BlueWallet: The Secure Bitcoin Wallet

Christian Decker

ETH Zurich – Distributed Computing Group – www.disco.ethz.ch

- Global
- No intermediary
- Instantaneous
- Pseudonymous

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- Secure?

Security

Bitcoin:

- Ledger based on consensus
- ECDSA (secp256k1) signatures
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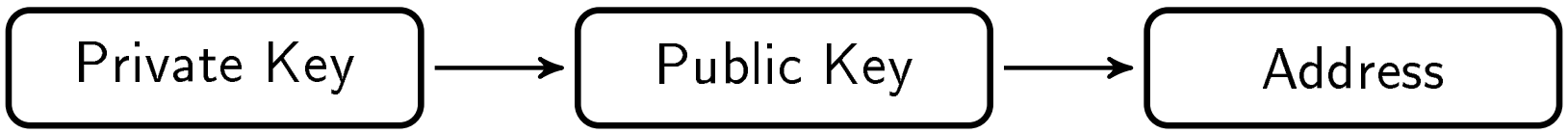
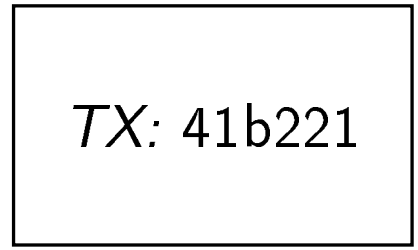
User:

- Theft
- Price instability
- Legal uncertainty
- ...

Opening an account in Bitcoin



Transferring bitcoins



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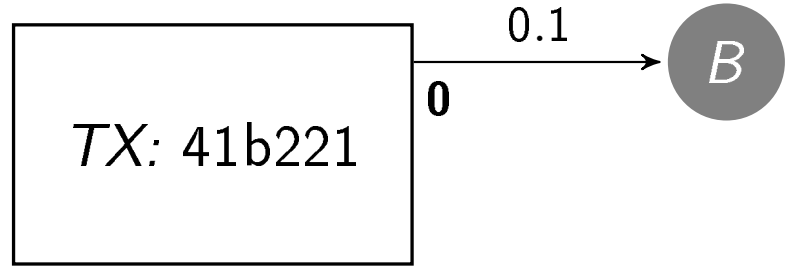

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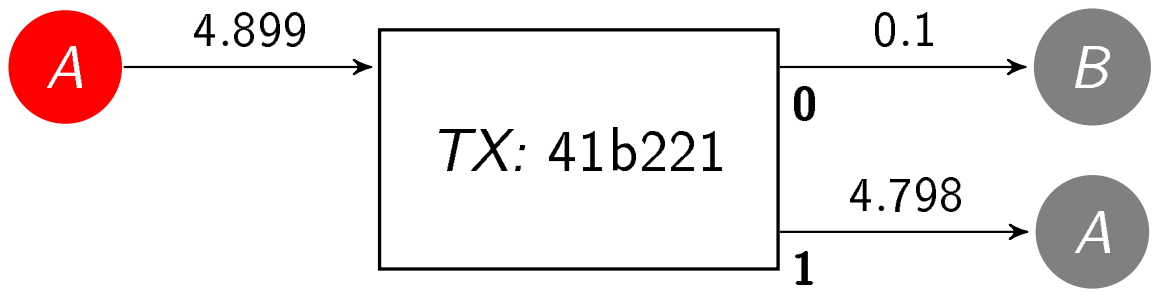

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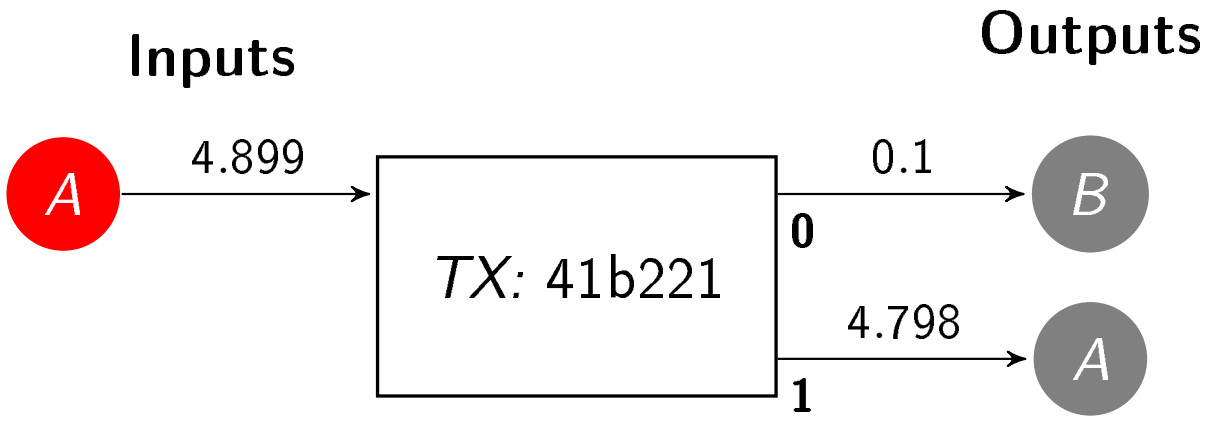

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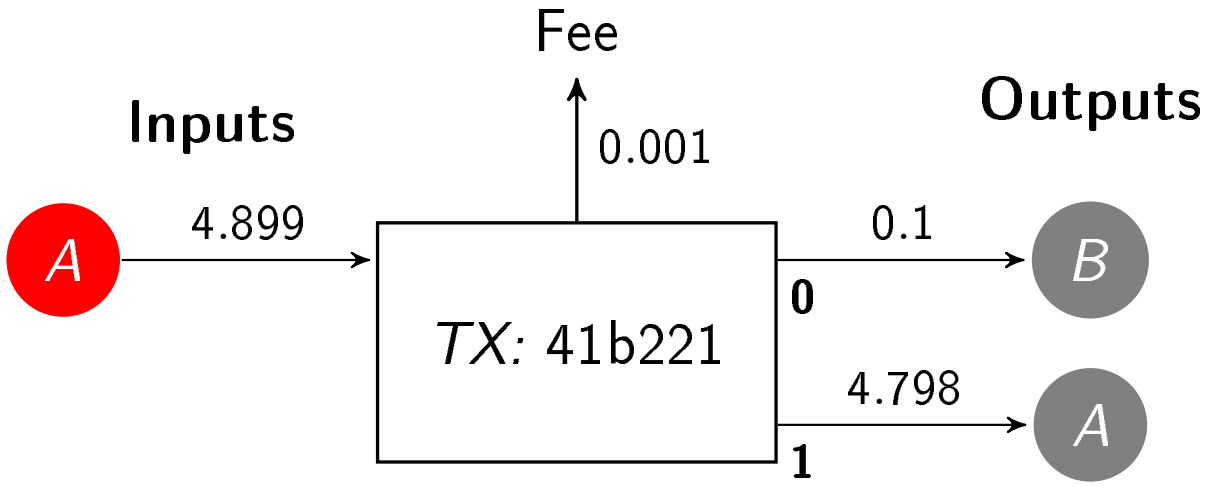

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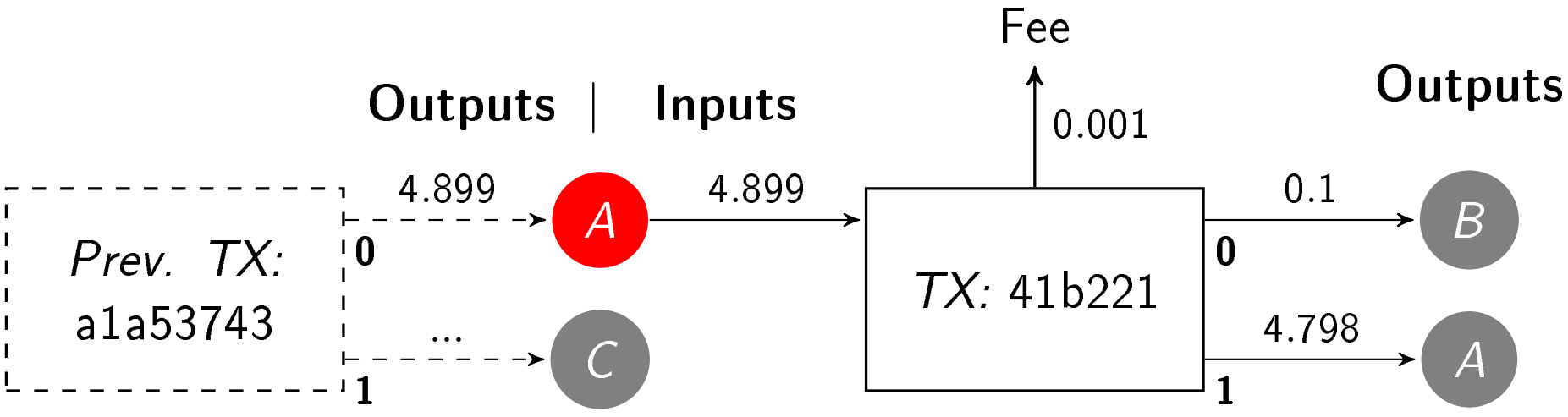
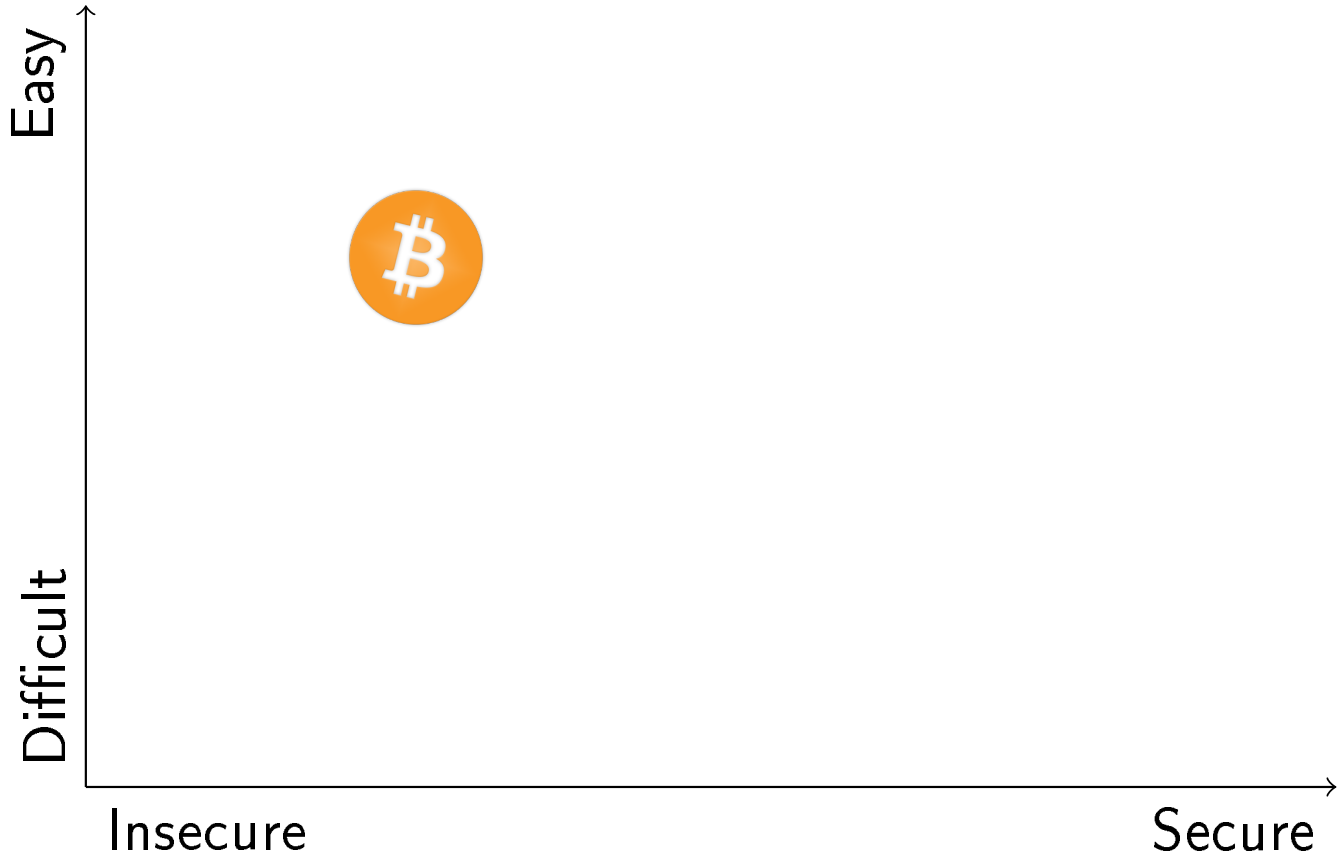


Securing User Wallets

Protecting private keys is paramount.



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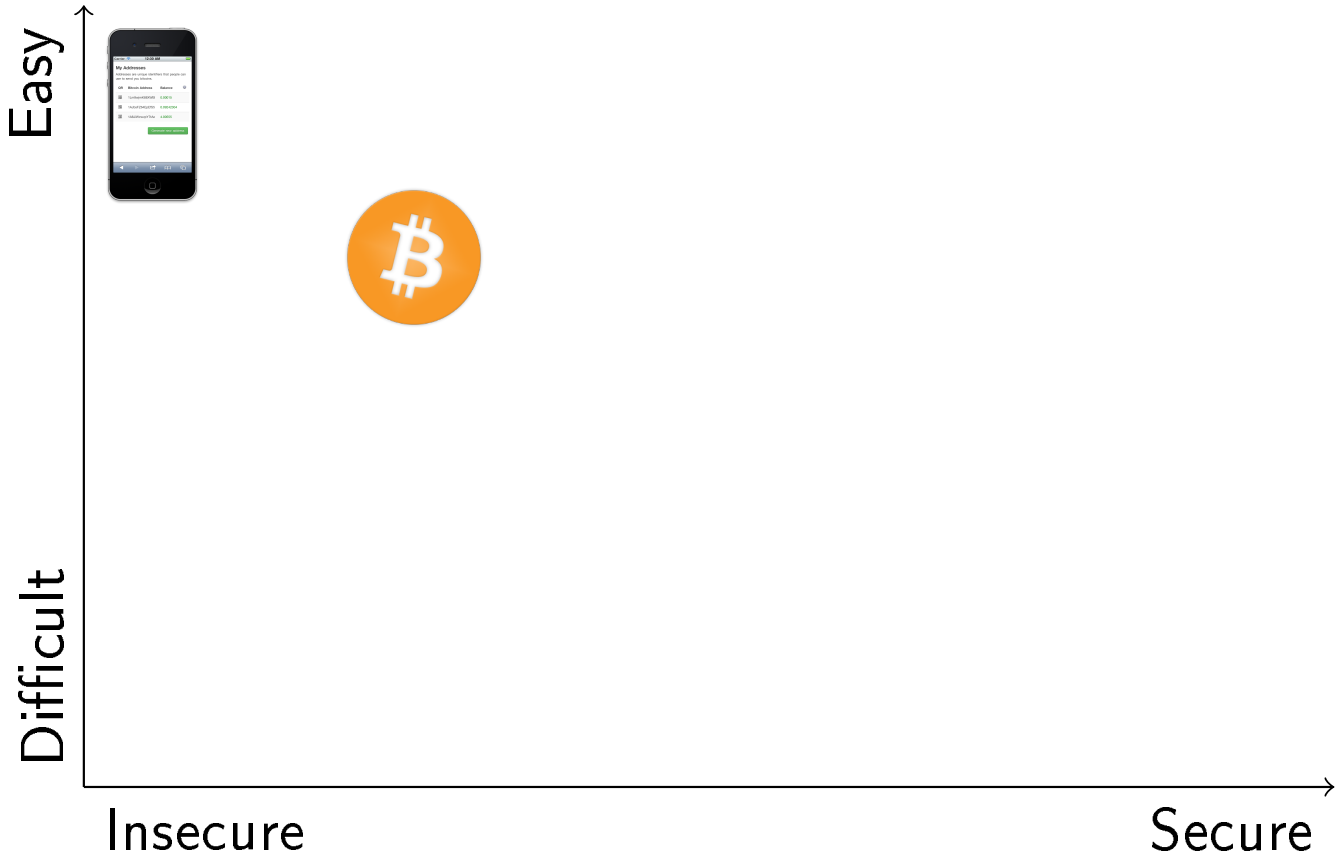

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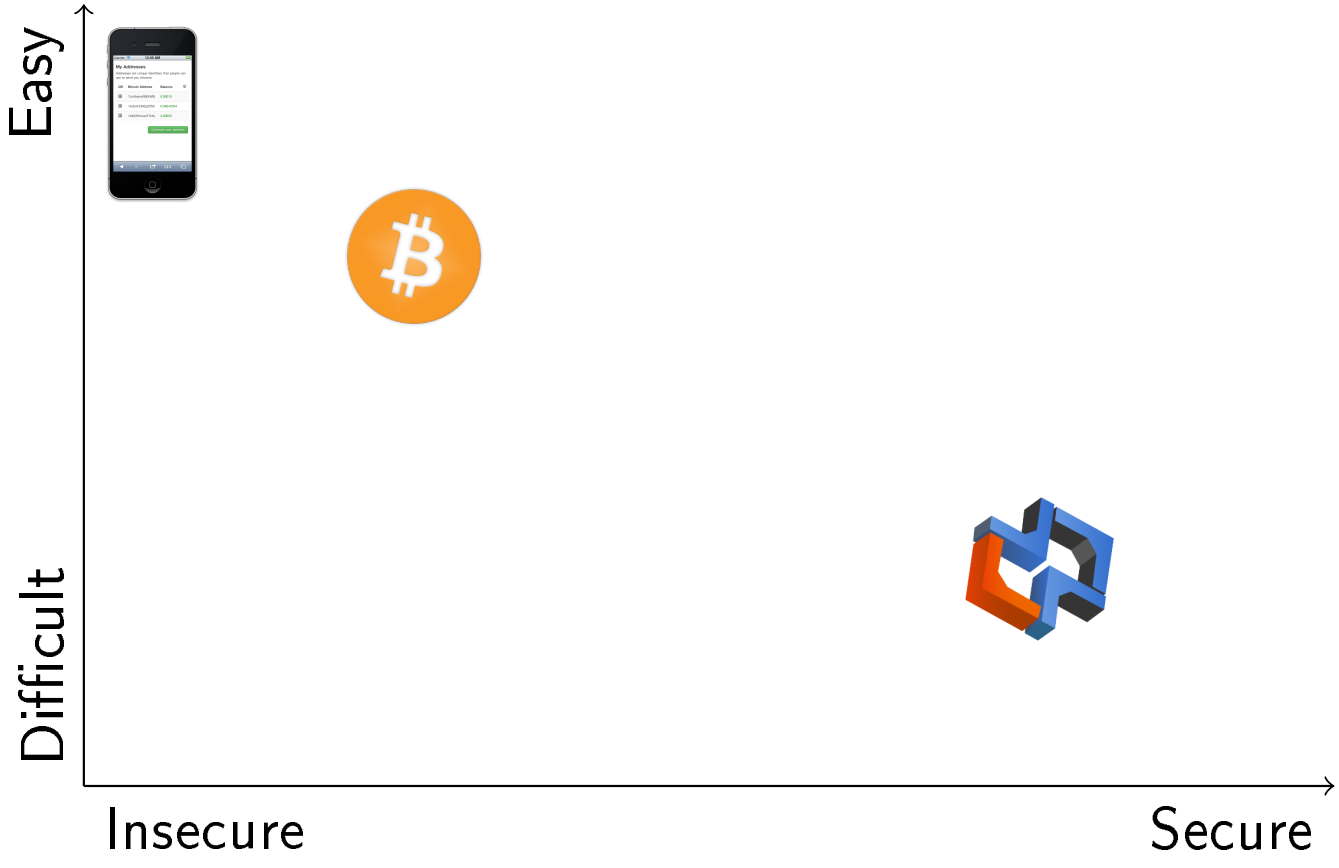

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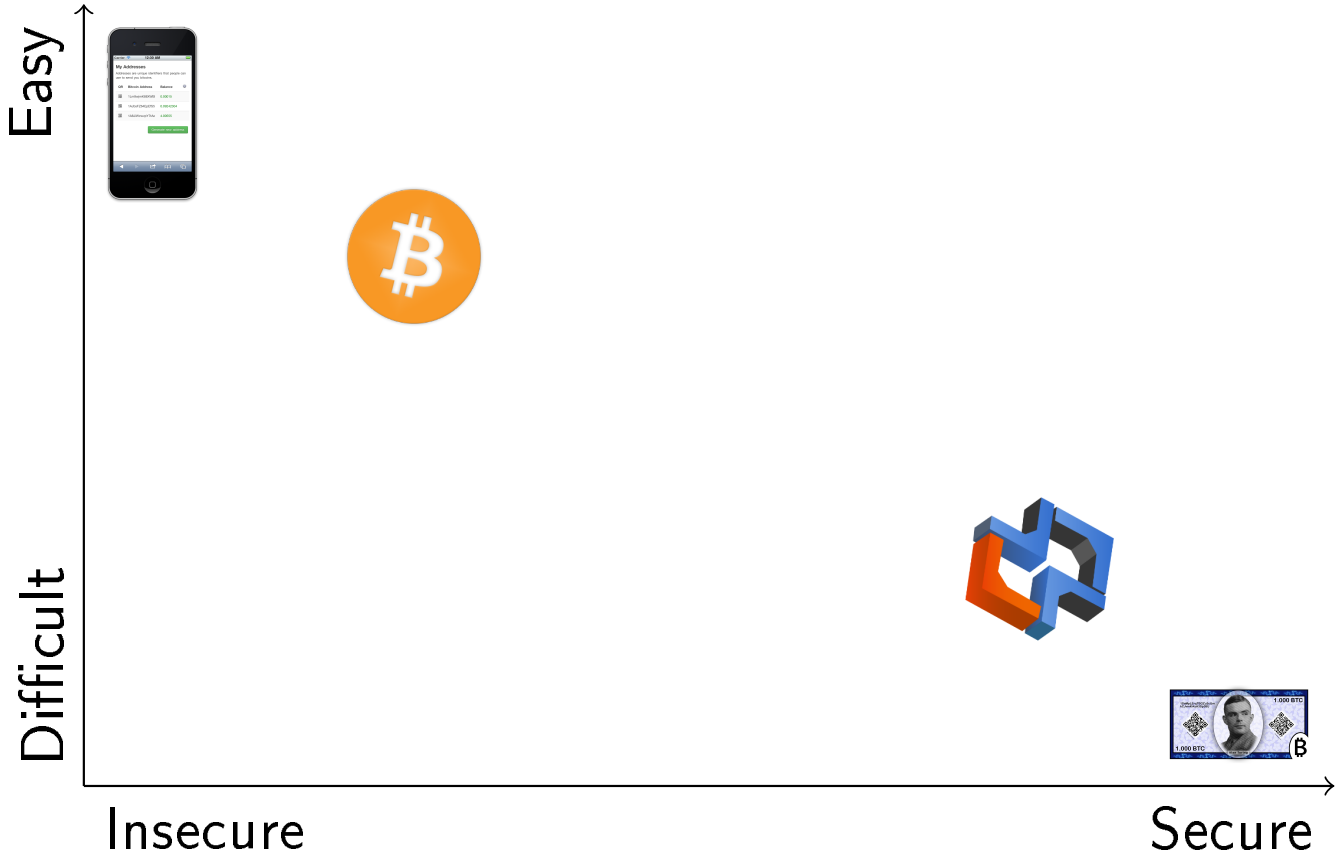

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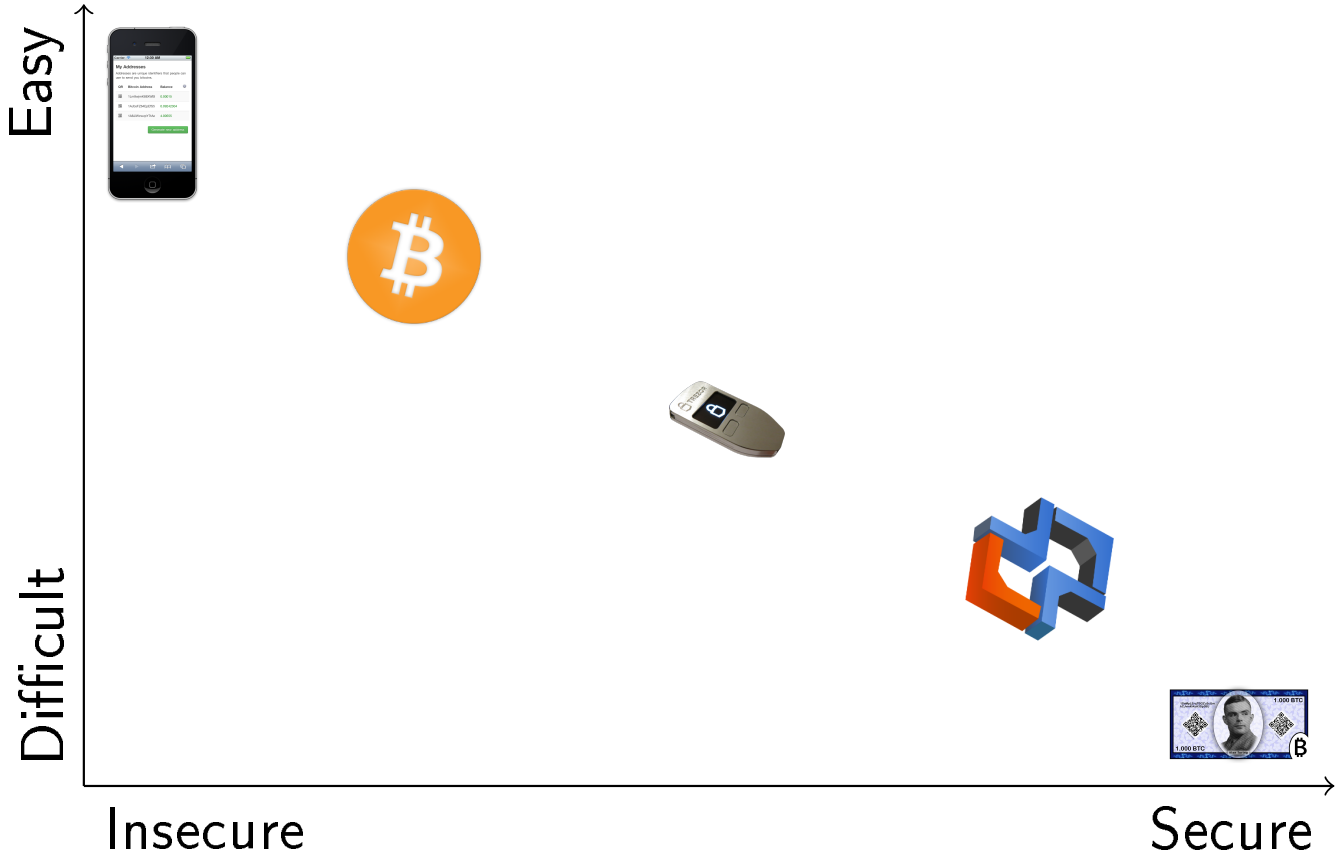

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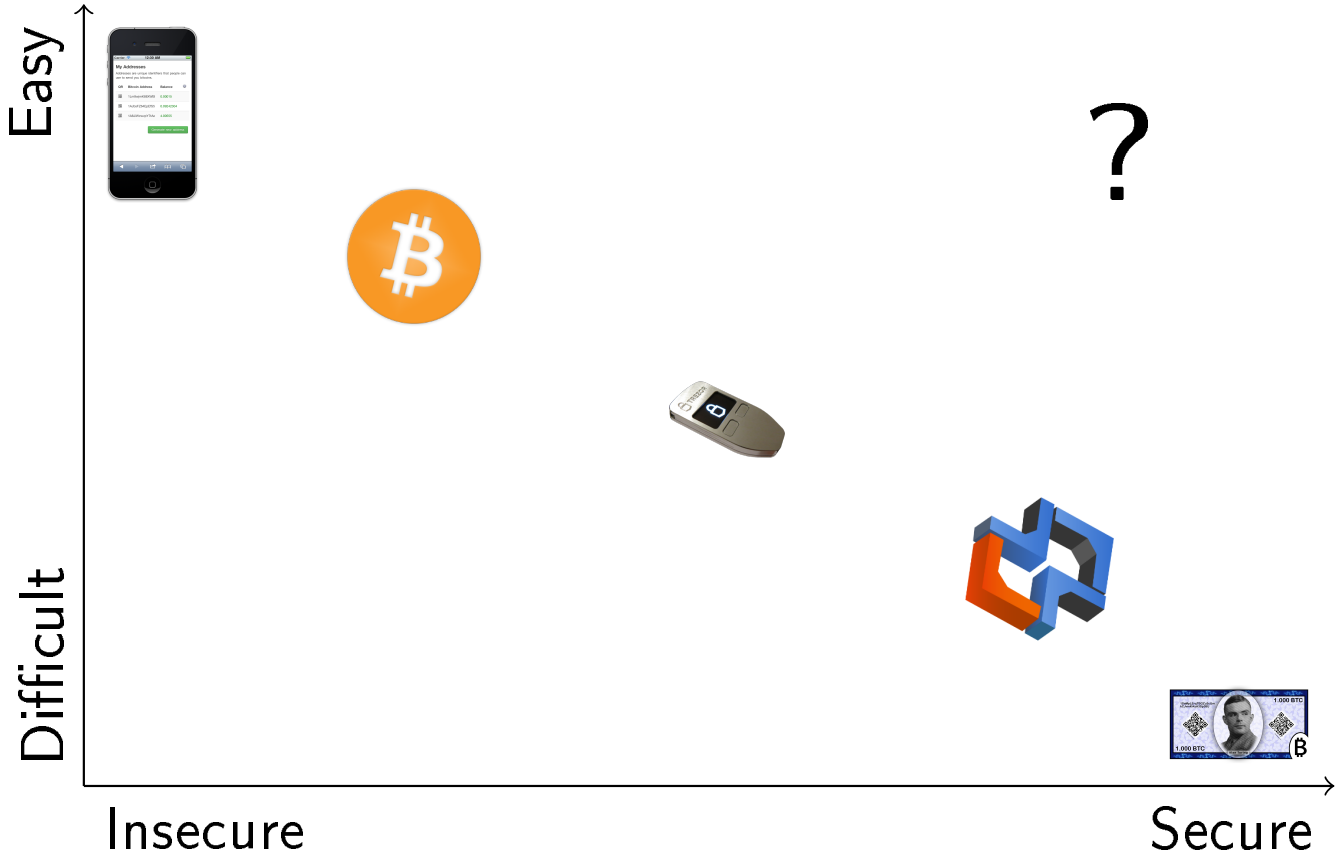
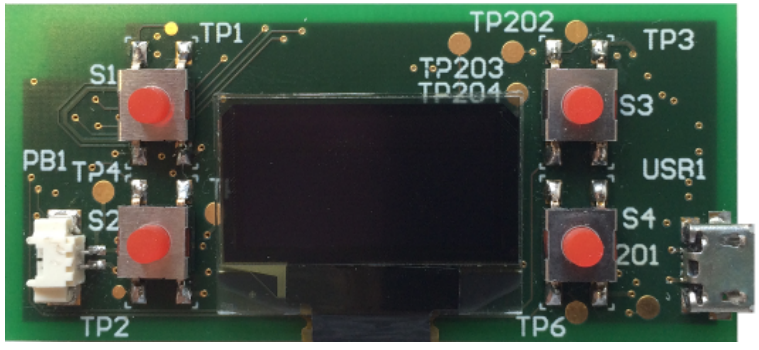


Goals

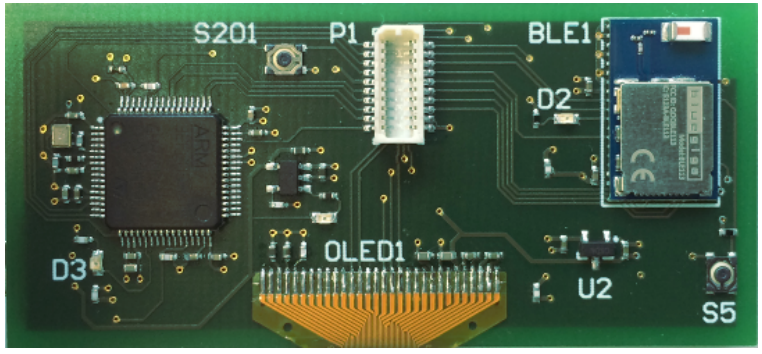
- Mobile (Point-of-Sale payments)
- Easy to use
- Real-time payments
- Secure

Result

Front



Back



Technical Details

Communication Chip

- Bluegiga BLE113 (8 bit)
- 8 kB RAM
- Always on
- Handles communication
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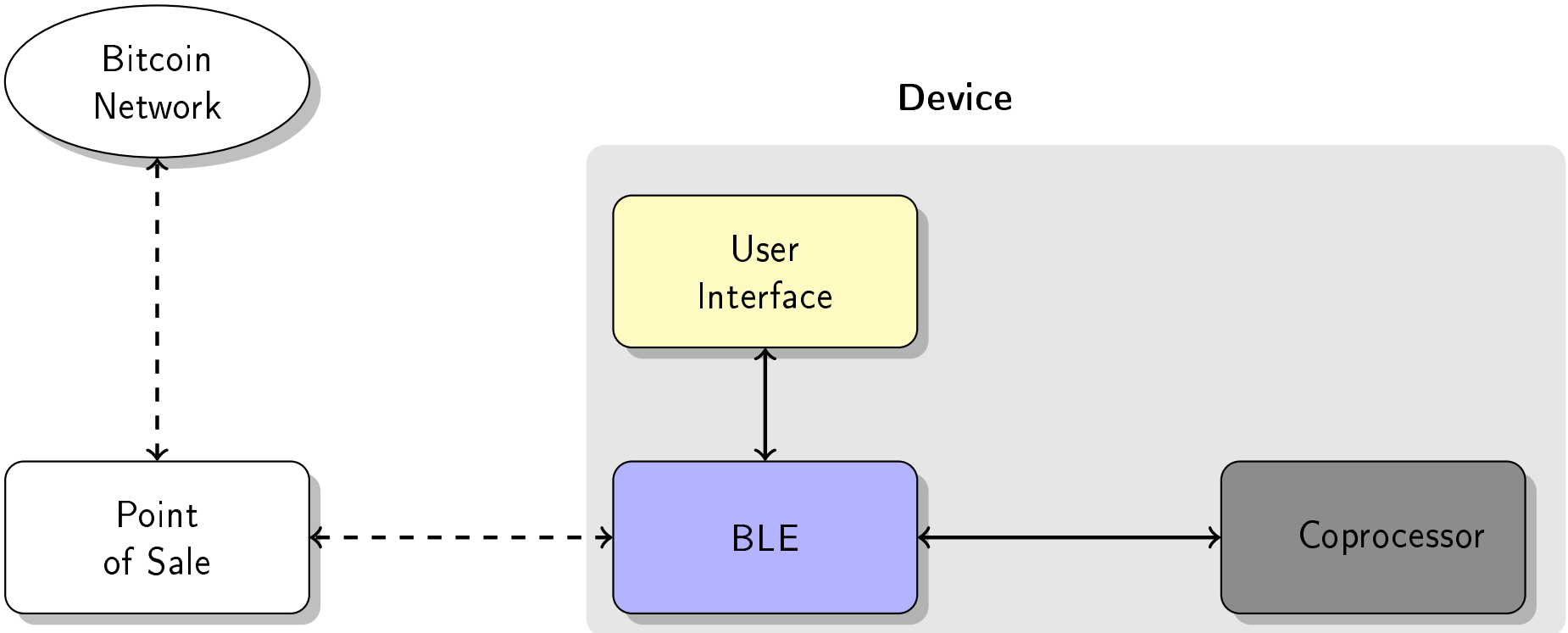
There are currently no secure cryptocoprocessors with ECDSA secp256k1.

Walkthrough



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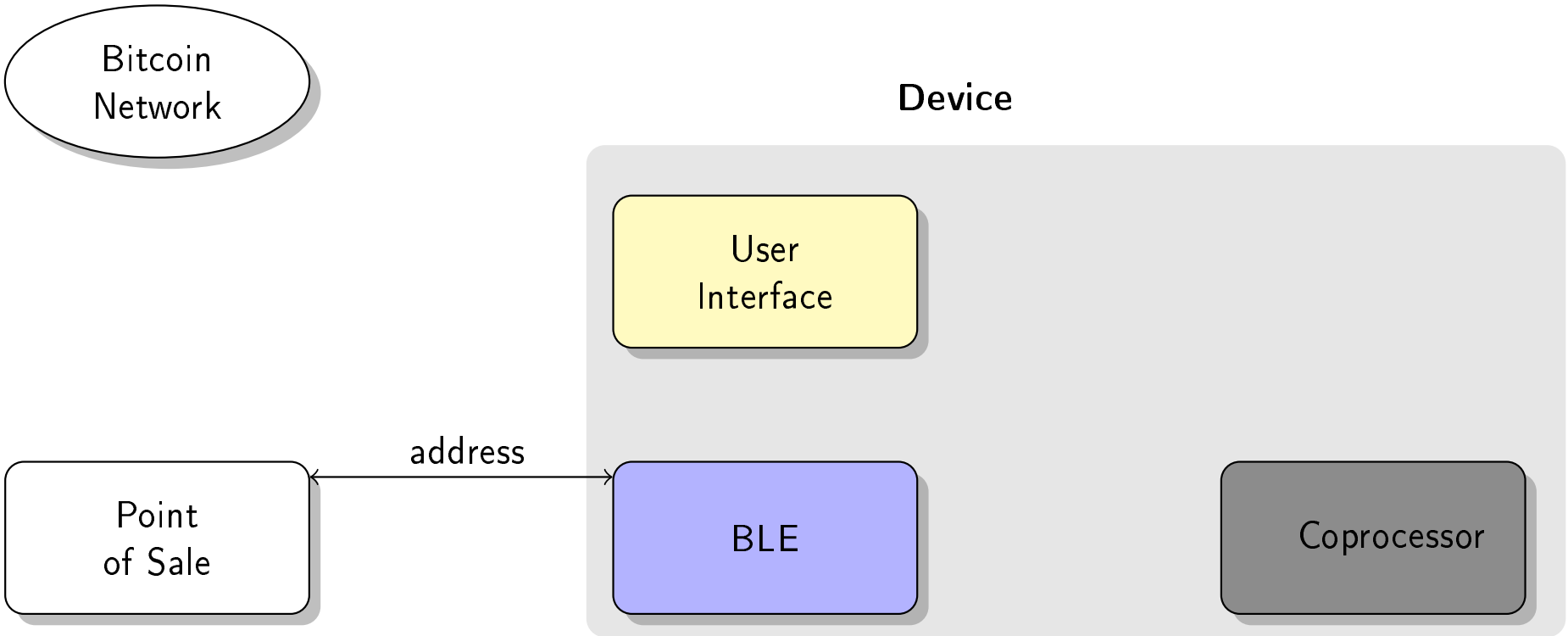

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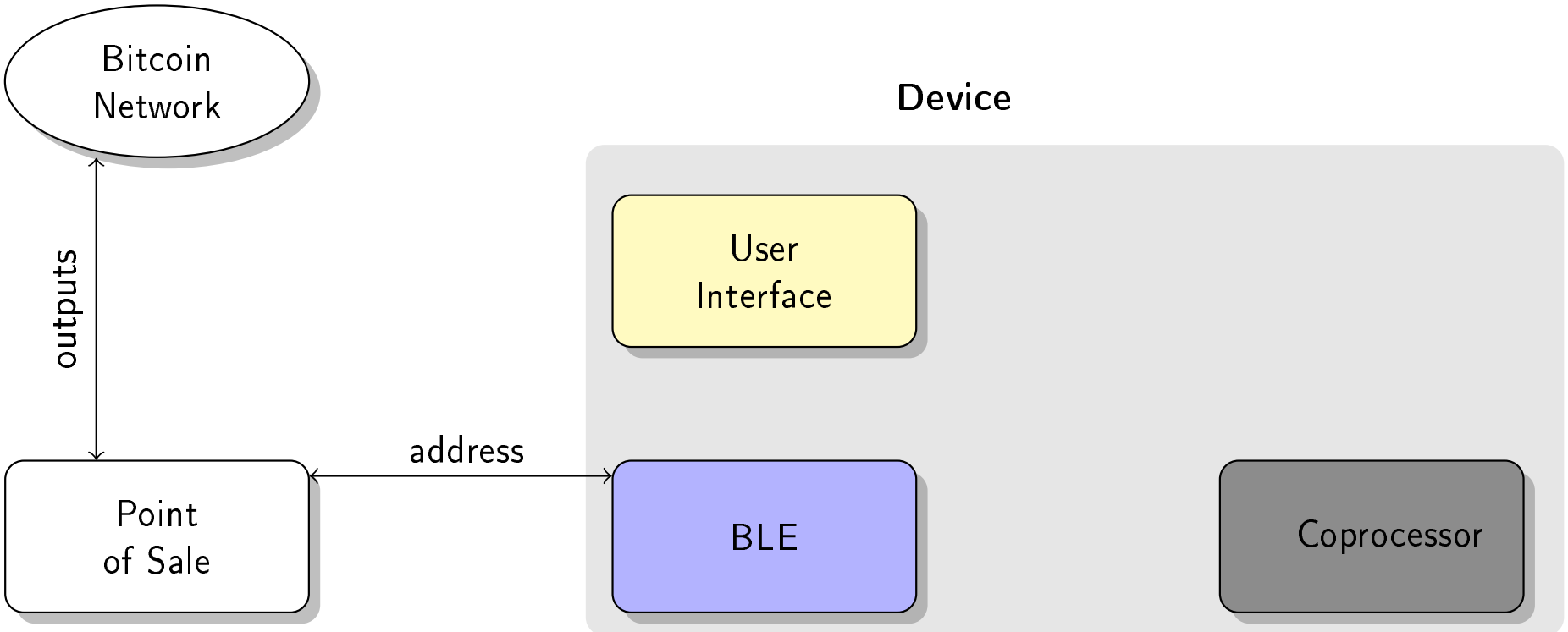

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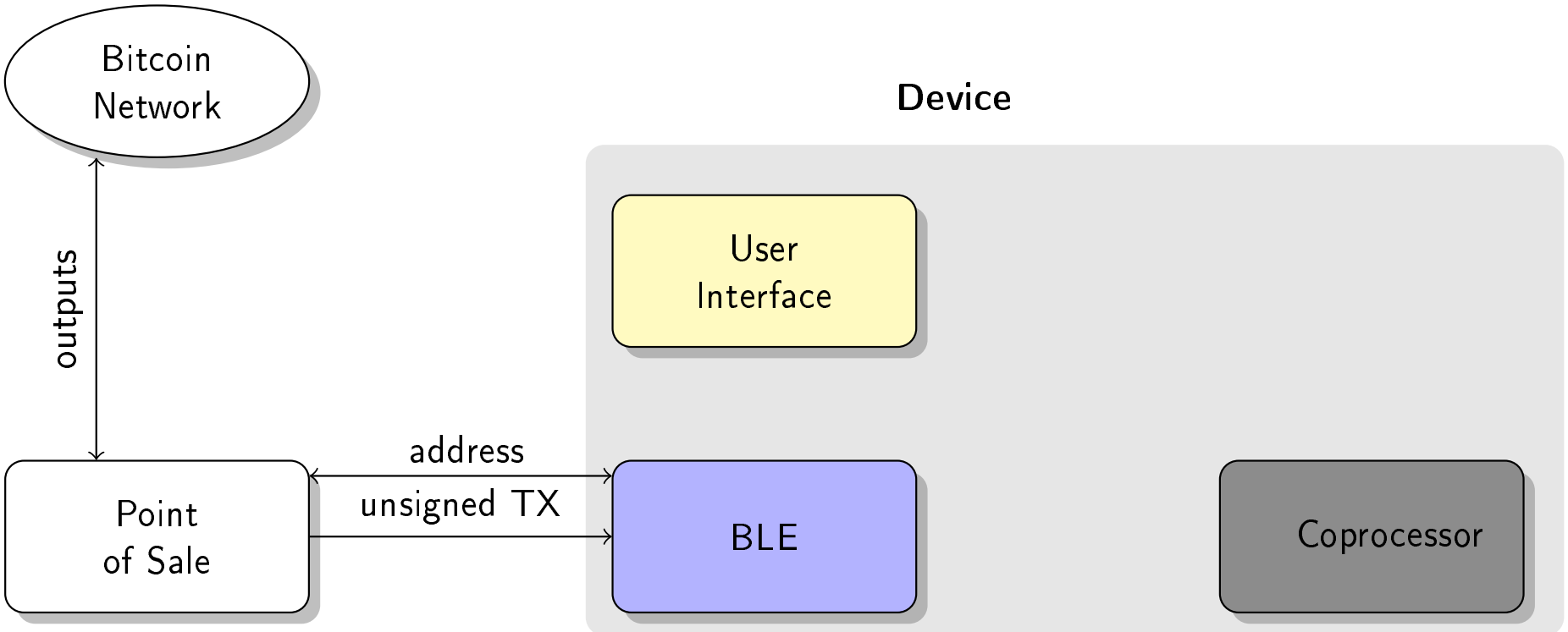

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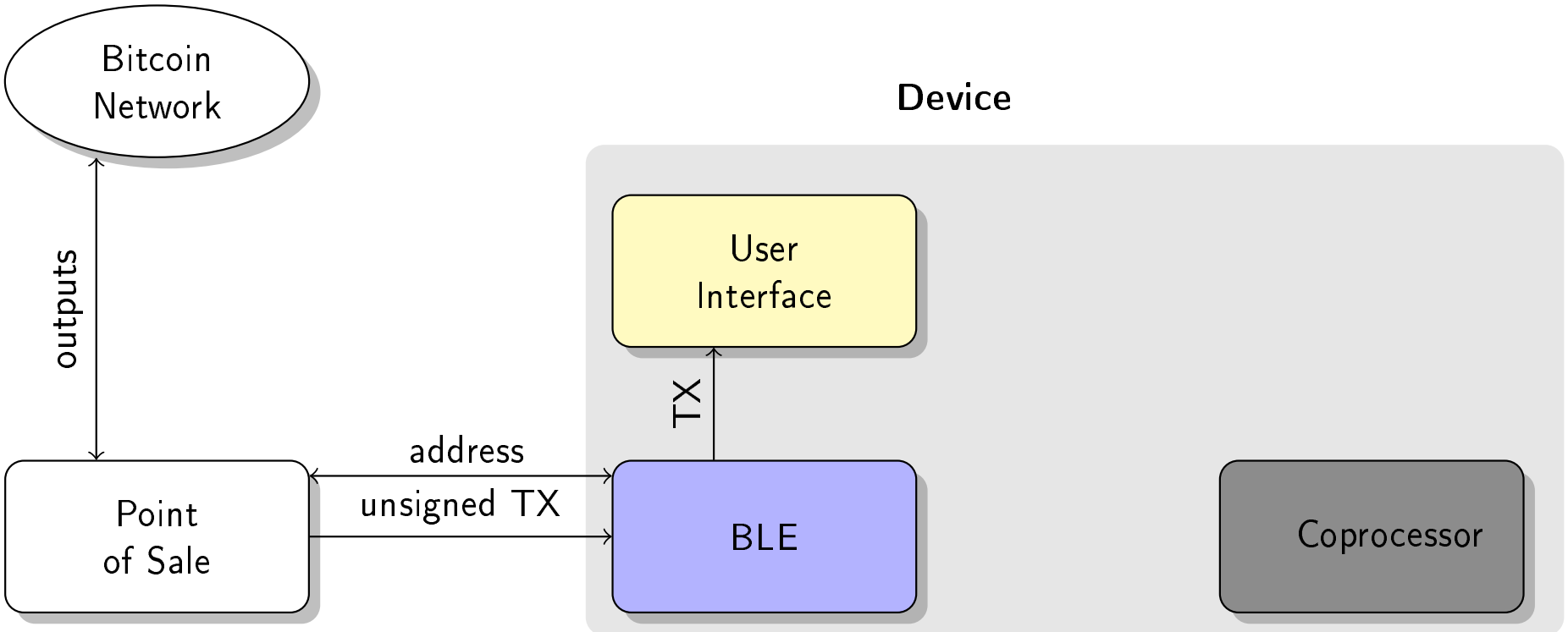

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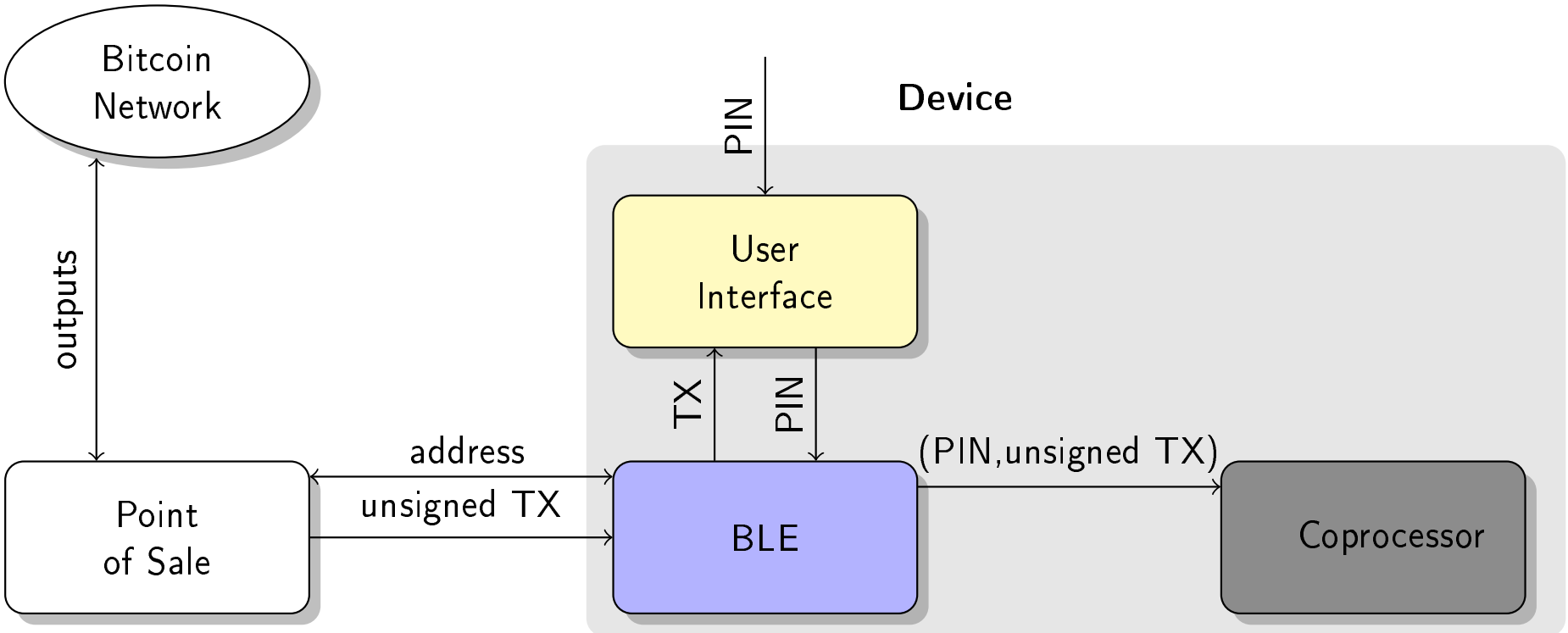

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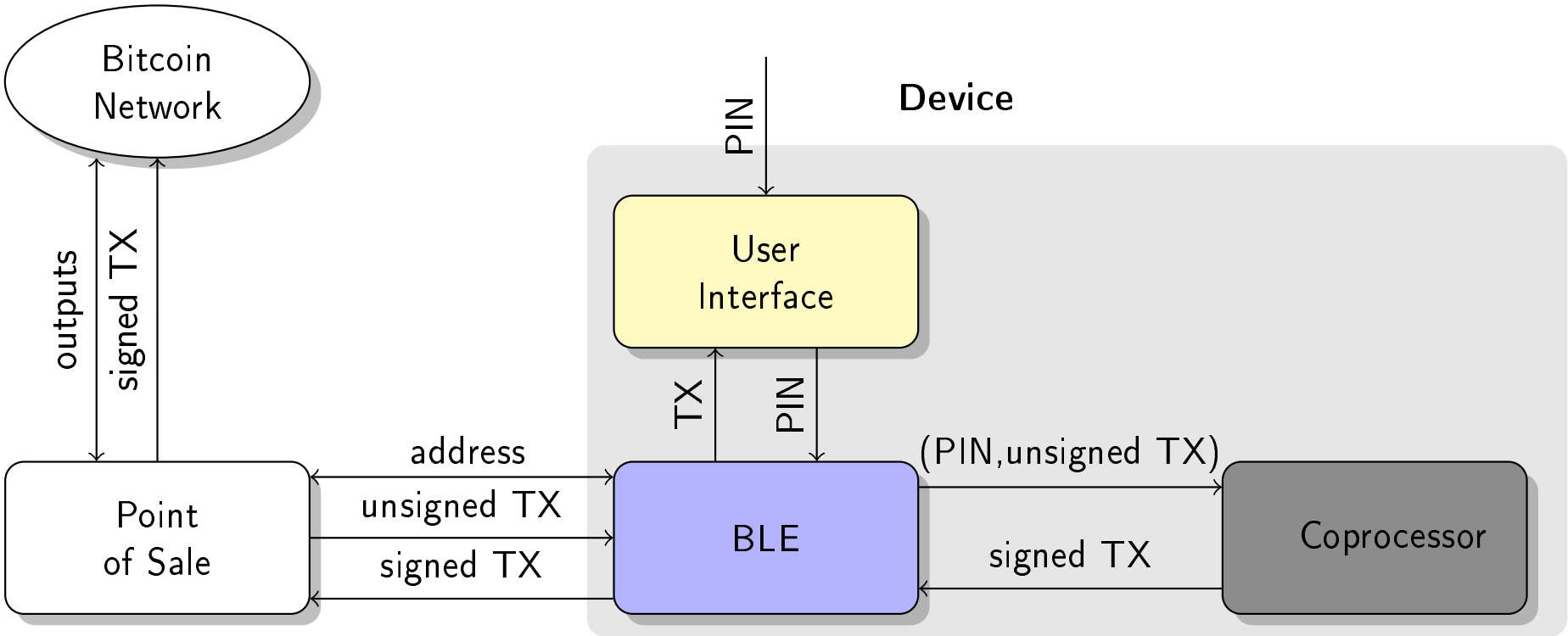

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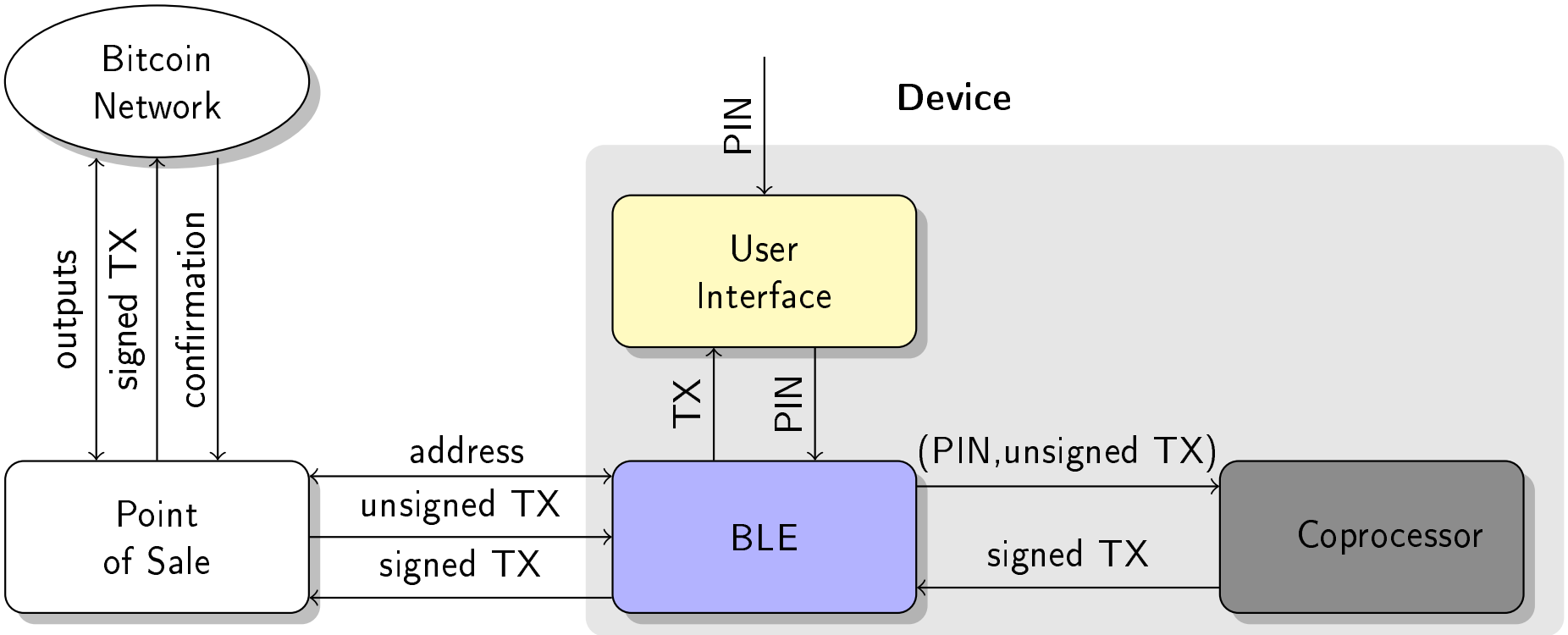

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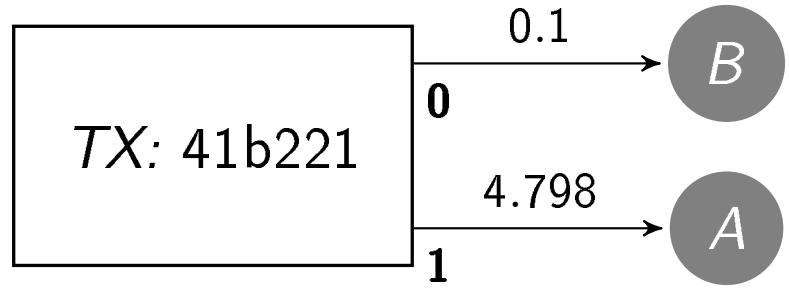

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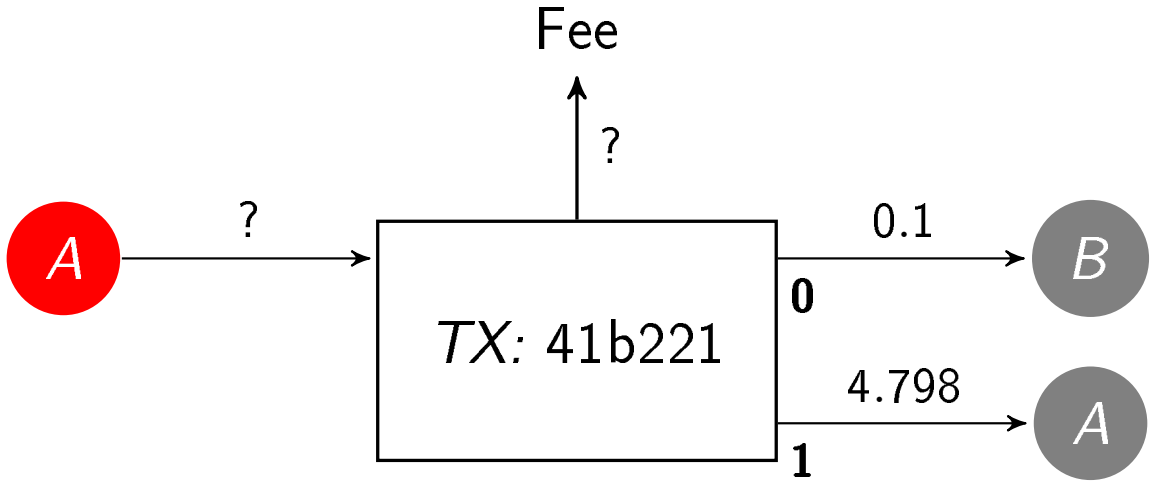

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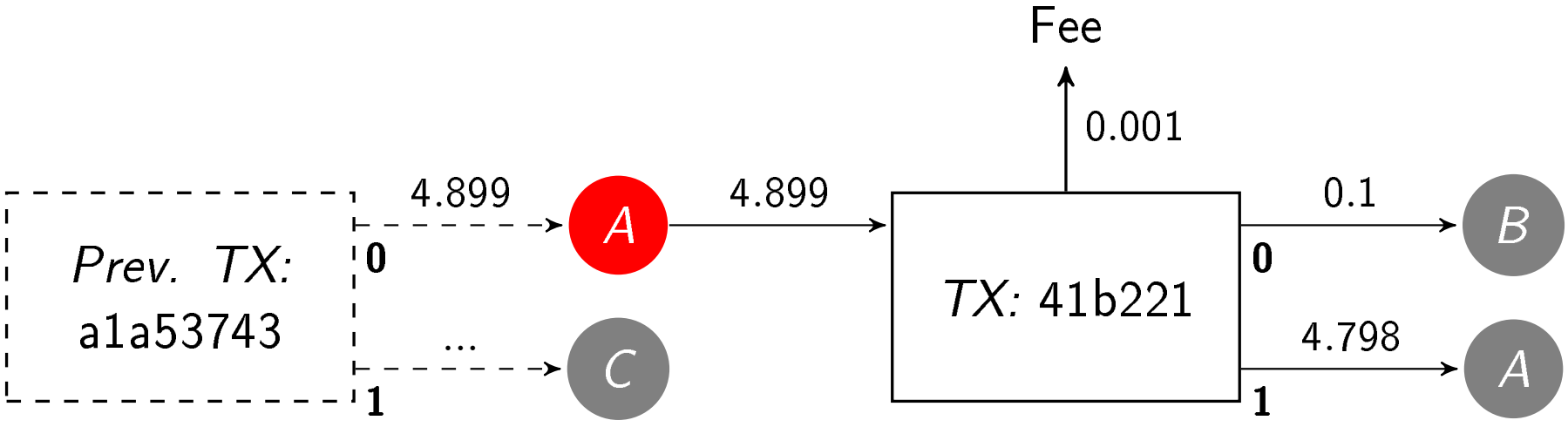

Send previous transactions to BlueWallet

Conclusion

- Mobile ✓
- Easy to use ✓
- Real-time payments ✓
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Thank you, questions?

Authors:
Tobias Bamert
Christian Decker
Roger Wattenhofer
Samuel Welten