

Bitcoin Core

Concrete Architecture

Group 21:

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Jayden Ting, Kevin Zhang

URL: <https://youtu.be/y85dZCRZzU4>





Teammates

Connor Decan

Descriptions of top-level concrete
subsystems and interactions
(Group Leader)

01

Jayden Ting

Inner architecture of Wallet

02

Yuanqi Liang

Reflexion analysis of high-level
architecture

03

Kevin Zhang

Reflexion analysis of the chosen 2nd
level subsystem: Wallet

04

Allen Geng

Sequence diagram

05

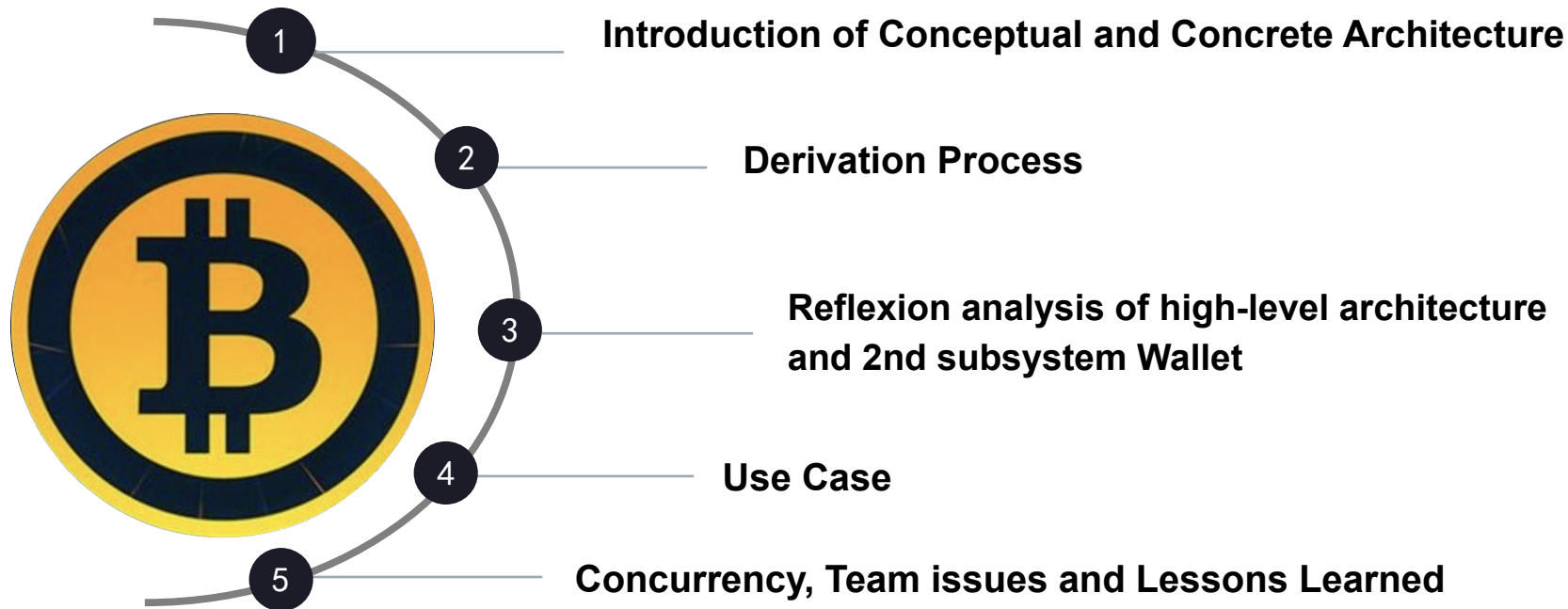
Kevin Jiang

Sequence diagram

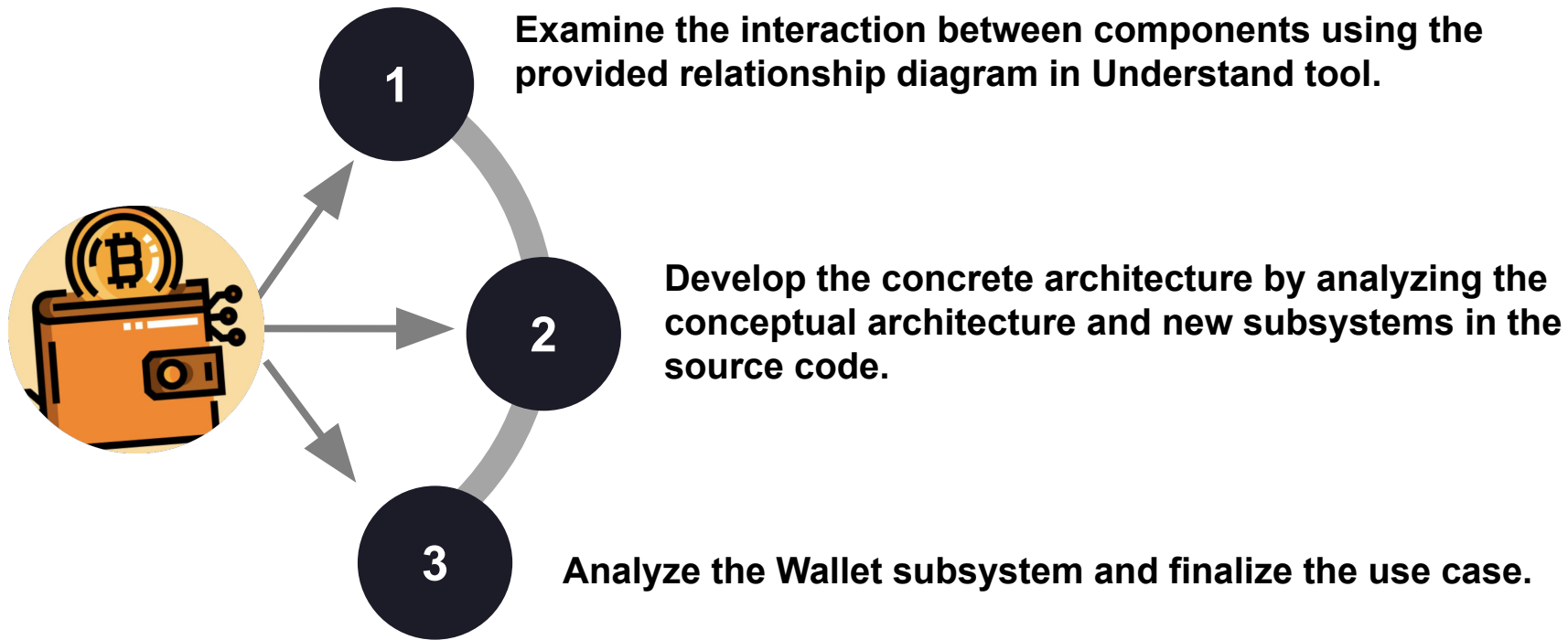
06



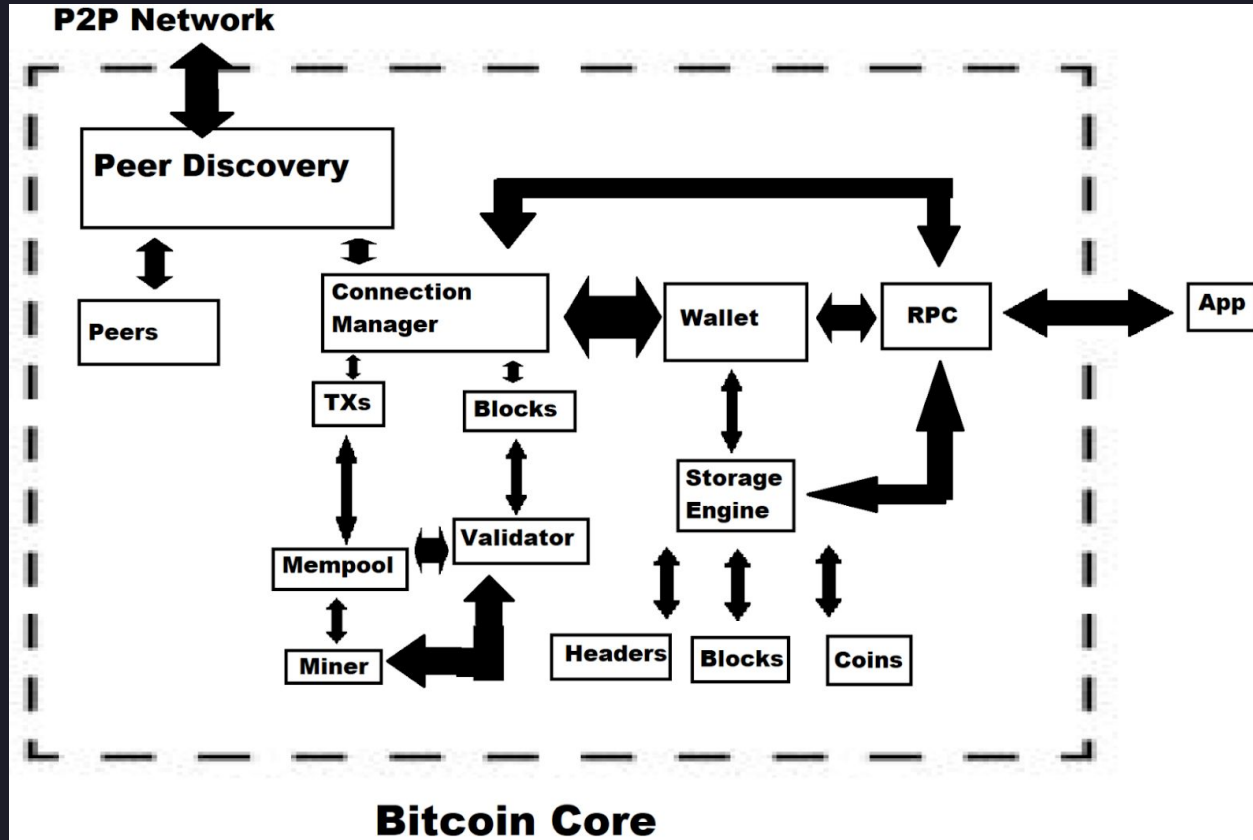
Contents



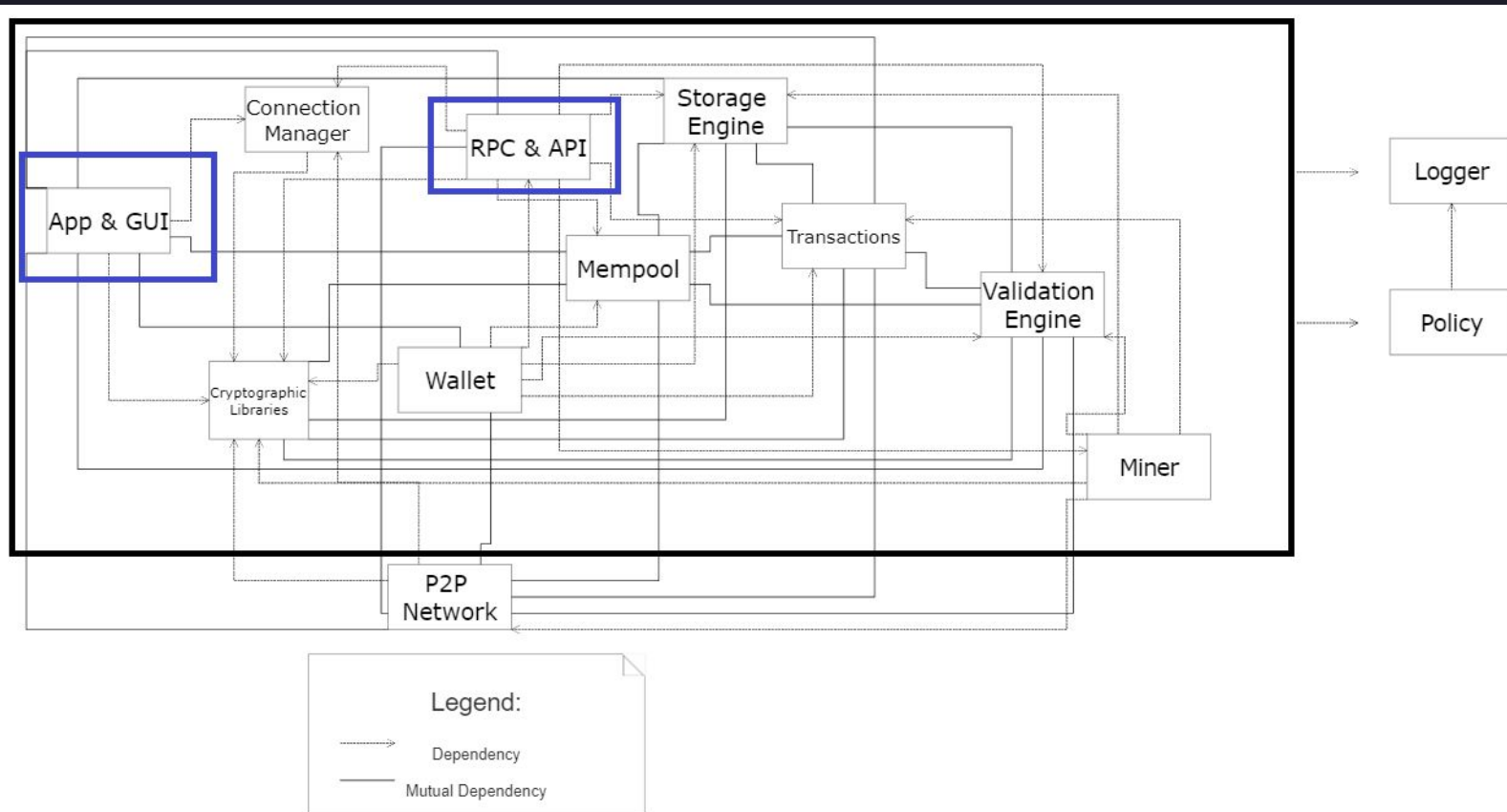
Derivation Process



🔗 Conceptual Architecture

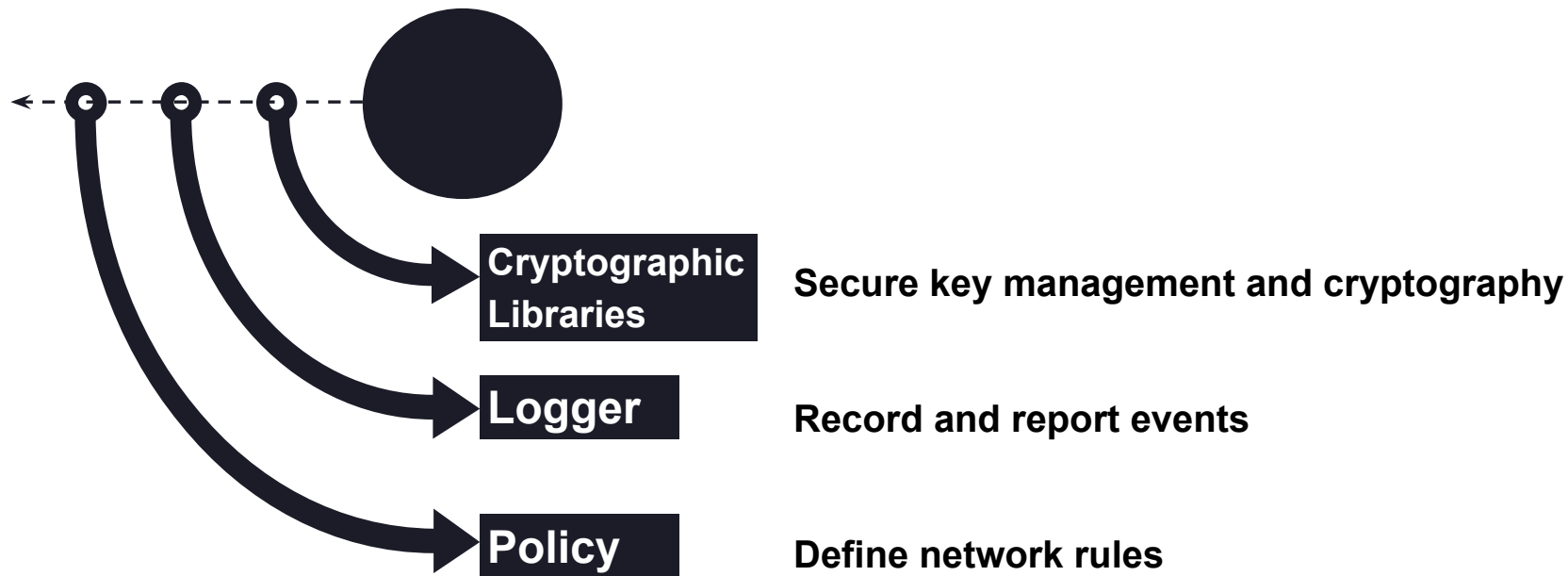


Concrete Architecture





New Subsystems



Divergences at High Level Architecture



- ✓ Connection Manager → Cryptographic libraries
- ✓ Wallet → Cryptographic libraries
- ✓ RPC & API → Cryptographic libraries
- ✓ Everything in P2P network → Loggers & Policy
- ✓ Policy → Loggers

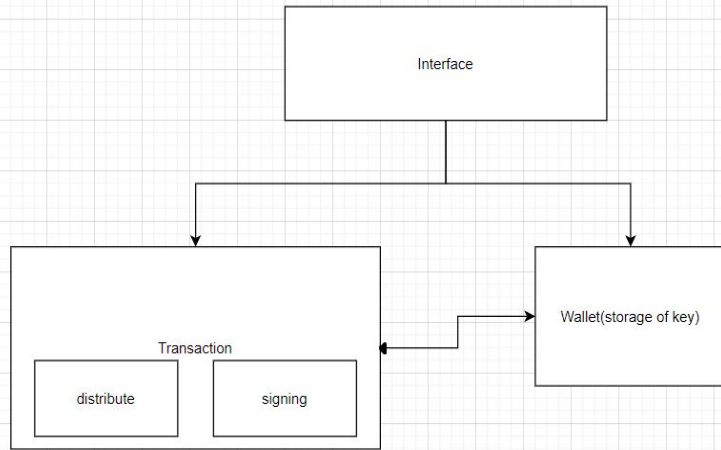
**Added
Dependencies**



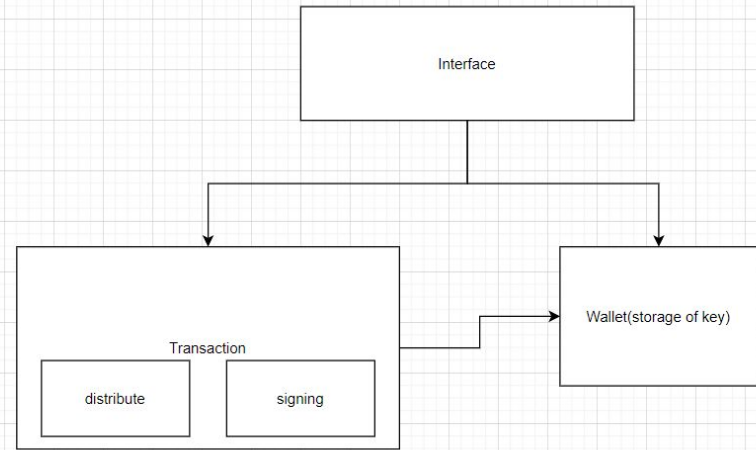
- ✓ P2P network → Peer Discovery
- ✓ Peer Discovery → Peers
- ✓ Connection manager ⇌ Blocks
- ✓ Storage Engine ⇌ Headers, Blocks, Coins

**Removed
Dependencies**

Architecture of Wallet



Concrete Architecture



Conceptual Architecture

Reflexion Analysis of Wallet



- ✓ Coin Control System
- ✓ RPC
- ✓ Fees Management

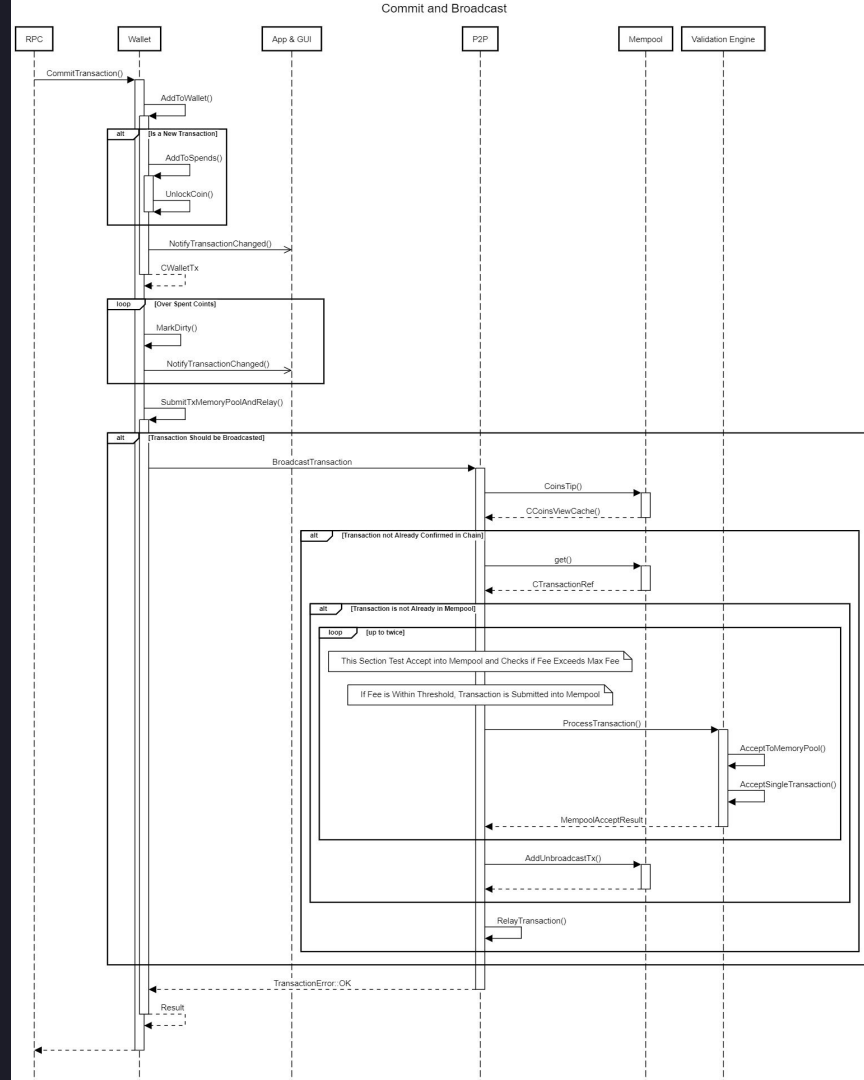
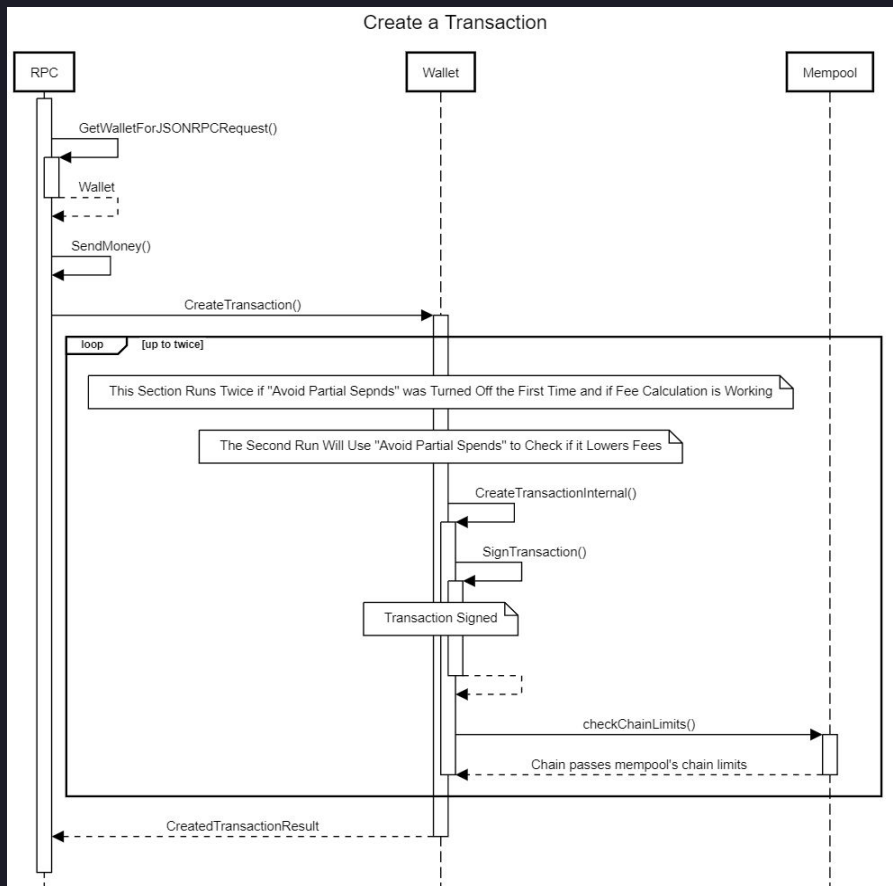
New Components



- ✓ Wallet Program → RPC
- ✓ Storage → Transaction
- ✓ Distribute → Fees Management

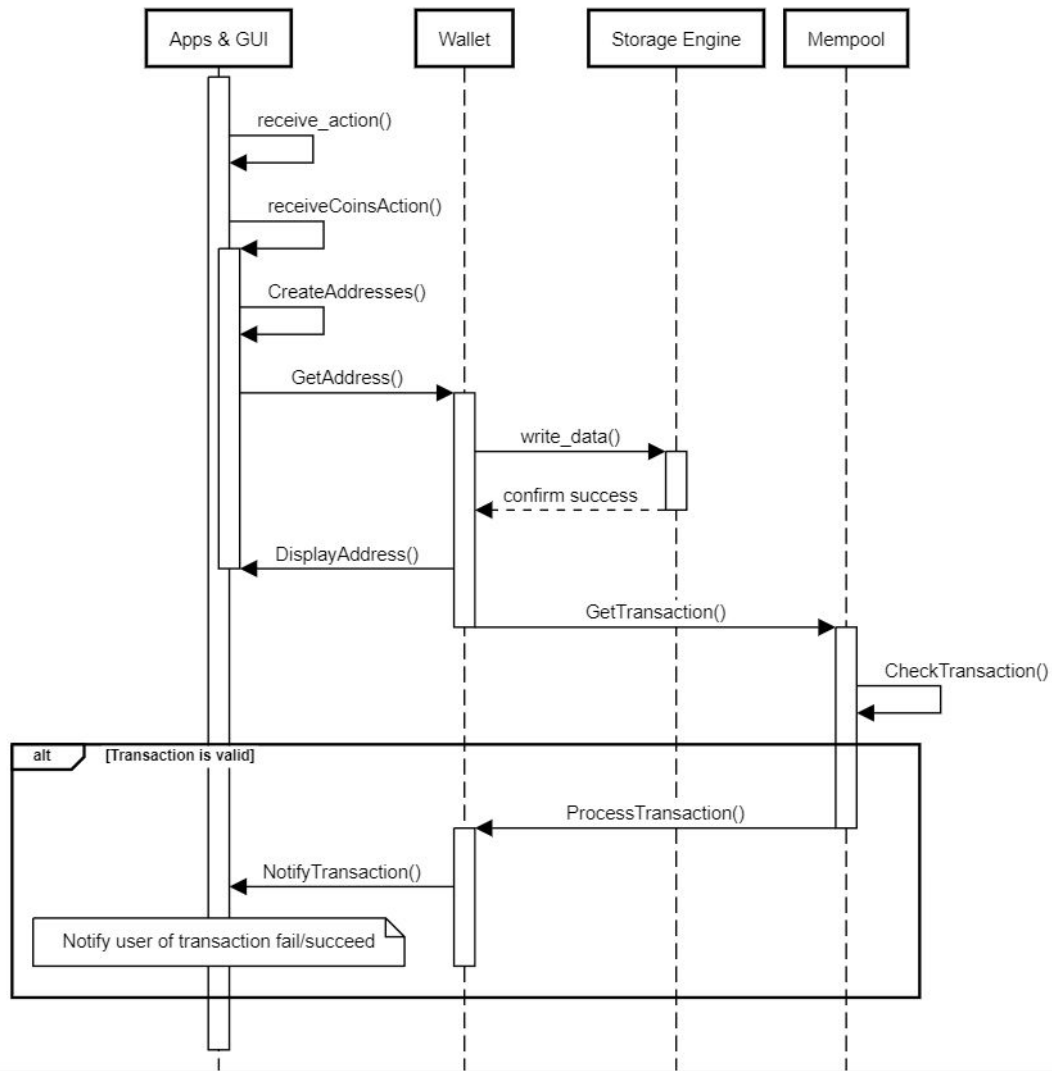
**Added
Dependencies**

🔗 Use Case 1





Use Case 2

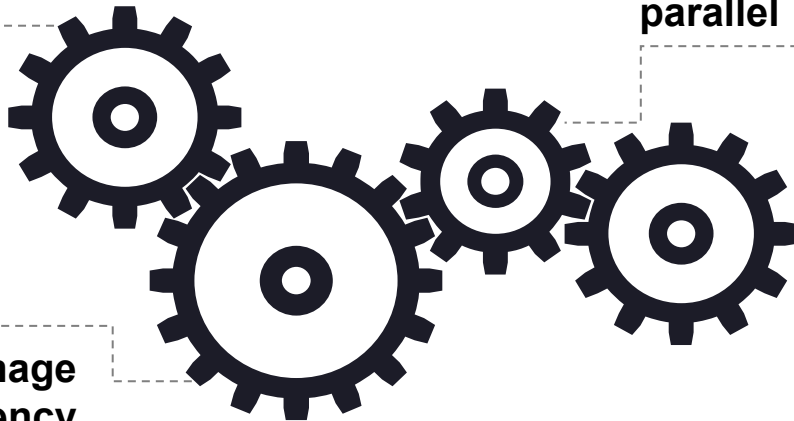




Concurrency

Handle multiple
transactions
simultaneously

Support different tasks in
parallel



More technique to manage
concurrency



Team Issues



1

Complex and decentralized nature of subsystems in Bitcoin core.



2

Some rationale of divergences are not clear, need to read many documents and source code.



3

Source code is poorly structured, making it difficult to map individual files to specific subsystems.



Lessons Learned

2

We understand why conceptual and concrete architecture deviate.

1

We learned to analyze source code to understand and map the concrete architecture and understand how components interact.

3

We understand the importance of collaboration

Thank You

