

51% Attack

- Exchanges used a risky/low amount of confirmations
- The ETC network experienced some interruption
- We were able to get many exchanges to adopt more conservative/higher confirmation counts
- Oddly the attackers returned most of what they stole



回顾 ETC 曾遭遇的 51% 攻击

Kotti

- ETC got a new testnet called Kotti
- It's PoA which means it's more reliable than our old PoW testnet
- Go try it out
- ETH got a new testnet called Goerli thanks in large part to the ETC Cooperative's funding



ETC 新增 Kotti 测试网

ETC's Github

- Was taken
- The original owners would like it back
- There's now ethereumclassic, eth_classic, etclabscore, and other GitHubs



ETC 原 Github 被收回，现有 ethereumclassic, eth_classic, etclabscore 等其他 gihub 地址

Ethereum Foundation

- Started cooperating with ETC where it makes sense
- Also helped with Project Goerli/Kotti and peaceBridge



ETC 与以太坊基金会开始合作，目前参与了 Goereli 和 Kotti 测试网项目以及 peaceBridge 项目

Atlantis Hardfork

- Brought ETC's opcodes in line with ETH's Byzantium
- Now easier to build ETC projects with popular dev tools



亚特兰蒂斯硬分叉升级成功进行，提升与以太坊的兼容性，有更广泛的开发者工具以供使用

Lots of Builders

- ETC Labs started their second cohort
- We now have ChainSafe, Ethernode, and others building cool tools
- Shout out to Wei Tang's work on multi-geth
- New dev tools: Pristine, Jade Suite, and OpenRPC



新开发者及开发工具即将加入，目前有 Chainsafe, Ethernode 等团队在开发工具，新增开发工具 Pristine, Jade Suite 以及 OpenRPC

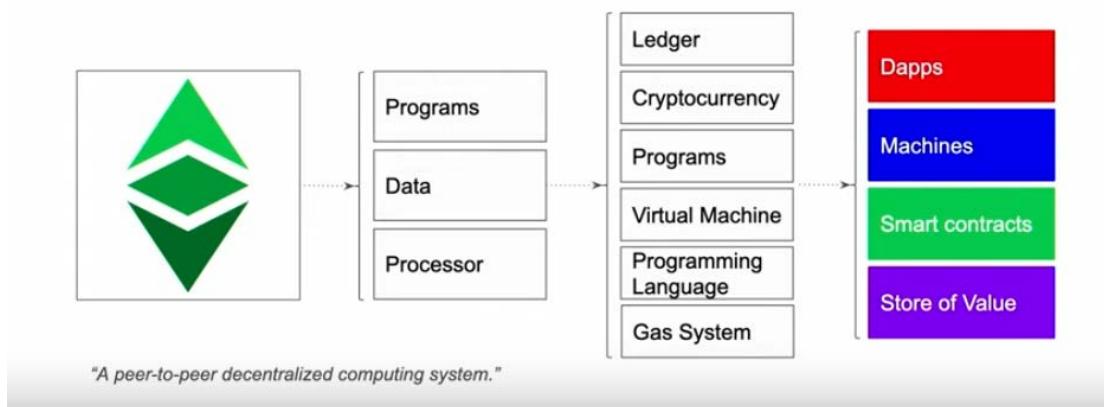
ETC：回顾与展望

Ethereum Classic Principles, Vision, & Opportunities

演讲嘉宾: Donald McIntyre

以太经典的原则是去信任、不可篡改性、可替代性、最终确定性、防审查性、无需许可性、可审核性、可调和性、去中心化及向后兼容性。

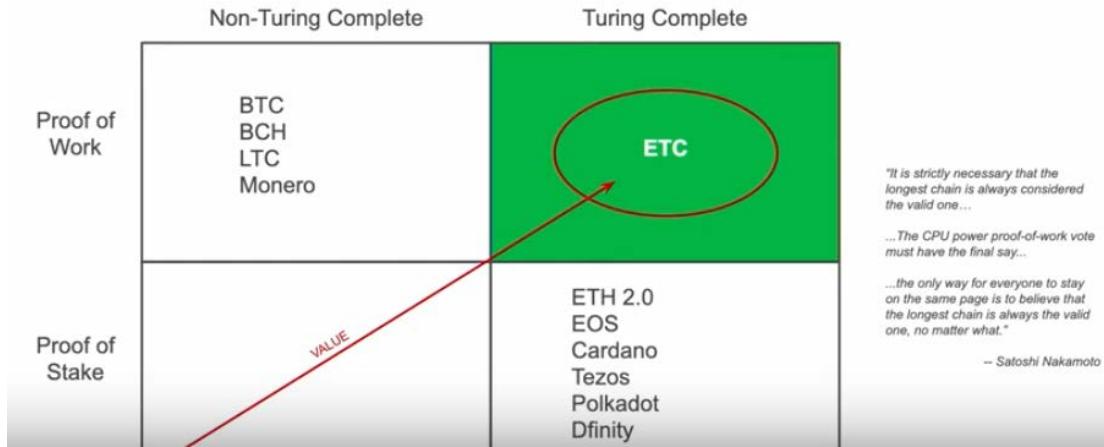
So, What is ETC in Layman's Terms?



不同于私人电脑系统，ETC 是一个点对点去中心化计算系统，存储程序、数据和具有处理器，由六部分构成，即账本、加密货币、程序、虚拟机、编程语言、Gas 系统，集去中心化应用程序(DApp)、节点之间交易、智能合约、加密货币、加密货币价值储存功能于一体。



PoW + Turing Completeness + Fixed Monetary Policy



待到以太坊 1.0 升级为 2.0，ETC 就成为世界上唯一一条使用智能合约的可信任无需许可 PoW 链。

Donald 预估 Layer1 链中，ETC 的竞争力排名第二，市场占有率达 25%。



ETC vs ETH 2.0, What is the Difference?

Features	Ethereum Classic	Ethereum 2.0
Cryptocurrency	Yes	Yes
Smart Contracts	Yes	Yes
Consensus Mechanism	Proof of Work	Proof of Stake
Monetary Policy	Fixed	Variable
Database	Replicated	Fragmented
High Security	Yes	X
High Performance	X	Yes

同为使用加密货币和智能合约的区块链，以太经典与以太坊 2.0 的区别在于，ETC 的共识机制为工作量证明，具有固定的货币政策，扩容性差、安全性高、性能较差，而以太坊 2.0 的共识机制为权益证明，货币政策多变、扩容性强、安全度低、

性能较高。

要实现 ETC 与 ETH 之间的协作，前提是不论是在理念、路线图方面，还是货币政策、互操作性方面，都应保持它们各自的独立性。



ETC vs ETH 1.x

ETH 1.x would be a low quality, low value residue of Ethereum because:

- 100% of accounts, balances and dapps will be duplicated on ETH 2.0.
- ETH 2.0 will have higher performance and scalability.
- The monetary base will also be duplicated after they split.
- ETH 1.x has no clear monetary policy.
- It would have to fork again to establish a monetary policy.
- A new monetary policy will not be credible.
- It is extremely bloated.
- It contains the precedent of an irregular state change.
- **It would create redundancy at the base layer.**

由于 ETH1. x 上的账户、余额、去中心化应用程序都将迁移到 ETH2. 0 上等原因，ETH1. x 最终会变成一条价值低下且多余的链，所以相对而言，ETC 的发展前景良好。

ETC Compared to FEDWIRE and CHIPS

	FEDWIRE	CHIPS	COMBINED	ETC Pro Forma
Transactions per day	620,000	460,000	1,080,000	680,000
Value \$ per day	\$2,800,000,000,000	\$1,700,000,000,000	\$4,500,000,000,000	\$3,094,520,547,945
Value \$ per TX	\$4,516,129	\$3,695,652	\$4,166,667	\$4,550,766
Hours per day	22	20	21	24
Transactions per month	12,968,333	9,621,667	22,590,000	20,683,333
Value \$ per month	\$58,566,666,666,667	\$35,558,333,333,333	\$94,125,000,000,000	\$94,125,000,000,000
Days per month	20.92	20.92	20.916666667	30.42
Transactions per year	155,620,000	115,460,000	271,080,000	248,200,000
Value \$ per year	\$702,800,000,000,000	\$426,700,000,000,000	\$1,129,500,000,000,000	\$1,129,500,000,000,000
Days per year	251	251	251	365
Members	7300	45	7345	The World

与联邦资金转账系统 (Fedwire) 和纽约清算所银行同业支付系统 (Chips) 相比，在交易量和价值方面，ETC 还是很有竞争力的。



Speaking of Improvements

After Atlantis, Agharta and Atzlán, the long term **roadmap** of Ethereum Classic should focus on these broad lines:

- Transaction capacity -> scaling responsibly thru moderate incremental efficiencies
- Maximizing node count by minimizing potential bloat
- Highly efficient L2 connectivity, interoperability and security
- Increase technological compatibility and collaboration with Bitcoin

未来，ETC 仍需许多改进，如提高其扩容性，最大化节点数量，有效提高与 Layer2 的关联性、互操作性与安全性，与比特币建立技术兼容性、增强协作。

以太经典与比特币具有互补性，建立互操作性后，两条链上的货币可实现转移。

ETC & BTC Capacity vs World Major Currencies

World Major Currencies Real Time Gross Settlement (RTGS) Systems 2017

Currency	USD US	EUR Euro Area	GBP UK	CHF Switzerland	RMB/HKD Hong Kong	JPY Japan	ALL COMBINED
Region	FEDWIRE	European Central Bank	Ban of England	Swiss National Bank	HKICL	Bank of Japan/TBA	
Institution	FEDRESERVE	TARGET2	CHAPS	SIC	CHATS	BOJ-NET/FXYCS	
Transactions/Year	153,200,000	90,336,523	41,655,119	52,815,343	11,950,119	23,856,117	373,813,221
Value \$/Year	740,097,000,000,000	547,620,000,000,000	108,220,000,000,000	41,131,084,832,696	55,016,000,000,000	348,433,000,000,000	1,840,517,084,832,700
Value \$/Transaction	4,830,920	6,062,000	2,598,000	778,772	4,603,803	14,605,604	4,923,628
Working Days	251	251	251	251	251	251	251
Transactions/Day	610,359	359,906	165,957	210,420	47,610	95,044	1,489,296

Bitcoin & Ethereum Classic Capacity Pro Forma

Currency	BTC Global	ETC Global	COMBINED
Region	Bitcoin	Ethereum Classic	
System	68.67%	33.33%	
Share on L1			
Transactions/Year	210,240,000	248,200,000	458,440,000
Value \$/Year	1,227,011,389,888,460	613,505,694,944,232	1,840,517,084,832,700
Value \$/Transaction	5,836,241	2,471,820	4,014,739
Working Days	365	365	365
Transactions/Day	576,000	680,000	1,256,000

ETC 与 BTC 的年均交易量平均值比主要的世界货币的年均交易量平均值要高，证明 ETC 与 BTC 之间的技术协作很有必要。

Core, Infrastructure and Services



INPUT | OUTPUT



- Protocol & client development
- Tools
- Consulting
- Training
- Support
- Sidechains
- Mining



- Cloud nodes
- Home and office hardware nodes
- APIs
- Operating systems for dapps and IoT
- DEX infrastructure



- The big boys will acquire their way in
- They will provide blockchain clouds
- Cater to enterprise
- Make all the mistakes incumbents usually make

他对未来的愿景就是希望企业与团队能发挥最大作用，增强协作，为核心技术、基础建设与服务做贡献。

A Formula for ETC's Future Success

- Continue to have a clear trust minimization philosophy and principles
- Connect and collaborate with ETH 2.0 and Bitcoin
- Caution: Collaboration must not change the value proposition of ETC
- Participants must define clear business models and messaging
- **Communicate, communicate, communicate!**



他认为 ETC 社区应继续坚持原则，加强与 ETH2.0、比特币及其他系统的联系与沟通，不因协作而改变自身价值主张。

亚特兰蒂斯升级与 ETC 路线图

Atlantis Protocol Upgrade & the ETC Roadmap

演讲嘉宾: Afri Schoedon

Protocol Milestones

- 0 „Frontier“ (2015)
- 200_000 „Ice Age“ (2015)
- 1_150_000 „Homestead“ (2016)
- 2_500_000 „Gas Reprice“ (2016)
- 3_000_000 „Diehard“ (2017)
- 5_000_000 „Gotham“ (2017)
- 5_900_000 „Defuse Difficulty Bomb“ (2018)

重大协议更新里程碑

Atlantis

ECIP-1054 „Atlantis Protocol Upgrades“
ETC & ETH Compatibility, Interoperability
„Sprurious Dragon“ + „Byzantium“
Activated 8_772_000 (September 2019)

ECIP-1054 Upgrades

State-trie clearing (13'785'000)

Contract-code size limit (24'576)

REVERT, RETURNDATASIZE, RETURNDATACOPY, STATICCALL

modexp, alt_bn128_add, alt_bn128_mul, alt_bn128_pairing

Transaction receipts with contract return status

Difficulty adjustment to target mean block time including uncles

亚特兰蒂斯硬分叉基本信息

Clients

Parity Ethereum

Multi-Geth

Geth Classic

Mantis

ETC 客户端

Tooling

Gastracker, Blockscout, Jade Explorer

Ethernode, Ethercluster, OpenRPC

6 different Classic testnets

ETC 开发者工具

Agharta

ECIP-1056 „Agharta Protocol Upgrades“
„Constantinople“ + „Petersburg“

March 2020

ECIP-1056 Upgrades

Bitwise shifting instructions
Skinny CREATE2, EXTCODEHASH
New account versioning

预计 2020 年 3 月实施下一次硬分叉，称作 Agharta (ECIP 1056)

Mining Outlook

ProgPoW?
SHA-3?
RandomX?

挖矿算法可能走向

Speculative

Most significant Proof-of-Work EVM chain?

Migration paths for ETH users opposing Proof-of-Stake?

Merging other EVM chains into Classic? (EIP-2225)

面临的不确定性:

是否将成为最重要的 PoW 链?

如何为反对 PoS 的以太坊用户提供转移路径?

将其他的基于 EVM 的链融合进 ETC?

Be Mindful about it

Maintain Integrity as Community

Honor Values, Vision, and Principles

Less toxicity, more diplomacy

More collaboration, less competition

Open minds, open protocols, open software

谨言慎行:

保持社区正义性

重视价值、愿景及原则

尊崇民主

多些合作，少些竞争

保持开放态度、开放协议、开放软件

下一代 JSON-RPC 工具

The Future of JSON-RPC Tooling

演讲嘉宾: Shane Jonas

What is JSON-RPC?

A simple protocol to make Remote Procedure Calls

Web3.js → JSON-RPC → MultiGeth

```
{ "jsonrpc": "2.0", "method": "eth_blockNumber", "params": [], "id": 1 }
```

```
{ "jsonrpc": "2.0", "result": "0x1", "id": 1 }
```

什么是 JSON-RPC?

可以进行远程过程调用的简单协议

Problem

- Unclear what methods a JSON-RPC API has
 - Leads to implementation incompatibilities
 - Repetitive outdated JSON-RPC Clients & Documentation

Not all Bad!

- JSON-RPC is simple, and transport agnostic
 - Already widely used in blockchain

Web3.js → JSON-RPC → MultiGeth

```
{ "jsonrpc": "2.0", "method": "eth_blockNumber", "params": [], "id": 1 }
```

```
{ "jsonrpc": "2.0", "result": "0x1", "id": 1 }
```

JSON-RPC 的问题:

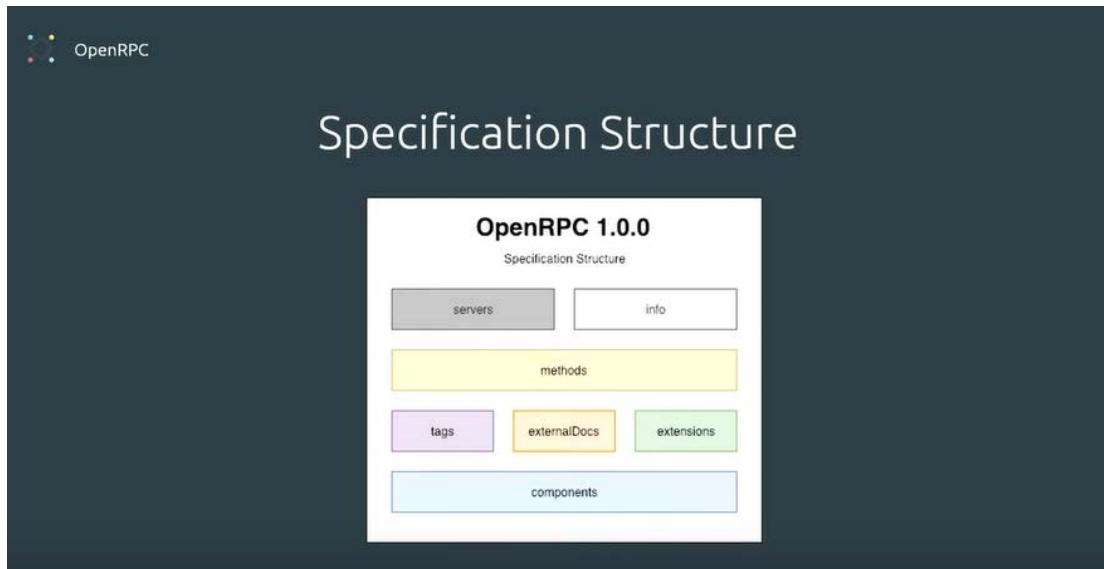
为何导致实现中的不兼容性尚不明确;

客户端和文档已经过时。

JSON-RPC 的优点:

使用简单, 无关传输协议;

已经在区块链中得到广泛应用。



规范结构

The screenshot shows the Ethereum JSON-RPC Specification page. At the top, it says "Ethereum JSON-RPC Specification" and "1.0.10 Apache 2.0". Below this, it states: "This API lets you interact with an EVM-based client via JSON-RPC". The page is divided into two main sections: "Methods" and a detailed table of methods.

Methods

Method	Description
web3_clientVersion	current client version
web3_sha3	Hashes data
net_listening	return listening status
net_peerCount	number of peers
net_version	chain ID associated with network
eth_blockNumber	Returns the number of most recent block
eth_call	Executes a new message (call) locally immediately without creating a transaction on the block chain
eth_chainId	Returns the currently configured chain id
eth_coinbase	Returns the client coinbase address
eth_estimateGas	Generates and returns an estimate of how much gas is necessary to allow the transaction to complete. The transaction will not be added to the blockchain. Note that the estimate may be significantly more than the amount of gas actually used by the transaction, for a variety of reasons including EVM mechanics and node performance
eth_gasPrice	Returns the current price per gas in wei
eth_getBalance	Returns Ether balance of a given account or contract
eth_getBlockByHash	Gets a block for a given hash
eth_getBlockByNumber	Gets a block for a given number (e.g.)
eth_getBlockTransactionCountByHash	Returns the number of transactions in a block from a block matching the given block hash
eth_getBlockTransactionCountByNumber	Returns the number of transactions in a block from a block matching the given block number
eth_getCode	Returns code at a given contract address
eth_getFilterChanges	Polling method for a filter, which returns an array of logs which occurred since last poll
eth_getLogs	Returns an array of all logs matching filter with given id

以太坊中的 JSON-RPC 规范

OpenRPC Discovery

MultiGeth supports [OpenRPC's Service Discovery method](#), enabling efficient and well-spec'd tooling. This method follows the established JSON RPC patterns, and is accessible via HTTP, console servers. To use this method:

```
$ curl -X POST -H 'Content-Type: application/json' --data '{"jsonrpc":"2.0","method": "openrpc", "version": "1.0.0", "id": 1, "result": { "openrpc": "1.0.0", "info": { "description": "This API lets you interact with an EVM-based client via JSON-RPC", "license": { "name": "Apache 2.0", "url": "https://www.apache.org/licenses/LICENSE-2.0.html" }, "title": "Ethereum JSON-RPC", "version": "1.0.0" }, "servers": null, "methods": [ { "description": "Returns the version of the current client", "name": "web3_clientVersion", "params": [], "result": { "description": "client version", "name": "clientVersion", "schema": { "type": "string" } }, "summary": "current client version" } ]}}
```

[...]

<https://github.com/multi-geth/multi-geth#openrpc-discovery>

如何在 Multi-geth 中执行

OpenRPC

Playground <https://playground.open-rpc.org/>

OpenRPC Playground

```

1 {
2   "openrpc": "1.0.0",
3   "info": {
4     "version": "1.0.10",
5     "title": "Ethereum JSON-RPC",
6     "description": "This API lets you interact with an EVM-based"
7     "license": {
8       "name": "Apache 2.0",
9       "url": "https://www.apache.org/licenses/LICENSE-2.0.html"
10    }
11  },
12  "methods": [
13    {
14      "name": "web3_clientVersion",
15      "description": "Returns the version of the current client"
16    }
17  ],
18  "errors": [
19    "examples",
20    "links",
21    "paramStructure",
22    "summary",
23    "tags"
24  ],
25  "schemas": [
26    {
27      "name": "web3_sha3",
28      "summary": "Hashes data"
29    }
30  ]
}

```

Ethereum JSON-RPC

1.0.10 Apache 2.0

This API lets you interact with an EVM-based client via JSON-RPC

Methods

web3_clientVersion	▼
web3_sha3	Hashes data
net_listening	returns listening status
net_peerCount	number of peers
net_version	chain ID associated with network

基于 JR 的工具 (Open-RPC Playground, Mock Server)



Open-RPC 工具架构



JSON-RPC 的好处：

API 文档支持；

基于规范设计开发；

人和机器都可读；

服务发现；

支持多语言的客户端；

创建行业标准。

Jade Service Runner: 跨越去中心化服务的鸿沟

Jade Service Runner: Bridging the Decentralized Service Gap

演讲嘉宾: Zane Starr

Let me show you how we can make a better decentralized experience for our users!

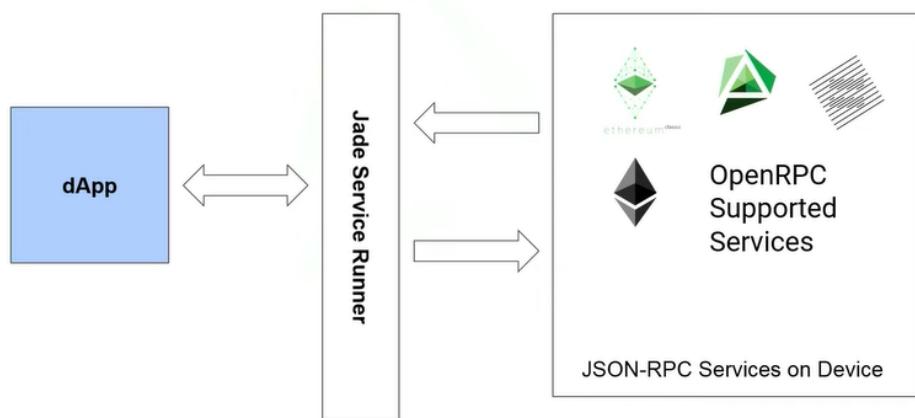


Jade Service Runner - A JSON-RPC Service Manager

Jade Service Runner 旨在解决用户与去中心化服务之间的鸿沟

使用全节点客户端和轻客户端连接 DApp 的用户和开发者偏少，用户使用去中心化服务门槛较高。因此要吸引用户使用 DApp，就要提供更加简便的去中心化服务。

We take advantage of the Service Runner to connect to local services.



➥ Jade Service Runner - Filling the Gap

➥ **Programmatically discoverable APIs**

➥ **Single click installation**

➥ **Fire and forget service daemonization**

如何做？使用 Jade Service Runner，提供安装工具，可以一键安装，使用服务。

Let's Move Things Forward !

 Jade Service Runner Docs
<http://jade.builders>

 Open-RPC Documentation
<http://open-rpc.org>

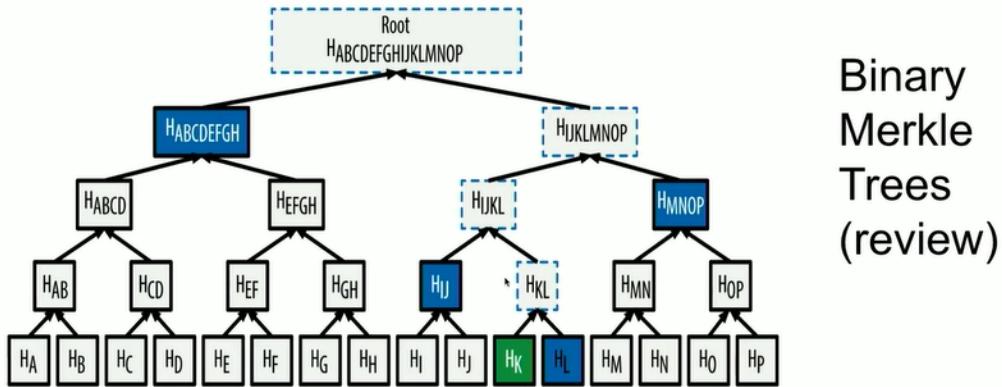
 Jade Service Runner Codebase
<http://github.com/etclabscore/jade-service-runner>

相关文档

寻求 ETC 格式更改的可能性

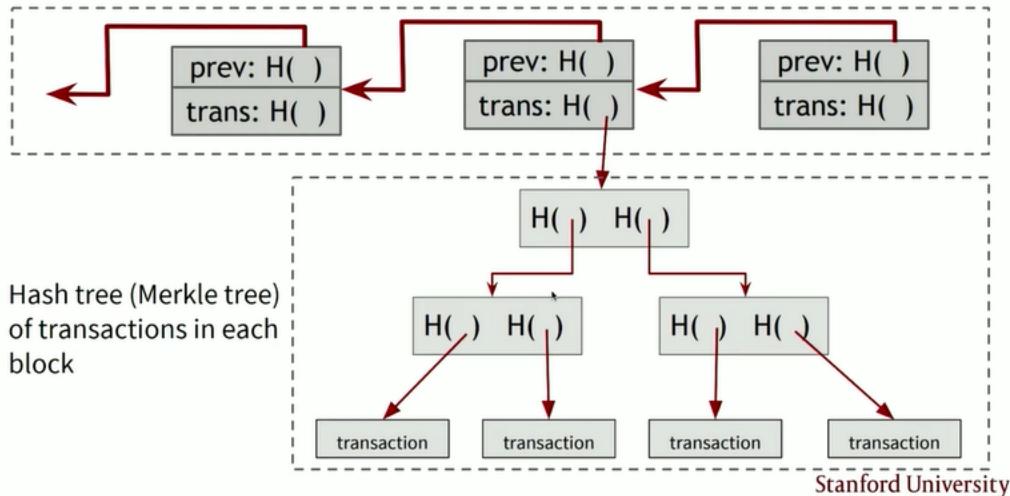
Adding Merkle-Mountain-Ranges and Fly-Proofs to ETC

演讲嘉宾: Zac Mitton

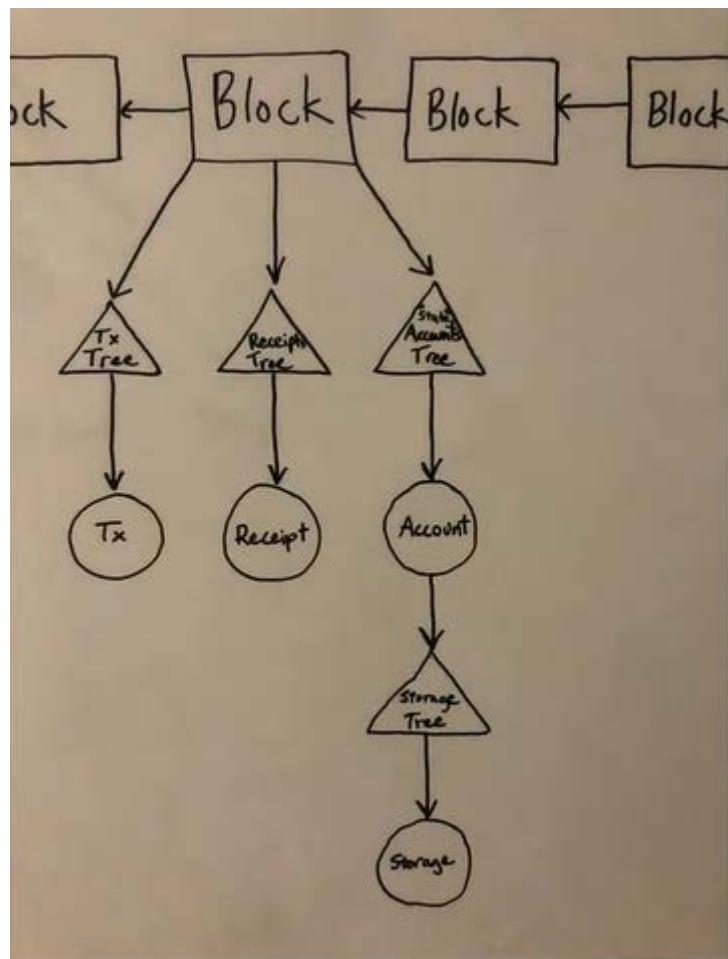


Binary
Merkle
Trees
(review)

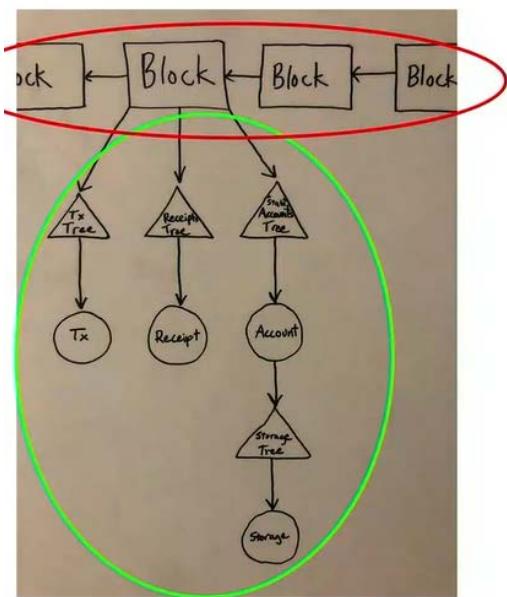
Recall: Bitcoin blockchain format
Hash chain of blocks



介绍二叉默克尔树，及其在比特币的应用



二叉默克尔树在以太坊中的应用

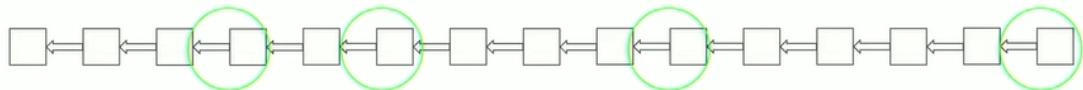


What are the numbers?

- Validate all block headers
- this is the problematic bit
- Validate data against a header
- simple and straightforward
- BTC
 - headers ~ 50Mb < even this
 - tx proof ~ 400bytes
 - Fly headers ~ < 500kb
- ETC/ETH
 - headers ~ 3Gb < problem here
 - storage proof ~ 800bytes
 - Fly headers ~ < 500kb

缺陷：区块头过大，使用 Fly headers 可以解决

Why not sample just a few random ones?

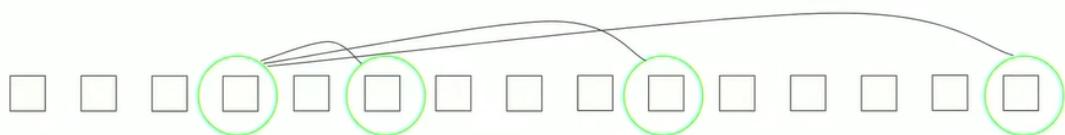


Since we cannot verify that they point to each other, an attacker can produce just the samples without the ones in-between.

They can produce them *after the fact*

随机下载区块头，而无需下载全部区块头。缺点在于缺乏前后相关性，攻击者可以后期创建区块头。

Solution: Each block should point to every previous block.

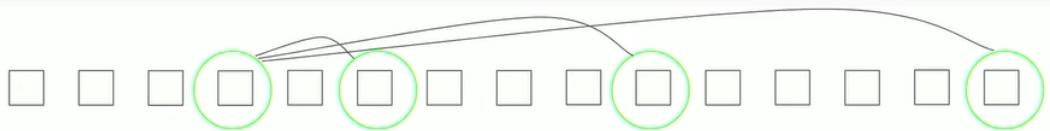


DO this by using a merkle-tree instead of a hash-linked-list

Tree requirements

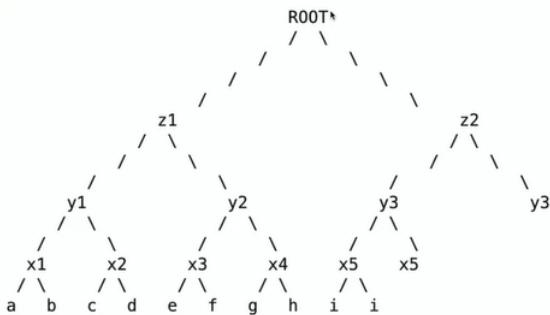
- Can efficiently append new blockhashes
- Can efficiently prove a specific blockhash is contained at a *specific index*
- Can efficiently prove an earlier value using a later value

解决方案：使随机区块头前后相关，但比特币所使用的默克尔树并不适用，所以采用 Merkle Mountain Ranges 优化证明，由此引入 Fly Proofs（后几张幻灯片简单解释了 MMR 和 Fly-proof）



Regular binary merkle tree

Problem:



When h is added, the proof for f **changes** (namely y_2 , z_1 , and ROOT)

Merkle Mountain Ranges

$H(H(H(0,1),H(2,3)),H(H(4,5),H(6,7)))$

$H(H(0,1),H(2,3))$

$H(H(4,5),H(6,7))$

$H(0,1)$

$H(2,3)$

$H(4,5)$

$H(6,7)$

$H(8,9)$

$bh0$

$bh1$

$bh2$

$bh3$

$bh4$

$bh5$

$bh6$

$bh7$

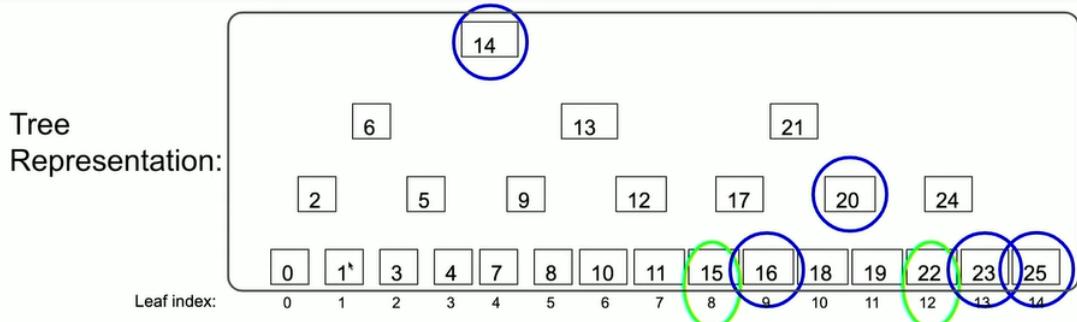
$bh8$

$bh9$

$bh10$

Array Representation:

$bh0$	$bh1$	H	$bh2$	$bh3$	H	H	$bh4$	$bh5$	H	$bh6$	$bh7$
H	H	H	$bh8$	$bh9$	H	$bh10$					



Array Implementation:

L0	L1	H	L2	L3	H	H	L4	L5	H	L6	L7	H	H	H	L8	L9	H	L10	L11	H	H	L12	L13	H	L14
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

Proof:

H	L8	L9	H
14	15	16	17

H	H	L12	L13	H	L14
20	21	22	23	24	25

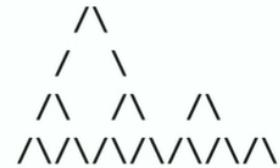
Optimized Proof:

H	L8	L9
14	15	16

H	H	L12	L13	H	L14
20	22	23	25		

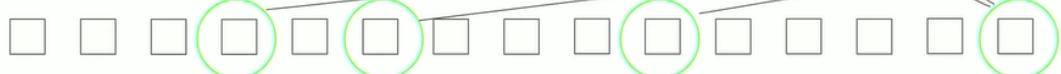
“Bagging the Peaks”:

Creates a single merkle root by hashing all of the peaks



Each later-proof is a superset of its earlier proof. Verifying 1 implicitly verifies the other

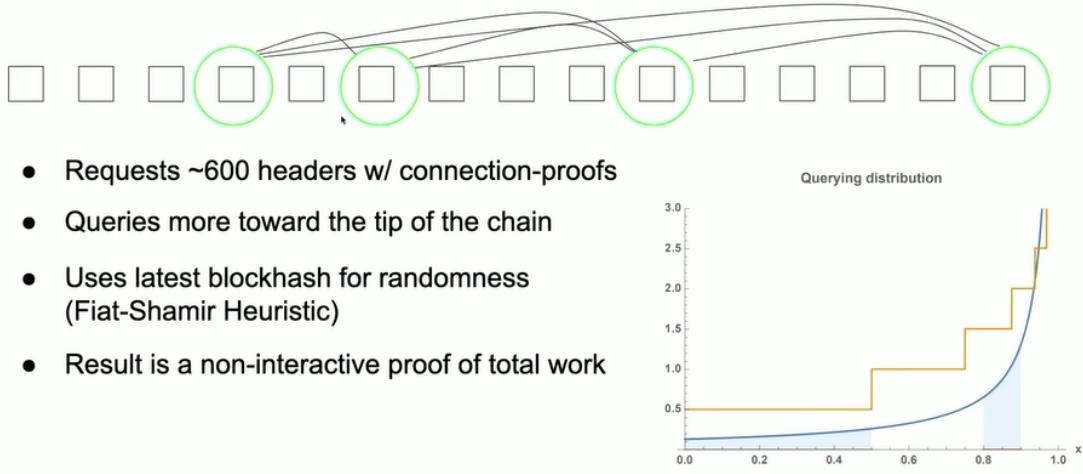
This:



Is sufficient to prove this:



Fly Proofs



使用 MMR 和 Fly-proof 优化后的好处：

- A. 所有数据在传输时都具有证明，而不引起用户体验的重大改变（所有节点的数据都可以被证明，即使是 Infura 数据也能被证明）
- B. 全节点同步不再需要检查点（节点拥有初始信任）
- C. ETC 和 ETH 交互时去信任化（无需再传递区块头）
- D. 提升 EVM 性能（所有历史数据通过智能合约都能读取）

Outstanding Issues

- Ethash is incredibly expensive (**times 600!**)
 - 100s of millions of gas in a smart contract
 - > 20 seconds on a phone
 - > 10 seconds on a laptop

Do we even want to continue supporting EthHash

- Has already failed at its intended purpose
- Gets exponentially harder to verify (without bound)
- Is obscure and proprietary
- Prevents FlyClient

Alternatives

- Keccak256
 - Well documented global standard
 - Being worked on by Alex Tsankov

考虑不再继续使用 EthHash 的原因：

- ✧ 成本昂贵
- ✧ 已经背离初衷
- ✧ 验证难度呈指数上升
- ✧ 太艰涩且太过专用化
- ✧ 不支持 FlyClients

另外 Keccak256 可作为替代方案。

ETC Labs 的未来一年
The Year Ahead for ETC Labs
演讲嘉宾: Terry Culver



MISSION

ETHEREUM CLASSIC LABS

Build: High Quality Technology

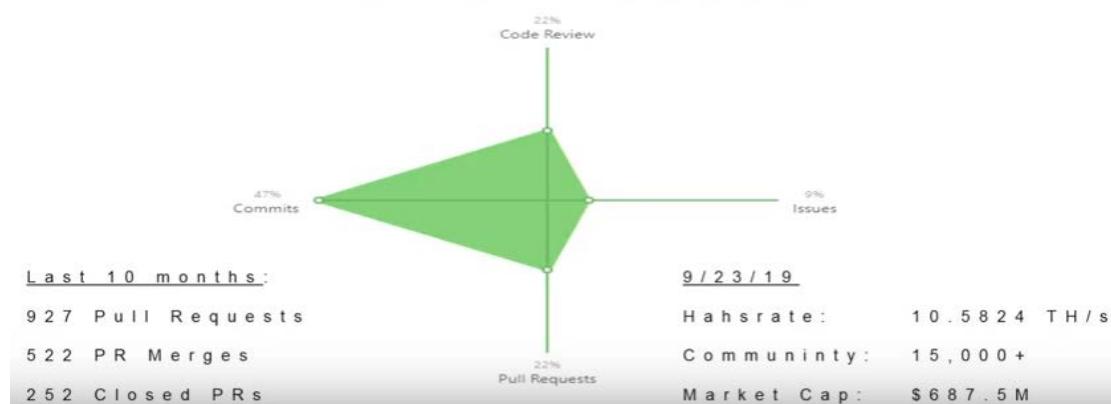
Create: Communities of Value

Fulfill: The Promise of Blockchain

ETC Labs 有三大使命，第一是开发高质量技术，第二是创建价值社区，第三是兑现区块链的诺言。



ETC IS GROWING



从代码提交量、开发工作来看，他们的开发团队正稳步向前发展，ETC 社区人数也在不断增加，多达 1.5 万人次，逐渐壮大。



1. BUILD HIGH QUALITY TECHNOLOGY

ETCLABS CORE TEAM

Built with Code, Coffee, and Love

Tooling

From fundamental specifications, SDKs, and resources, we deliver open-source tooling for the Ethereum Classic ecosystem. As believers in cross platform compatibility, many of our tooling is cross compatible with other Ethereum Platform based blockchains.

Protocol

We are actively supporting the ETC protocol with improvement specifications and supporting clients including, Classic Geth and MultiGeth.

EVM

The computer of the ETC network is the EVM. We maintain EVM-RS (SputnikVM) and support EVM accessibility and adoption in our EVM projects.

ETC Labs 有三支核心团队，分别建设不同的领域：工具、协议和虚拟机。

目前，他们的重要技术合作伙伴有 ChainSafe，未来一年也将与 Whiteblock 合作。



2. CREATE COMMUNITIES OF VALUE

➤ STUDIO PROGRAM

➤ BOUNTIES AND HACKATHONS

➤ MANAGED INDEX SERVICE

今年，ETC Labs 发布了 Studio 程序，以支持 ETC 链上的项目开发，也能改善区块链使用率不高的问题。他们计划举办黑客松，并颁发奖金，正与 Gitcoin 沟通该事宜。今年下半年也将推出索引服务。



2. CREATE COMMUNITIES OF VALUE

EMOTIONAL COLLABORATION WITH ETH1X

- IDENTIFY AND IMPLEMENT POSITIVE SUM COLLABORATIONS
- SHARE TECHNICAL INNOVATIONS AND DEVELOPMENTS
- JOINTLY INVESTIGATE & ADDRESS KEY CHALLENGES IN BLOCKCHAIN, INCLUDING SCALABILITY AND ADOPTION

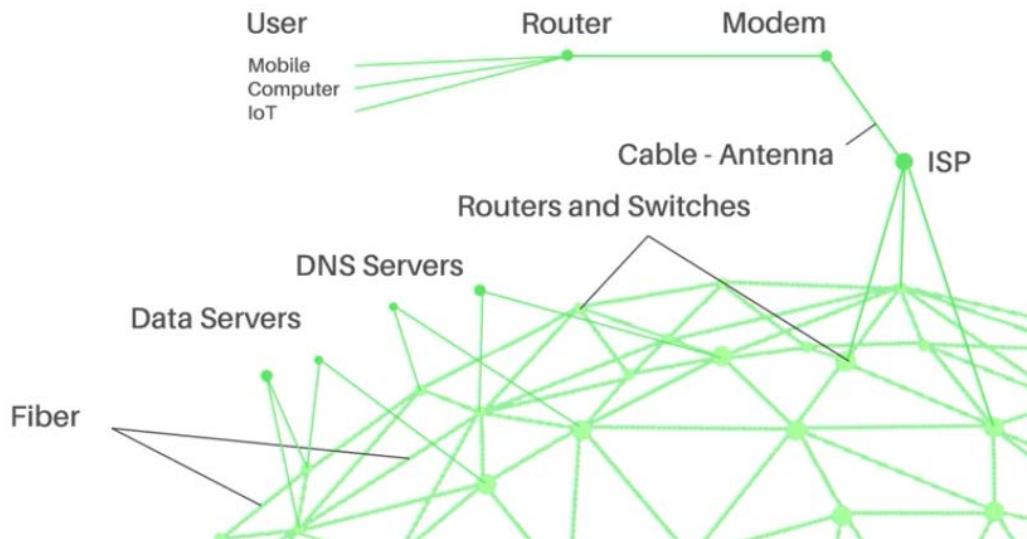
增强与 ETH1.x 的“正和协作”，共享技术创新成果，携手迎接扩容性等挑战也是未来的重要一步。

去中心化分布式网络的基础设施

Infrastructure for Decentralizing Distributed Networks

演讲嘉宾: Aaron Lowry

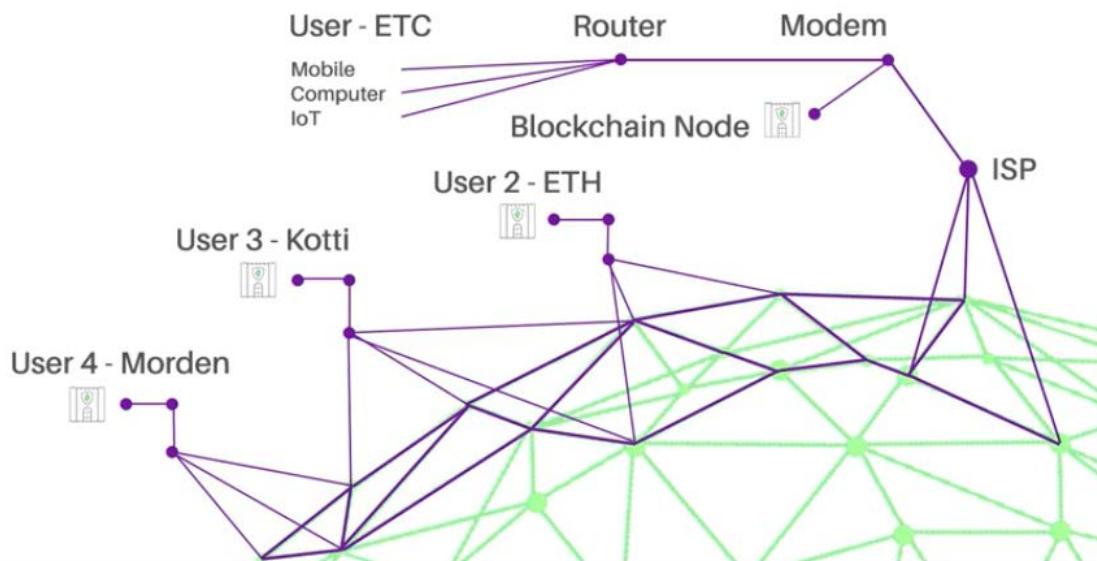
Hardware Infrastructure



这是我们开发的一些节点以供普通个人用户和企业运行区块链节点。

已经具有了一些分布式网络的特点，但仍然需要运行在一些基础设施之上，底层设施不断衍生的脆弱性平时很少被提及，但这正是我们寻求分布式应用系统的原因。

Blockchain Network Infrastructure



虽然这些 EVM 网络运行在不同的区块链中，但其实存在于同一个网络中。其中节

点的互相沟通就显得尤为重要，Ethernode 的设计就是想要取代目前基础设施中的路由器。路由器（Router）是区块链网关，也是调制解压器（Modem）背后的网络网关。

亲自参与网络的优势（以运行节点为例）：

Benefits of Network Participation

A Case for Running Nodes

Network Identity

- Nodes are blockchain gateways
- Enable p2p interaction
- Utilize protocols like Whisper (shh)

Reduce Dependencies

- Remotely accessing a blockchain through a 3rd party introduces multiple security vulnerabilities

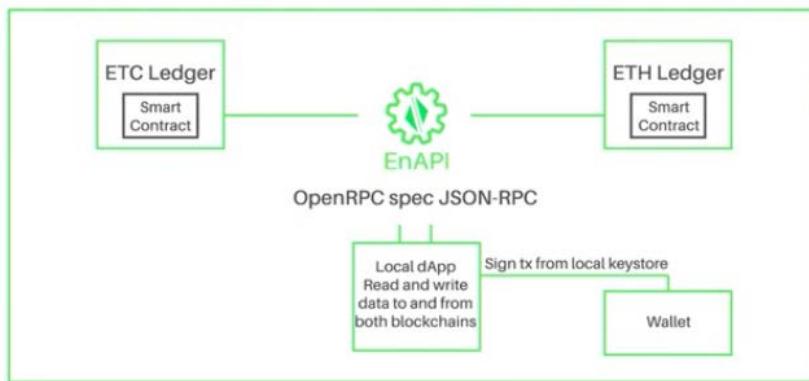
Direct Interaction

- Sign and send tx locally and securely
- Query blockchain data quickly

EVM Blockchain Interoperability

Public/Public and Public/Private Blockchain Data Transfer with EnOS

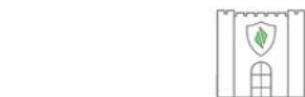
EnOS - Linux OS for Blockchain Node Hosting and Interaction



如果依赖中心化基础设施解决方案，例如 Infura，那么就无异于重新引入了我们一开始尝试避免的脆弱性。如果用户自己掌握区块链的数据副本，那么就能拥有很多灵活选择。技术结合以实现基于 EVM 的区块链互操作性，API，OpenRPC。

Economic Transmission of Encrypted IoT Data

Hardware Node
- Whisper shh client
- EnAPI

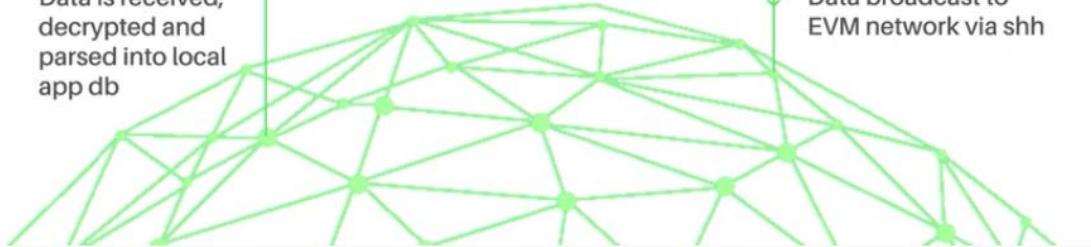


Data is received,
decrypted and
parsed into local
app db

Edge Device
- Whisper shh client
- node.js Firmware



Sensor Data
Data broadcast to
EVM network via shh



这张幻灯片描述了我们如何以一种经济的方式通过公共网络传输 IoT 数据。

用户仅仅通过参与网络、运行客户端就可以实现。我们所做的就是要尽可能地整合这些工具，例如使用 En0s 平台将 IDE 等工具与钱包等基础应用在操作系统中相结合，然后用户就能安全地与其进行本地交互。

大胆试验：如何维护开源软件

Radical Ideals: Experiments in Sustaining Open Source Software

演讲嘉宾：Scott Moore

来自 Gitcoin 的 Scott Moore 讲述关于如何维护开源软件的大胆试验。首先介绍免费的开源软件，它是一种源代码可以任意获取的计算机软件，使用开源软件的应用程序多达 96%，57% 的软件代码取自开源软件，总值 3.87 亿美元，相当于 3.5B 以太币。目前，开源软件的维护人员面临困境，开发者工作量庞大，却没有收入，62% 的团队只能自负开发资金或得不到任何资助。

The Maintainer's Dilemma

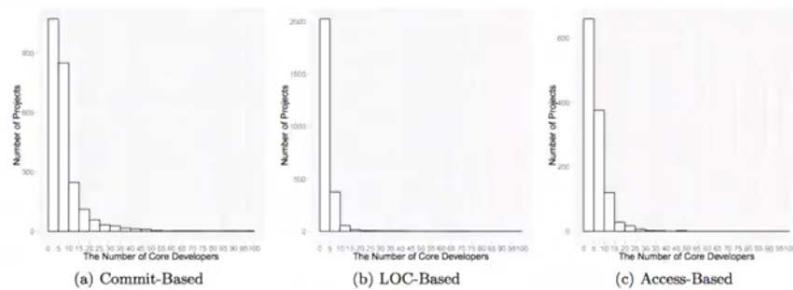
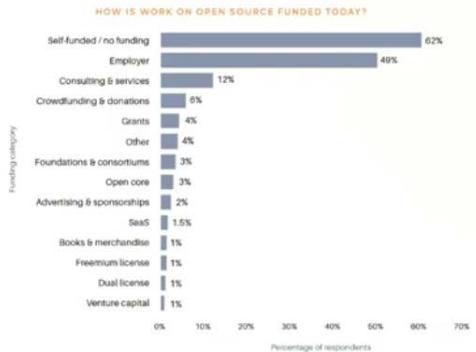


Figure 4: The distribution of projects according to the number of core developers.



More Work, No Pay



Source: Open Duck 36:01/4:00:00 io



2001 年，Sourceforge 的用户只有 20.8 万，而到了 2018 年，Github 的用户多达 3100 万，用户规模大为扩大。一些开发者出现了倦怠期，如 Jack Lukic 为开发操作系统花了 3 年时间，到最后却发现功亏一篑。

如何解决资金不足的问题呢？

The (Magic) Internet of Money

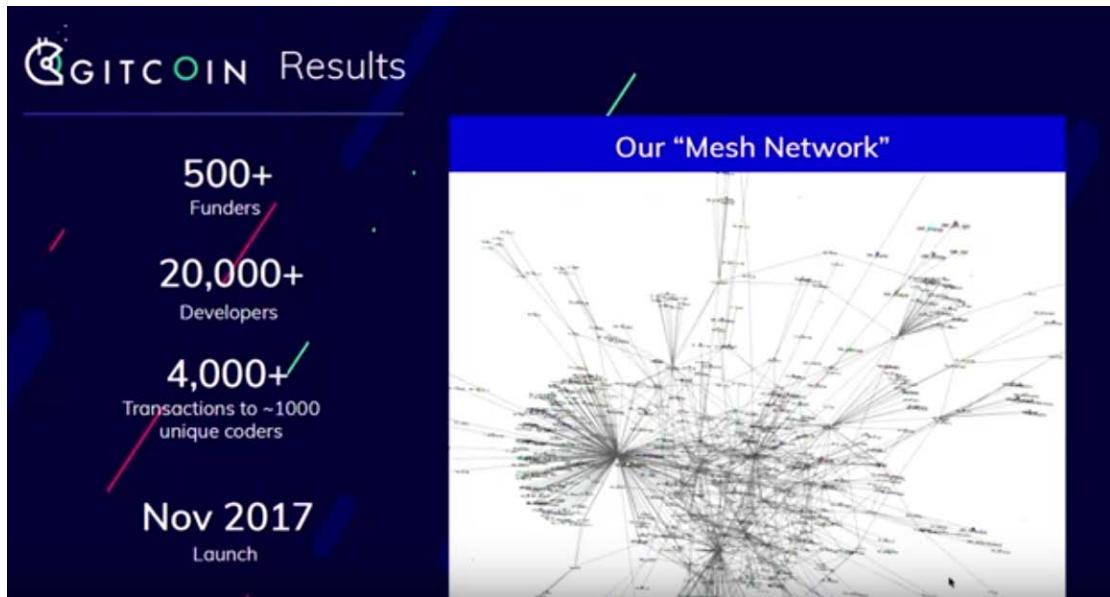
1ST
PRINCIPLES

- With programmable money, we can program our values into our money.
- Transferring value globally is now as easy as sending an email.
- We directly see the value of Open Source.

10
X BETTER

- There's up to \$900 billion in market cap.
- Everyone needs Devs.
- Everything is built Open Source.
- Everything is built Remote.

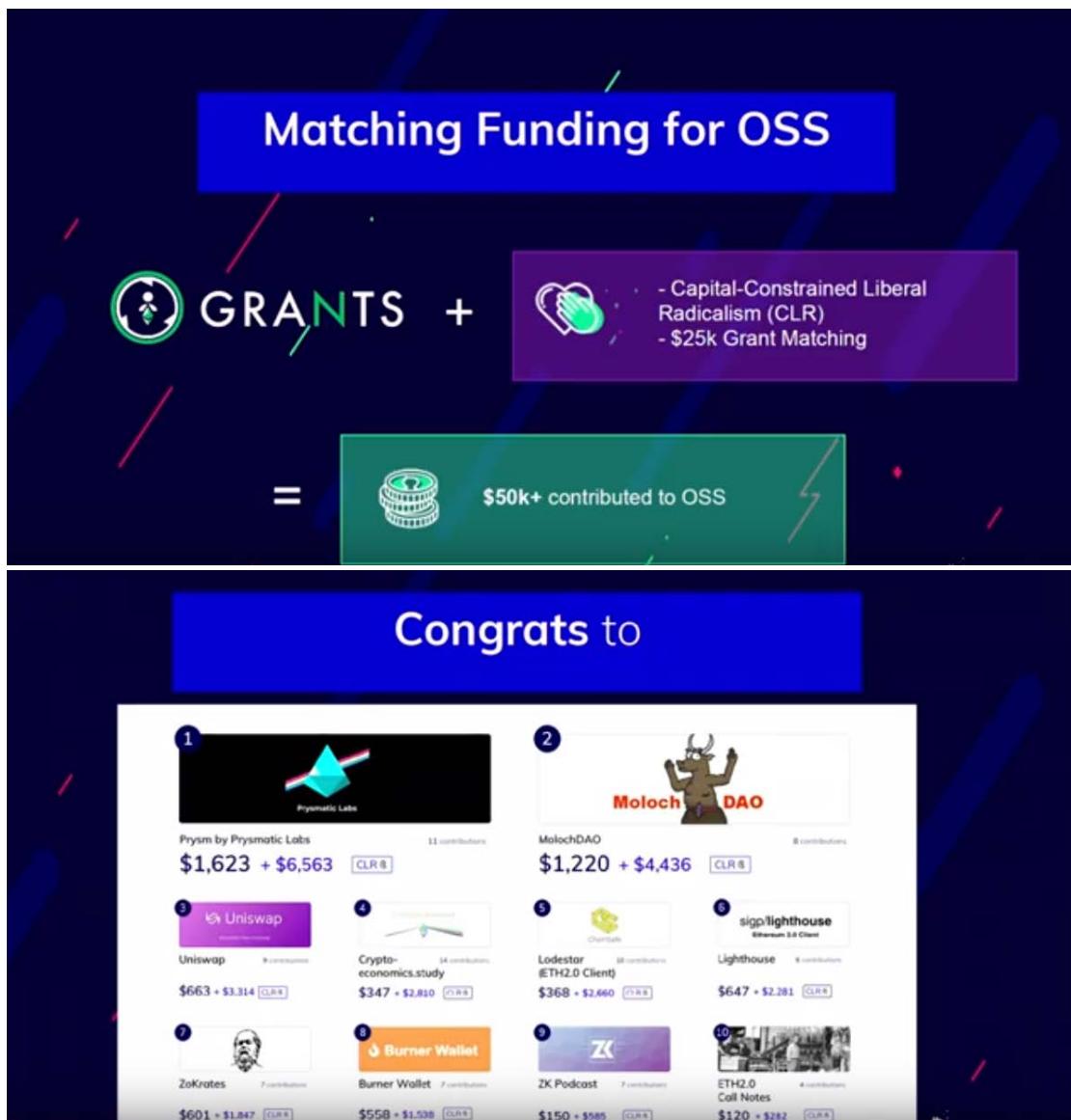
采取以物质鼓励个体开发者的激励措施，使程序员们积极为社区做贡献。



截至 2017 年 11 月，已有 500 多家赞助商、2 万多个开发者参与其中，交易量达到 4000 多次。

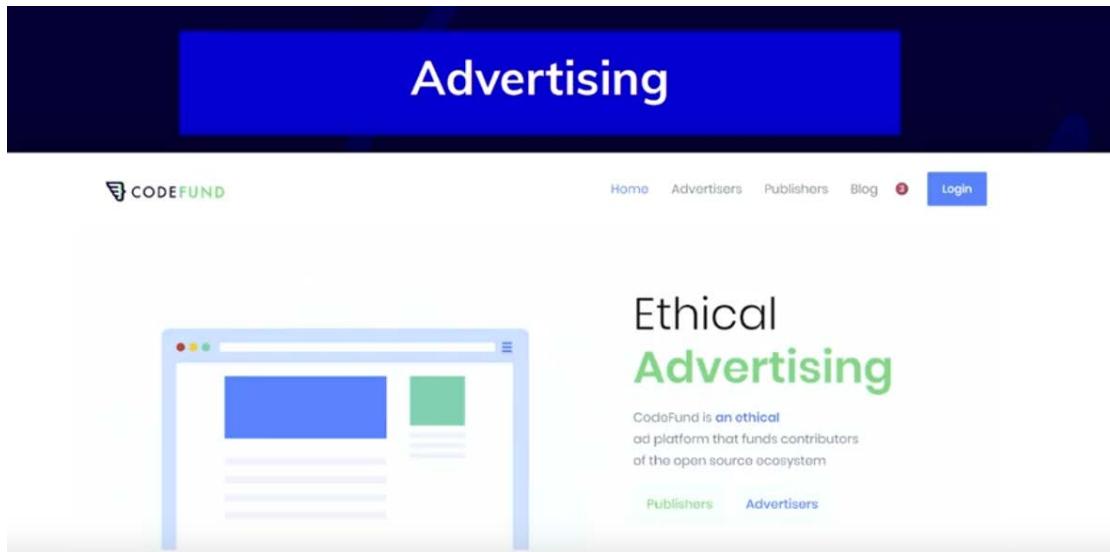


Gitcoin 开始为维护人员提供资金赞助，以确保社区的可持续性。



为 OSS 提供配比基金，众多项目也在 CLR 模式下获得资金。

EIP1789 是一项关于通胀基金的提案，而 EIP2025 是关于以太坊 1.x 区块奖励的提案，值得考虑采用。

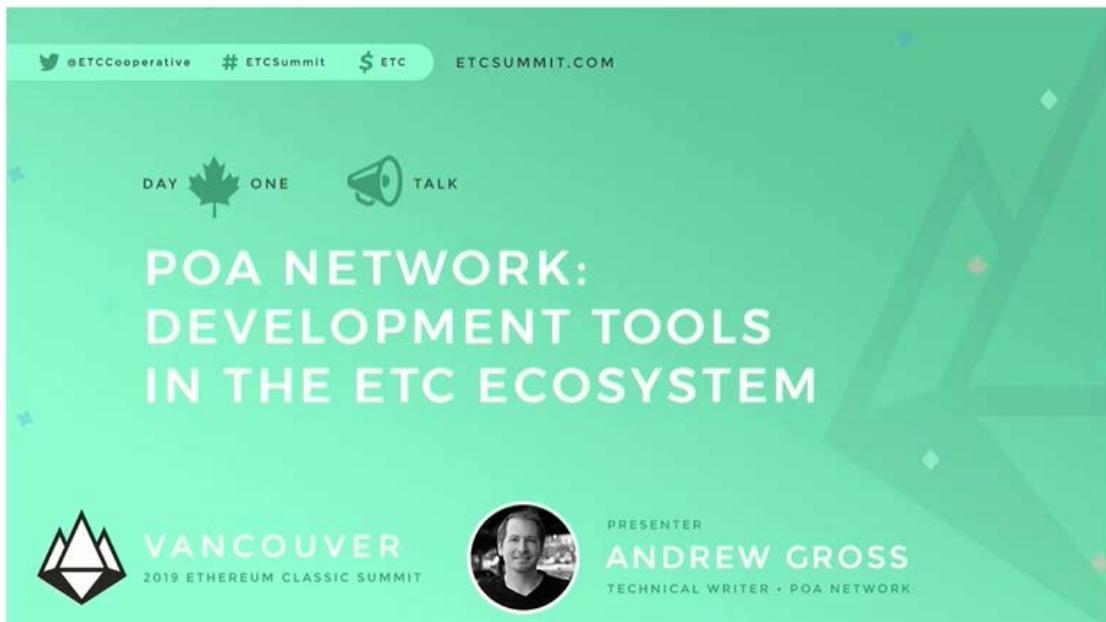


Gitcoin 开发的“绿色”广告平台，为开源生态系统募集资金。

POA Network: 用于 ETC 生态中的开发工具

POA Network: Development Tools In The ETC Ecosystem

演讲嘉宾: Andrew Gross



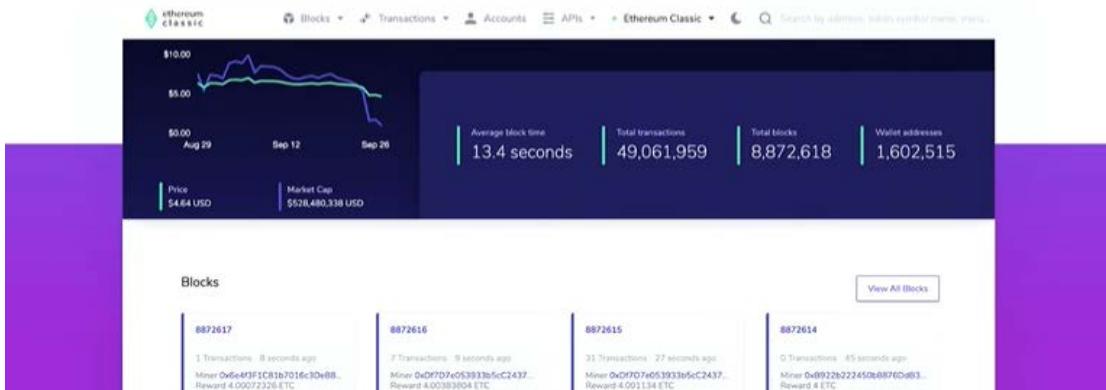
POA Network: 为 ETC 生态提供开发工具

BlockScout 介绍

BlockScout Overview



- Elixir/Erlang VM
- ERC20 & ERC721 Support
- Smart Contract reading and verification
- Full transaction history view



BlockScout 最近的升级涵盖开发者工具、性能提升和用户体验三个方面：

合约调用方法, logs, 原始数据追踪, API, 前端和后端优化, 用户体验 (用户体验/用户保证/标签/CSV 下载/夜间模式)

Decoded View: Contract Method Calls



Tools for Developers

Input			
Method Id	0xa955c0b		
Call	transfer(address to, uint256 tokens)		
Name	Type	Data	
 to	address	0x59af2dd5c57bf17f2714bfe41232fe17a2482c	
 tokens	uint256	210000000000000000000000	

Logs



Tools for Developers

Address	0x171040cd10f204f3b257e45b41ce65D3615058C			
Decoded	Method Id: 0x0d7252ad			
Call	Transfer!address_IndexedFrom, address_IndexedTo, uint256_tokens)			
	Name	Type	Indexed?	Data
	from	address	true	0x5d9484317b19b63d7f76ffac9bd384007a798799e
	to	address	true	0x59af2ddaa5c57b8f17f27140fe41232fe17a2482c
	tokens	uint256	false	208950000000000000000000
Topics	[0] 0x0d7252ad11be2f89b49c26060f17fdaa952ba7f163c4a1162b955a4d9f23b3ef [1] 0x00000000000000000000000000000000d9484317b19b63d7f76ffac9bd384007a798799e [2] 0x000000000000000000000000000000009a23aa5c57b0f17f27140fe41232fe17a2482c			
Data	0x00			

Raw Trace

Tools for Developers

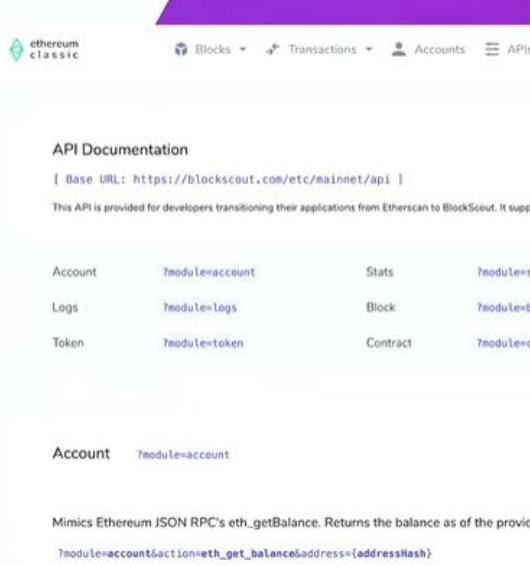


Internal Transactions	Logs	Raw Trace	Internal Transactions	Logs	Raw Trace
Internal Transactions			Raw Trace		
<div style="display: flex; justify-content: space-between;"> <div style="width: 33%;"> <pre>Internal Transaction Call</pre> <pre>0x94116909d300c95a3bdca485ea5a1b92251d16aa15ea16d912e47d16539e812 0xC581EcE658524f3Aa70f770dE01dC09110187F -> 0xb0b8E07e8451B4C 0.82094124 ETC</pre> </div> <div style="width: 33%;"> <pre>Internal Transaction Call</pre> <pre>0x94116909d300c95a3bdca485ea5a1692251d16aa15ea16d912e47d16539e812 0xb0b8E07e8451B4D9684607C0B150fc26C0B03 -> 0xC0033203014EF42 0.82094124 ETC</pre> </div> <div style="width: 33%; background-color: #8000ff;"></div> </div>			<pre>{ "action": { "callType": "call", "from": "0x4c581EcE658524f3Aa70f770dE01dC09110187F", "gas": "0x31416", "inputs": "0x", "to": "0xb0b8E07e8451B4D9684607C0B150fc26C0B03", "value": "0x864913547AB30000" }, "result": { "gasUsed": "0x24C48", "output": "0x", "subtraces": 1, "traceAddress": [], "type": "call" } }, { "action": { "callType": "call", "from": "0x2099cbe47c04518408cde4607c0815bf98c0003", "gas": "0x31416", "inputs": "0x", "to": "0xC0033203014EF42", "value": "0x00" } }</pre>		

API Improvements

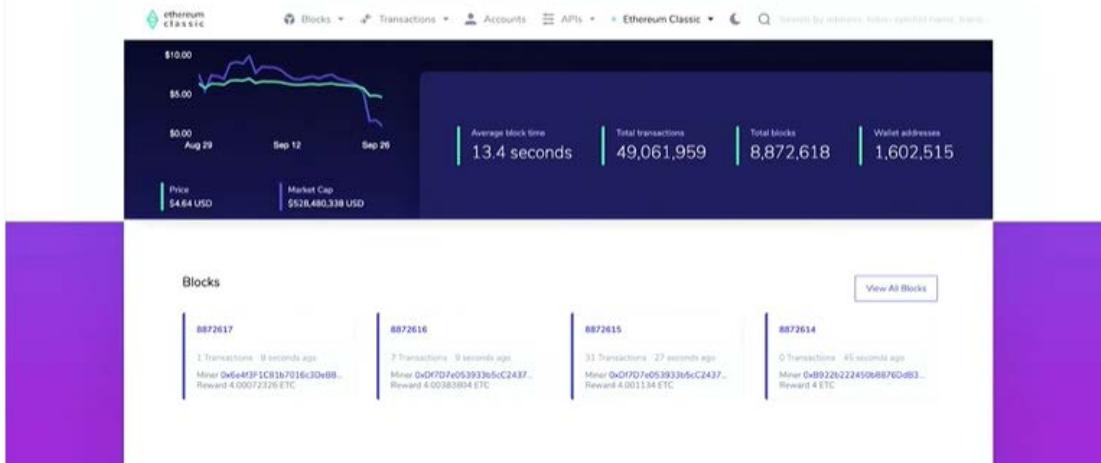
Tools for Developers

- No limits or keys needed
 - Requests directly from the UI
 - GraphQL support
 - Eth RPC
 - eth_block_number
 - eth_getBalance
 - eth_getLogs
 - Extended RPC endpoints for contracts
 - listcontracts
 - verify



Optimization: Backend

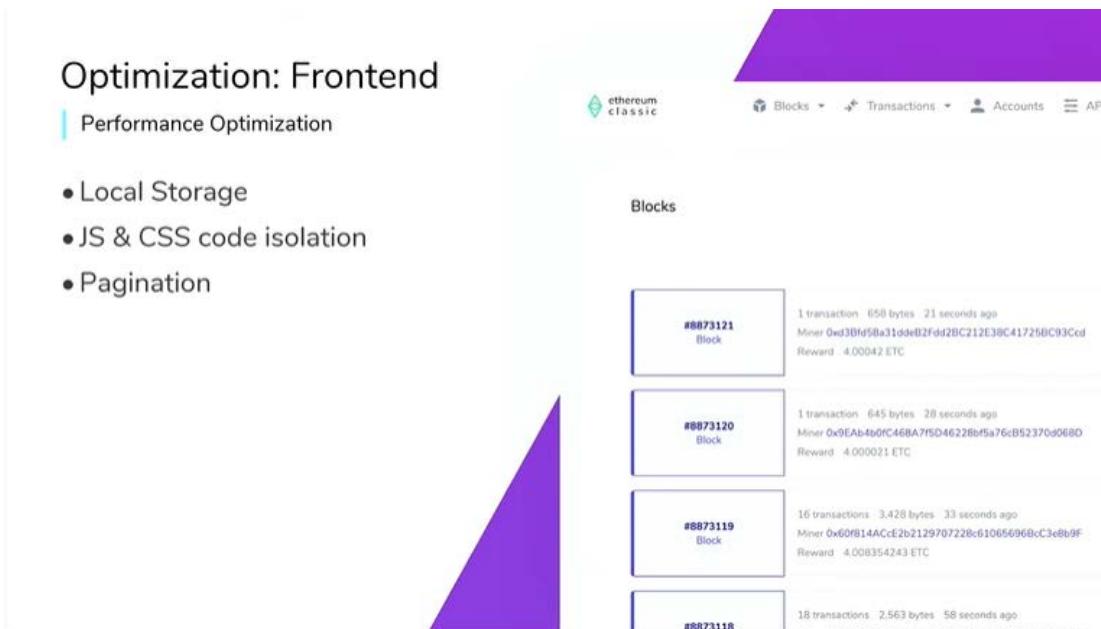
Performance Optimization



Optimization: Frontend

Performance Optimization

- Local Storage
- JS & CSS code isolation
- Pagination



User Interface

User Experience



Transaction Details

0xd1079a125cb38a744d04ba96005a340c1b0a0ebbf69063fb640b2a3ff3c1c4ed2

0x5EB587606f02B6F1CD50fb8ddFB86658bE068A02d - 0x3f5100eA2984d703957a69e0Cbe7f1e6;

Transaction Success 38 seconds ago (September 27, 2019 09:45:40 PM +3 UTC)

Block Number 8873156

Block Confirmations 1

Nonce 0

TX Fee 0.00042 ETC (\$0.001938 USD)

Transaction Speed 11.6 seconds

Internal Transactions

Logs

Raw Trace

User Reassurance

User Experience



Sorry, We are unable to locate this transaction Hash

1

If you have just submitted this transaction, please wait for at least 30 seconds before refreshing this page.

2

It could still be in the Tx Pool of a different node, waiting to be broadcasted.

3

During times when the network is busy (e.g. during ICOs) it can take a while for your transaction to propagate through the network and for us to index it.

4

If it still does not show up after 1 hour, please check with your senders/exchange/wallet/transaction provider for additional information.

[Back Home](#)

Clear Labelling



User Experience

 Contract Call Success	0x00999160c991C0F00e4B501100e058d988E2D 0 ETC 0.001007643 TX Fee	0x8815782f0f62f820C00cA95A4c81Ae01Df03	Block #8873292 48 seconds ago
 Contract Call Success	0x7f64ac1b3a92f7e34a28952f1c781a3d60e626757f49094501370850a972 0x00999160c991C0F00e4B501100e058d988E2D 0 ETC 0.001007643 TX Fee	0x8815782f0f62f820C00cA95A4c81Ae01Df03	Block #8873292 48 seconds ago
 Contract Call Success	0x305f783385a1f1d230a54502f24a1f1800846a4d124256a6378a30b535 0x00999160c991C0F00e4B501100e058d988E2D 0 ETC 0.001007643 TX Fee	0x8815782f0f62f820C00cA95A4c81Ae01Df03	Block #8873292 48 seconds ago
 Transaction Success	0xe7dd31804947976d3202f24637f50f7279014a44d3f740f22ec40ca7d5a03a 0xB4806a3e9f9670A11966f09e0541691505a91b -->0x18f3707f7b140e604172466CD42D1Ec35E0544 1.03847069 ETC 0.000409116 TX Fee		Block #8873292 48 seconds ago
 Transaction Success	0xcb12f23b27378758b0ab027e5695a5c0dad98e76439217b5d473f3f09449570 0xDfFD7e0539338c5c2437f878c90e62c6ADAD5642 -->0x140c74a5c5C0f566722dA140D5530Cc7FcA0841 1.000273968923904544 ETC 0.0000211 TX Fee		Block #8873289 a minute ago
 Transaction Success	0x0051f978f5f57659702ecc2b2b8e3dc5eb4fe488b4a27cef14ccddaaaa32 0x0f7D7e0539338c5c2437f878c90e62c6ADAD5642 -->0x135e603e68a904D97990c262DB60D4abbef54 1.00004456651323454 ETC 0.0000113 TX Fee		Block #8873289 a minute ago

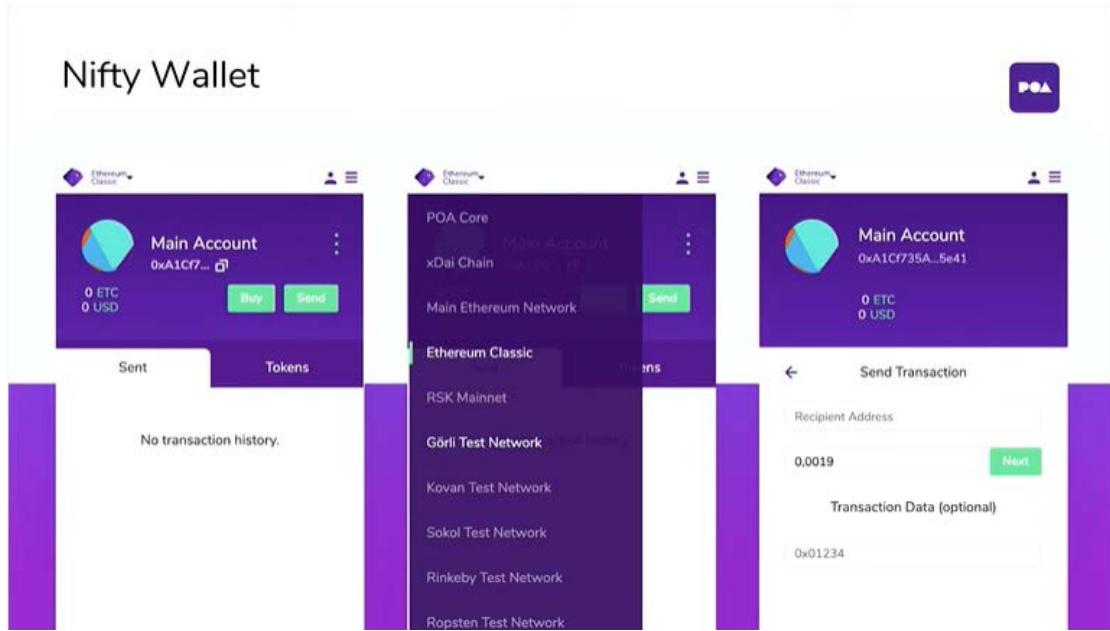
CSV Download

User Experience

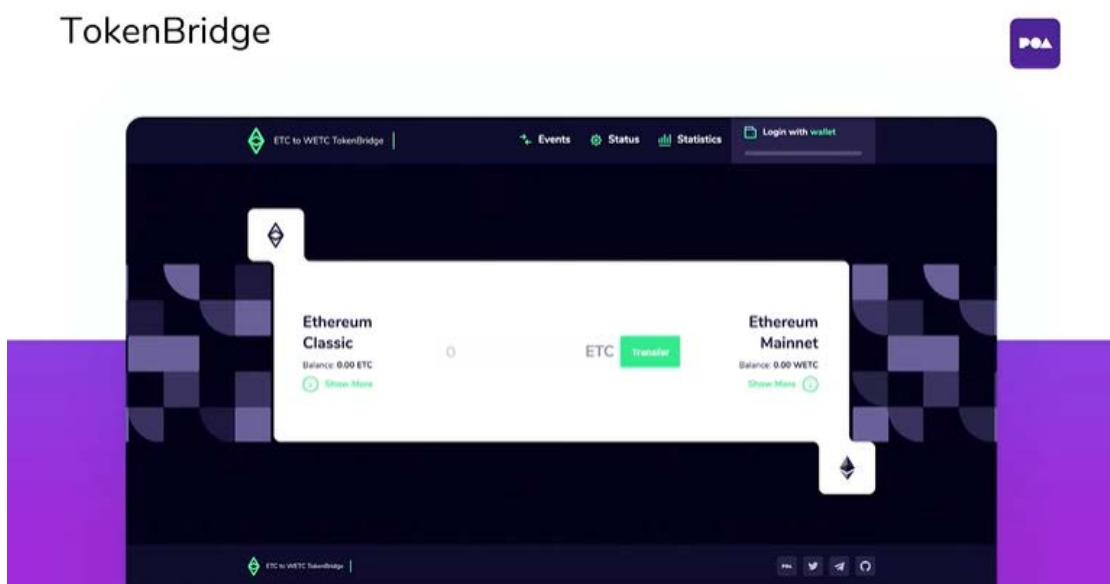
- TxHash
 - BlockNumber
 - Timestamp
 - FromAddress / ToAddress
 - Value
 - Fee
 - Current Price
TxDateOpeningPrice
TxDateClosingPrice

Transaction Success	0x101490533348320873 ETC 0.000021 TX Fee 0xD7D70503393305cC243728f80e62dADAD5d42 ... 0x97AB: 0.10376214632439217 ETC 0.000021 TX Fee
Transaction Success	0x7925480Cd9e3beff58b0c711663e6db#93d2be0787253422c79 0xD7D70503393305cC243728f80e62dADAD5d42 ... 0x97E12: 0.104882270471674705 ETC 0.000021 TX Fee
Transaction Success	0x741b6ed3c51c6085fa467605fe97cdff98be611a65a4d518b43! 0xD7D70503393305cC243728f80e62dADAD5d42 ... 0x7533A: 0.202501849660238420 ETC 0.000021 TX Fee
Transaction Success	0xd99cb4b02171f25b0458bbce8f61f94d7329fb62298a37509f 0xD7D70503393305cC243728f80e62dADAD5d42 ... 0x85Ea9: 0.101755305422743508 ETC 0.000021 TX Fee

[Download CSV](#)



Nifty 钱包：开源，支持许多其他基于 EVM 的区块链，支持合约调用



TokenBridge：使 ETC 和 ETH 进行交互，将 ETC 锁定在以太坊主网合约中，WETC (Wrapped ETC) 在以太坊主网中具有一切 ETC 的性能，与其他的 ERC20 通证一样可以自由使用。当交互结束时，可以将 ETC 返回 ETC 网络，WETC 在以太坊主网中将被销毁，解锁释放出 ETC。

AMB Bridge



- Arbitrary Message Bridging
- Bridge any assets (ERC-721, ERC677)
- Currently deployed on Sokol -> Kovan testnet

AMB Bridge: 支持所有种类通证的交互，目前在 Sokol 和 Kovan 测试网中部署测试。

ETC 与机器学习

Collaborative Machine Learning on Ethereum Classic

演讲嘉宾: Cody Burns

CONTENT

1 Introduction

Basic Definitions

2 Combining Blockchain & AI

Existing initiatives categorization, methodology and combination tree

3 AI for Blockchain

Smarter blockchain(s) and distributed ledgers

4 Blockchain for AI

Empowered Artificial Intelligence

5 Blockchain + AI

New solutions enabled by the combination of Blockchain & AI

Glossary

COMBINING BLOCKCHAIN & AI

MAIN CATEGORIES



AI for Blockchain: smarter Blockchain(s) and Distributed Ledgers

From improved consensus mechanism, to auto-coding to smart analytics and prediction by learning on historical data: this category collects all the initiatives that are using AI at the service of DLTs and Blockchains.



Blockchain for AI: empowered Artificial Intelligence

Blockchain can enable democratic and decentralized AI market-place, can solve some security challenges of distributed learning and can make more transparent prediction platforms: this category collects all the initiatives that are using Blockchain to empower Artificial Intelligence.



Blockchain + AI: new solutions enabled by the combination of Blockchain & AI

This category looks at the initiatives that are combining AI and Blockchain (without necessarily improving one of the two technologies) but creating new value from the combination of the two.

Copyright © 2019 Arcepia. All rights reserved.

9

Cody 的演讲内容主要涵盖了区块链和 AI 协作的三种可能性，其中就每种可能性提出了一些用例，分别是：

1. 将 AI 用于区块链
2. 将区块链用于 AI
3. 将区块链与 AI 相结合

将 AI 用于区块链：

1. 更智能的共识机制；
2. 机器计算取代 PoW 挖矿；
3. 自动编写智能合约；
4. 区块链分析（防止人为错误、跟踪交易、检测欺诈并即时提供解决方案）

AI FOR BLOCKCHAIN

IMPROVE CONSENSUS MECHANISM

OVERVIEW

AI applied to Blockchain to implement new Consensus Mechanism models or to replace Proof-of-work mining with AI computation.



Smarter Consensus Mechanism

AI algorithms could be applied in the selection of Validators and in the governance of the Consensus Mechanism



Useful work to mine new blocks

In 2018, the power consumed by the entire Bitcoin network in a year is estimated to be nearly the same as the power consumed by Ireland. The mining does not produce anything valuable and can be considered as pointless computation. Multiple research papers and companies are suggesting new consensus mechanisms that replace hash computation with AI computation (e.g. Proof-of-Useful-Work or green mining).

SMART CONTRACT AUTO-CODING

OVERVIEW

Writing smart contracts requires a programming expertise.

Automatic code generation using **Natural Language Programming** and adaptive **Deep Learning**-based templates could be used to **generate smart contracts**

This would allow anyone (e.g. lawyers, doctors) to be able to write them without the need of having any programming skills

BLOCKCHAIN ANALYTICS

OVERVIEW

Machine Learning trained with **tamper-proof trustable data** to understand the ledger and get valuable insights.

LEARN
behavioral patterns

CLASSIFY
peers on the network

PREVENT
fraudulent activities

PREDICT
future transactions

RECOMMEND
actions

将区块链用于 AI:

1. 联邦学习（Federated Learning），以 AI 形式呈现需要全球化的数据，多个机构可以即时使用同一个 AI 训练模型。如此可以使 AI 训练模型摆脱中心化服务器的需要，在全球进行去中心化式的即时更新；使用区块链追踪 AI 的训练模型，获得其每一次的训练数据，从而克服 AI 决定机制的不透明性。
2. 去中心化的 AI 服务市场以确保 AI 数据即时交换、更新，还包括云计算、AI 算法、健康数据等方面。
3. 预测平台，AI 用于预测事件，区块链可以为其提供去中心化的、防篡改的可信平台，还可用于记录、奖励合作方。

BLOCKCHAIN FOR AI

FEDERATED LEARNING AND BLOCKCHAIN

OVERVIEW

Federated Learning is collaborative Machine Learning without centralized training data, meaning users collaboratively learn with shared prediction model while keeping all the training data on their device.



Decentralized Federated Learning

Blockchain can be used to remove the need for a central server by decentralizing the global model updates.



Traceability of the Federated Learning process

Blockchain can be used to provide a secured tamper-proof traceability of the Federated Learning process.

DECENTRALIZED AI SERVICE MARKETPLACES

OVERVIEW

Decentralized **blockchain-based marketplaces** where computational power for AI/ML purposes and the training data are exchanged.

Cloud computing

The possible switch from PoW to PoS for the Ethereum main network would have a huge negative impact on the miners. A few decentralized marketplace for Cloud Computing have arisen and they could be a good reconversion for these miners.

The computational power could be used for Machine learning and paid via the blockchain market-place.

AI Algorithms

Today's AI tools are fragmented by a closed development environment. Most are developed by one company and perform one extremely narrow task, and there is no straightforward, standard way to plug two tools together.

To democratize AI algorithms and allow anyone to buy and sell them, different startups are proposing decentralized marketplace for AI algorithms.

Health data

The medical data makes up for a multi-billion dollar business. The blockchain technology can help people to protect and be sure to own their health data, and with the help of decentralized marketplace for Health data, they are able to sell it and know whom they sell it to and for what reasons.

The data could be used to train local Machine Learning (e.g. sleep analysis) or sold to be used for training purpose.

PREDICTION PLATFORM

OVERVIEW

AI can be used to predict things: blockchain can be combined to guarantee trusted, decentralized, tamper-proof accountability platform on the back of the prediction service.

A few startups have emerged, offering "**Predictions As-A Service**" for business purposes (e.g. retail predictions) using **blockchain for accountability**.

Blockchain is also used for logging and reward for collaborative prediction platforms.

区块链+AI：

AI 用于加密资产交易，通过分析历史交易数据和集体性意见，帮助用户做出更明智的投资选择。

AI + BLOCKCHAIN **AI IN CRYPTO TRADING**

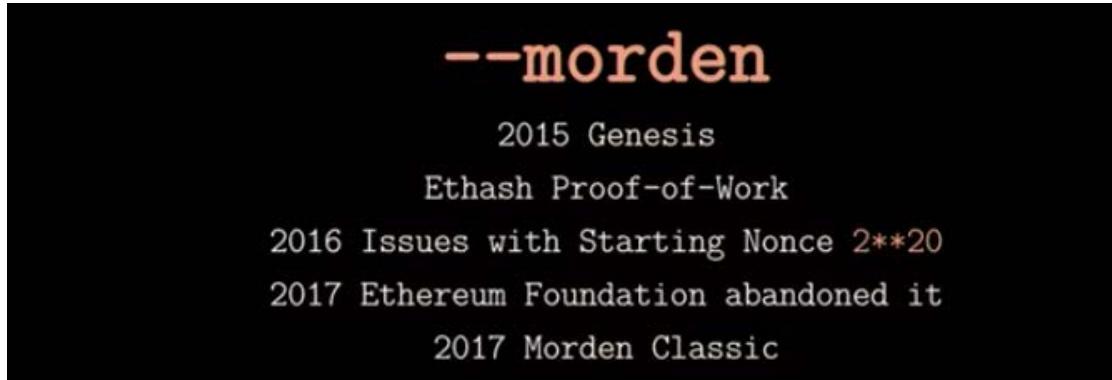
OVERVIEW

AI-powered bots specialized in crypto markets can help users do better **crypto investments** by providing them forecasts based on previous data and **collective intelligence** (e.g. analysts' opinions).

AI is not improving the blockchain capabilities but by learning on historical data could recommend the best way to trade cryptocurrency.

ETC 测试网状态
State of the Ethereum Classic Testnets
演讲嘉宾: Afri Schoedon

ETC 现有 Morden、Kotti、Astor、Kengsington、Nazgul、Morder 测试网。



morden 测试网发布于 2015 年，运用 Ethash 算法，采用工作量证明机制。2016 年，使用 2^{**20} 作为起点随机数。2017 年，以太坊基金会决定弃用该测试网，改用 Ropsten。morden 测试网如今成为 Morden Classic 测试网。



kotti 测试网发布于 2018 年，运用 Clique 共识算法，采用权威证明机制，是一个跨客户端测试网。



astor 测试网发布于 2019 年，运用 SHA-3 共识算法，采用工作量证明机制，Alex Tsankov 在 ECIP-1049 中提议创建这一测试网。



Kensington 测试网发布于 2019 年，运用 Ethash 共识算法，采用工作量证明机制，是专门为亚特兰蒂斯升级做准备的测试网。它与 Morden 的区别就在于是否有起点随机数。

--nazgul

2019 Genesis

Ethash Proof-of-Work

Görli Initiative & Whiteblock

Stress-testing of Atlantis

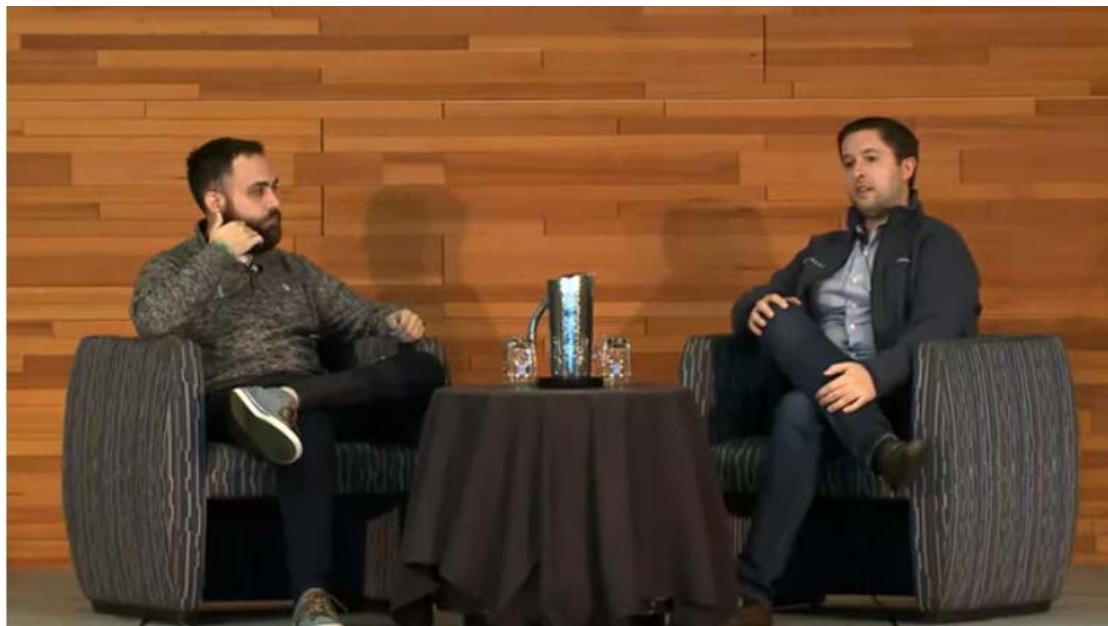
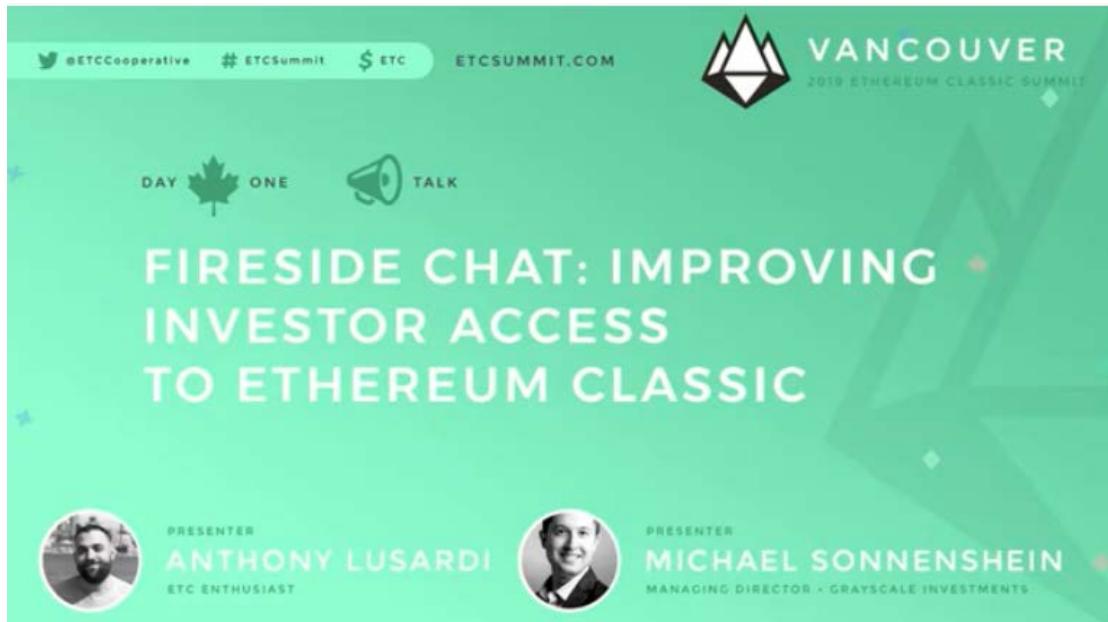
Temporary testnet

为进行亚特兰蒂斯硬分叉后的压力测试，他们创建了一个名为 Nazgul 的暂时性
测试网。

嘉宾谈话：改善 ETC 投资渠道

Fireside Chat: Improving Investor Access to Ethereum Classic

参与嘉宾：Michael Sonnenshein (Grayscale 总经理) & Anthony Lusardi



Anthony: 请介绍一下自己和 Grayscale。

Michael: Grayscale 为大众、家庭、企业提供了在公共市场上投资加密货币的产品。Grayscale 团队一直以来都看好以太坊的理念和潜力，但在 The Dao 事件之后，ETC 迅速建立起了相适应的治理原则，Grayscale 在其中看见了巨大的投资机会。Grayscale 在 2016 年末开始投资 ETC，并在 2017 年初发布了相关白皮

书并保留至今，其中记述了 ETC 初期建设者如何团结在一起，实施了怎样的治理原则。当时用户可以交易 ETC 的渠道非常少，Grayscale 采取了能够使 ETC 生态长期受益的措施：将基金管理费的三分之一资助给 ETC Cooperative，使其能够持续为 ETC 生态做出贡献。该捐助仍持续至今。

Anthony：你认为 ETC 三年以来在金融方面有哪些变化？

Michael：这几年许多开发团队都在竞相探索正确的治理模型、网络升级、挖矿算法等等，但看到 ETC 社区在资源有限的情况下仍然能够物尽其用、蓬勃发展十分令人振奋。

Anthony：请介绍一下 ETCG（以太经典信托基金）。

用户将持有的 ETC 放入基金以换取股份，很棒的一点是用户在为自己的 ETC 资产负责的同时还能为 ETC Cooperative 提供支持，因为基金管理费的三分之一将资助给 ETC Cooperative。

Anthony：目前加密市场中的资产管理工具百花齐放，例如托管和钱包，那么 ETCG 作为其中一种资产管理工具在金融方面可能面临的挑战有哪些？

Michael：目前许多针对电子货币的托管吸引了一部分外界的传统金融参与者，但要扩大在传统金融界的影响力还有很长的一段路要走。例如收购提供加密资产托管服务的公司，或者与其合作，如果能做到这一点，我相信加密货币在传统金融产业中的参与度会更高。在加密货币市场中，除了资产托管，订单管理系统和交易系统也不可忽视，目前市场中各种交易所数不胜数，并且容易面临黑客攻击和盗窃，但随着整个生态系统走向成熟，投资者们也看见了更完善、更安全的工具，未来也很有可能诞生一些公司为用户提供工具以帮助报税、减少纳税损失。

Anthony：我们关注到一些大型投资公司开始将目光移向加密货币市场，你认为这对我们来说有什么意义？

Michael：传统金融参与者开始进入加密货币市场是因为加密货币正在大行其道，他们不想错失良机，并且投资者对于加密货币的投资需求也在日益增长。目前我们都在全力支持加密货币的基础设施发展，但是在日后加密资产要是不能实现更强的流动性，那么与其相关的商业模式和服务也不会得到长足的发展。我们的使命在于思考如何从目前的实体世界向数字化时代转变。

Anthony：如果加密资产的流动性得不到改观会产生什么局面？

Michael: 总的来说，流动性是将加密资产“资本化”后的说法。如果加密资产的货币基础能够更强大，将更容易投入到广泛的应用中，人们也会更倾向于使用和交易加密货币，这就使得加密资产更接近于价值储存机制。

Anthony: 你认为是什么阻碍了投资者对于加密资产的兴趣？

Michael: 在过去投资者会考虑到投资加密资产可能遭遇的头条风险和名誉风险，但现在投资者已经不再有这种焦虑了。现在投资者对加密货币的兴趣瓶颈主要在于法规。我认为短期内在法规方面不会有大的改观，原因在于加密货币产业发展飞速，监管机构无法稳步跟进，而投资者可能更希望在清晰的政策法规下进行投资。

跨链合作之必要性

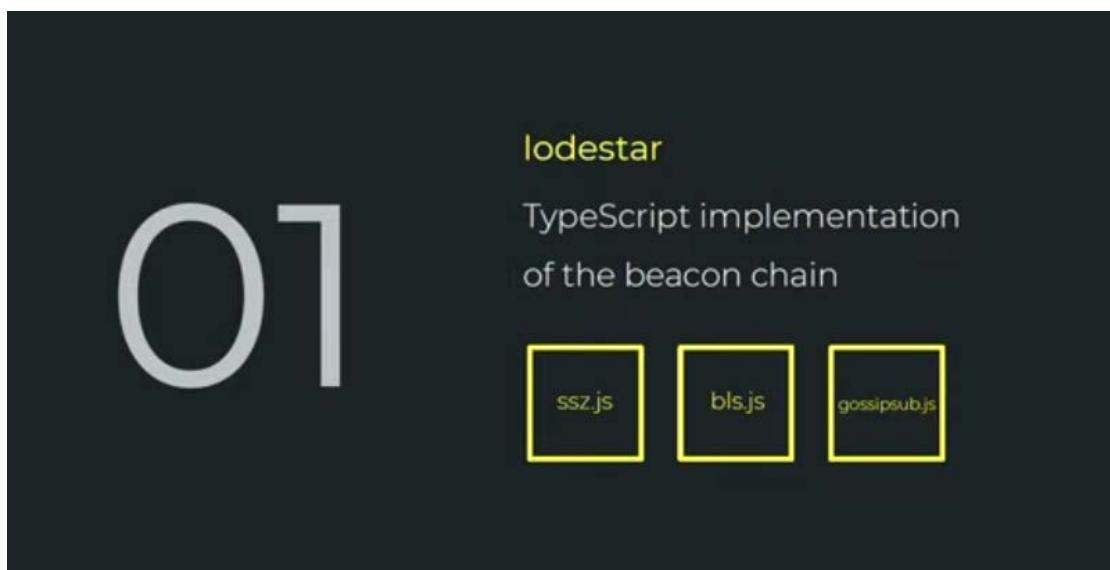
The Need For Cross Chain Collaboration

演讲嘉宾: Aidan Hyman

Aidan Hyman 是 ChainSafe System 的共同创始人兼执行董事, 他阐述了跨链合作的必要性。



就以太坊而言, ChainSafe 现在正致力于开发以上四个主要项目。



Lodestar 是一个用 TypeScript 编写的以太坊 2.0 信标链客户端，最近也成功与多客户端实现互操作性。



gossamer 是 Polkadot 运行环境的实现，它用 Go 语言编写。Polkadot 运行环境需要建立平行链（parachain），该链遵守 Polkadot 系统的规则。



ChainSafe 团队在 go-ethereum 客户端上升级了 Atlantis 硬分叉。Aidan 认为开放资源具有互操作性且可利用性，开发者应友好协作，致力于开放资源的开发。

04

ethermint

Ethereum on Tendermint
using Cosmos-SDK

ethermint 把以太坊上的虚拟机替换成 Cosmos-SDK 组件，更有利于开发者扩大 Dapps 的规模。



Aidan 表示他们团队有幸获得多个机构的资助，并对以太坊社区基金、web3 基金会、以太经典合作社、以太坊基金会及 Interchain 基金会的大力支持表示感谢。

SIDE CHAINS

usually a fork of Ethereum, optimized for a specific use case, relies on interoperability through a bridge.

大概两年前，他们团队就开始研究侧链技术。侧链通过“建桥”能实现两条不同链之间的互操作性，既能优化 Dapps，又能实现不同链之间不同代币的交易与转移。

WHAT WE HAD TO DO TO BUILD ETHEREUM SIDECHAINS

- > fork geth
- > parity-bridge/ChainBridge
- > implement unique PoS

构建以太坊侧链的必要工作：

1. 在 Geth 客户端上进行侧链的开发
2. 使用 parity-bridge/ ChainBridge
3. 采用独特的 PoS 共识机制

LESSONS LEARNED FROM BUILDING ETHEREUM SIDECHAINS

- > need for more modular blockchain components
- > the only upstream PR was for remix (ctrl+s)
- > interoperability is only as useful as it is usable

从构建以太坊侧链的过程中，他们获取了一些经验，如需要更多的区块链组件等。

2018 年，他们在 ETC 社区发布了 Goerli、Kotti 测试网。今年二三月，与 ETC Labs 进行合作，与其开发团队致力于 go-ethereum 客户端的开发。另外还在今年八九月与 ETC Cooperative 进行合作，开发 Besu 客户端。

该团队目前正在开发四个主要工具：Anenome、Nodemap、Ultralight Beam、ChainBridge。

ETC 开发者关系
Developer Relations in Ethereum Classic
演讲嘉宾: Yaz Khoury

Why Are Developers Important?

"If a platform benefits from increased user adoption, it needs products and services to attract those users; an ecosystem of 3rd party developers is how they get built."

Reto Meier, Google Developer Advocate



Ethereum Classic Summit

开发者的重要性何在？对于 ETC 来说，开发者致力于开发智能合约和去中心化应用程序，用产品与服务吸引众多用户，用户接受度提高，才能使 ETC 这一平台获益。

What Is Developer Relations?



- Building awareness of the platform among developer communities.
- Create necessary tools and infrastructure to allow developers to build apps.
- Filing feature requests and bug fixes and tickets on Github and answering questions on Discord, Gitter and StackOverflow.
- Writing documentations, how-to guides, and building demo apps.

TLDR: DevRel is the interface between developer communities and the product stakeholders



Ethereum Classic Summit

开发者关系是指开发者与 ETC 权益持有者之间的关系。

Quantifying Success in DevRel

- DevRel ROI is hard to quantify.
- It's a mixture of data signals + gut feelings/sentiments in the community.
- Online engagement metrics are important (Twitter mentions, Github forks, Medium shares)
- In-person connections difficult to quantify, equally important:
(types of developers in attendance, sponsor interactions, themes)



Ethereum Classic Summit

判定开发者关系是否良好，主要看开发者网上互动的三大指标：推特上的转发、Github 上的复制以及 Medium 上的评论，线下互动与联系这一指标也同等重要。

Challenges in Crypto DevRel

- Crypto has a lot of politics, which can be intimidating for developers.
- DevRel in crypto needs to deal markets, prices, tribalism when advocating
- Protocol/Dapp dev have more conflicts in ecosystem



Ethereum Classic Summit

加密生态系统中，在协议、Dapp 方面，开发者之间的矛盾争议更多。

DevOps - Ethercluster



ETHERCLUSTER

- Born because of a lack of support in Infura for ETC.
- Provides scalable ethereum-classic and ethereum infrastructure for dapps and wallets.
- Open-source while Infura is closed source.
- Popular in both ETC and ETH communities
(Infura is centralized)



最重要的 ETC 开源项目是 Ethercluster。作为 Infura 的替代品，Ethercluster 项目为 ETC 与 ETH 提供了具有可扩展性的 Dapps 与钱包基础设施。

Projects that use Ethercluster

- Jade Explorer works with Ethercluster
- Metamask works with the Ethercluster endpoint
- SecondState's BUIDL IDE for ETC
- Two Infura-competitors are referencing Ethercluster design for their products.
- Several dapp developers and devop engineers are interested in contributing.



Ethereum Classic Summit

Ethercluster 已投入使用。

Future Plans for Dapps on ETC

- Add dapps that work with decentralized oracles.
- Add dapps that focus on mixers and anonymity.
- Add fun social dapps for Token Coin Registry.
- Add DAOs for fun experiments.

Plans for collaboration on open source improves relations with third-party developers.



DevRel 未来将加强开源方面的协作，这有利于改善与 ETC 第三方开发者之间的关系。

Cooperative Cross-Projects

- Project Goerli/Kotti testnet runs on Ethercluster
- Peacebridge uses Ethercluster and Kotti testnet
- Hyperledger Besu for ETC will be running on Ethercluster when ready.



合作性跨项目也在不断发展中，如 Goerli/Kotti 测试网在 Ethercluster 上运行等。

Outlook for Future Cooperative Projects

- More Ethercluster improvements and features
- More dapps
- Provide frameworks for dapp cybersecurity
- More data analysis and research
- Robotics and Machine Learning with ETC.



Ethereum Classic Summit

当然也少不了计划未来进行的合作性项目，如改进、开发更多 Ethercluster 功能，开发更多 Dapps，做出更多数据分析与研究，促进 ETC 机器人学习与机器学习的发展。

Future of Dev/Community Outreach

- Give more conference talks about ETC development
- Sponsor more hackathons
- Hack with other devs on more ETC projects at hackathons
- Do more meetups!



Ethereum Classic Summit

他们未来也将积极拓展与开发者、社区间的互动，发表更多关于 ETC 发展的会议演讲，赞助更多黑客松，与开发者一起研究更多 ETC 项目，开办更多交流会。