Public sale:** The public sale of the token, will start after the private, seed and investor sale.

- **Dev & Marketing:** This wallet will be used to develop the blockchain and to finance the team and the marketing.

- **Bounty:** An amount of the tokens are reserved for the bounty. A cryptocurrency bounty is a reward that users can receive for executing tasks assigned by a particular blockchain or crypto project. Crypto bounties are a significant rewards mechanism that blockchain projects use to get help from the community on specific and necessary tasks needed by the network. A crypto bounty campaign is when a project announces a promotion campaign where users execute marketing actions and gain tokens in return. These advertising marketing actions can be anything such as posting a photo or a video to elevate a particular project, or also by publishing reviews on forums and online community boards. As a trade-off for performing these promotional activities, users receive either free or discounted tokens.

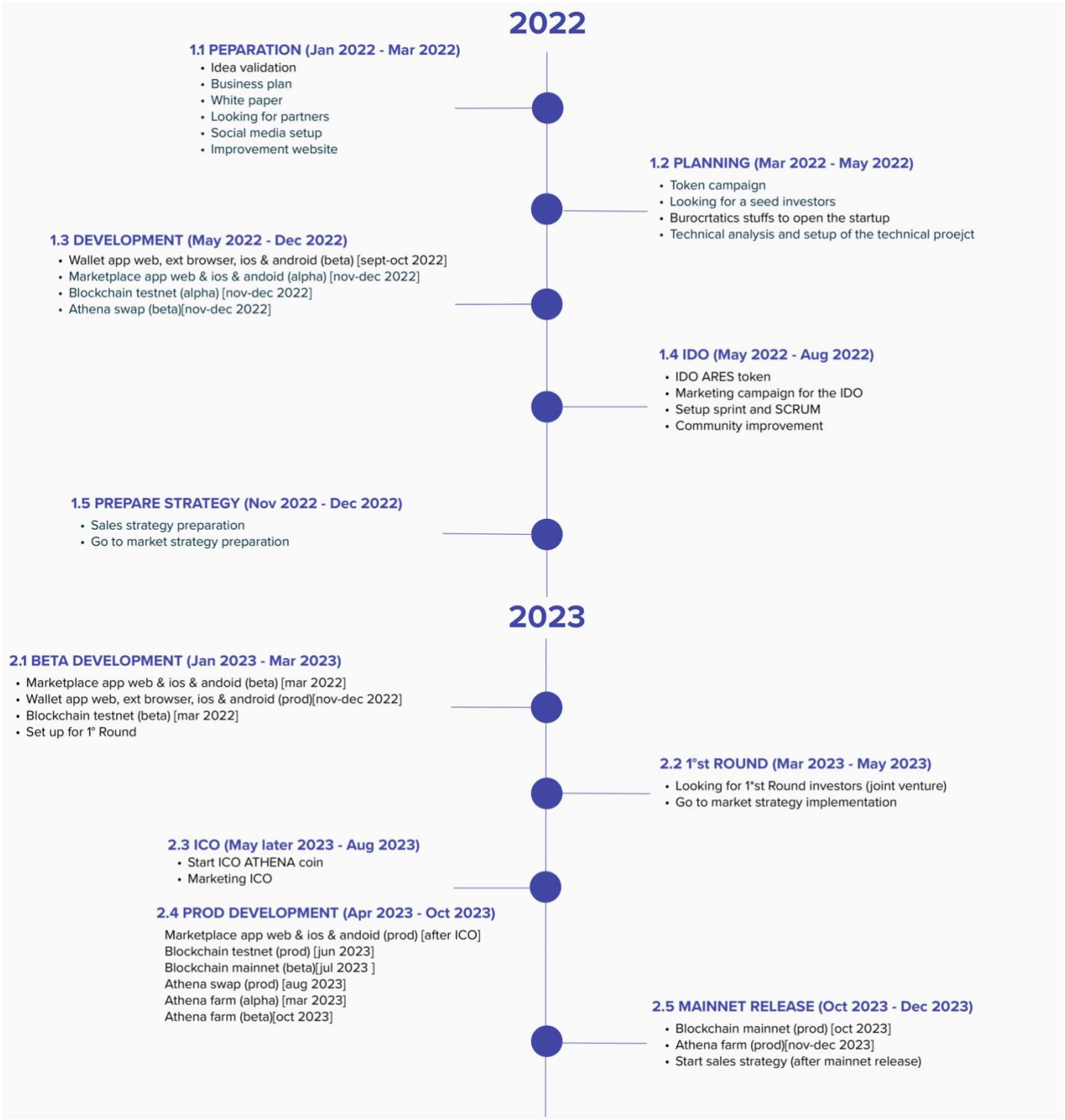
- **Founding Team:** This amount will be lock for six months and then unlock for the team and adding more liquidity.

- **Exchange Liquidity:** An amount of the token is reserved to the exchange. We think to start on pancake swap, on the other hand we can choose also to list in others exchanges.

- **Future Listing:** For six month this amount will be locked and then an exchange offers trading pairs for a particular asset, this action is known as “listing” the asset. In traditional markets, this means that a companies shares (or material asset) are available to be traded on that particular stock exchange. In general, this means that the company being listed has passed certain thresholds for financial and regulatory viability in addition to a degree of trust from the exchange. Thus, by the act of listing, the exchange is signaling that the shares of company/asset are known to be of a base threshold of quality.

- **Burning Program:** Some token will be reserved for the future of the project, without be released. This because, the budget, will be used for the better purposes that in the future appear.

5 Roadmap



The first year we want build all the core parts of our ecosystem, releasing the beta of the main parts of the project such as the wallet app, the blockchain testnet & mainnet and the marketplace. During the second year we will change the utility coin, in the real coin. After the ICO we will continue with the development of all the structure of the project with all services of our ecosystem. During the end of the second year we will release in production our services and the blockchain mainnet. In the next years, we will add new functionality inside ecosystem, releasing the framework of our blockchain to build your private supply chain.

6 Team

6.1 Core team

Nicolò Costantini
Founder

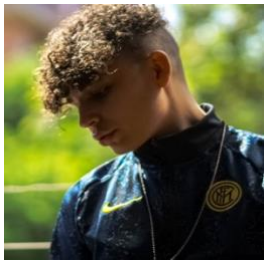
Etienne Sgarbi
Co-founder

Nicolò Sgarbi
Co-Founder

6.2 Contributors

Rocco Luigi Scarcella
Front-end developer

Marius Lacatusu
Back-end develoepr



Mattia Costantini
Graphic Designer & Director

7 Disclaimer

The above information is non-binding and subject to change. It is intended only to give potential investors and partners insight into the Athena blockchain business model as it is currently set up. The directors, partners, and advisors of Athena blockchain reserve the right to alter the models and information provided in this whitepaper as the business progresses and evolves.