Stateless Ethereum Roadmaps

Highly un-official introduction

From Alexey Akhunov

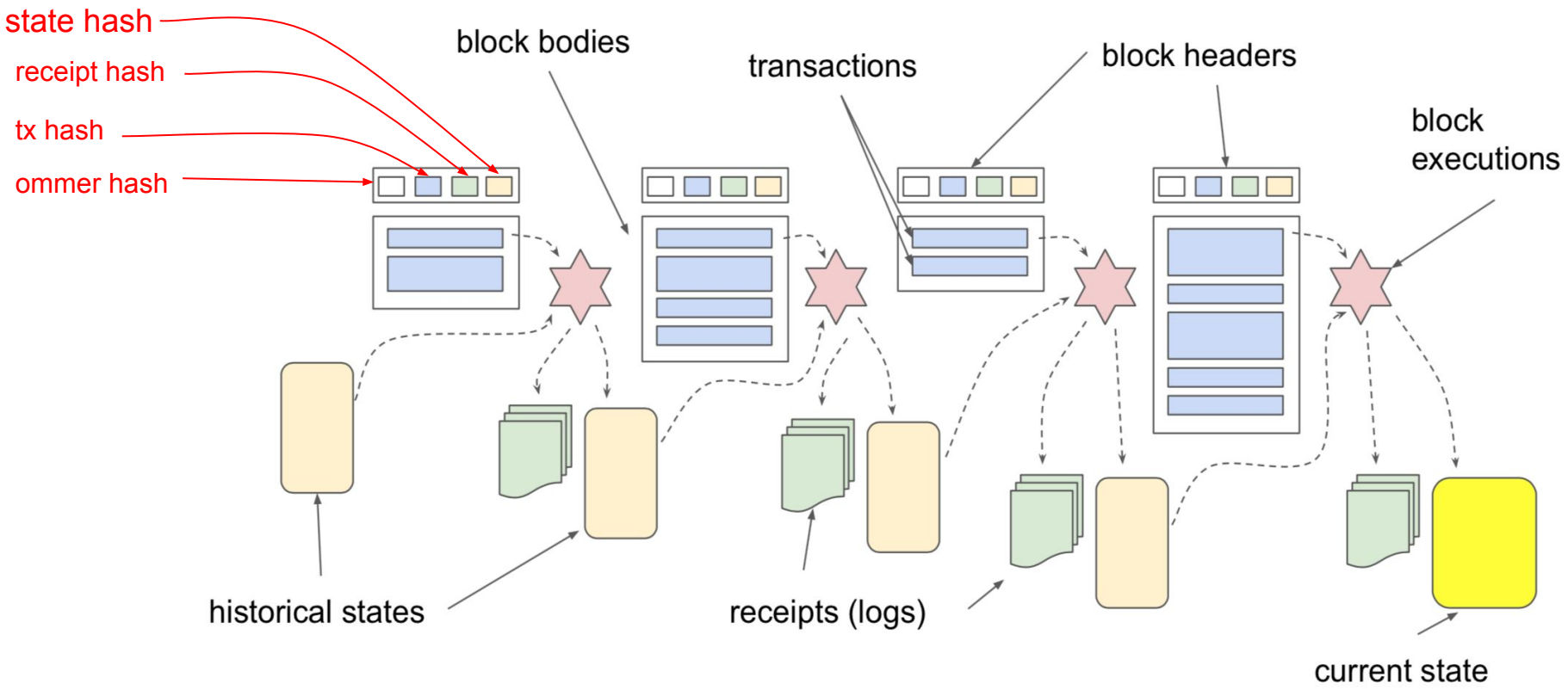
1. What is the problem statement?
2. What are the current priorities?
3. Why are there 3 roadmaps?

From: https://github.com/ethereum/stateless-ethereum-specs/blob/master/roadmaps.md

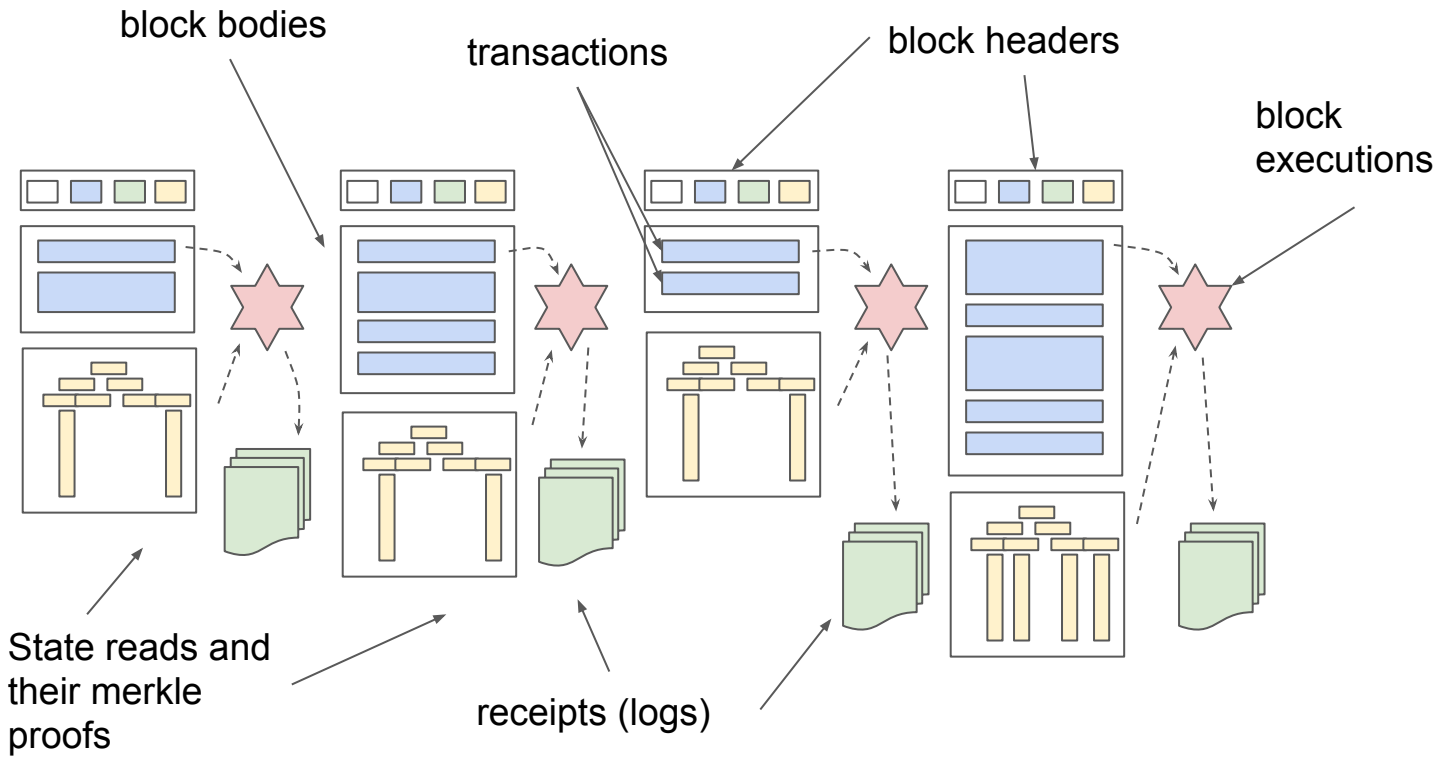
Problem statement

Preserve the resilience of Ethereum 1 network despite the state growth. By making it easier to join the network and stay on it, and therefore increasing number and diversity of nodes. The improvement in the User Experience is not in the scope.

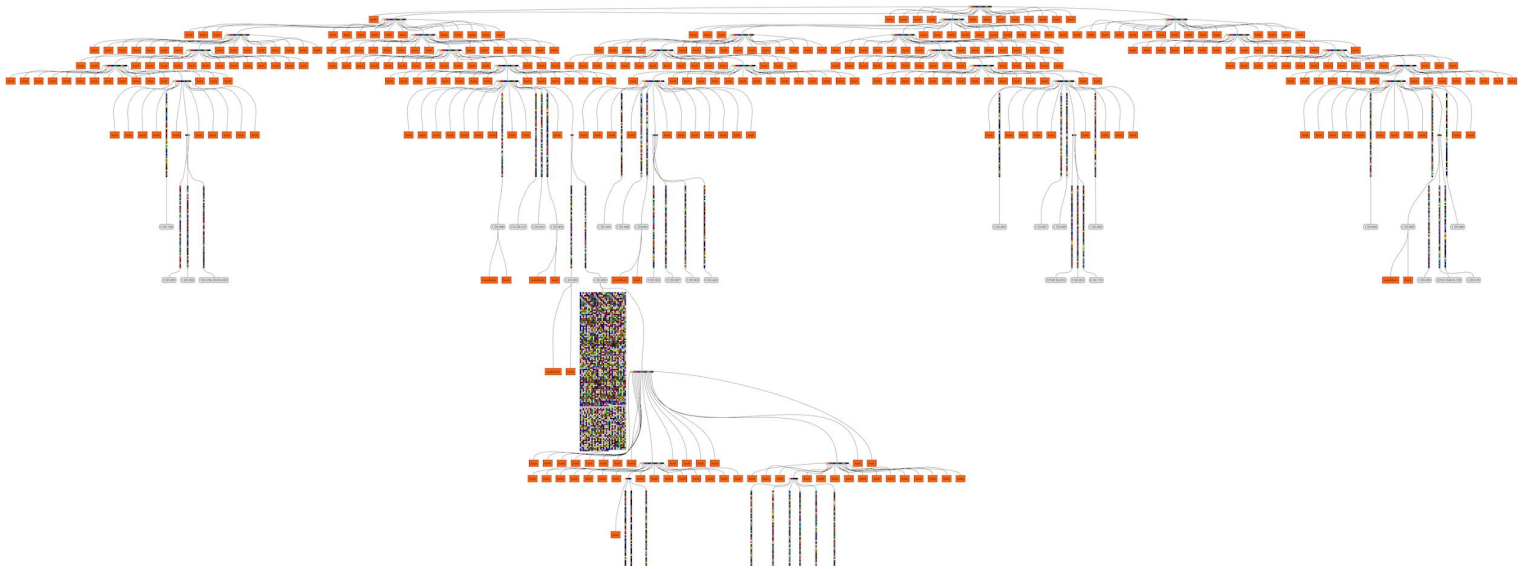
Block processing in Ethereum



Block processing in Stateless Ethereum



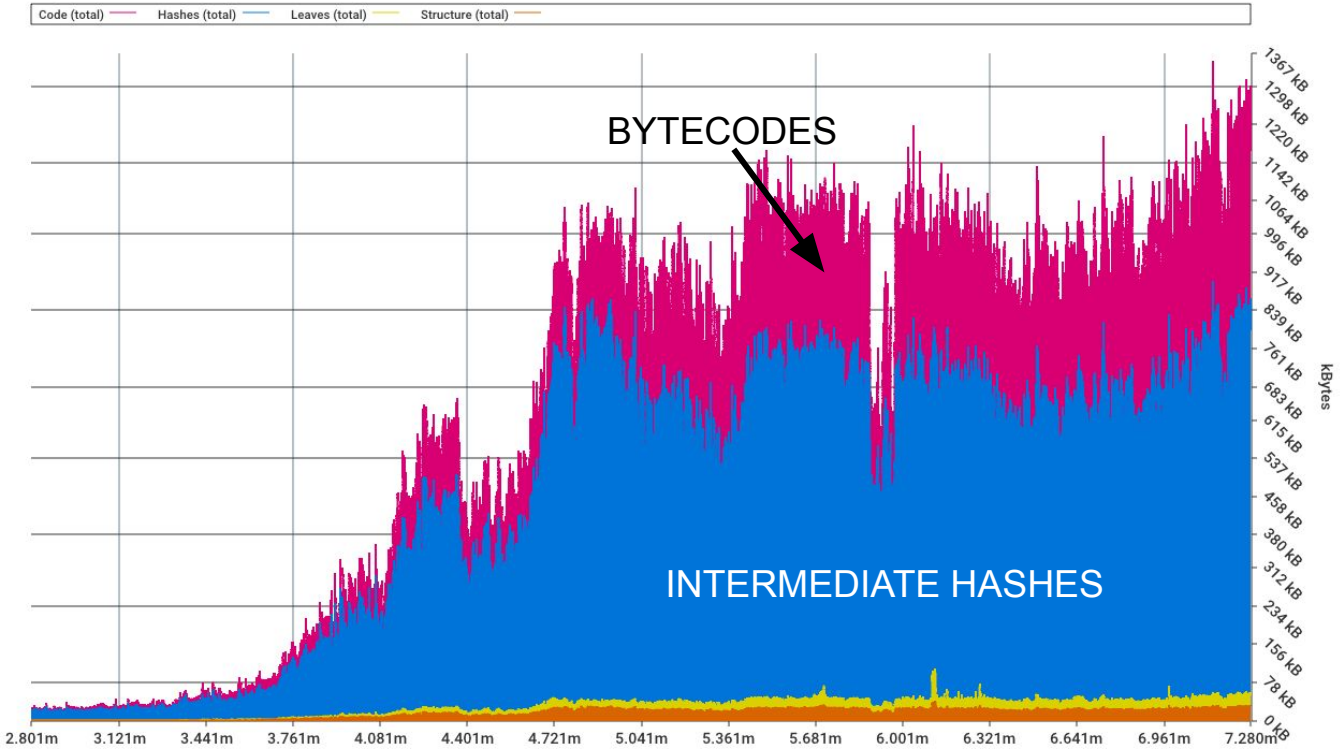
Block witness (block 5790929)



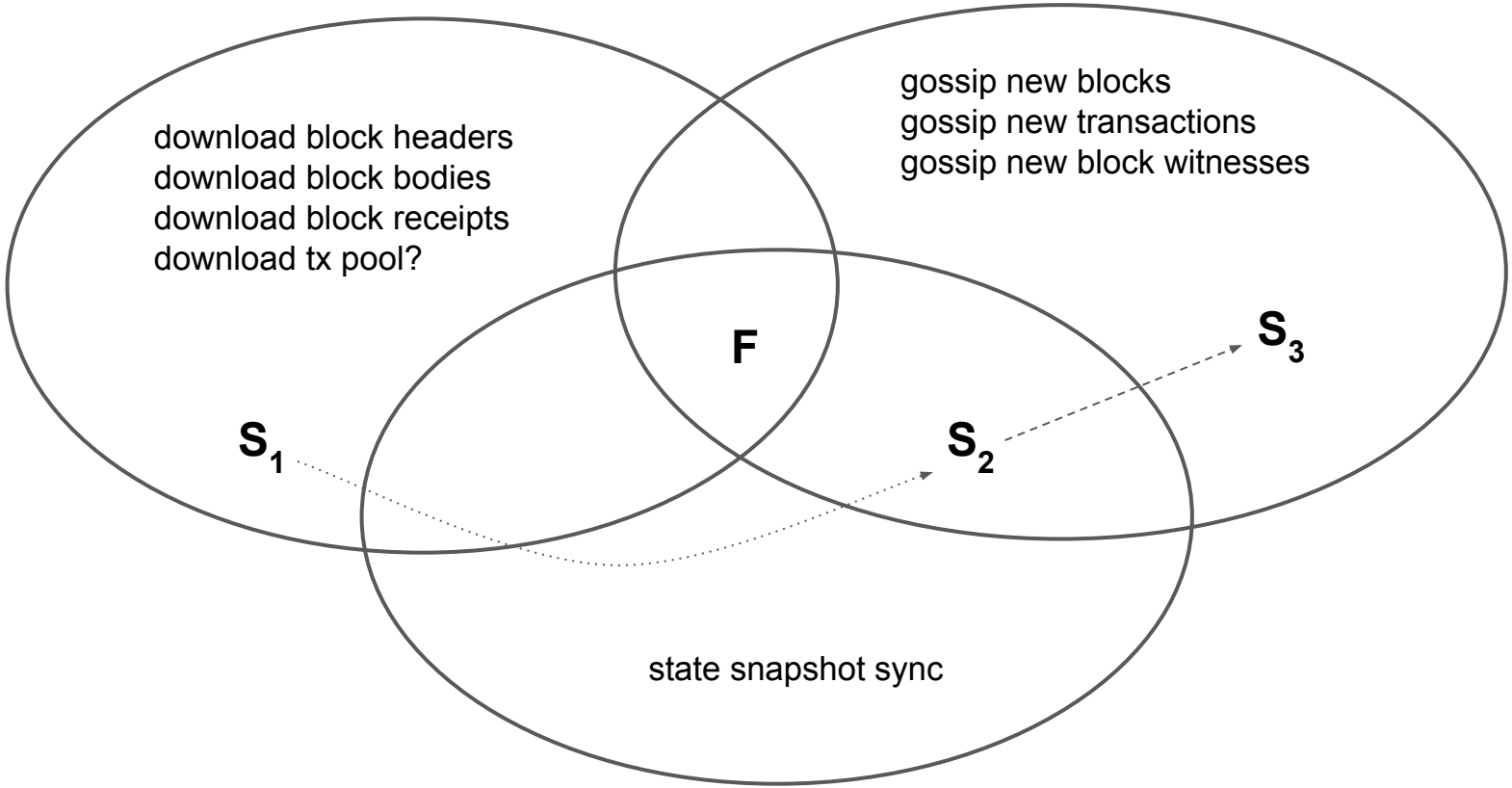
A total of 2 transactions found

Txn Hash	Block	Age	From		To	Value	[Txn Fee]
0xa309ebd90b42c0…	5790929	619 days 20 hrs ago	0x99fe5d6383289c…	→	0x9817c4d9c7ab47…	0 Ether	0.00239929
0x48d0e118d3b468…	5790929	619 days 20 hrs ago	0xd6cb6744b7f2da…	→	0x0c2ac875b6a015…	0.21 Ether	0.002814

Block witness sizes



Three networks



Three roadmaps

1. Tools
    a. Network simulations
    b. EVM semantics
    c. State growth and witness generation
2. Research
    a. Witness reduction strategies (hexadecary => binary state tree, code merkle tree, semi-stateless)
    b. Witness tiles for more efficient relay
    c. Incentivisation of witness generation and relay
    d. Transaction witnesses (proof of balance + proof of nonce)
3. Implementation
    a. Merry-Go-Round sync network?
    b. ...

Merry-Go-Round Sync