Comparison of Acala, Moonbeam and Plasm

Preface

As the largest smart contract platform, Ethereum still has some problems to be solved, such as network congestion, high transaction charges, slow transaction speed and so on. In the fast-growing Polkadot ecosystem, there are aslo many projects focusing on the development of smart contract platform. What are their new features compared with Ethereum, and can they solve the problems of Ethereum?

This paper compares and analyzes several main smart contract platforms in Polkadot : Moonbeam, Plasm and Acala. They all plan to be parallel chains on Polkadot, and all have the function of deploying smart contracts.

Opportunities and Challenges of Smart Contract Chain on Polkadot

Due to the characteristics of Polkadot itself, the smart contract platform based on Polkadot has some natural advantages, such as lower contract fees, faster speed, interaction with other chains, support for cross chain assets, etc.

But every smart contract platform will face a challenge, the construction of ecology. That is, how to attract more developers to use the platform, develop good projects and attract more users to use the platform. In turn, it will attract more developers and form a virtuous circle of growing network value.

At present, the ecology of Ethereum has developed for many years. The contract development environment is mature, the tools are complete, there are many developers, and there are some high-quality dapps. These are the advantages of Ethereum, and the smart contract platform on Polkadot needs to catch up.

Obviously, smart contract has became an indispensable part of the blockchain ecology. For Polkadot ecology, because Polkadot relay chain itself does not have the function of smart contract, Polkadot needs parallel chain of smart contract to achieve it.

Moonbeam

slogan: The Future is Multi-Chain

goal: A Fully Ethereum-Compatible Environment on Polkadot.

Moonbeam is a Ethereum-Compatible smart contract platform based on Polkadot. It enables developers to deploy existing Solidity smart contracts and DApp to moonbeam with minimal changes.

Maximum compatibility with Ethereum

The compatibility of Moonbeam with Ethereum is mainly realized by using the Frontier layer. Frontier is the Ethereum compatibility layer on the Substrate, which enables the chain based on the Substrate to run unmodified Ethereum contracts.

Frontier mainly includes the following modules:

1. Web3 RPC module: existing tools and applications interact with Ethereum through Web3 RPC, Moonbeam deploys Web3 RPC to connect existing tools and applications to moonbeam. For these tools and applications, it is just like connecting to another Ethereum network.

2. Ethereum module: it simulates how Ethereum works, including blocks, receipts, logs, and being able to subscribe to log events.

3. Complete EVM implementation: EVM is the contract virtual machine of Ethereum, Moonbeam integrates EVM module, so it is compatible with EVM.

In general, Moonbeam is compatible with Ethereum layer 1 as much as possible. These measures can make the existing Ethereum contract easy to deploy to Moonbeam with only a small change.

Plasm

slogan: Multi Chain Polkadot DApp Hub.
goal: The Heart of the Multi Chain Future.

Plasm Network is a gateway to the multi chain, connect multiple layer1 blockchains to Polkadot through Plasm Network.

Support EVM and Wasm virtual machine

Plasm also use Frontier to be compatible with Ethereum. Plasm supports both EVM and Wasm virtual machines. It can run either the existing Solidity contracts on Ethereum with EVM or ink! Wasm contract.

Layer 2 scalability

Another feature of Plasm is that it supports the smart contract function on both layer 1 and layer 2 to further improve its scalability.

Acala

slogan: The DeFi Hub of Polkadot
goal: Acala's all-in-one DeFi platform to help you stake, swap, borrow, lend, earn, and more – all with micro gas fees.

Acala is the DeFi Hub of Polkadot.

Bodhi: compatible with Ethereum while retaining the advantage of substrate

Moonbeam and Plasm are integrated with the current compatibility solution of Substrate EVM, that is, using Frontier to simulate the nodes of Ethereum. However, Acala will adopt a set of self-developed Ethereum compatible solution Bodhi. This solution is not compatible with Ethereum RPC, and the existing Ethereum DApp needs Polkadot Extension to interact with Acala EVM. At the same time, Bodhi avoids some legacy problems of Ethereum, and keeps the advantage of substrate while compatible with Ethereum. For example, let Acala have customizable economic mechanism, allow users to use any supported token to pay transaction fees, local cross chain function, on chain governance mechanism, fully scalable and so on. And these innovations are not possible in Ethereum.

Focus on the DeFi scene

Unlike the general contract platform, Acala pays more attention to the optimization of DeFi scenes. Deployment contracts may also set a little threshold. At the same time, it will integrate Acala's DEX, stable currency, etc.

Summary

Contrast：

	EVM	Wasm	Advantage
Moonbeam	support	Not published	Fully compatible with EVM
Plasm	support	support	1.Support EVM and Wasm virtual machine 2.Layer 2 scalability
Acala	support	Not published	1.Compatible with Ethereum while retaining the advantage of substrate 2.Focus on the DeFi scene

1. Moonbeam focuses on the full compatibility with Ethereum, so that developers can deploy the existing solid smart contract and DApp to Moonbeam with the least changes.

2. While being compatible with Ethereum and Wasm virtual machine, Plasma improves scalability through layer 2.

3. Acala focuses on the DeFi scene and makes some optimization while compatible with Ethereum, which is more suitable for deploying smart contracts in the financial field.