

Implementazione in TypeScript e sperimentazione dell'architettura FulgurHub per la scalabilità blockchain.

Relatore

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**Problema della scalabilità
della blockchain.**

Scalabilità off-chain.

Payment channel.

Payment channel.

Alice 1 ETH

2 ETH Berto

Payment channel.

Alice 1 ETH

2 ETH Berto

0 ETH **1 ETH**  **1 ETH** 1 ETH

Smart contract

2 ETH

Payment channel.

Alice 1 ETH

2 ETH Berto

0 ETH 1 ETH



1 ETH 1 ETH

0 ETH 0.9 ETH

1: 0.1 ETH



1.1 ETH 1 ETH

Smart contract

2 ETH

Payment channel.

Alice 1 ETH

2 ETH Berto

0 ETH **1 ETH**  **1 ETH** 1 ETH

0 ETH **0.9 ETH** 1: 0.1 ETH **1.1 ETH** 1 ETH

0 ETH **1.1 ETH** 2: 0.2 ETH **0.9 ETH** 1 ETH

Smart contract

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Payment channel.

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0 ETH **2 ETH** 3: 0.9 ETH **0 ETH** 1 ETH

Smart contract

2 ETH

Payment channel.

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0 ETH **2 ETH** 3: 0.9 ETH  **0 ETH** 1 ETH

2 ETH **0 ETH**  **0 ETH** 1 ETH

Smart contract

0 ETH

Inextinguishable payment channel.

Inextinguishable payment channel.

Alice 1 ETH

2 ETH Berto

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Smart contract

2 ETH

Inextinguishable payment channel.

Alice 1 ETH

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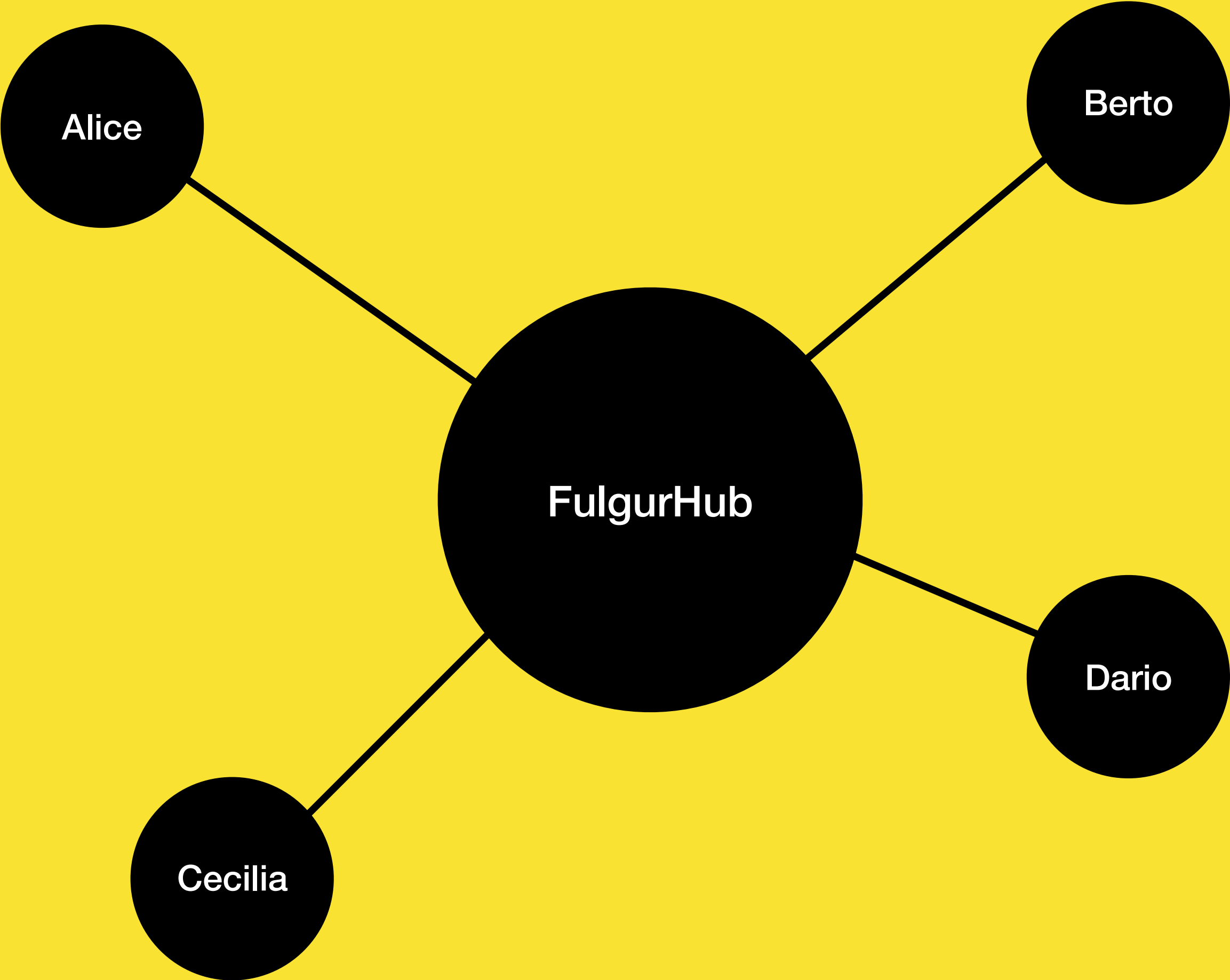
0 ETH **2 ETH** 3: 0.9 ETH **0 ETH** 1 ETH

0 ETH **2 ETH** **1 ETH** 0 ETH

Smart contract

3 ETH

FulgurHub.



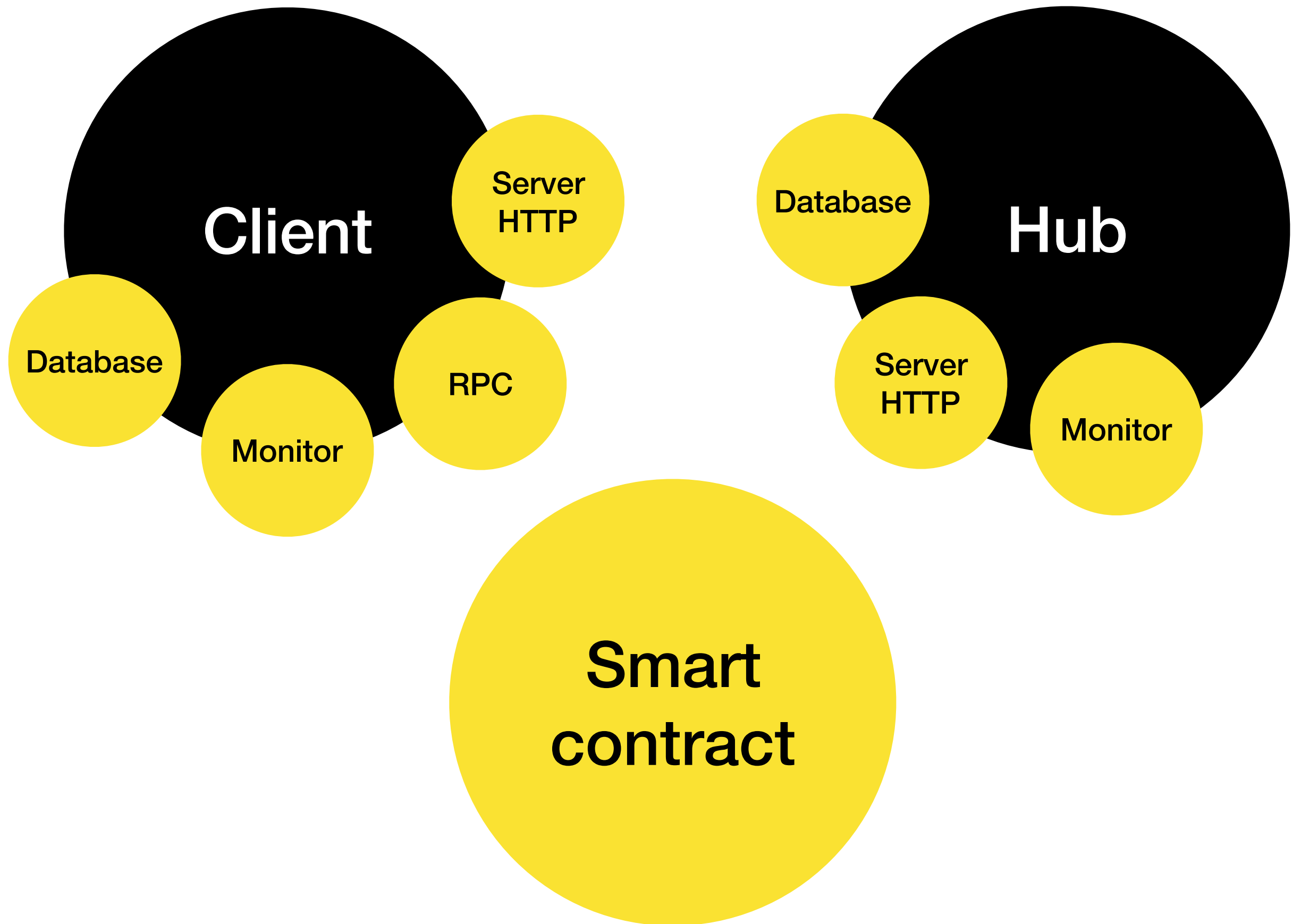
A diagram consisting of three circles. Two black circles are positioned at the top left and top right, labeled 'Client' and 'Hub' respectively. A yellow circle is positioned at the bottom center, labeled 'Smart contract'.

Client

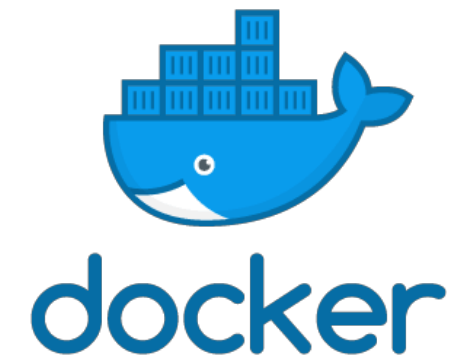
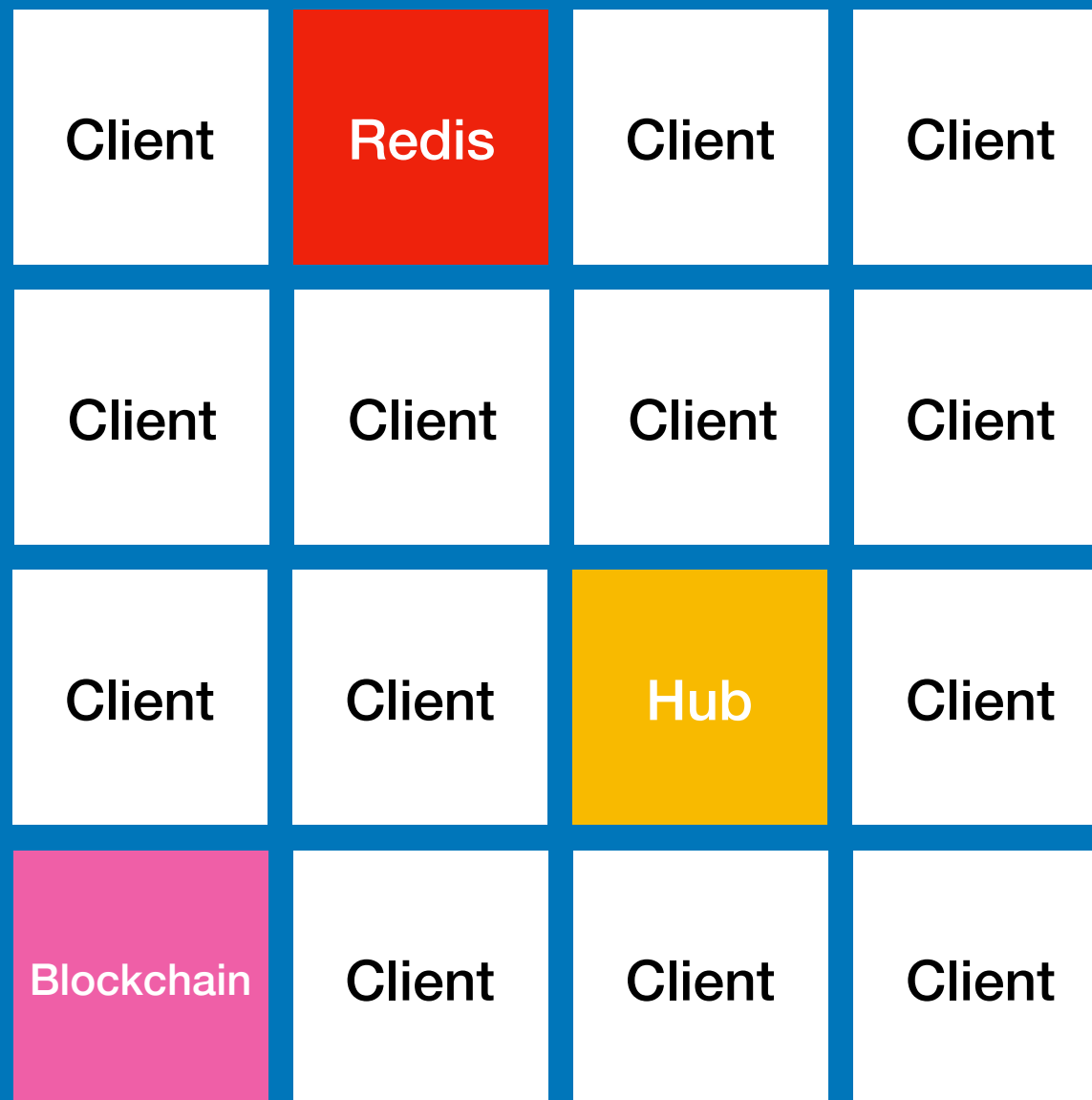
Hub

**Smart
contract**

```
interface SmartContract {  
  
    subscribe(wallet: Wallet);  
  
    detachToken(token: Token);  
  
    attachToken(token: Token);  
  
    transfer(payeeAddress: string, amount: BigNumber);  
  
    close(propose: Propose);  
  
    redeemToken(token: Token);  
  
    argueRedemptionToken(token: Token);  
  
    withdraw();  
  
    argueClosure(propose: Propose);  
  
}
```

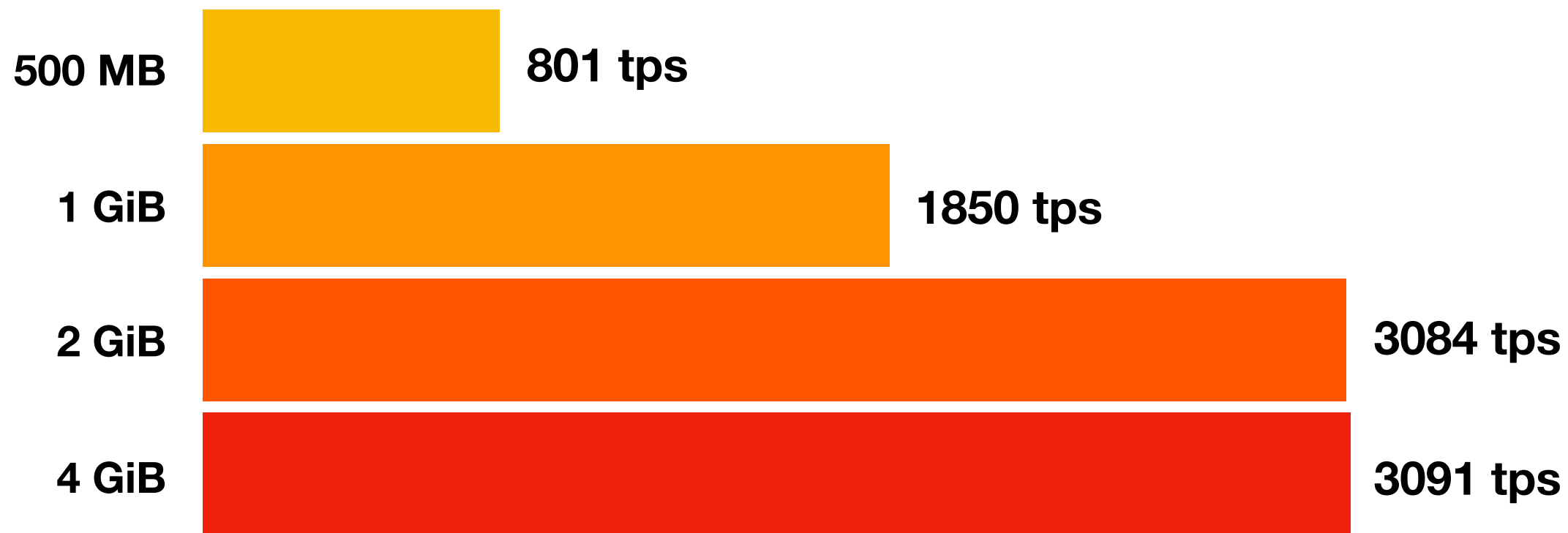


Prove sperimentali.



m4.16xlarge
64 core
256 GiB di RAM

Transazioni OffChain-OffChain gestite ogni secondo dall'hub al variare della RAM.



tps = *transazioni per secondo*

Prospettive future.