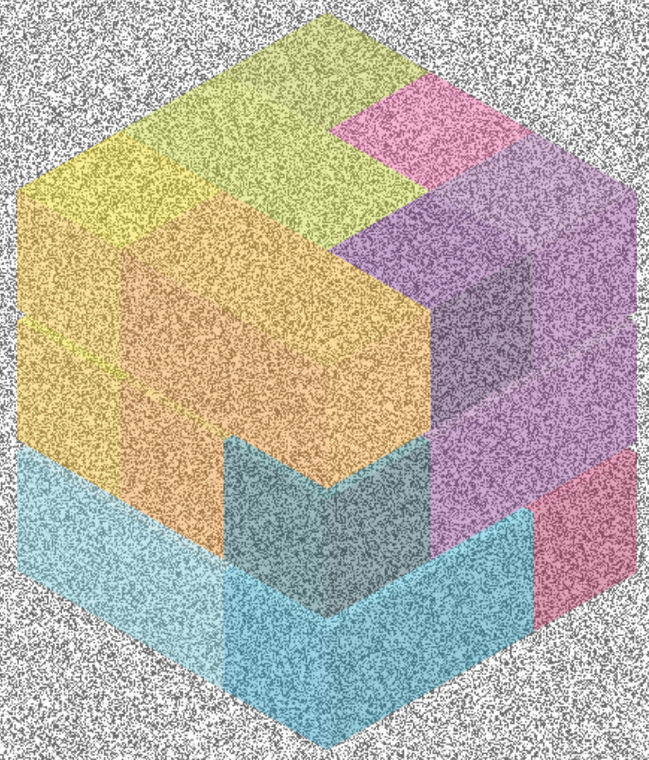

go-libp2p-noise

A new secure transport option for Eth2.0, Polkadot, Cosmos, and web3

ETHBerlin bzwei

Libp2p is a network layer framework that allows you to write decentralized peer-to-peer applications.

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Eth2.0
uses libp2p for p2p messaging

IPFS
uses libp2p for p2p messaging

Cosmos
considering libp2p for p2p messaging

Polkadot
uses libp2p for p2p messaging

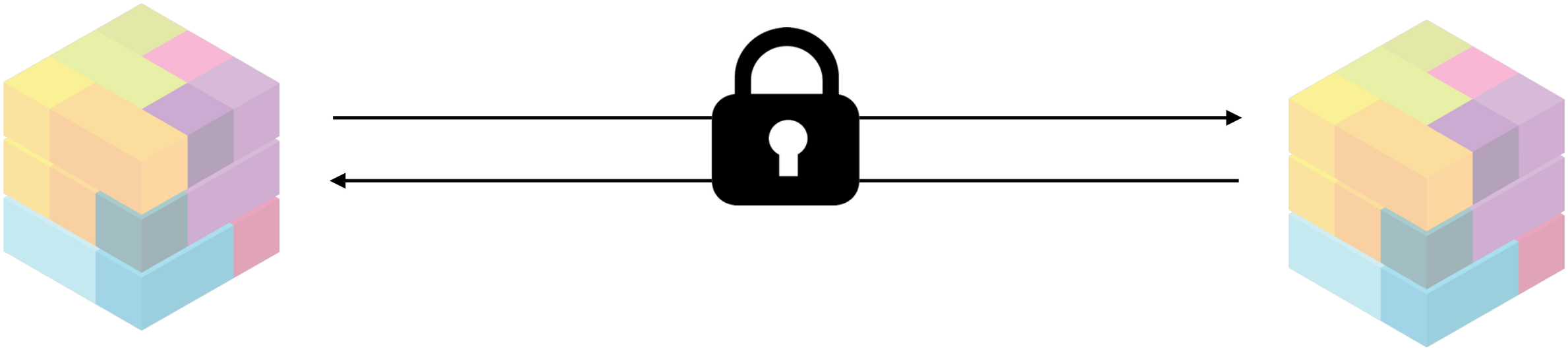
Why implement go-libp2p-noise?

“Ethereum 2.0 has tentatively picked the Noise Protocol Framework to conduct its cryptographic handshakes in mainnet. This decision is reflected in the Ethereum 2.0 networking spec.”

“Not implementing noise-libp2p would be a missed opportunity to improve libp2p's tech stack and grow the libp2p community, and may impact the roadmap for the Ethereum 2.0 mainnet launch.”

-libp2p devgrant brief

peerA



peerB

libp2p peers need a way to securely communicate.

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what is noise protocol?

Framework for building security protocols by composing a small set of cryptographic primitives into patterns with verifiable security properties.

```
IK:
<- s
...
-> e, es, s, ss
<- e, ee, se
```

```
IN:
-> e, s
<- e, ee, se
```

```
IX:
-> e, s
<- e, ee, se, s, es
```

```
K:
-> s
<- s
...
-> e, es, ss
```

```
KK:
-> s
<- s
...
-> e, es, ss
<- e, ee, se
```

```
KN:
-> s
...
-> e
<- e, ee, se
```

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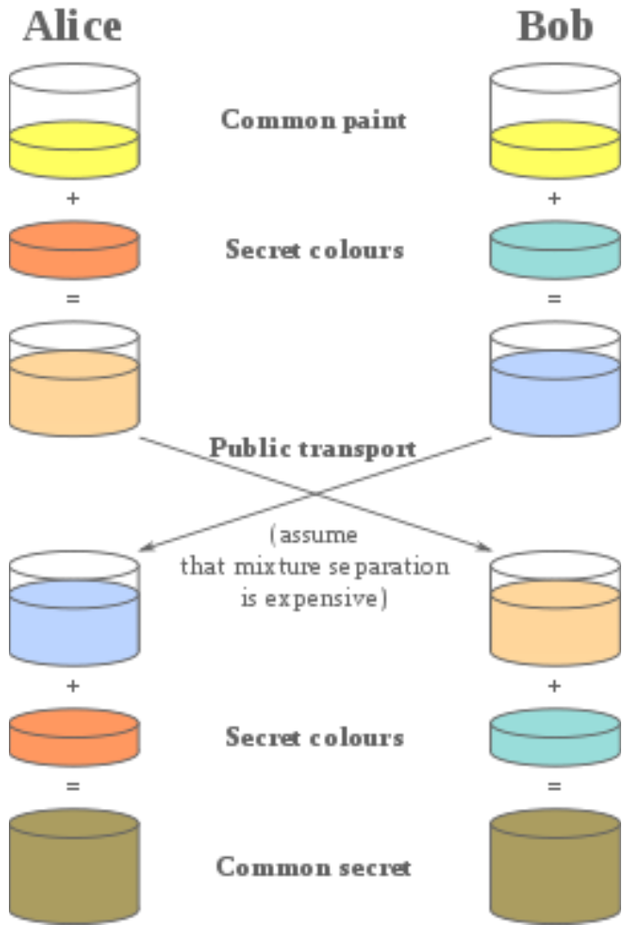
The noise protocol uses Diffie-Hellman operations to provide secure symmetric key encryption of messages.

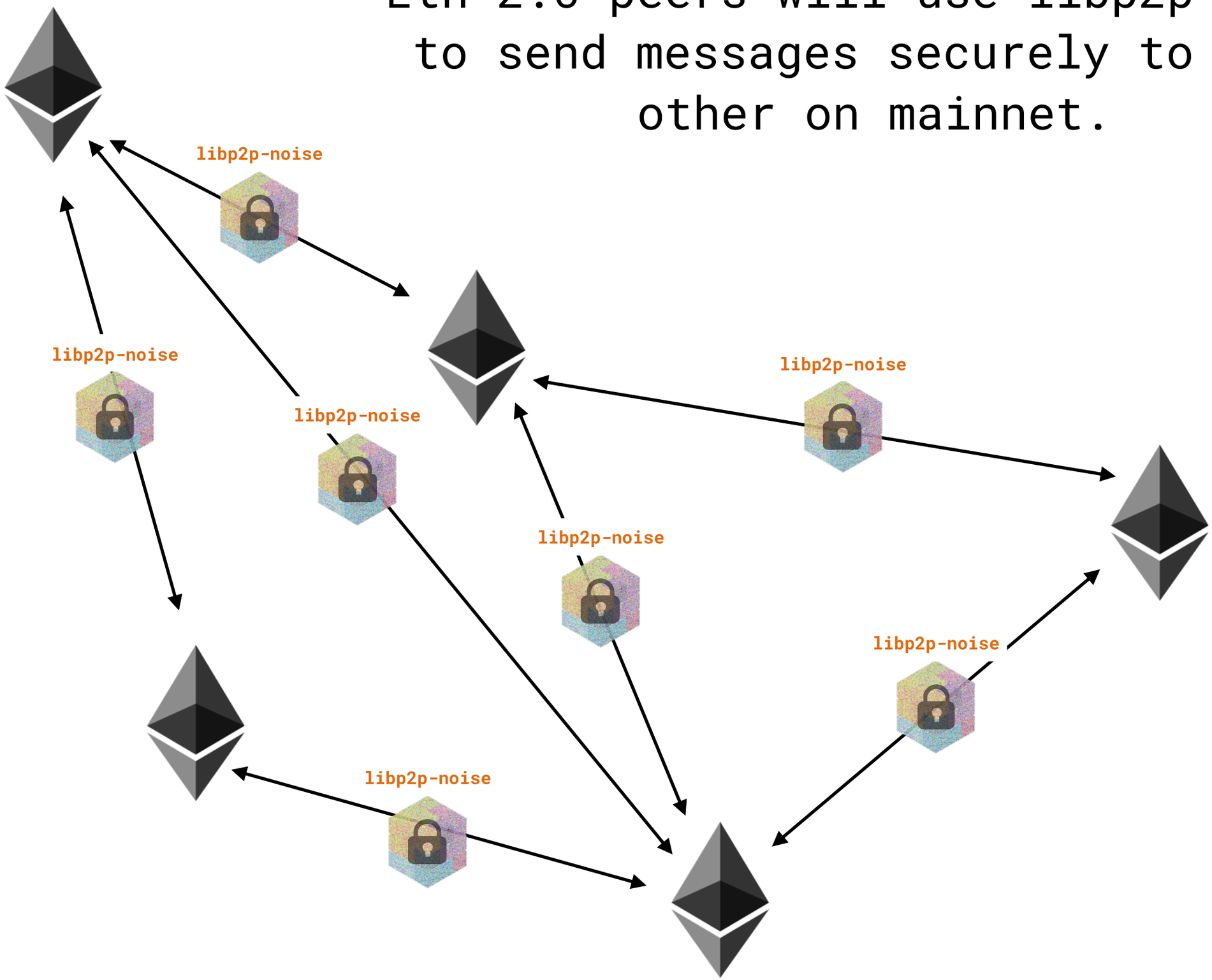


Paint color analogy for Diffie Hellman key exchange (wikipedia)

Why Noise Protocol?

- ✓ lightweight (lighter than TLS 1.3)
- ✓ well-vetted, soundly designed
- ✓ formally verified

Eth 2.0 peers will use libp2p-noise to send messages securely to each other on mainnet.



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