Peer to peer cryptocurrency: An interaction with Blockchain technology

Team Satoshi

Tuan-Anh TRAN, Tu-My DOAN, Na WANG

Plan

- Cheese Stack Networking Protocol
- Peer to Peer networking
- Cheese Stack and Cheese Mining
- Retrospective and auto-evaluation

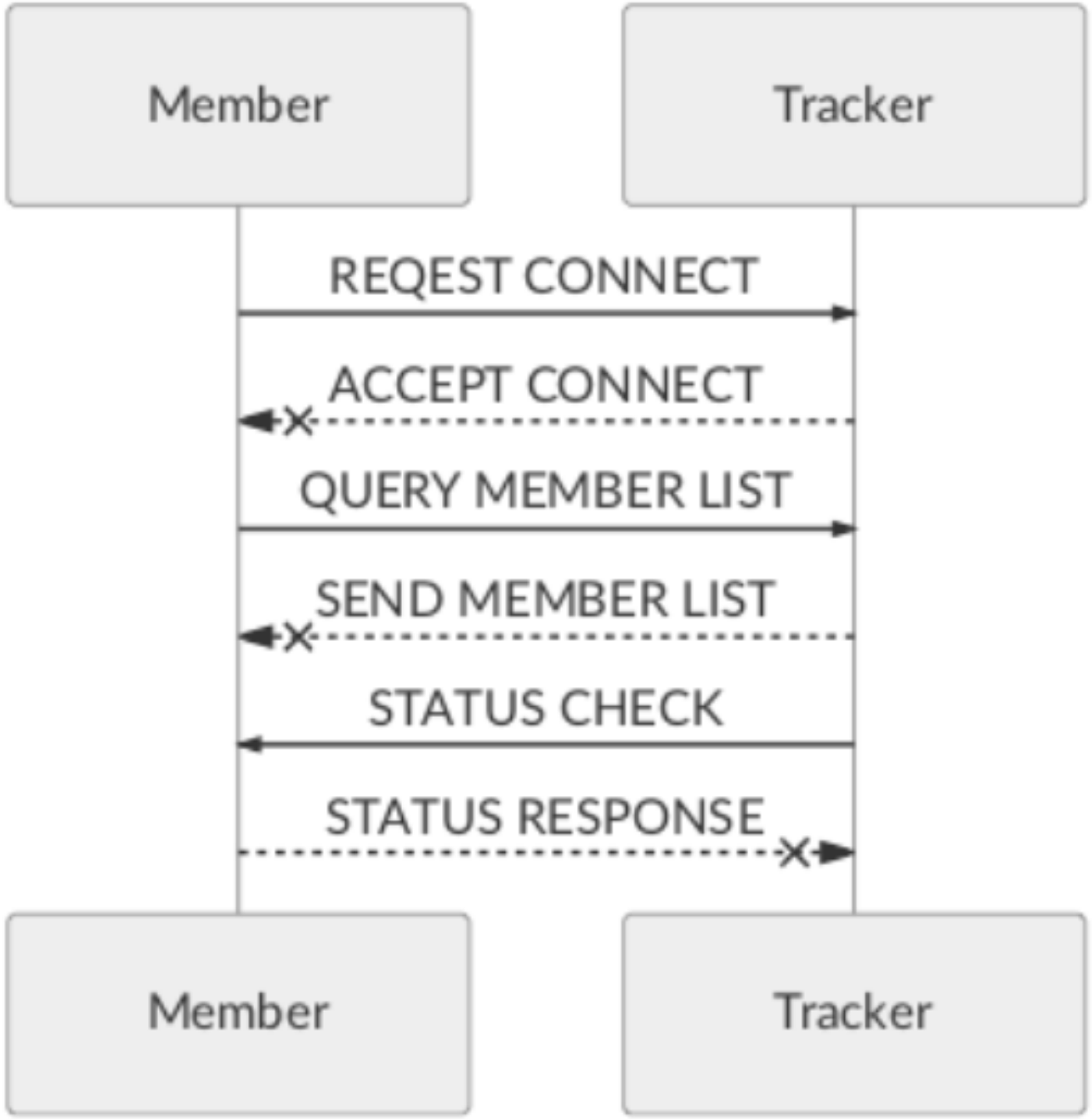
Cheese stack Networking Protocol

- New transactions are broadcast to all members, all transactions will be contained in a queue FIFO.
- Each member collects new transactions into a Cheese
- Each member works on finding a difficult proof-of-work for its Cheese.
- When a member finds a proof-of-work, it broadcasts the New Cheese to all members.
- Members accept the New Cheese only if all transactions in it are valid and not already spent.
- Members express their acceptance of the Cheese by working on creating the next Cheese in the chain
- …using the hash of the accepted Cheese as the previous hash and deleting processed transactions in the queue.

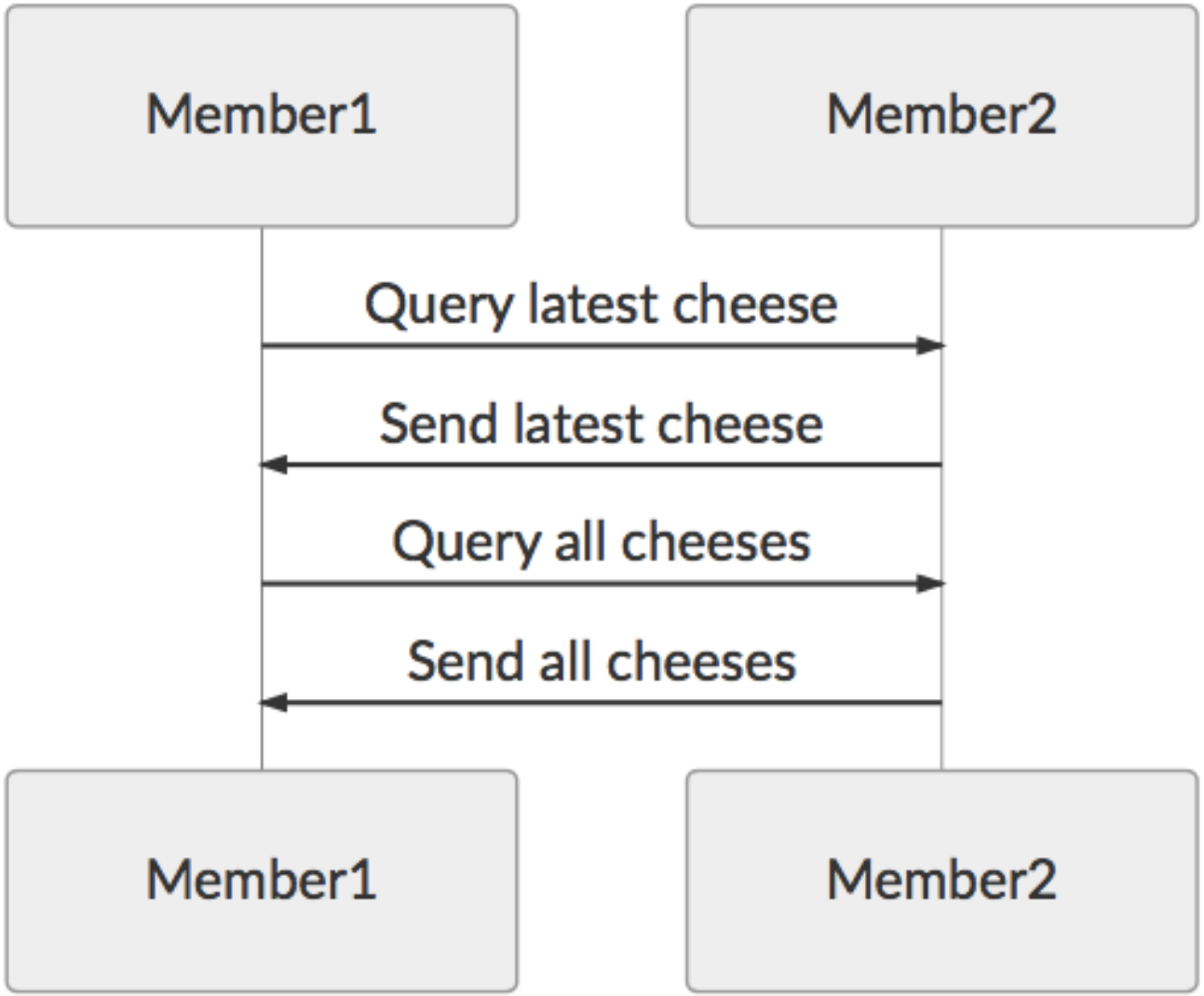
Peer to Peer networking

- In a peer to peer network, members work together to ensure the cheese stack is secure and up-to-date
- Every one of these members stores the complete, updated version of the cheese stack
- Every time a new cheese is added, all the members update their cheese stack.

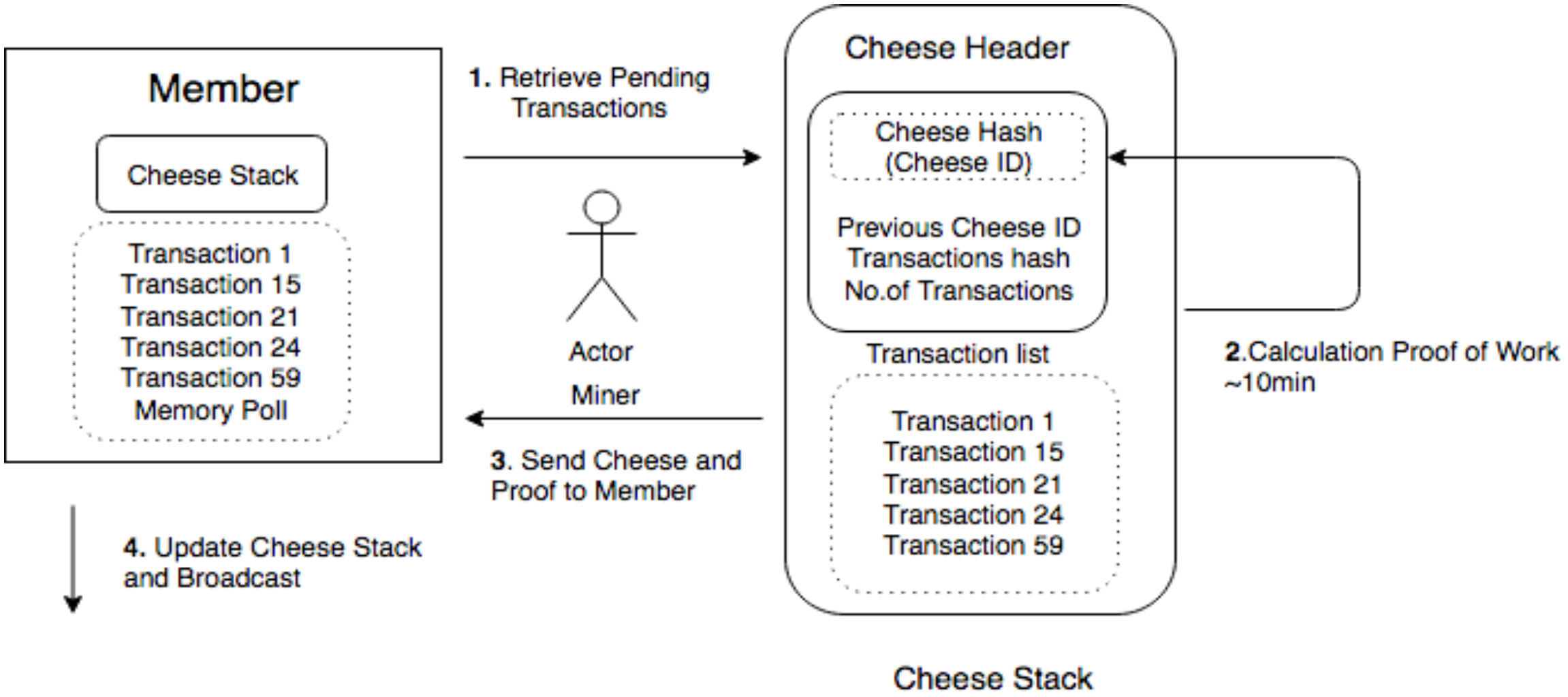
Tracker-Member Connection



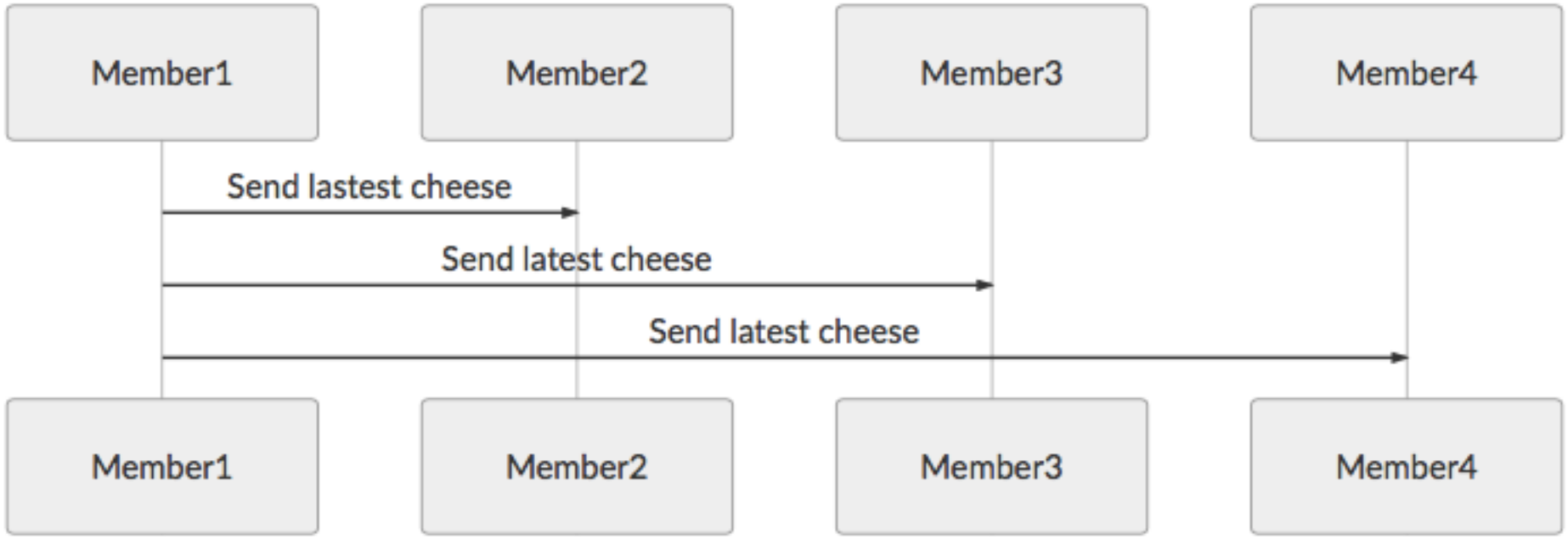
Member connection and synchronization



Cheese Stack and Cheese mining



Member broadcasting for latest cheese



Consensus protocol: Proof of Work

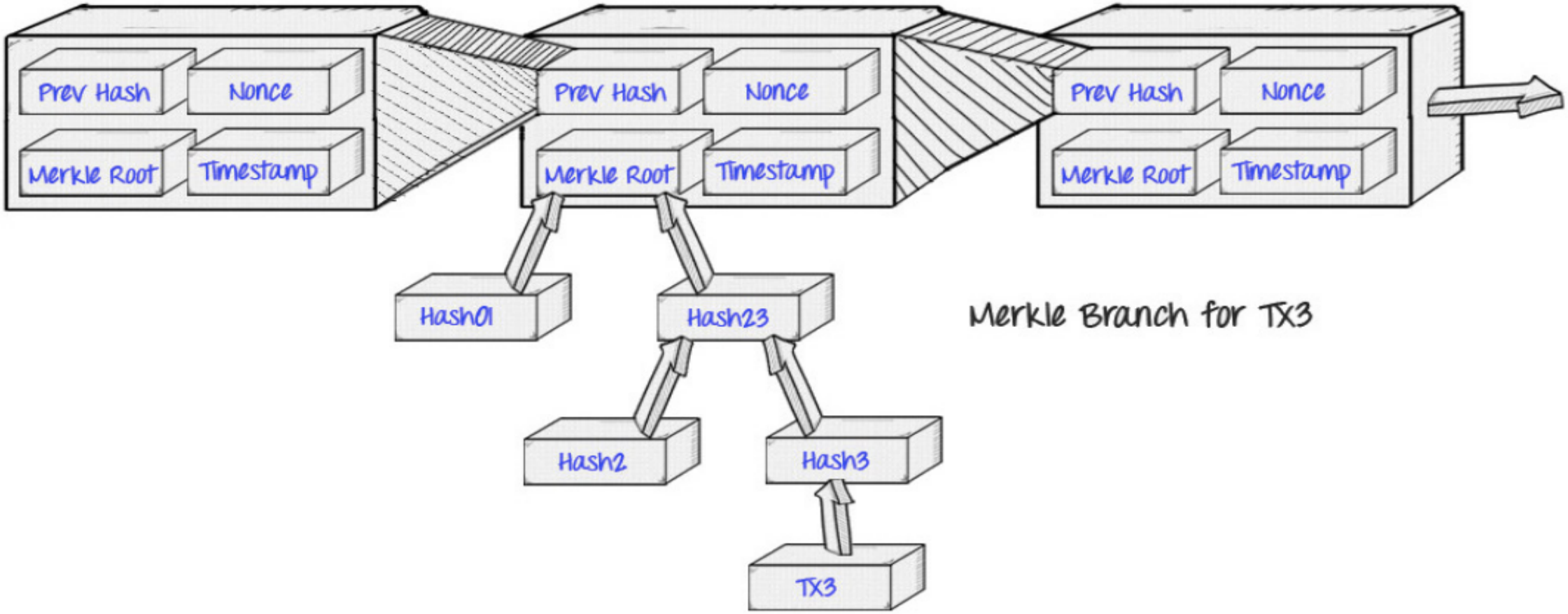
The consensus mechanisms The consensus protocol sets rules on:

- How cheeses are to be added to the cheese stack,
- when cheese are considered to be valid, and
- how conflicts of truth are resolved.

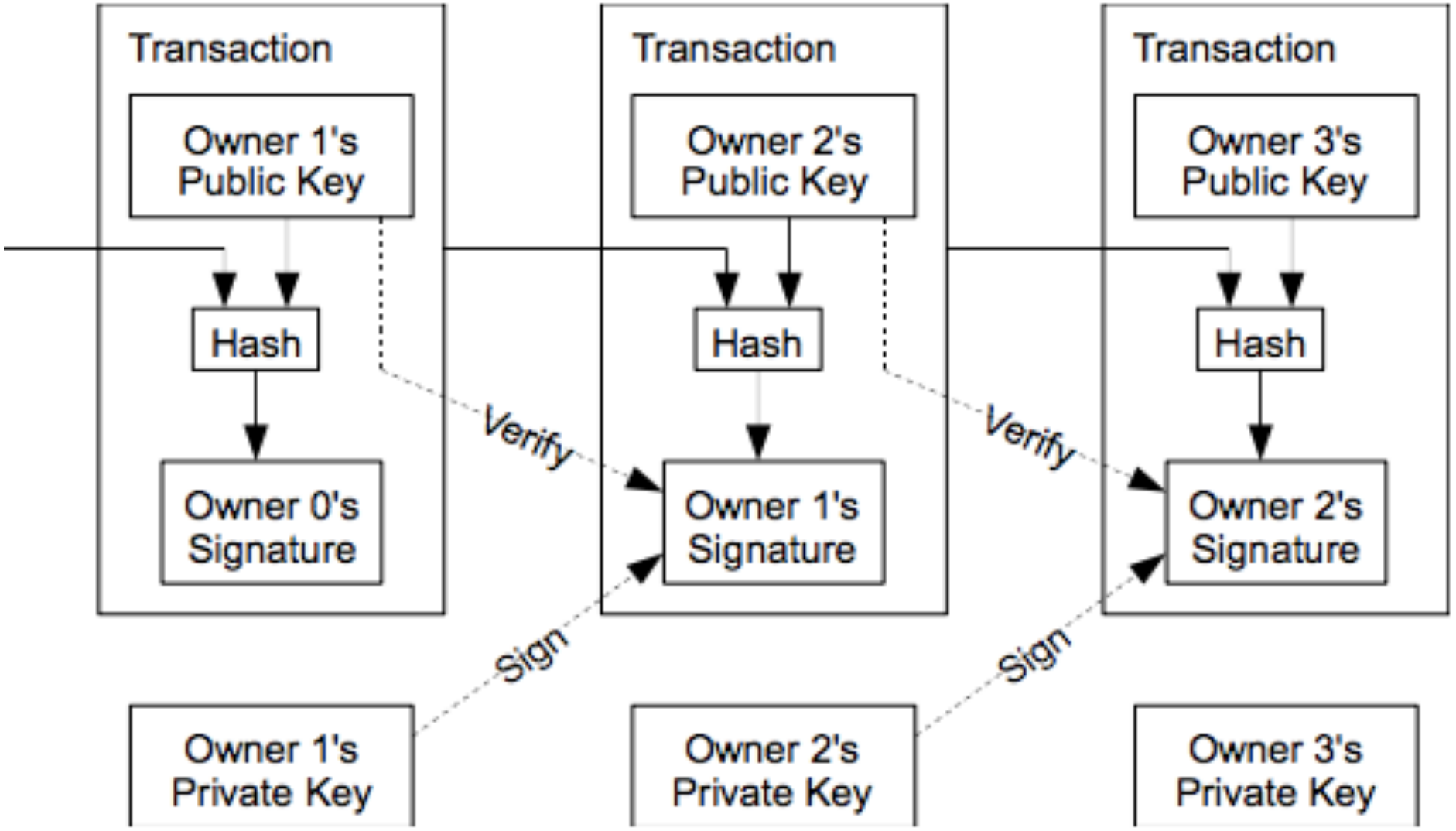
Thus allows members in a peer-to-peer network to work together without having to know or trust each other.

Mining and Proof of work in Cheese stack

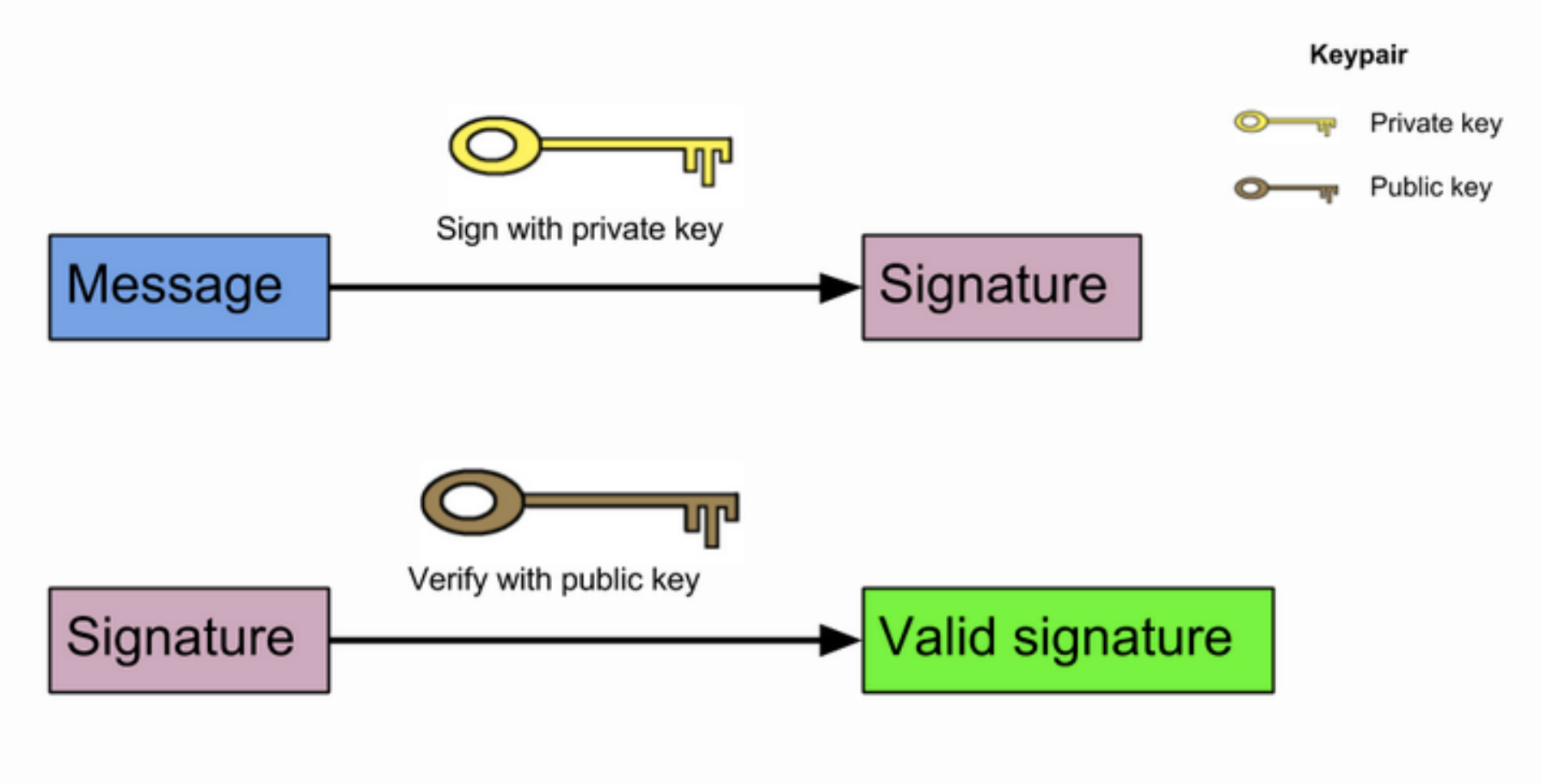
Longest Cheese Stack



Transactions in cheese stack



Transaction Verification



Project Retrospective

Difficulties & Improvement

- Conflict in simultaneous mining
- Meta-group test

Lessons learned

- Keep good ambiance and constant morality and motivation from the beginning to the end.
- Meet and discuss regularly from the very beginning until the very end.
- Team Esprit is the King.

Auto-evaluation

Member	Protocol	Time	Programming	Time	Documentation	Time	Total
Tuan-Anh TRAN	Research + planning + protocol.md	6h	P2P network + user interface + synchronization	52h	Testing project + Readme.md + retospective.md + auto-evaluation.md	9h	67h
Tu-My DOAN	Research + protocol.md	5h	Blockchain + Transaction + Signature	40h	Design poster, system background + Readme.md + retospective.md	9h	54h
Na WANG	Research + protocol.md	10h	Binary de_encoding to Cheese + Implementing	15h	Slides for presentation + Readme.md + retrospective.md + auto-evaluation.md	15h	40h

Reference

- Satoshi Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System”, https://bitcoin.org/bitcoin.pdf
- https://medium.com/@jochasinga/implementing-a-bitcoin-merkle-tree-cb0af3d53ec9
- https://lhartikk.github.io/jekyll/update/2017/07/13/chapter2.html
- https://hackernoon.com/3-steps-to-understanding-blockchain-8a285572daa3
- …


THANK YOU