# Layer2 Solutions

Shu Dong
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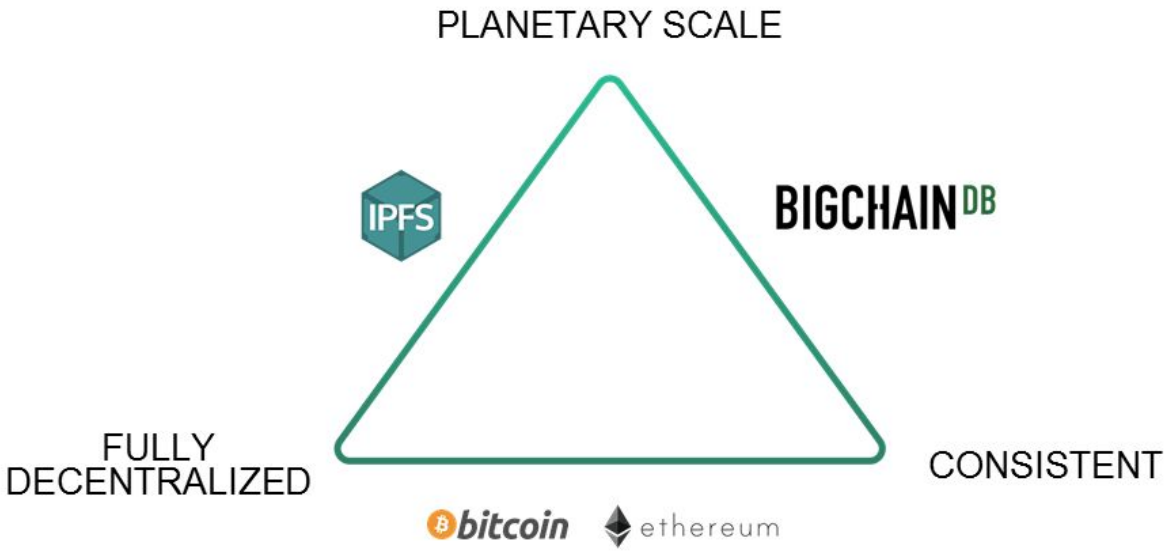
# Background


PLANETARY SCALE
IPFS
BIGCHAINDB
FULLY DECENTRALIZED
CONSISTENT
bitcoin
ethereum

# Explorations

- Consensus(PoS, DPos)
  - Casper, EOS
- Sharding
  - Quarkchain
- Block DAG
  - IOTA

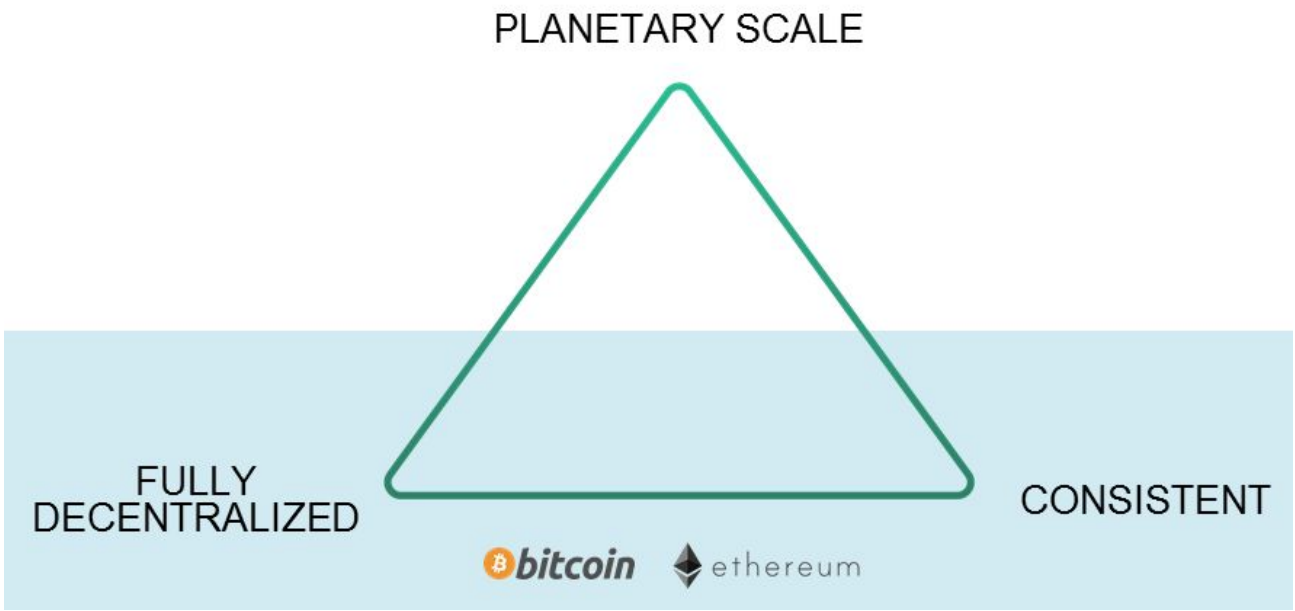
# Another Perspective

**What if Blockchain will never scale?**

**Blockchain is expected to be inefficient and expensive.**

- The high cost of communication is inevitable

# Layered Solution



# Role of Layer 1

**Blockchain As A Court.**

- Finality
- Security
- Decentralization

# Layer2 Solution

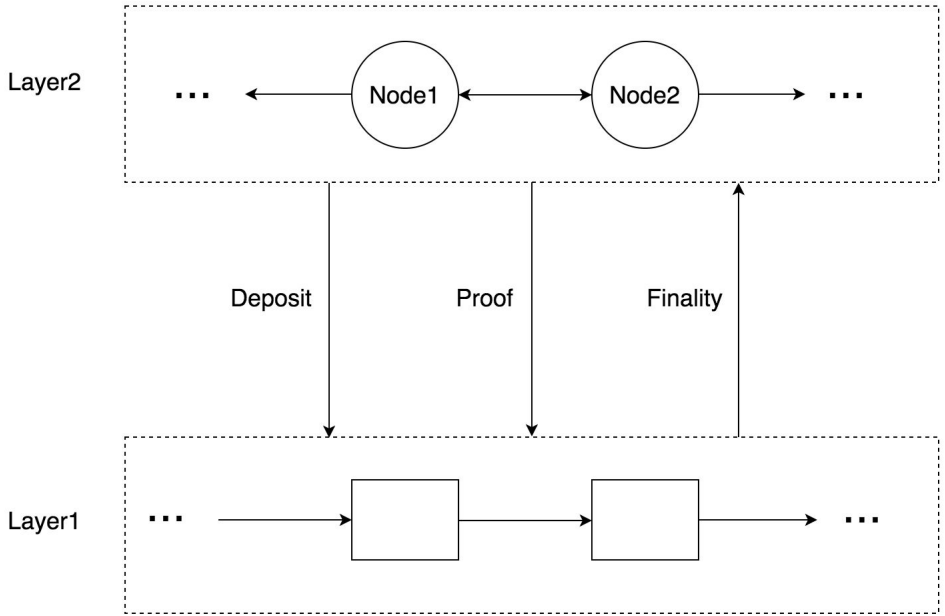
**Mechanism**

1. Each entity in Layer 2 makes some deposit in Layer 1
2. Entities in layer 2 flush their state to Layer 1 periodically
3. Entities should be able to submit the proof to layer 1 for any violations in layer 2
4. Layer 1 will finalize the result according to the predefined layer 2 rules

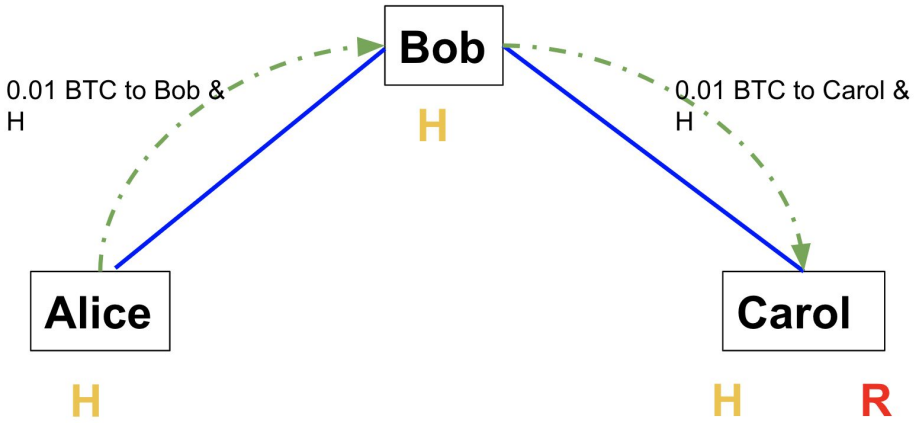
**Notes**

1. Layer 2 can have its own tokens but its finality is guaranteed by Layer 1
2. Layer 2 has to define its own mechanism to ensure its security(pre-defined rules)

# Layer2 Solution

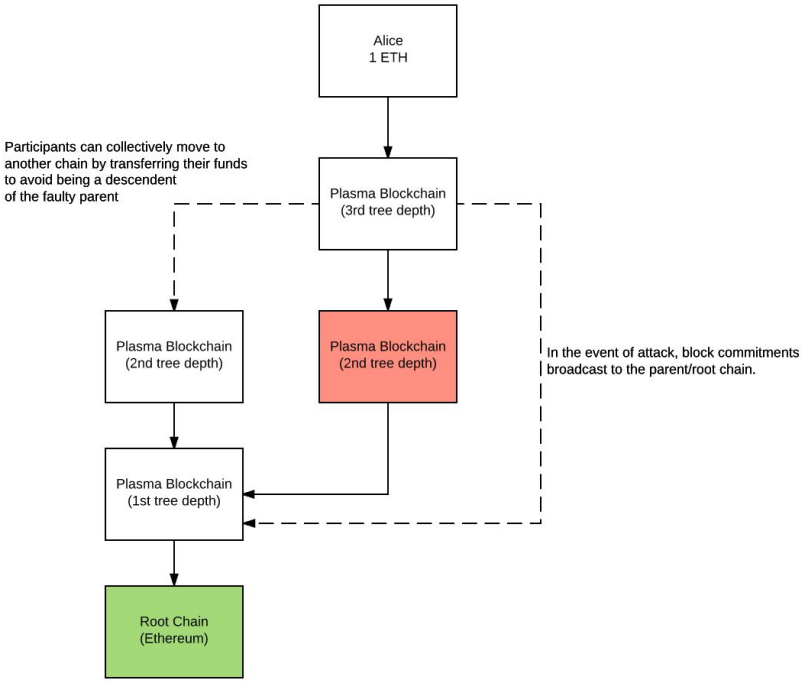


# State Channel



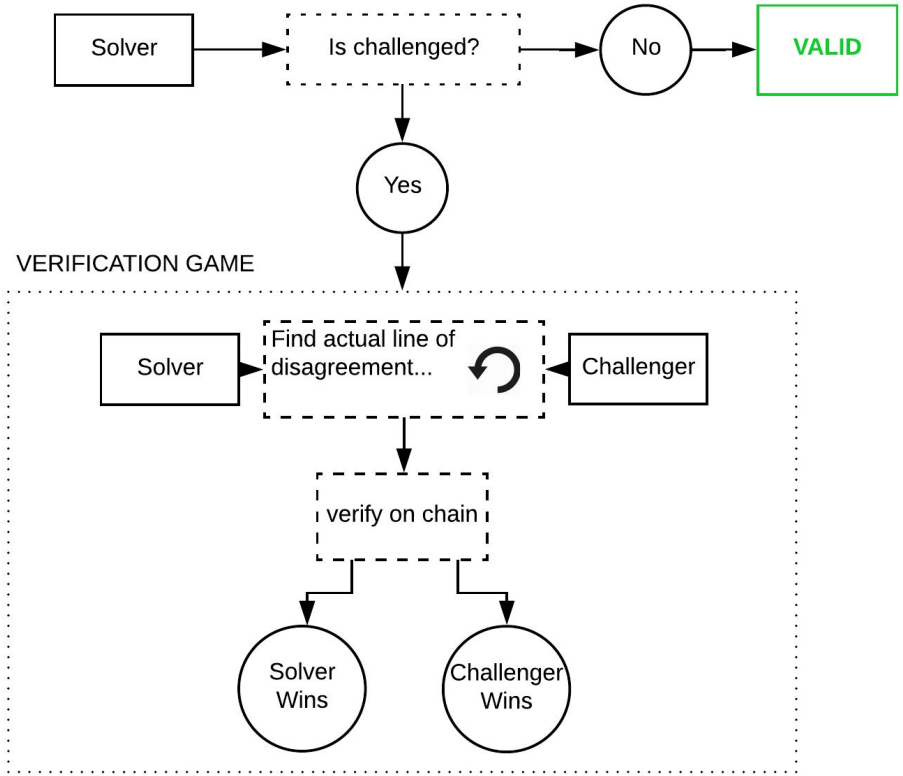

There is a trade off between Liquidity & Security

# Plasma: Blockchains in Blockchains



# Truebit

*Truebit won't let us do more transactions, but it will let ethereum based applications do more complex things in a way that can still be verified by the main-chain.*

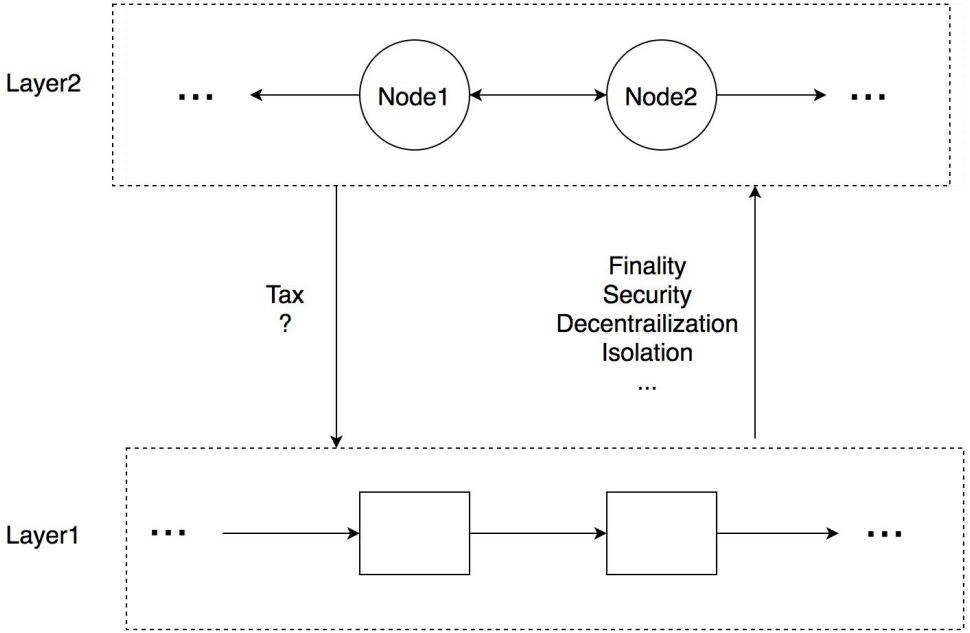


# Other Cases

Two Layer Solutions

- Quarkchain: tax
- Difinity: randomness
- MOAC: isolation + randomness

# Generalized Layer 2 Solutions



# Reference

Making Sense of Ethereum’s Layer 2 Scaling Solutions: State Channels, Plasma, and Truebit
https://medium.com/l4-media/making-sense-of-ethereums-layer-2-scaling-solutions-state-channels-plasma-and-truebit-22cb40dcc2f4

# Thank you!

Shu Dong
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