Metis Whitepaper

Layer2 DAO Protocol Building on Optimistic Rollup

Version 3.2

Jan 2021

Context

Driving the mass adoption of Web2 applications onto the blockchain is the vision and mission of many projects. However, after over ten years' development, the barrier is still too high for the builders to launch and operate their decentralized applications (DApps) on the blockchain.

The challenges do not just lie in the unmatured of technology infrastructure. Although many DApps find it hard to convert complex business logic into the code of smart contracts without worrying about the performance, security, cost, functionalities, and scalability of the Layer 1 network, the real challenge is how to cater to the user experience cultivated by the internet applications and make the DApps appealing–to–adopt and easy–to–use. And more importantly, what kind of organization structure underneath should be implemented to leverage the community's participation and manage the business process in these DApps in a decentralized way.

With the launch of Ethereum 2.0, many other high–performance public blockchains, such as Polkadot, Casper Network, Solana, Near, etc., and the optimization of the developing environment and tools, the long–term–being–criticized bottleneck of Layer 1 network has found the way to breakthrough. However, the Layer 1 network's evolution only serves to solve parts of the puzzle and does not naturally entail the mass adoption of DApps.

To solve the most challenging part, if we refer to the developing stages of mobile applications becoming popular, we found that more work should be done to construct an easy–to–use and low–cost framework or templates to enable builders, no matter how well they understand the blockchain technology, to launch their applications freely and effortlessly. And what's more important is that a new organization structure and management framework should also be applied to coordinate the decentralized collaborations in the DApps.

And Metis is going to solve the most challenging part.

Metis Way and Use Cases

Metis Way

Metis aims to build an easy–to–use, high scalable, low cost, governance and management mechanism embedded Layer2 protocol to fully support the application migration from Web2 to Web3.

As a Layer2 protocol, Metis enables Web2 builders and communities to create their decentralized company (DAC, a subset of DAO) and launch their DApps on the blockchain with effort–free, and to leverage blockchain–based tools to manage the decentralized collaborations happening in the DApps to fully unleash the power from the community.

The core of Metis Layer2 protocol is a game theory of "Staking and Pullback", which is built based on the spirit of Optimistic Rollup（OR）and OR sidechain. And we name it Optimistic Governance (OG), aiming to solve the trust issue dwelling among distributed community members. OG will help these trustless collaborators to buildup trust, confirm collaborative relationship, and validate the computation results or deliverables.

To support the running of OG, Metis has hard–forked Optimistic Rollup, constructed the Metis Virtual Machine, and deployed the ComCo Framework on the sidechain to implement the complex computation and management of data and business. Comparing with Layer1 and smart contract, Metis Layer2 protocol has greatly broken through the limitations of performance, functions and cost. Metis supports to "rollup" the computation results from the sidechain and aggregates to submit to the mainchain for lowering the transaction cost, and it is highly scalable to support the operation requirements of various DApps by plugging–in different microservices and functions on the sidechain.

Backboned by the Layer2 framework, Metis upgrades the legacy Governance DAO to new style Management DAO(DAC). Every DApp is constructed on the DAC structure, which is constituted by its community members and stakeholders. And they are collaborating cross–domain to accomplish the specific mission of the DAC. Under a unified and machine–ruled

management principle, all the community members can participate in the value creation activities of the DApp, contribute and earn token incentives.

Key Advantages

- Easy-to-use framework

Builders with no technical background only need to click some buttons to launch their decentralized company and manage the community operation without worrying about the development and deployment. Teams with coding capabilities can call the protocol, APIs, and templates to create their own DApps to satisfy various user experiences.

- Cater to the UX of internet applications

No need to worry about connecting with the MetaMask, remembering private key or public key, and executing complicated on-chain operations, Metis builds up the framework to implement most of the communication with Layer1 network, erases the difficulty of using blockchain, leaving it very easy for the users to use the DApps, just like using other internet applications.

- High scalability

By hard forking the Optimistic Rollup (OR) sidechain, Metis has constructed an event-driven framework, which does not need to place every transaction on the Layer1 network. OR sidechain will significantly empower more functions to be developed and implemented with the support of the Layer1 network.

Meanwhile, Metis applies the microservice framework to support various management tools for community collaborations. New tools can be easily plugged and unplugged from the framework to satisfy different use scenarios.

As Metis's framework is constructed on top of the Layer1 network, Metis can support and run on multiple public blockchains, which also adds the scalability for Metis to drive the mass adoption of DApps.

- Low cost

Most operations are conducted on the OR sidechains, and transactions are packed and rolled up to communicate with the Layer1 network, significantly reducing the operational cost for the DApps.

Use Cases

Builders can easily launch their DApps under the help of the open–sourced microservice framework of Metis. By clicking some existing service, modules, and UI, builders can launch their DApps instantly (now Metis supports Decentralized Wiki and Task Collaboration DApp). They can also choose to call the APIs and protocols of Metis to tailor the DApp development, more complex DApps can be developed by this way, including Decentralized Reddit, Chatroom, Open–Source Developer Community, Social Group, Games Community, Events Management, Crowdfunding, Defi, NFT platform, etc.

Create a DAC in 3 Steps

Tasks Collaboration DApp

	Create Time	Status	Team
POC System and MSC deployment	2020-11-01	finished	
AMA Events	2020-10-18	finished	
Pitch Potential Investors	2020-10-18	pending	
Onboard KOLs and Advisors	2020-10-15	finished	
MetisDAO Demo Video	2020-10-05	finished	
Technical Manifesto	2020-09-30	finished	

All Tasks
Pending 1
In Process
To be Reviewed
Finished 30

Decentralized Wiki DApp

Optimistic Governance (OG)

The core of Metis Layer2 protocol is Optimistic Governance, which aims to build the trust foundation for trustless community members to form the collaborative relationship and validate the computation process and results in the DApp in a decentralized way.

Metis deems that minimum or even no governance involved in the DAC is the best and most efficient practice. So, referring to the algorithm of Optimistic Rollup, Metis leverages the **staking bonds** as the guarantee for each Meta Collaborator to act as their promise. Both Meta Collaborators should stake bonds into the escrow account of the Meta Staking Contract to establish the Meta Collaboration. In the collaboration process, by default, both Meta Collaborators are acting coordinately and as their promise, and the bonds will be automatically returned when the Meta Collaboration is finished. However, if any collaborator (aka "Bad Party") defaults, the other collaborator (Good Party) can apply for Arbitration service right away, the to–be–allocated bonds will be revoked, the Meta Staking Contract will be suspended. According to the arbitration result, the Bad Party's bonds will be taken away as a penalty. The revoking and arbitration mechanism of Metis enables every distributed collaborator to establish a collaborative relationship with anyone else in the world quickly, protectively, and permissionlessly.

By the same principle, in the data computation layer of the DApp (conducted on the sidechain), Aggregators also need to stake bonds before they pack the data (result) and synchronize it to the mainchain, which is used to prevent these Aggregators from packaging the wrong data. The submission from Aggregators will not be confirmed instantly on the mainchain. On the contrary, the Validator on the mainchain will execute the computation by itself and see if the two results will be matched in a specified Challenge Time. If they found some mistakes happening, they will need to stake bonds to challenge the Aggregator on the mainchain, which will trigger a smart contract to play the Arbitration Game. The arbitration smart contract will execute the computation again and compare the result with the one from Validators and Aggregators. As a result, the party who provides the right answer will get the incentive, while the bonds from the party with wrong answer will be taken away as the penalty.

Metis System Framework

Overall Framework
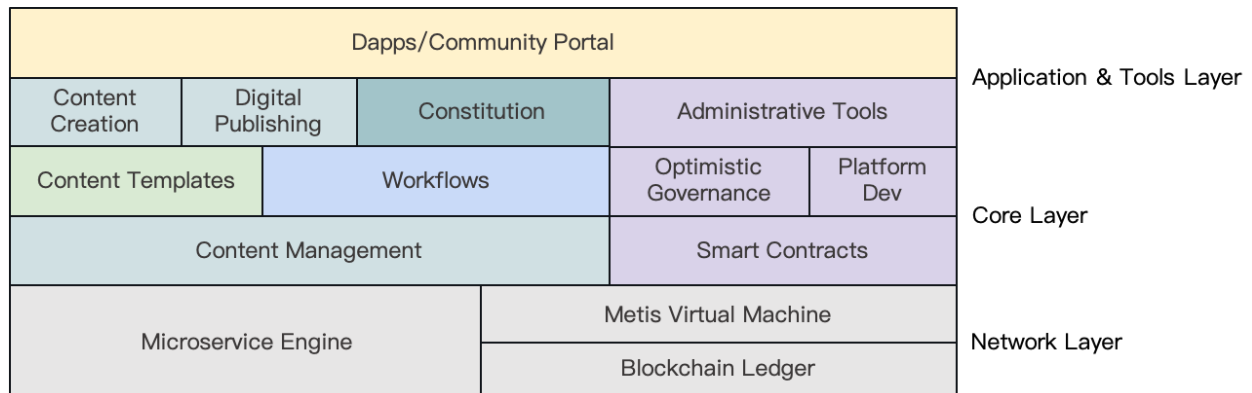
To support the running of OG, Metis is building a robust and highly scalable system framework. Metis also aims to lower the barrier for end users and builders, so Metis will do most of the framework construction work and support multiple Layer1 networks (now built on Ethereum, soon ported to Casper Network and Polkadot) , then builders can use the platform directly or use the templates, APIs and tools to integrate into their own DApps.

Metis adopts a two–tier layered approach to construct the framework.

Metis VM

Metis VM is an extended version of the Ethereum Layer2 OVM (Optimistic Virtual Machine), adding specialized instruction sets for managing collaborations.

- Oracle components to support multi chain communication.
- Adding the support for deposit and withdraw of Layer1 Metis Token to and from Layer2.
- Introducing dynamic minimum bond for aggregators to prevent block tempering.
- Adding a data scrambling layer to protect confidential collaboration data.
- Integrating the governance protocol with the rollup process.

Besides Ethereum, Metis VM plans to support more Layer1 network infrastructures.
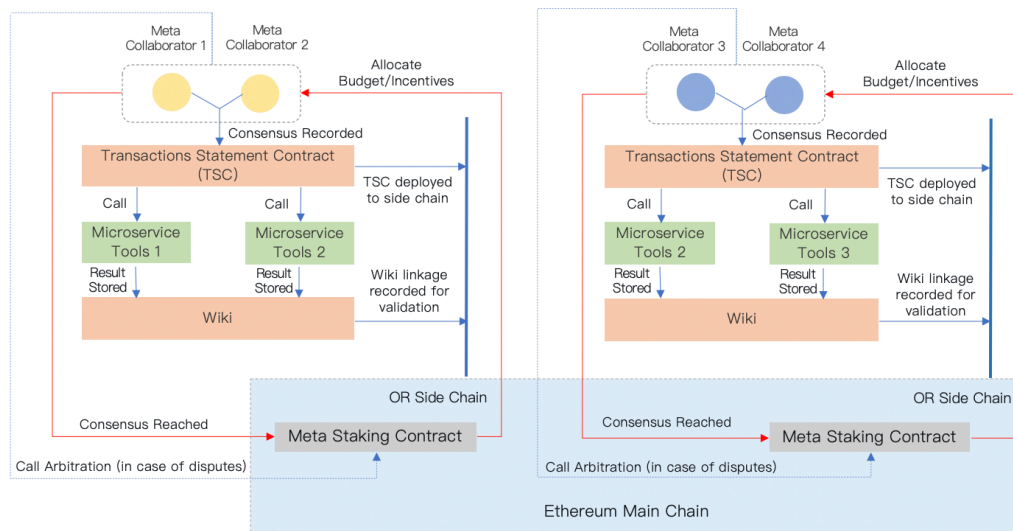
ComCo Framework

ComCo Framework is a software framework built on top of Metis VM to model and program complex collaborations for managing decentralized companies. ComCo Framework provides various on–chain tools for collaboration and management, and it serves to make the collaboration happen and hold people accountable. The framework will also act as the accounting department to provide proof for disputes resolution and proof for profit sharing.
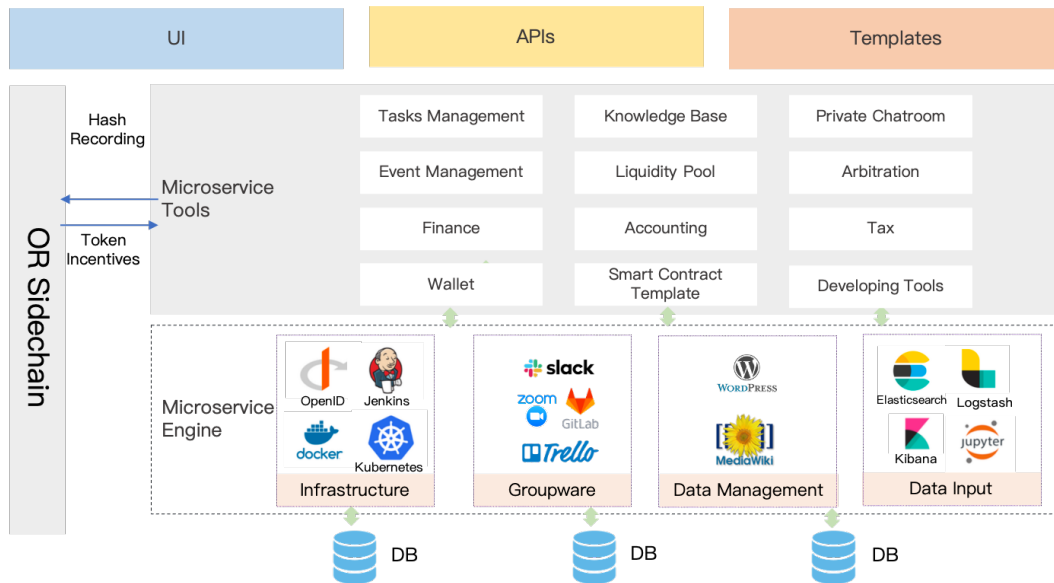
Management DAO

Metis is leveraging the mechanism of Decentralized Autonomous Organization (DAO) to construct the decentralized company.

DAO is a great concept to solve the issue of decentralized organization structure, which is featured by autonomous execution of the smart contract, community–involved collaborations, and contribution–based token incentives.

However, in practice, most DApps tend to use DAO only as a governance vehicle, where community members can submit proposals and vote. The potential of DAO, especially the power from community collaborations, is not fully exploited.

Metis takes DAO differently. Metis thinks DAO should be used to manage all the collaborations (community activities, not just the voting) so that the community members' power can be unleashed to support the project's development.

To do that, Metis is constructing a trusted and protected environment for DAO members to build up trust and upgrade the mission of DAO from Governance to Management.

Under the Management DAO framework, different tools can be used to activate and organize all the community members to get engaged in various tasks, activities, events that align with the project development and get incentivized based on the contribution they deliver.

Metis names Management DAO as the fundamental business unit in the Metis ecosystem. As Management DAO is very similar to a Decentralized Autonomous Company (DAC), we also call Management DAO as DAC.

Reputation Power

Reputation Power is an important index to evaluate the contribution of a community member. At the current stage, the algorithm of Reputation Power includes two indicators[1]: the amount and token days of the staked bonds, the protocol fee the DAC or DAC member generated.

In a DAC, Reputation Power represents the ranking of a member. A higher Reputation Power means more exposure to different collaboration opportunities and more profit sharing.

RP will also work as a social contract to prevent bad behavior or defaults.

Token Economics

- Token Name: Metis Token (Metis)
- Total Supply: 10 Million
- Value Proposition: Governance token of Metis Protocol ecosystem
- Minting Mechanisms
    - Any valuable transactions leveraging Metis Protocol will mint new Metis Tokens, which will be distributed among all the collaborators proportionally
- Rights of Metis Token Holders
    - Participate in DAC operation, Governance, and Use of Data
- Use of Metis Token

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[1] More indicators will be added to the algorithm of Reputation Power.

- o Metis Token is used to STAKE when you create a DAC or intent to build up a collaborative relationship with DACs, which will build up the commitment foundation for the Optimistic Governance
- Protocol Fee
  - o All the collaborations (economic activities) in the DAC are built on the staking/pullback mechanism backboned by the Metis Protocol, so Metis Protocol will collect a protocol fee (0.05%) for every transaction[2] as the tax. With the increase of DAC numbers and transaction numbers, the accumulated protocol fee would offer the value base for Metis Token.
- Token Allocations Breakdown in Different Ages

Age	Allocation	% supply	Tokens	Ways of Minting
Stone Age	Founding Team	6%	600,000	Based on Contribution (resource and funds)
	Token Economy Labs	4%	400,000	
	Advisors	1.5%	150,000	
	Angel Investors	1%	100,000	
	Private Investors	12%	1,200,000	
	Community Development	6%	600,000	
Bronze Age	Liquidity Pool	10%	1,000,000	Based on Tasks and/or Transactions
	Community Development	3%	300,000	
	Transaction Mining	14.86%	1,486,000	
Discovery Age	Community Development	1%	100,000	
	Transaction Mining	40.64%	4,064,000	

Development Stages and Plan

Stages	Milestones
Stone Age **Dec 2018–Dec 2020**	• Building up the cornerstone for Metis Protocol with the Genesis version of White Paper, Purple Paper, Meta Staking Contract, the POC ComCo Framework, and Initial Funding

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[2] Payment activities.

Bronze Age **Jan 2021 — Dec 2021**	• Project cold launch • Public test net launch • Founding members join to create Genesis DAC on Metis, mint NFT as the proof–of–ownership • DApps/Community onboard program • API connection with Defi projects and joint promotion with Defi communities • Support DACs to issue their own tokens and swap on Layer2 • Main net launch with Layer 2 solution
Discovery Age **Starting from 2022**	• Enroll more Projects/Communities onboard • Launch Microservice Tools Developer Community and Data Assets Market

The Way Ahead

Big and centralized platforms have controlled the fate of Web2, which has raised a lot of concerns from the public. As a trending of migrating to decentralized Web3, new framework, new organizational structure, and new ways of value creation will be needed to coordinate the complex and decentralized collaborations.

And this is the vision as well as mission of Metis. Metis deems that the Management DAO (DAC) will soon become the portal of Web3 era. Combing the merits from the Metis Layer2 (Optimistic Rollup) construct, the autonomous and minimum Optimistic Governance, and the microservice–based and decentralized ComCo management system, Web2 applications and communities can easily create their organization (DAC) on the blockchain, launch their decentralized applications, and leverage the community members' power to operate, manage and govern the future for the DApp.

Specifically, a lot of decentralized companies will emerge and become as important as the traditional companies in the real–world. People buildup trust and implement collaborations in a decentralized and secured way, which will deeply change the landscape of what the future looks like. And Metis will become the cornerstone protocol to make it happen.