Bitcoin SV 开发技术与工具概览 2.0

Gu Lu, 2021.04

Bitcoin SV 1st Bootcamp

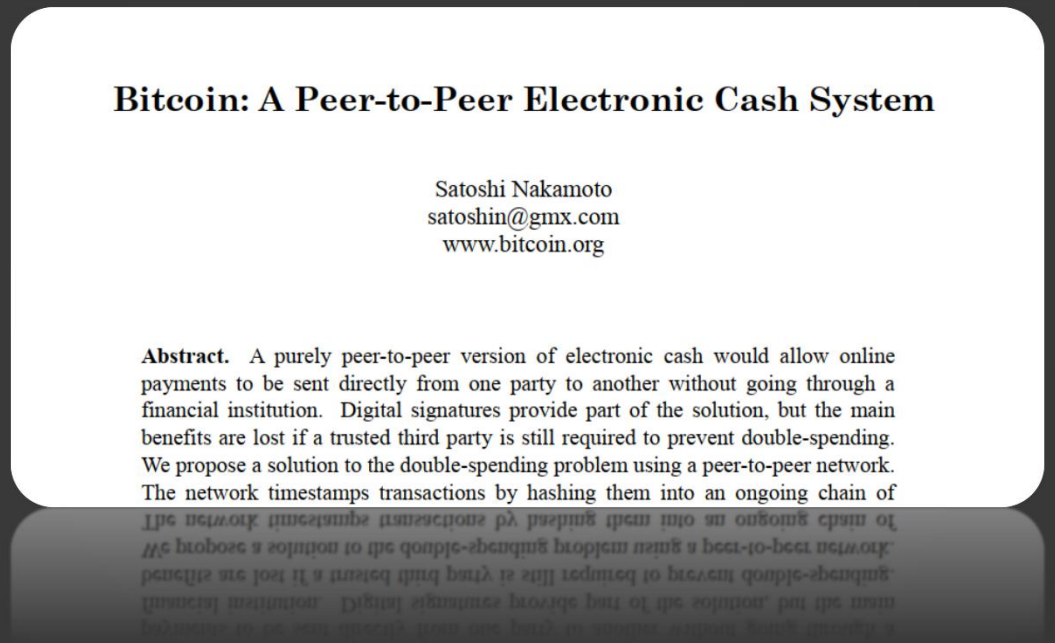
Overview

- 协议 Protocols
- 工具 Libs & Tools
- 服务 Services
- 框架 Frameworks
- 理论 Theory

- **nChain** Tech
- **Xoken** Tech
- **Sensible** Tech

协议 Protocols

the bitcoin whitepaper



Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto
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Abstract. A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of

交易

交易，是比特币的核心目的。链状的签名只是一种实践。

第一性原理：打破知识的藩篱，回归到事物本源去思考基础性的问题，在不参照经验或其它已有系统的情况下，从物质/世界的最本源出发思考事物/系统。

时间

时间的不可逆特性，被固化为“区块”，由 POW 保证。

这种不可逆，既体现为链状数据结构，也体现在区块内交易按照时间的自然排序。

P2P 节点网络

激励 & 诚实

效率 & 优化

尺寸优化，SPV，良好的 UTXO 集管理

隐私 & 信任

“去掉 trusted third party”所带来的实际效用

用户体验：“隐私友好”&“信任无关”

	理论	实践
目的	交易（第一性原理）	链状签名
方式	时间（不可逆性）	链状区块 & POW
增长	P2P 节点网络	激励 & 诚实
效率	极大规模下的可持续性	紧凑化、SPV & UTXO 管理
体验	保护隐私，降低信任成本	去除第三方、公私钥管理

Bitcoin: A Peer-to-Peer Electronic Cash System

协议 Protocols

应用层协议 (B/C/D/BCAT)	数据的存储和索引
metanet	数据的结构化组织

库

- bitsv (Python)
- bsv (JavaScript)

工具

sCrypt

服务

- MetaSV
- whatsonchain
- Sensible API

框架

- runonbitcoin
- MetaID
- Sensible Contract

理论

- craigwright.net
- Theory of bitcoin (on Youtube)

协议 Protocols

工具和库 Libs & Tools

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nChain Tech

mAPI	fee discovery; tx submission
SPV	tx & utxo validation
nakasendo	threshold signature

SPV Channels（incorrect）

SPV Channels 依托于矿工网络的高效 P2P 通信

- 借助矿工网络（高效，scalable）
- 端对端加密（无许可通信）
- NAT 穿透（peer 主动发起连接）
- 消息缓存（客户端可离线）

兼具 P2P 和中心服特性

不准确的说法！

SPV Channels (revised)

SPV Channels 中心服辅助通信

- 端对端加密 (无许可通信)
- NAT 穿透 (peer 主动发起连接)
- 消息缓存 (客户端可离线)

一个典型的中心化
消息业务服

2021.04 修正

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TouchStone

依托于矿工网络的 P2P 加密通信

协议 Protocols

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Infrastructure

TeraNode

Xoken

Massive Distributed

Parallel TX processing

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Transpose Merkle Tree (TMT)

通过转置所有中间的缓存节点，使得由叶节点向根节点的遍历直接包含了所需的默克尔证明。所有的叶节点和根节点，仍保持原位置不变。

通过对默克尔树一次预处理并存到 Graph DB 里，极大地降低了处理T级区块的内存占用，这样（即使树莓派这样的）运算单位也能处理 T 级区块了

Xoken – NEXA

- 高性能处理 T 级区块的 SPV
- Neo4j (Graph DB) 对 TMT 友好
- TMT 实现针对 T 级默克尔树计算的极低资源开销
- Haskell 惰性求值实现 tx 流式处理

Xoken – VEGA

分布式，并行，长 tx 链友好，重组友好，TMT，bitcoin sharding

- Fully distributed transaction processing cluster, scale-out by adding more nodes.
- Massively parallel transaction processing – Parallel Fork/ Block/ Transaction processing
- Virtually instantaneous chain-reorgs, no additional processing required to accommodate the chain re-organizations.
- Sharding done right: ensures low cross-shard communication (storage and compute nodes), and is thus a "true scale-out" solution, i.e. provides linear or near-linear increase in performance
- Potentially Unlimited chained transactions – can validate tx-chain in logarithmic time

Xoken

Massive Distributed Parallel TX processing

交易，是比特币的核心目的。

物理存储，拓扑结构，代码实现在这一层不重要。（第一性原理）

Token Solutions

Tokenized	Centralized	Regulation friendly
Fabriik SFP	Centralized	UTXO + OP_RETURN
Badge	Open-source Processor	UTXO + OP_RETURN
CUP	3rd Party Authentication	Lightweight Contract
BTP	UTXO-Set in Oracle	Full-featured Contract Payload

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Sensible Tech

1. full-featured contract logic

   no stateful oracle — no 3rd-party authentication

2. full-featured contract data payload

   verifiable critical fields — no op-return for this

3. fully decentralized

   miner validation — no need for authenticator / validator

4. " bitcoinic "

   suite well with metanet — support SPV exactly as same as bitcoin

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Sensible SV

Sensible Tech (comes at a price)

1. full–featured contract logic
2. full–featured contract data payload
3. fully decentralized
4. “bitcoinic”

comes at a price:

1. a minimal signature service (external)
2. heavy–weighted scripting (bigger size)

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BCPs

BCP 01

NFT

BCP 02

Token (FT)

BCP 03

Unique Contract

BCP 0x ...

(to be revealed)

"automation of agreements with easily definable transaction steps"

– the "official narratives" about contract

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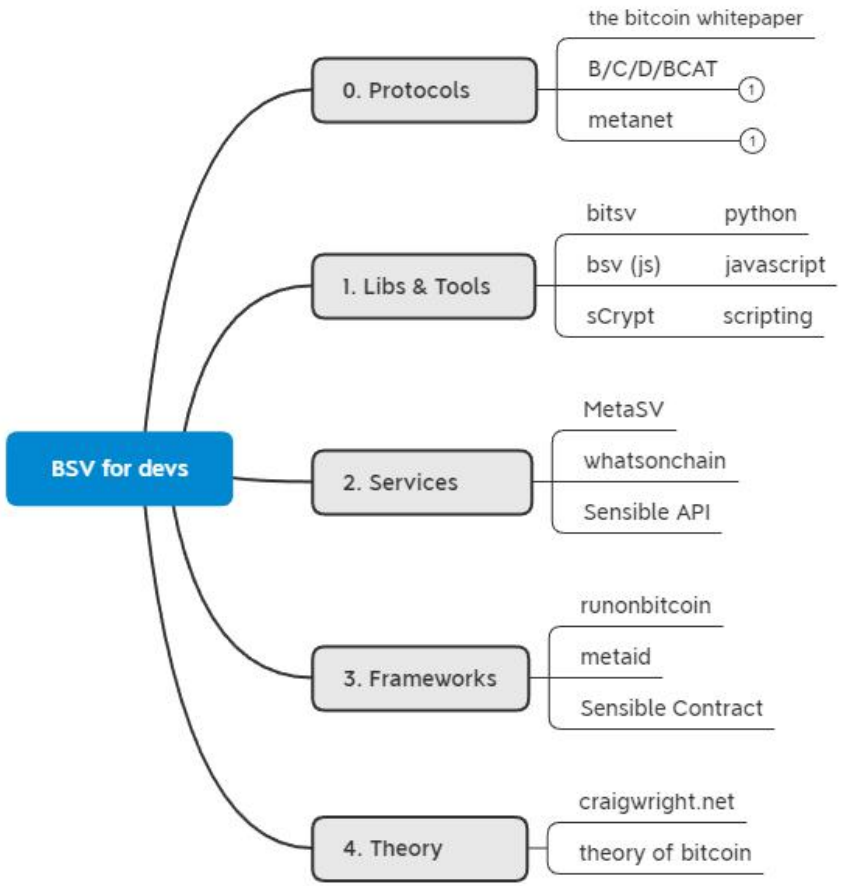
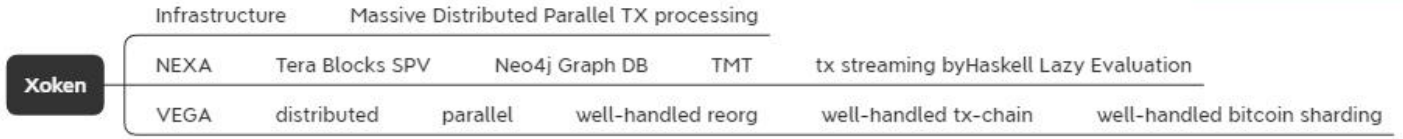
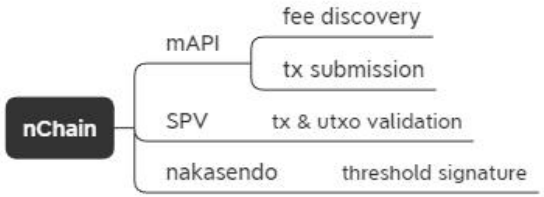
Take–away



Bitcoin SV 开发技术概览 (v0.2)
2021.04.08
Gu Lu





"automation of agreements with easily definable transaction steps"

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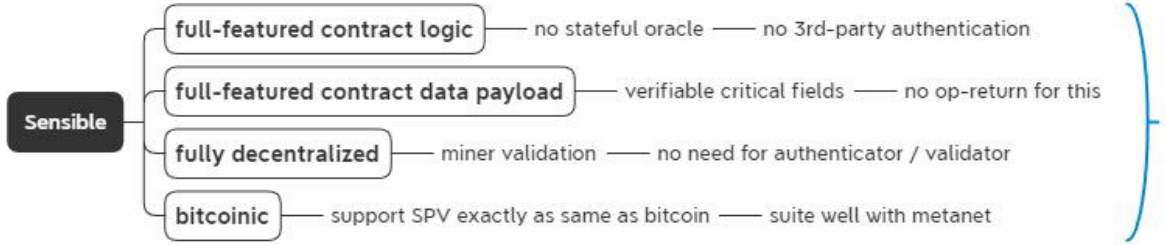

comes at a price:

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2. heavy-weighted scripting (bigger size)

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Thank you

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