Ark

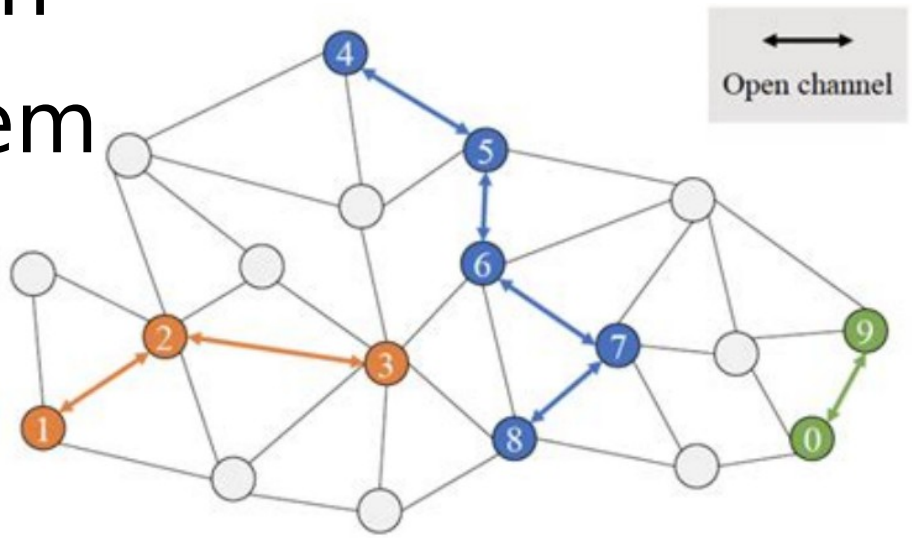
a new Bitcoin layer 2 protocol

Who am I?

- Steven Roose
- Bitcoin dev for over 10 years
- Liquid team @ Blockstream
- rust-bitcoin

Lightning Network

- off-chain payment protocol
- connected graph of two-party channels
- channels made on-chain
- inbound liquidity problem



What is Ark?

- new off-chain protocol for Bitcoin
  - → interoperable with Lightning
- sharing UTXOs with many users: VTXOs
  - → exchanging VTXOs for new VTXOs

on-chain

4 BTC

off-chain


on-chain
cov
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off-chain
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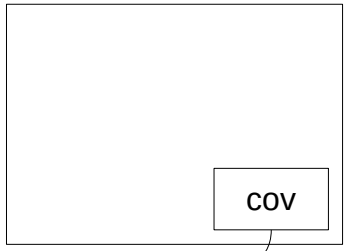
on-chain

4 BTC

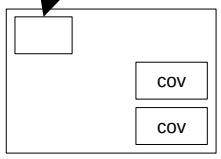
off-chain

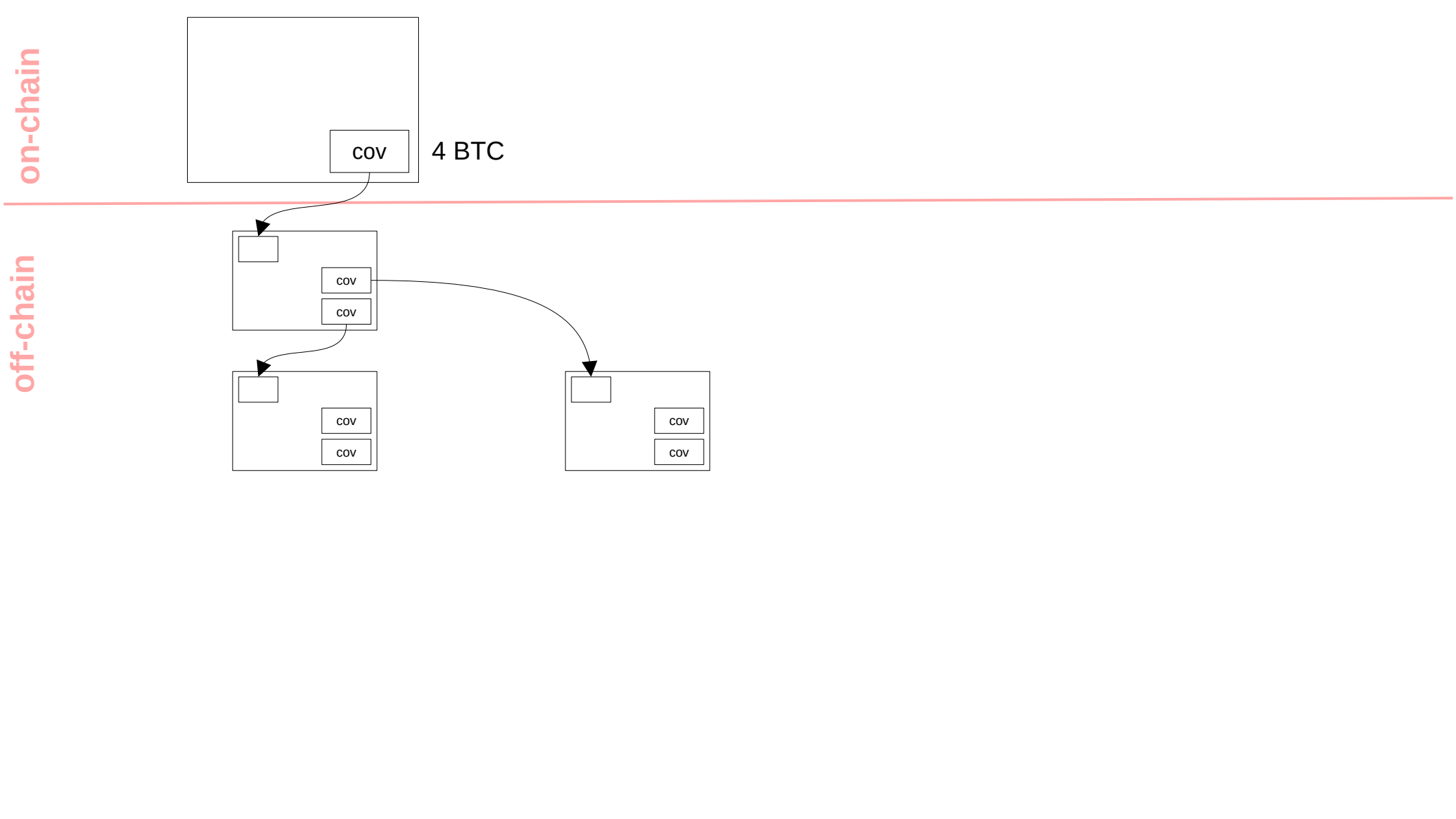
on-chain



4 BTC

off-chain

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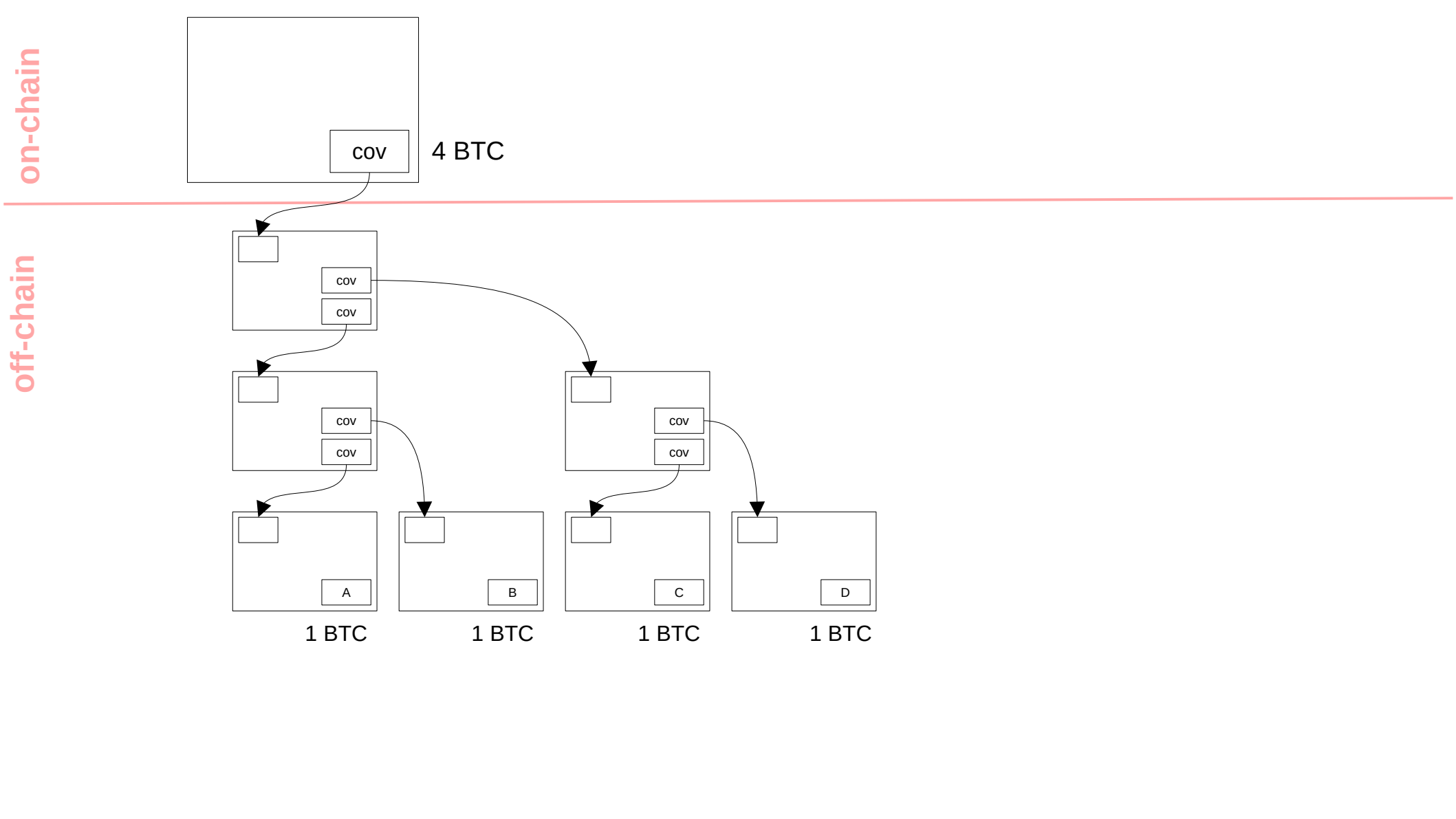
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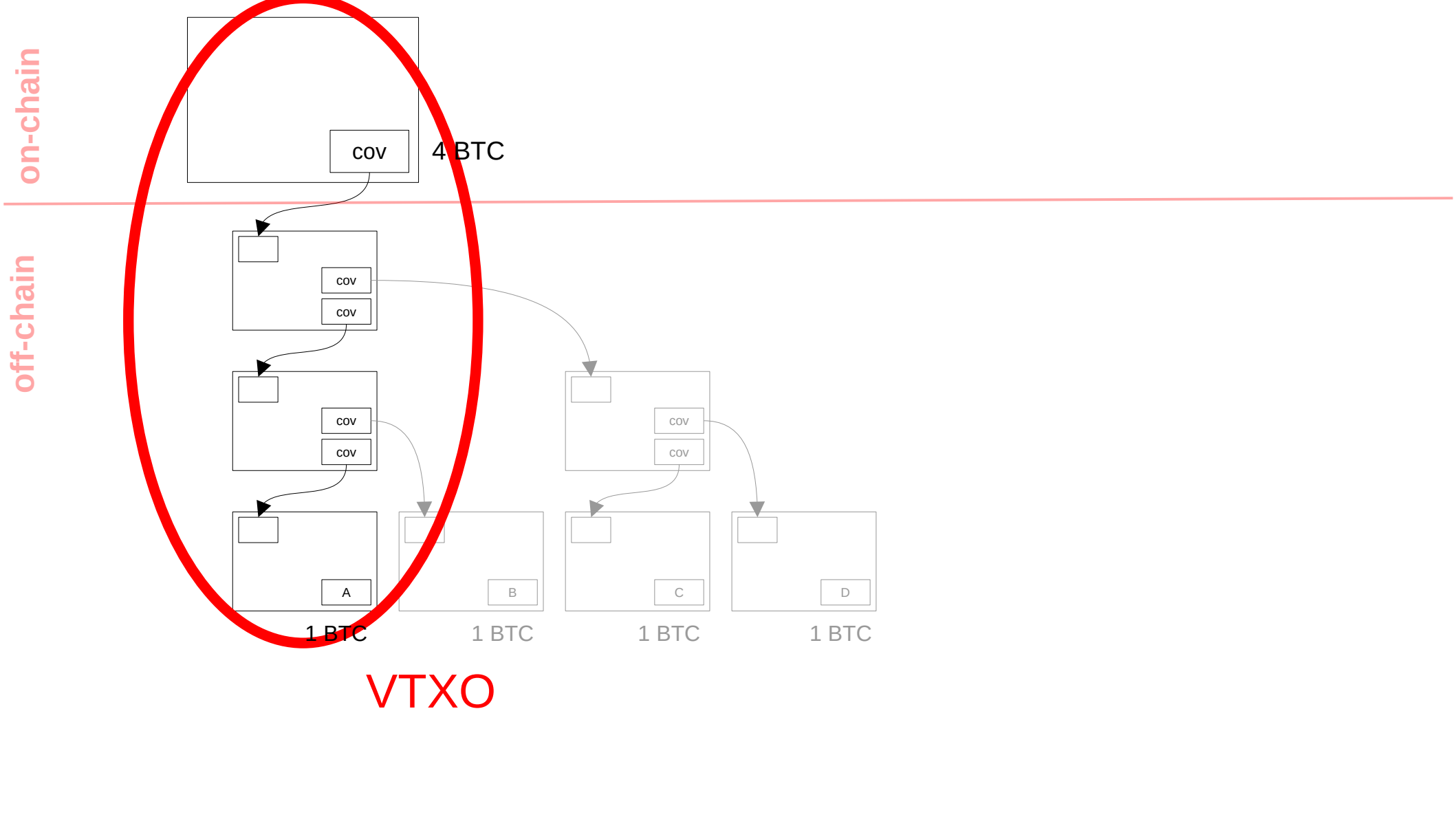
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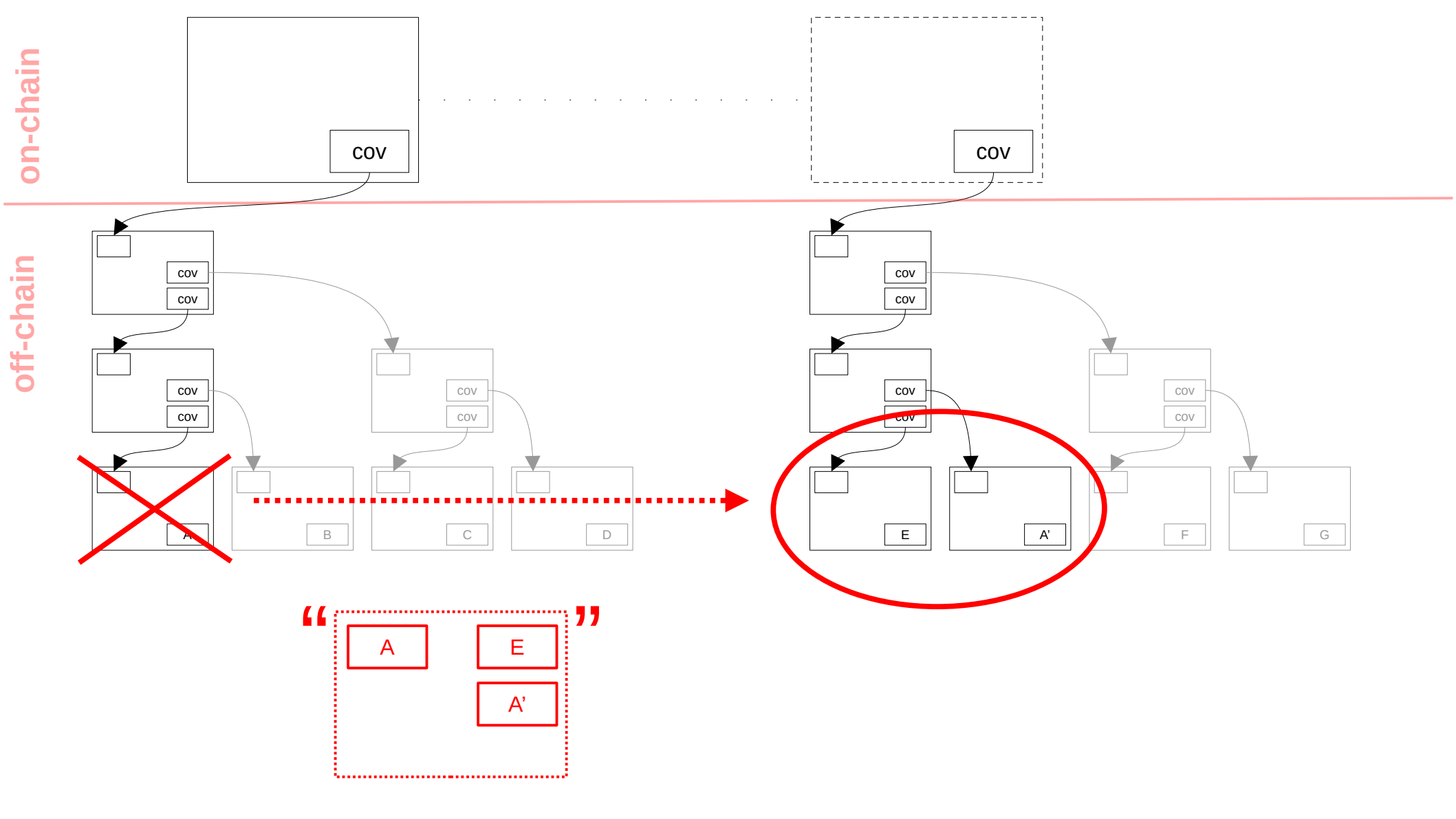
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Ark Payments

- efficient UTXO-style off-chain txs
- users 100% in control of money
- anyone can receive
  - no channel or inbound liquidity required!
- Ark rounds by Ark Service Provider
  - scheduled at fixed time intervals
  - liquidity required from ASP
- VTXO expiry

Out-of-Round Payments

- we can send a VTXO directly
  - → without participating in a round
  - → instant & no liquidity fee
- “Somsen Shortcut”
- Arkoor


on-chain
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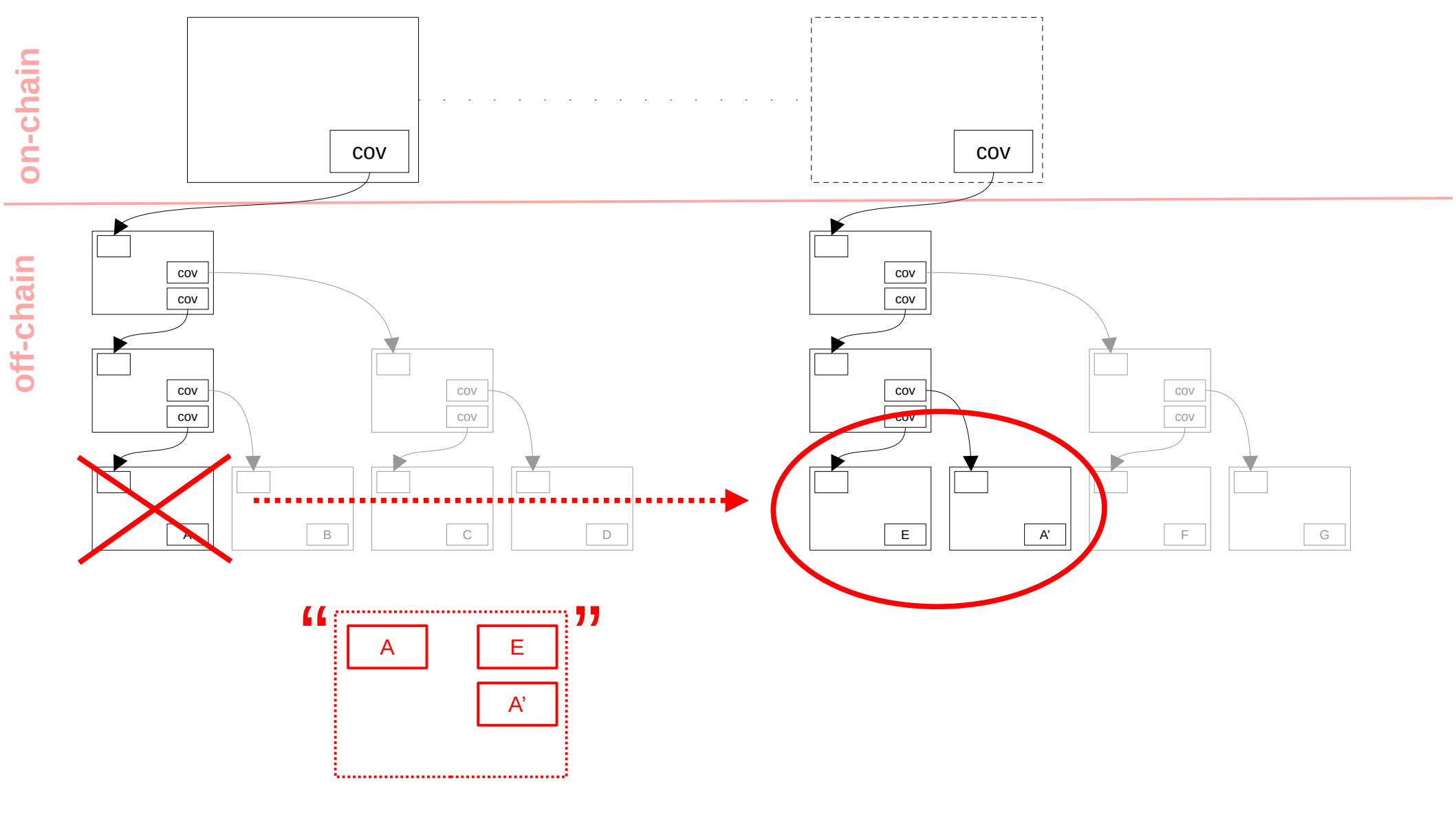
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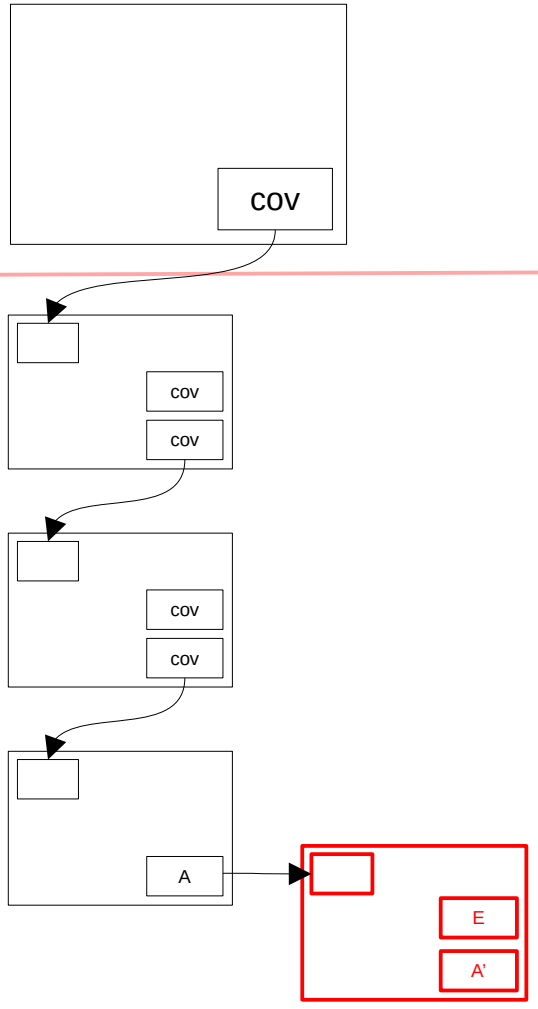
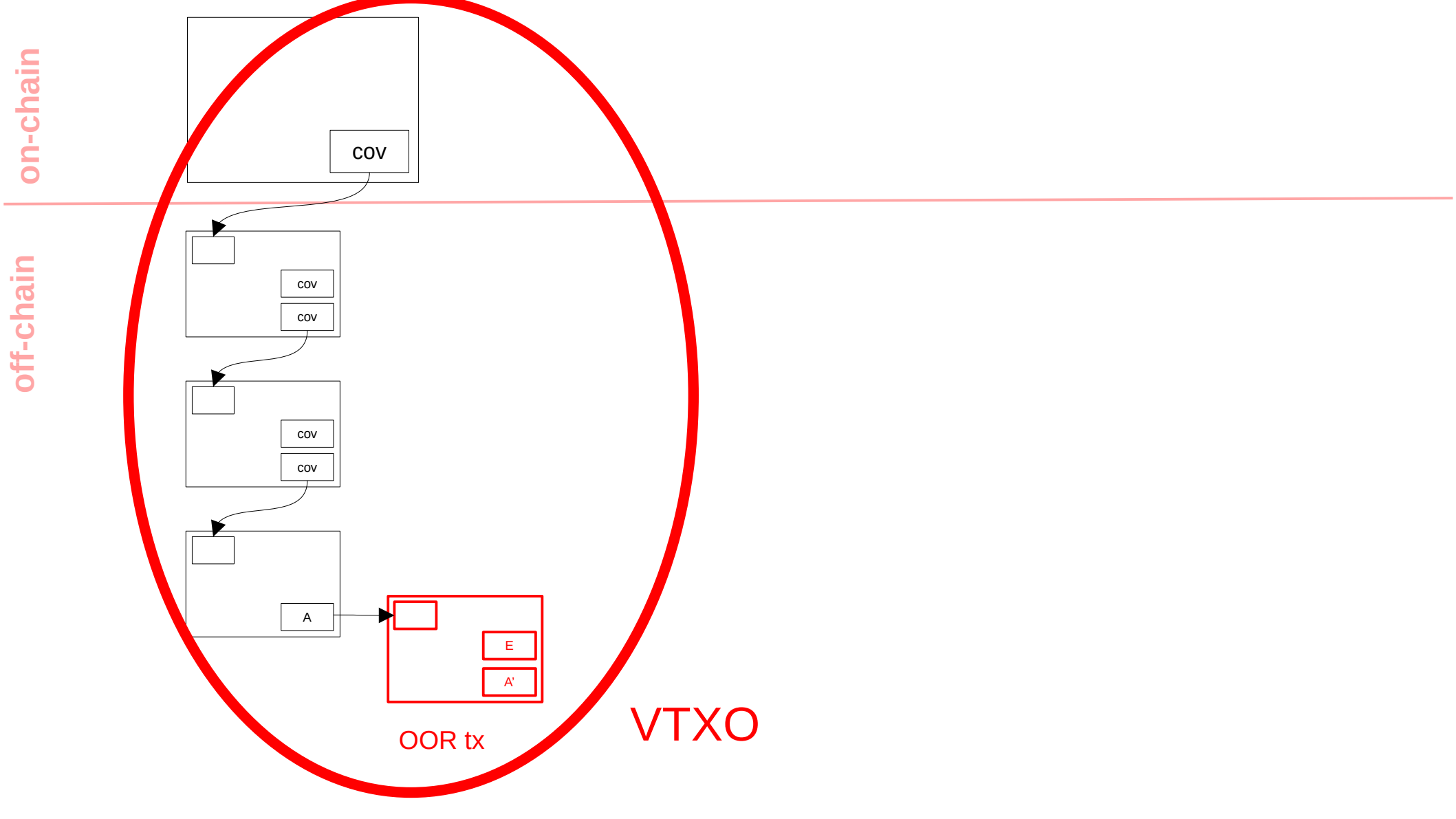


OOR tx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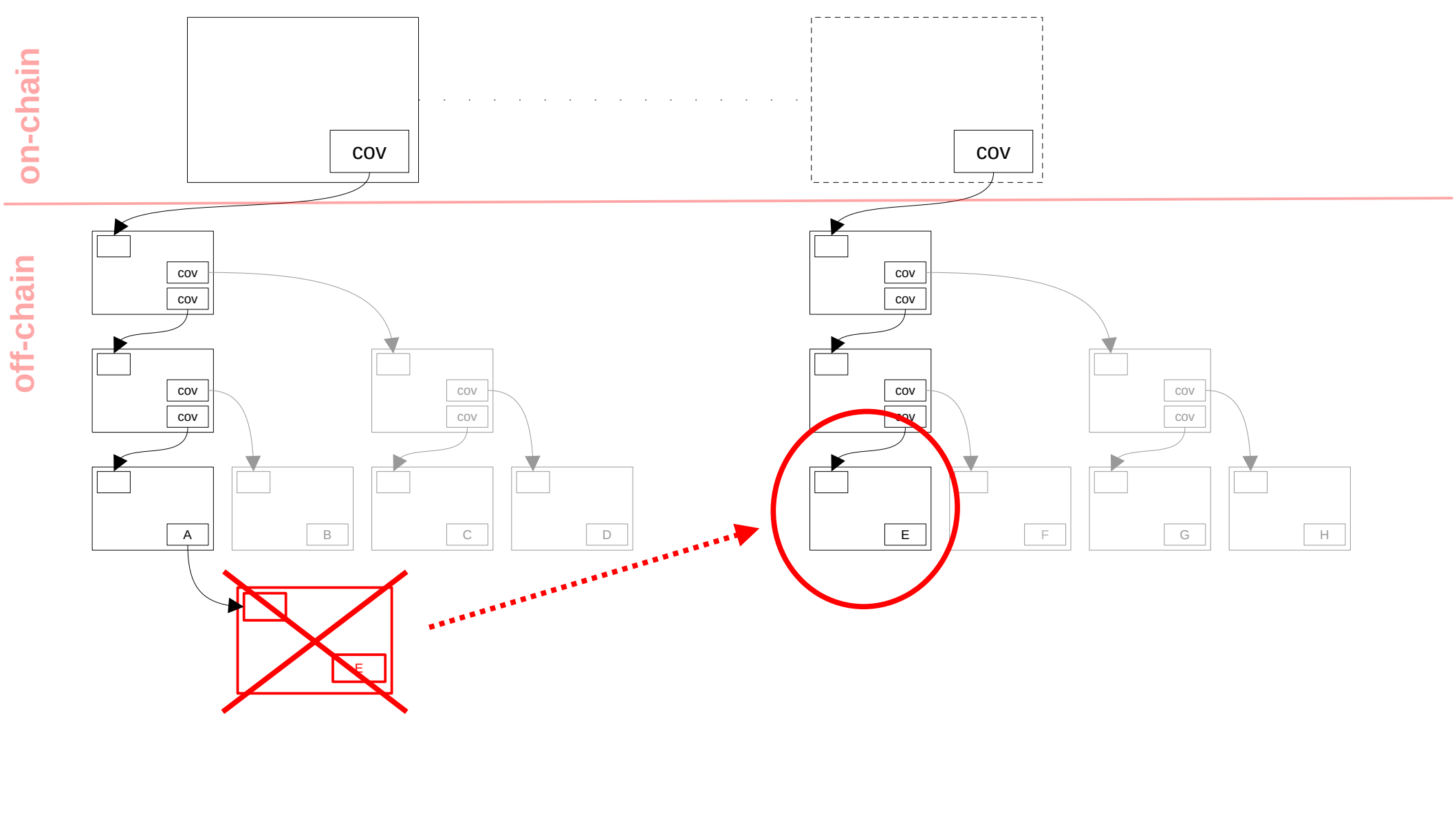
OOR tx
VTXO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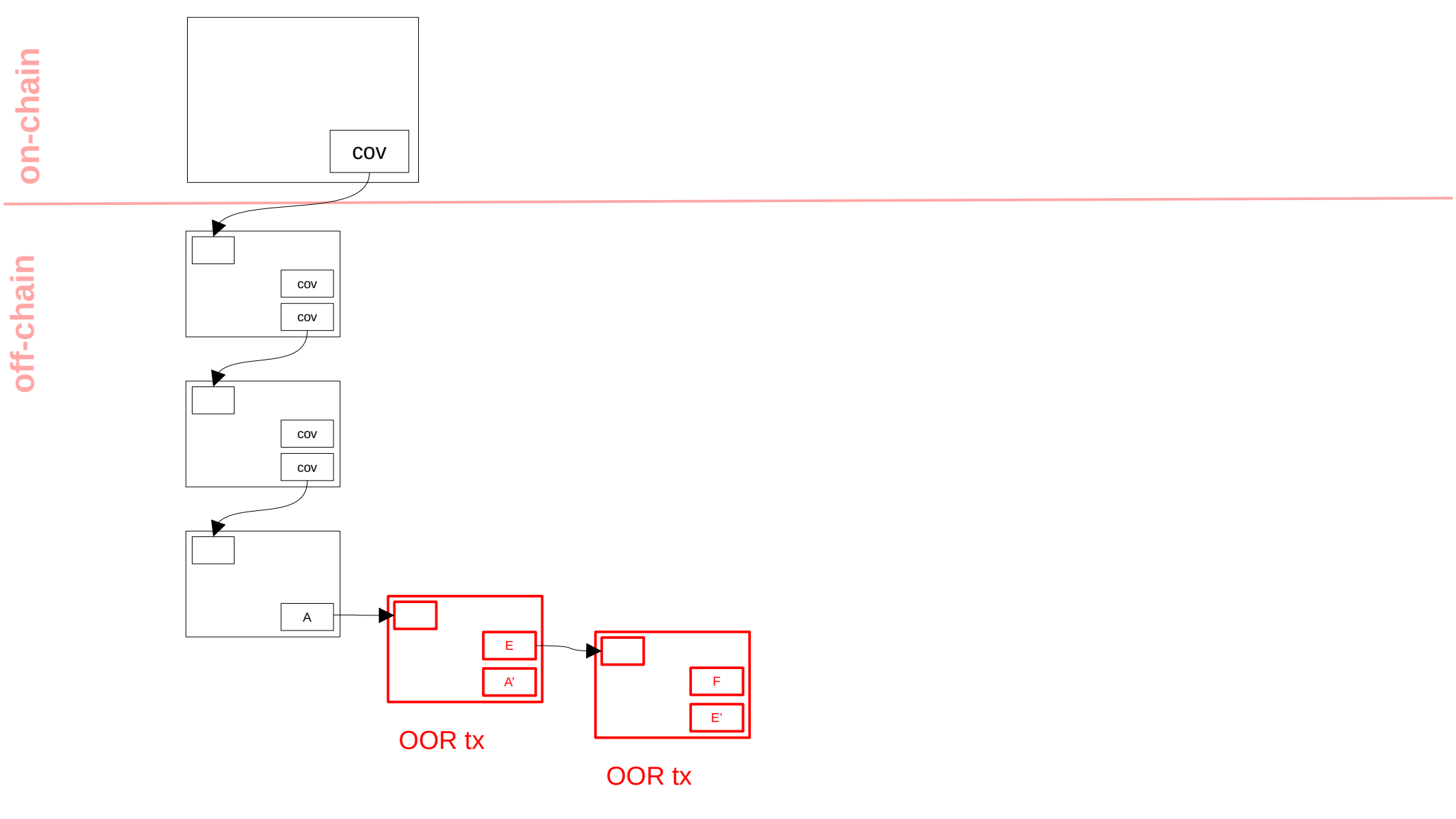
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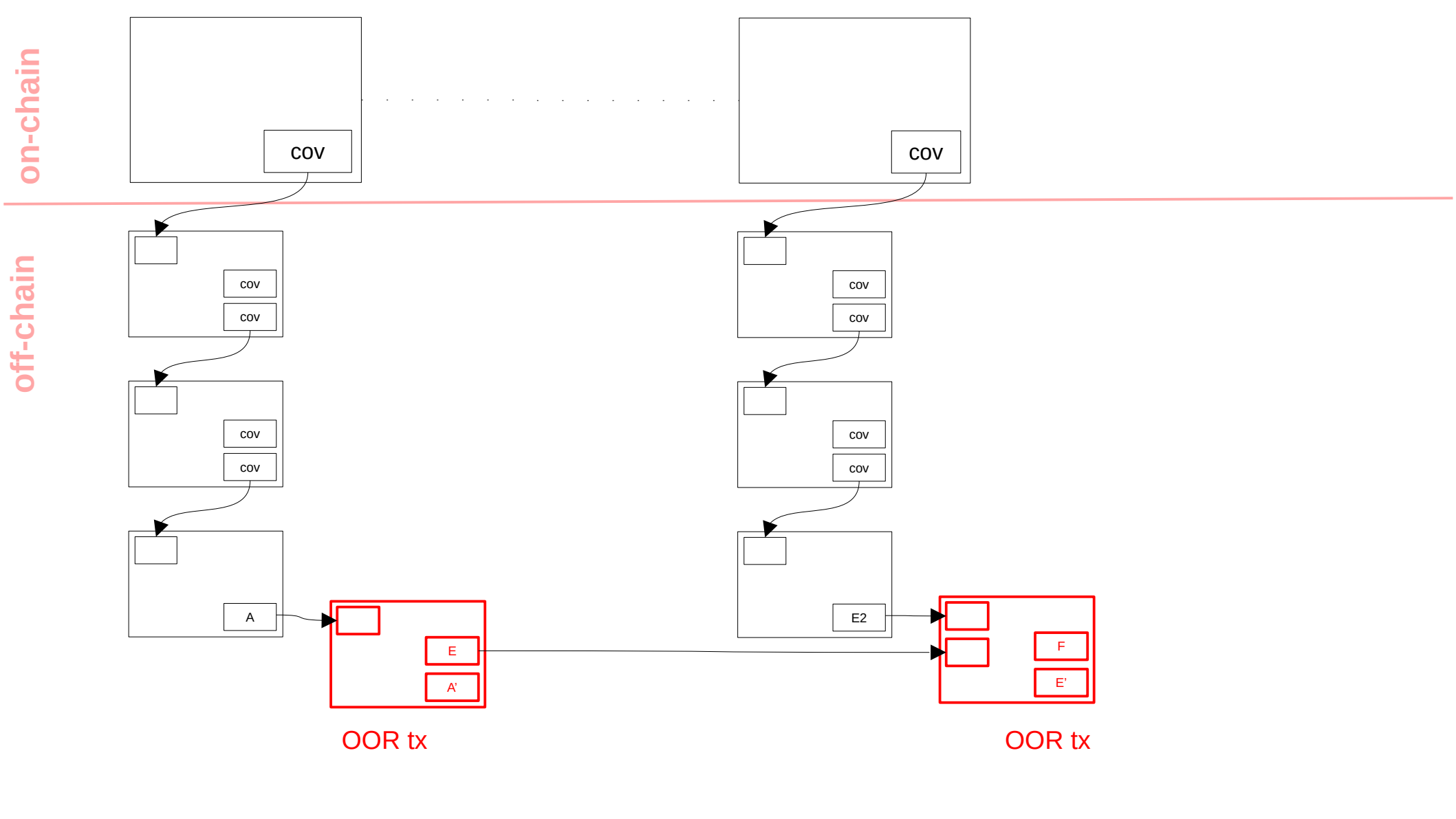
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OOR tx
OOR tx

Out-of-Round Payments

- instant & no liquidity fee
- temporary state-chain model
  → opt-out

Lightning

- make Lightning payments from Ark
  - → similar to regular Ark (OOR) tx
  - → ASP functions as LSP
- create Lightning channels inside Ark
  - → Ark as “channel factory”
  - → cheap channels with expiry

State of the Ark

- impl of clArk on Bitcoin
  - → covenant-less Ark
  - → MuSig2 cosigning instead of covenants
- impl on Liquid using covenants

Thanks

- https://roose.io/presentations
- https://ark-protocol.org/
- Questions?