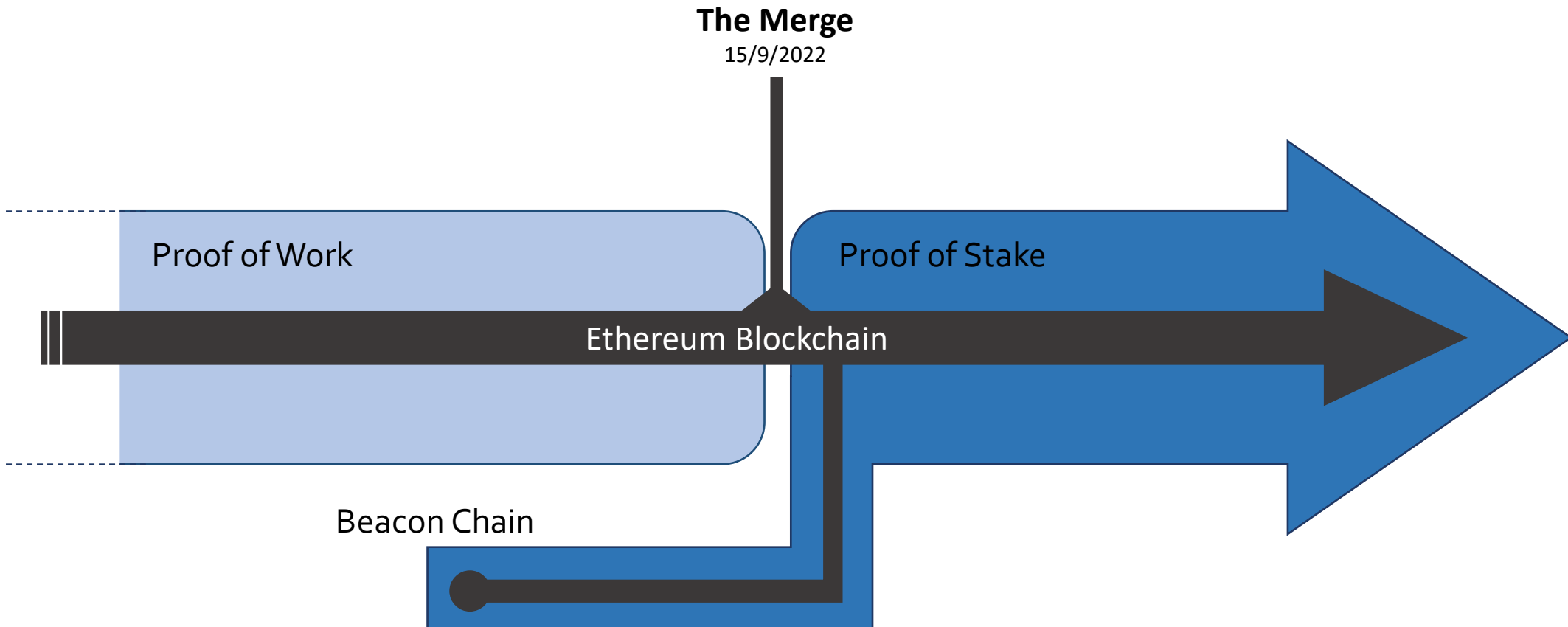**Exploiting Ethereum after "The Merge":**
The Interplay between PoS and MEV Strategies

Davide Mancino, Alberto Leporati, Marco Viviani, and Giovanni Denaro

Bologna – DLT23

Concerns about decentralization

Ethereum at the center of centralization debate as SEC lays claim

Ethereum's transition to PoS was celebrated as a key upgrade. However, a month after the move, centralization concerns are mounting high.

COINTELEGRAPH
The future of money

Big Firms Dominate Post-Merge Ethereum Validation

The shift to proof-of-stake has analysts exploring its impact on the blockchain's much-touted decentralization.
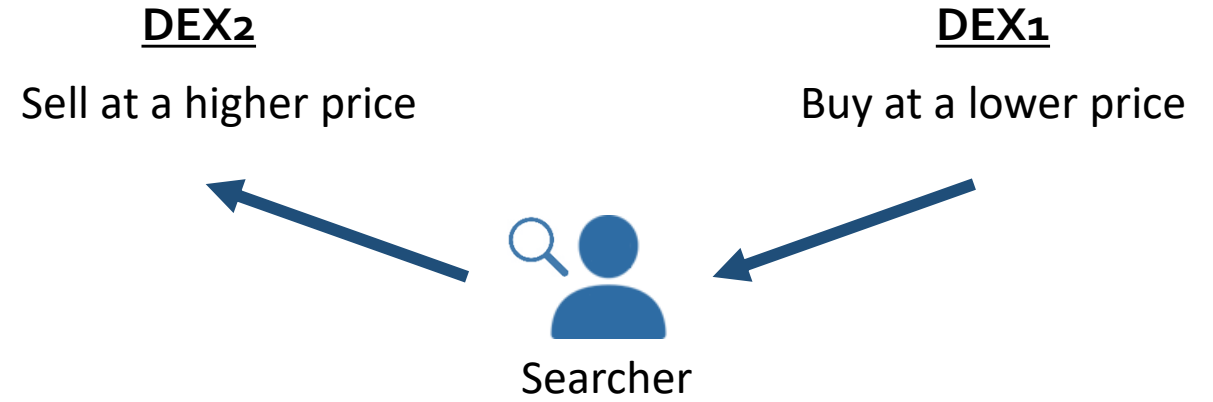
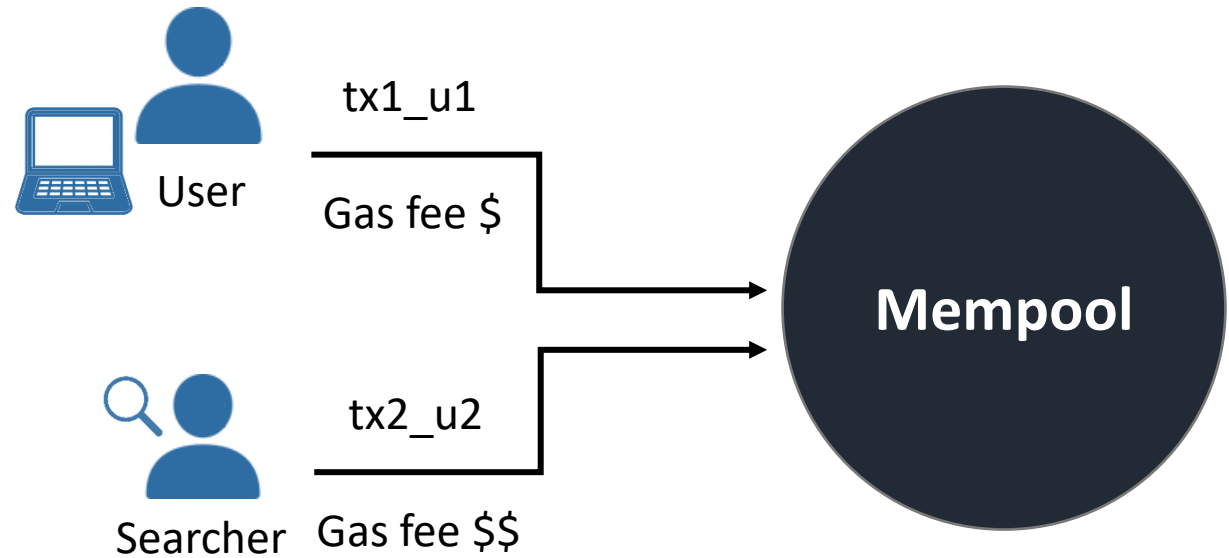**Decrypt**

Maximal Extractable Value (MEV)

- **Maximal Extractable Value (MEV)** strategies acting on including, excluding or, rearranging transactions to obtain additional value in terms of cryptocurrency.

Arbitrage

DEX2
Sell at a higher price

DEX1
Buy at a lower price

Searcher

Frontrunning

User
tx1_u1
Gas fee $

Searcher
tx2_u2
Gas fee $$

Mempool
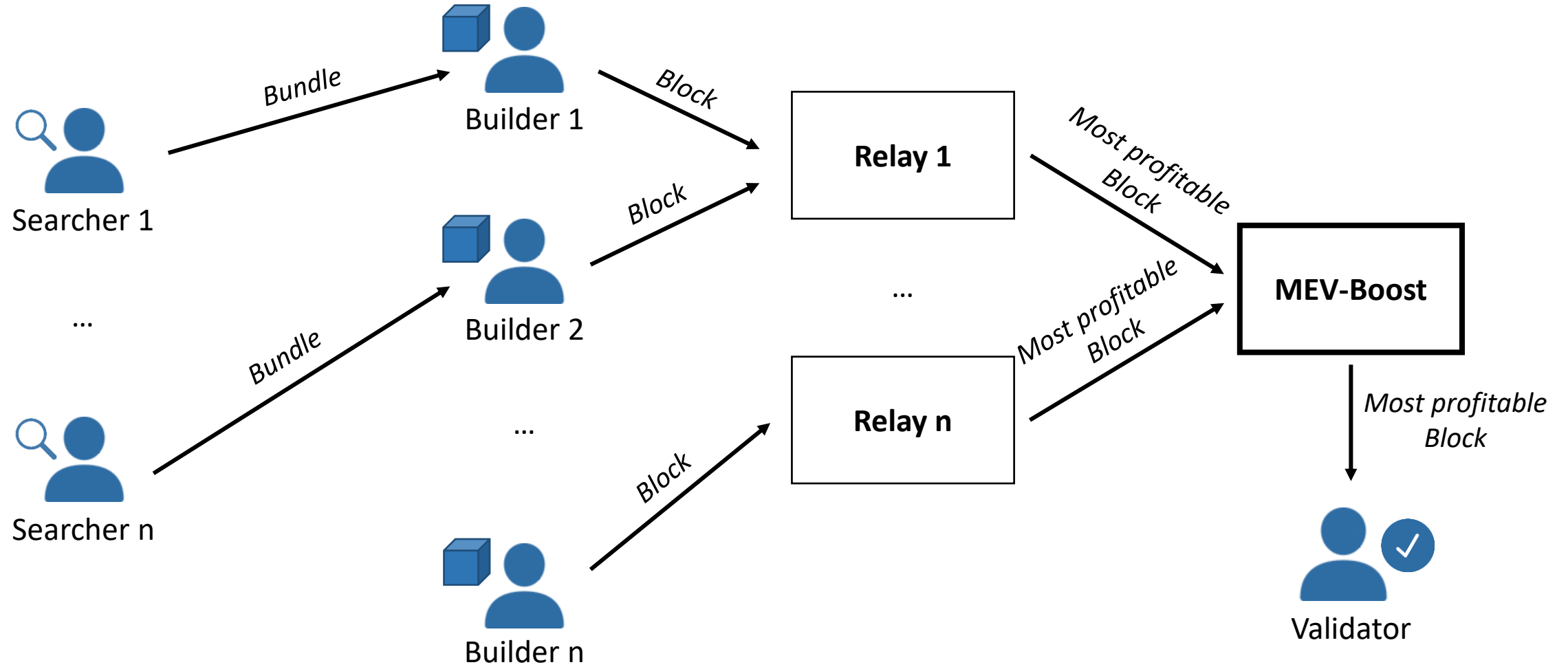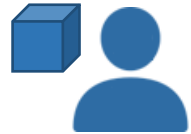
MEV Ecosystem in Ethereum

MEV and rewards

 Searcher — MEV transactions

 Builder — Block Rewards (Priority fee)

 Validator — Builder's payment

Data Collection

936,839 blocks from The Merge
from 15/9/2022 to 24/1/2023
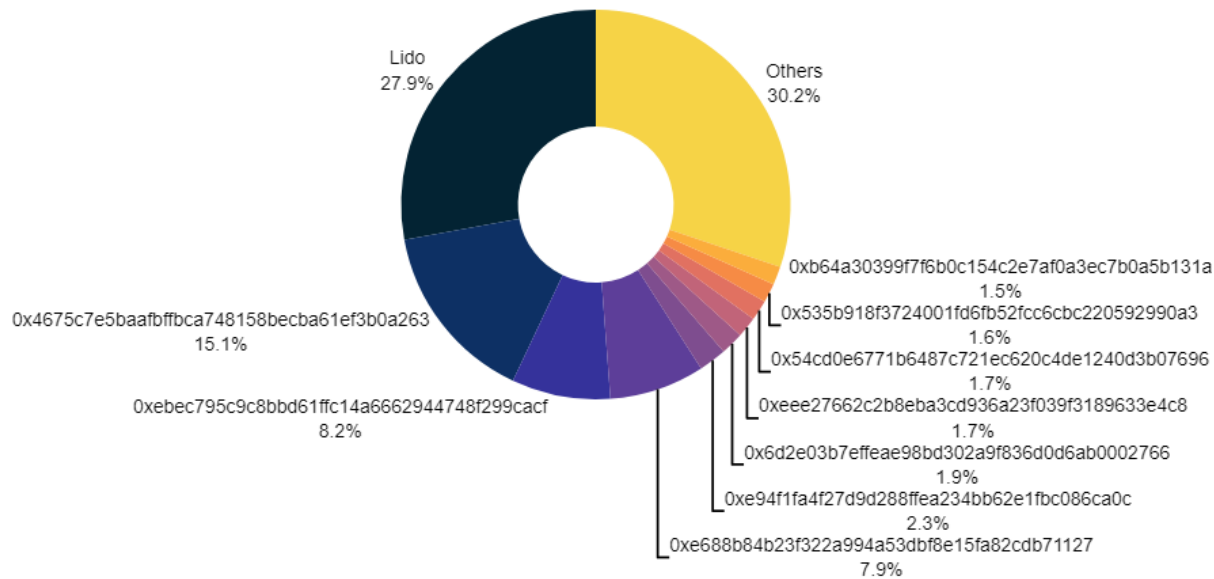
Data
Collection

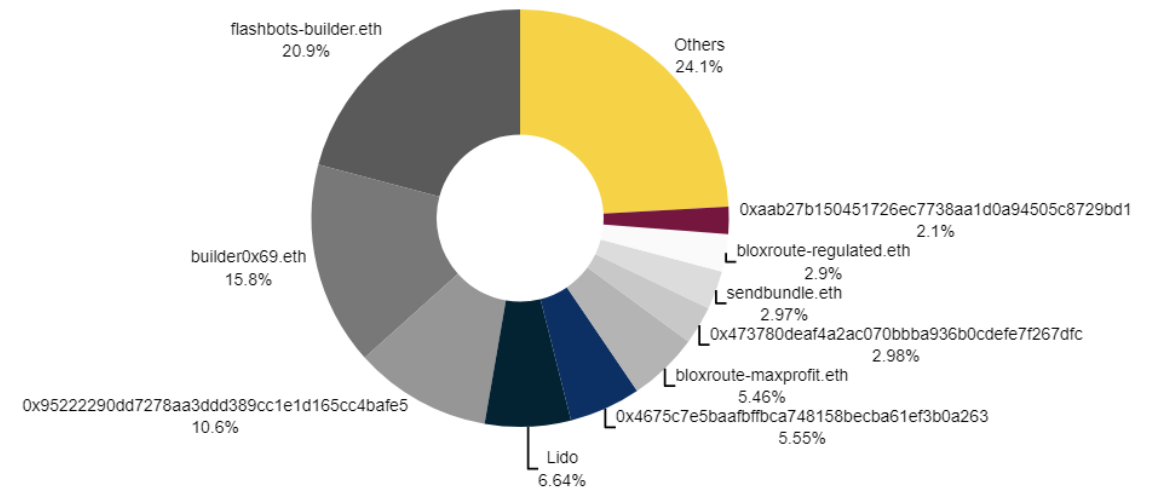Flashbots Relay API

Infura API

Etherscan API

Blocks after Ethereum's "The Merge"

Fee recipient analysis

First 1,000 blocks

Lido
27.9%

Others
30.2%

0xb64a30399f7f6b0c154c2e7af0a3ec7b0a5b131a
1.5%

0x535b918f3724001fd6fb52fcc6cbc220592990a3
1.6%

0x54cd0e6771b6487c721ec620c4de1240d3b07696
1.7%

0xeee27662c2b8eba3cd936a23f039f3189633e4c8
1.7%

0x6d2e03b7effeae98bd302a9f836d0d6ab0002766
1.9%

0xe94f1fa4f27d9d288ffea234bb62e1fbc086ca0c
2.3%

0xe688b84b23f322a994a53dbf8e15fa82cdb71127
7.9%

0xebec795c9c8bbd61ffc14a6662944748f299cacf
8.2%

0x4675c7e5baafbffbca748158becba61ef3b0a263
15.1%

First 936,869 blocks

flashbots-builder.eth
20.9%

Others
24.1%

0xaab27b150451726ec7738aa1d0a94505c8729bd1
2.1%

bloxroute-regulated.eth
2.9%

sendbundle.eth
2.97%

0x473780deaf4a2ac070bbba936b0cdefe7f267dfc
2.98%

bloxroute-maxprofit.eth
5.46%

0x4675c7e5baafbffbca748158becba61ef3b0a263
5.55%

Lido
6.64%

0x95222290dd7278aa3ddd389cc1e1d165cc4bafe5
10.6%

builder0x69.eth
15.8%

936,839 blocks after Ethereum's "The Merge"
Fee recipient analysis

flashbots-builder.eth
20.9%

Others
24.1%

0xaab27b150451726ec7738aa1d0a94505c8729bd1
2.1%

builder0x69.eth
15.8%

bloxroute-regulated.eth
2.9%

sendbundle.eth
2.97%

0x473780deaf4a2ac070bbba936b0cdefe7f267dfc
2.98%

0x95222290dd7278aa3ddd389cc1e1d165cc4bafe5
10.6%

bloxroute-maxprofit.eth
5.46%

0x4675c7e5baafbffbca748158becba61ef3b0a263
5.55%

Lido
6.64%

Cleaned 936,839 blocks after Ethereum's "The Merge"
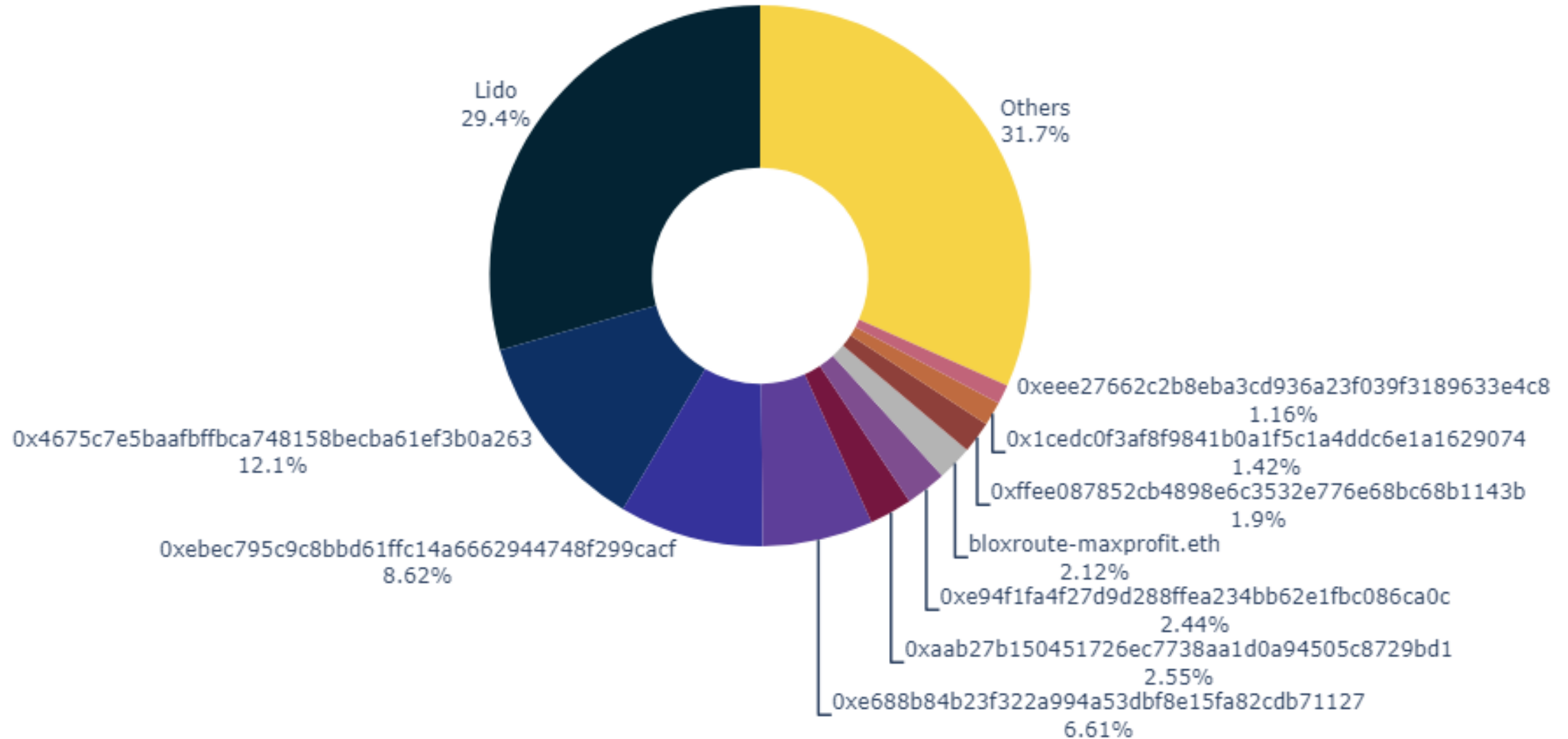
Open Questions

- For validators, are the rewards of the off-chain MEV ecosystem greater than Priority fees?

- How many different actors act within the MEV off-chain ecosystem?

- How much competition is there among builders to propose the most profitable block to the validator?

Thank you
for the attention

Questions?