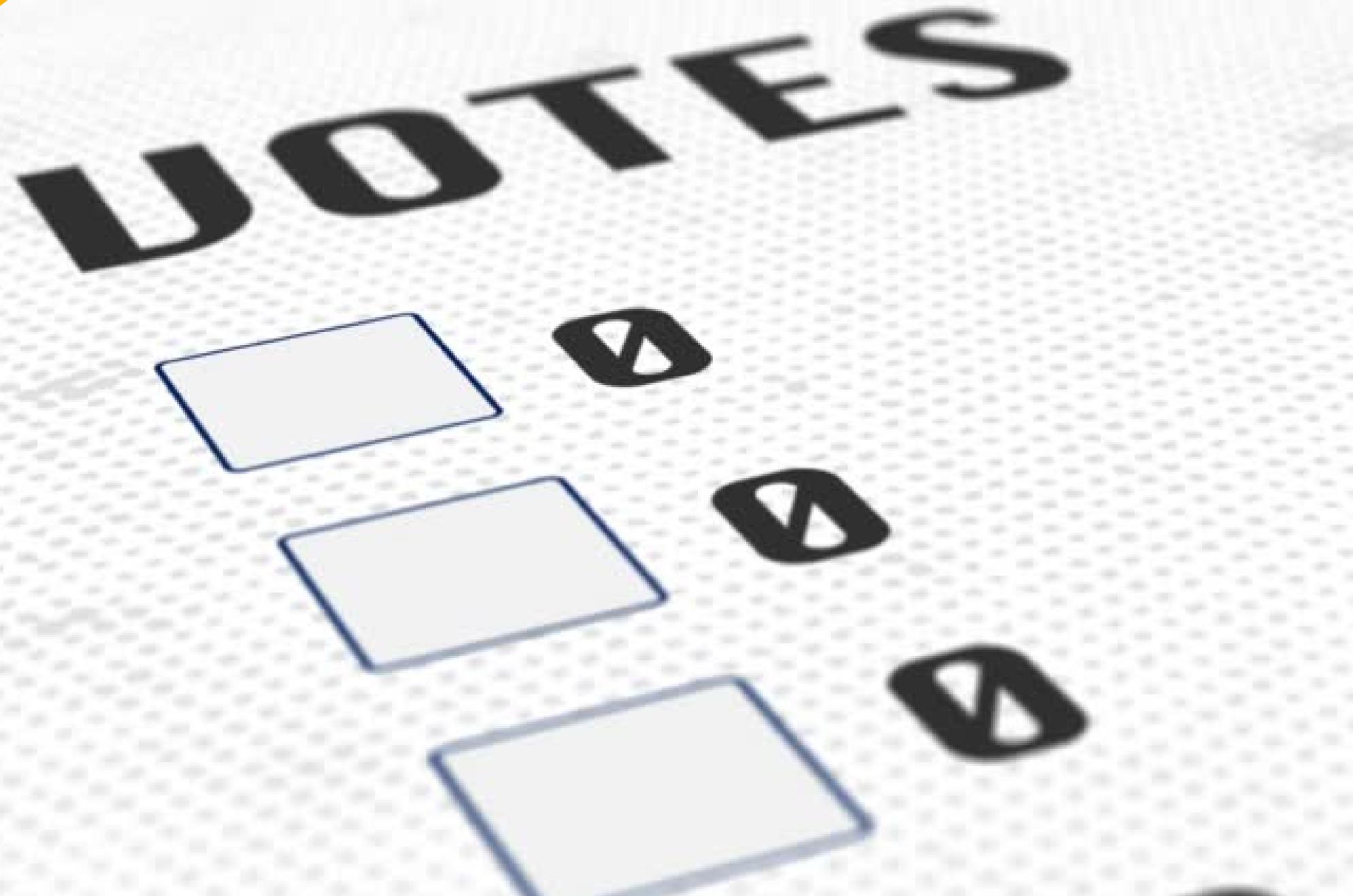




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Concordium Smart Contracts



A voting-themed demo
to kickstart your journey
as a dApp developer
on Concordium



In this Presentation

Here's what we'll cover:

Overview of blockchains and Concordium

A Very Realistic Problem

Concordium Smart Contracts

Smart contracts onto the chain!

Additional resources

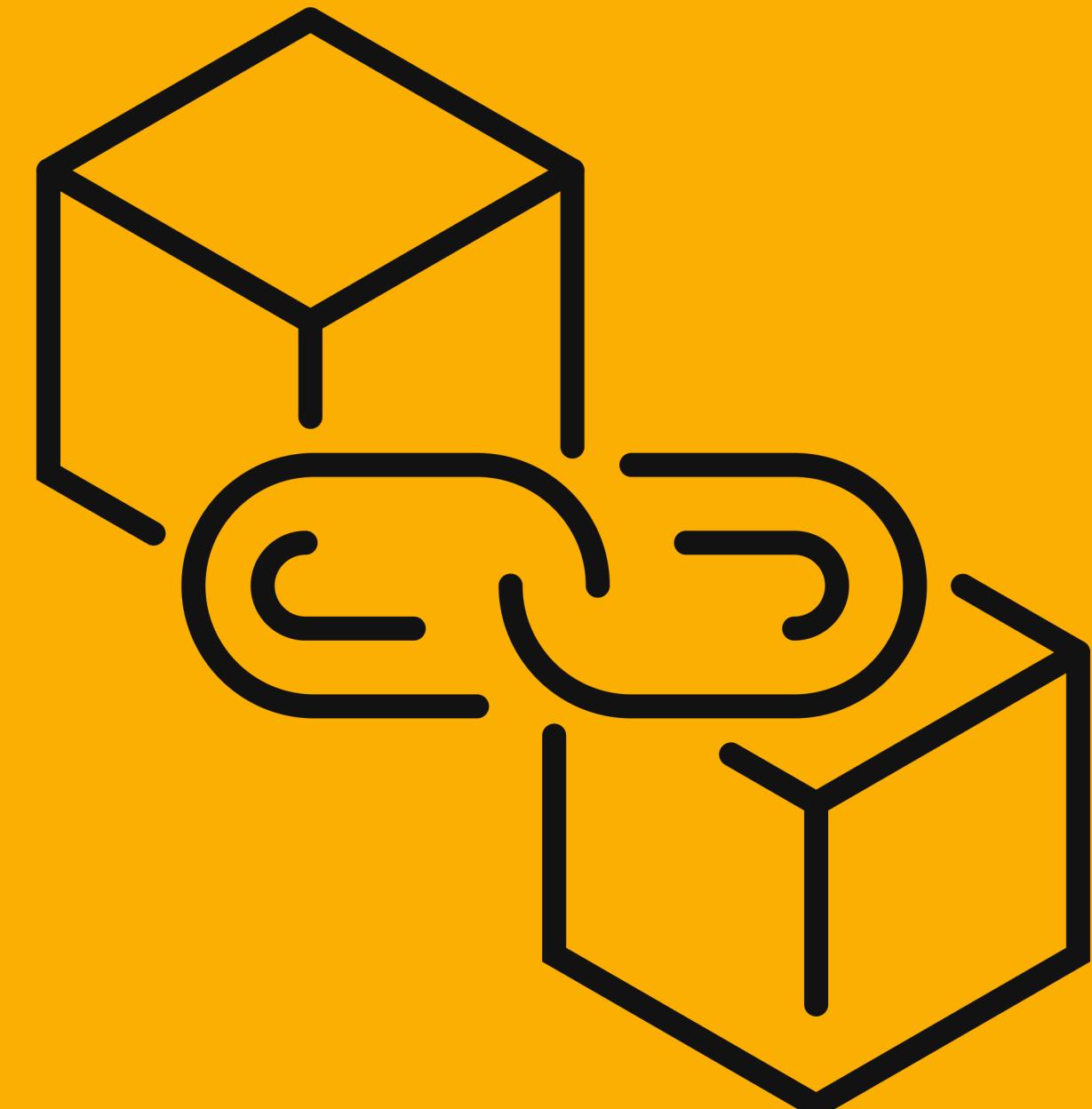
Questions



Blockchains in general

Blockchains

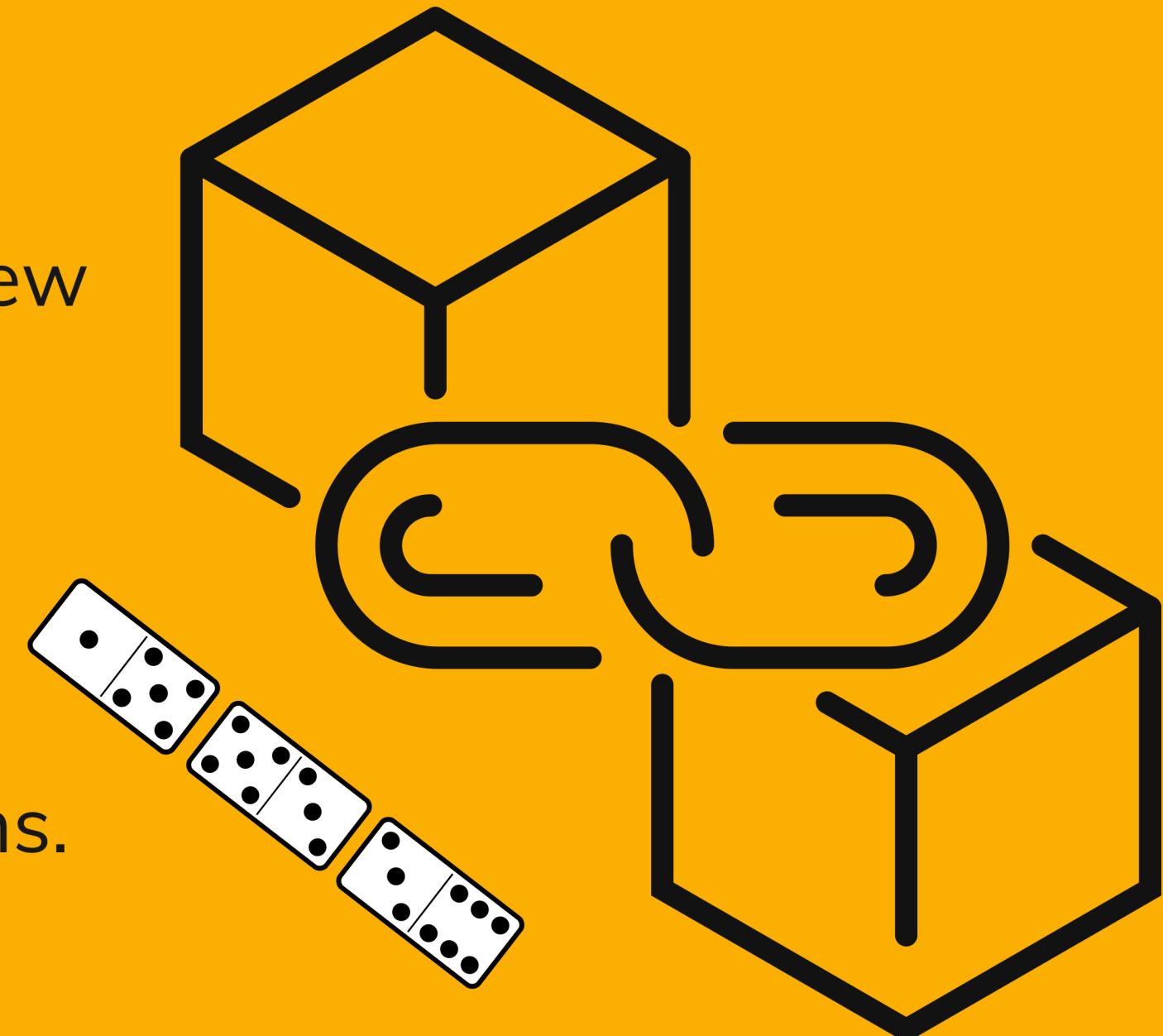
- A way to safely store data in a network of computers.
- Where every node (computer) agrees on what the data is.
- The data could for example be transfers
 - Person A transfers 10 coins to person B
 - Person B transfers 5 coins to person C





Blockchains

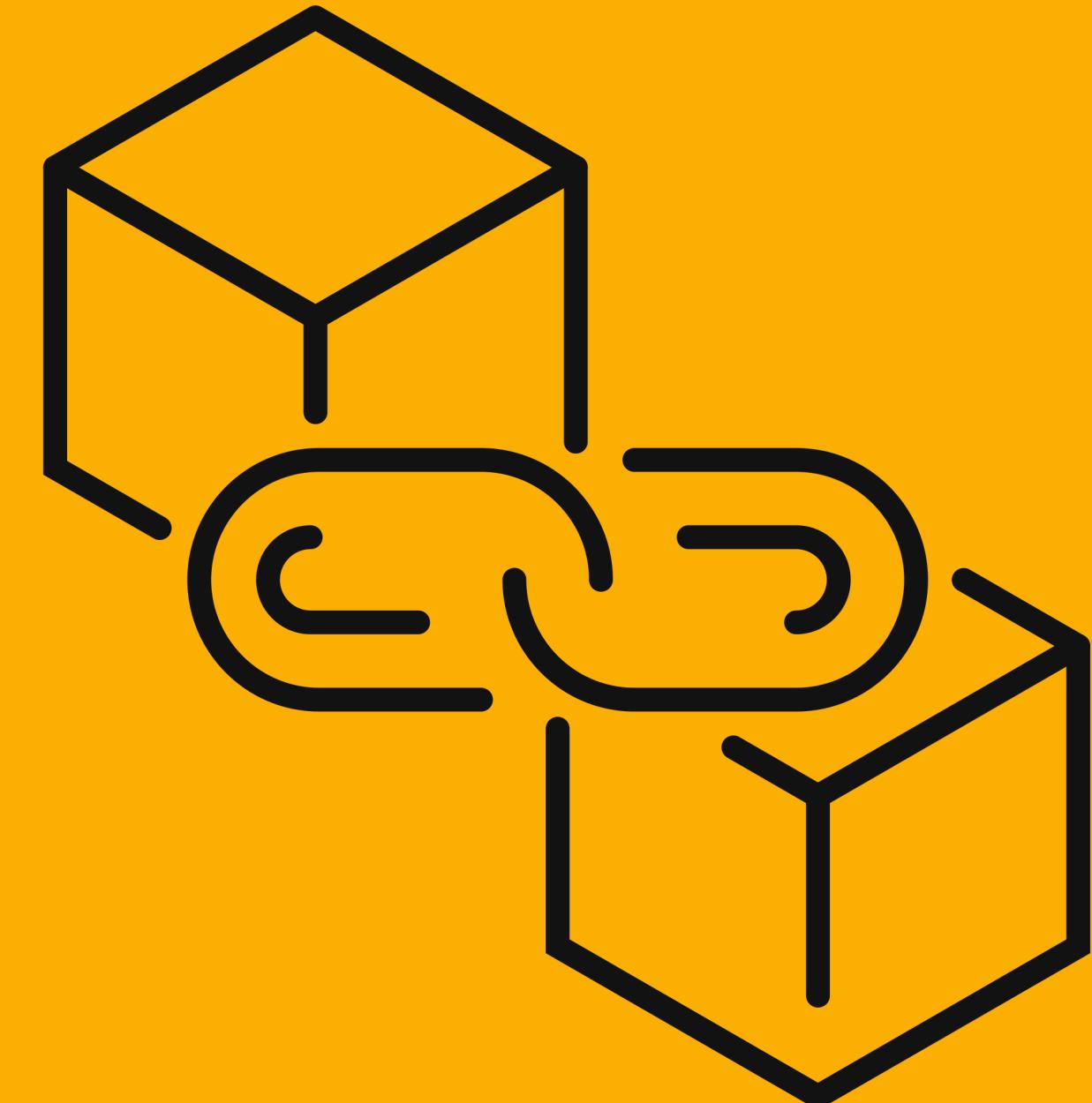
- Network of nodes (computers) running a consensus algorithm to agree on the order of new transactions (new data added).
- Transactions are grouped in blocks, which are cryptographically linked.
- The data can also be small programs, smart contracts, and messages sent to these programs.





Typical blockchain problems

- Users are anonymous
 - What happens when crime occurs on the chain?
- Prices are unpredictable and usually high





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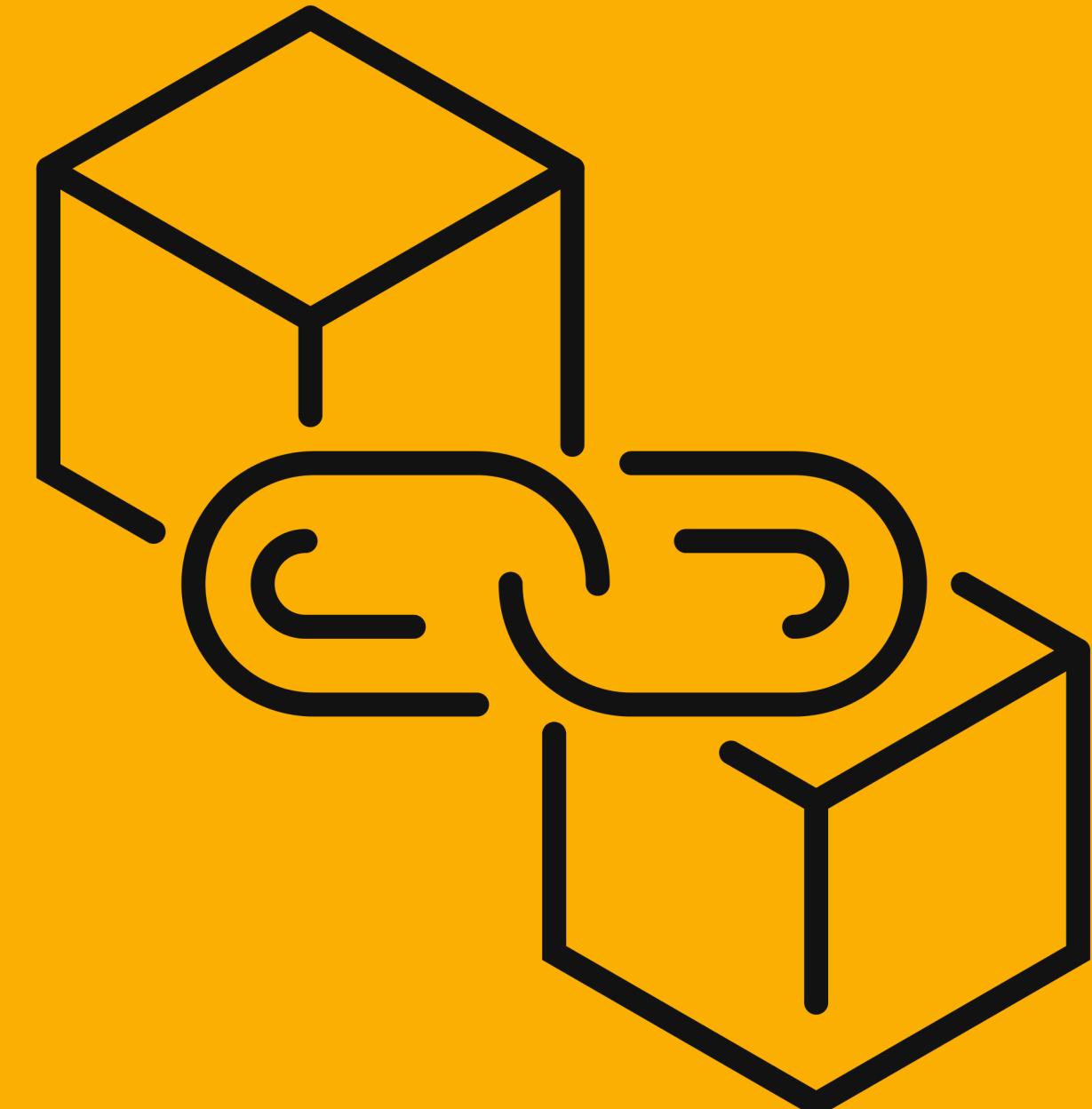
Concordium Blockchain

Doris Benda
Kasper Dissing Bargsteen



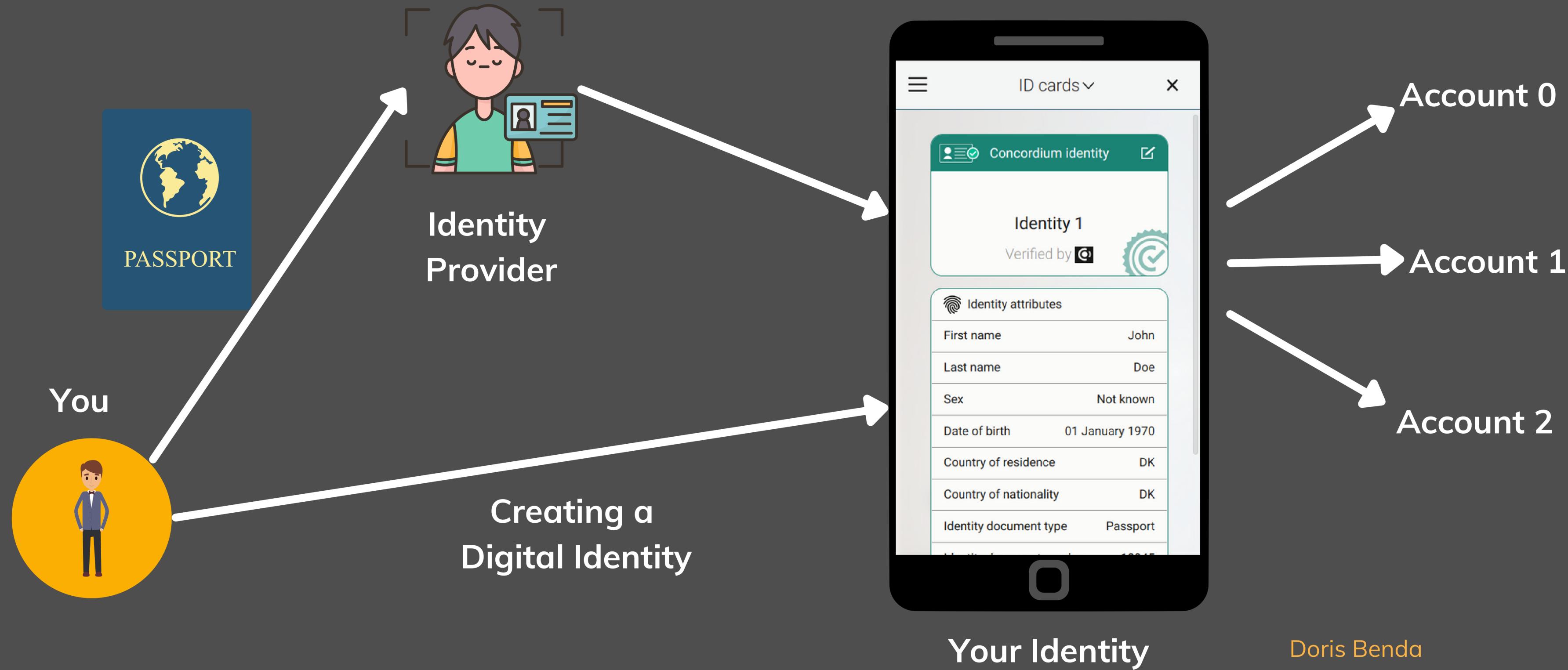
Typical blockchain problems SOLVED

- Users are anonymous by default
 - But anonymity can be revoked by law enforcement
- Prices are predictable and low (fixed in terms of euro)





Concordium's ID-layer and account creation





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Revoking anonymity



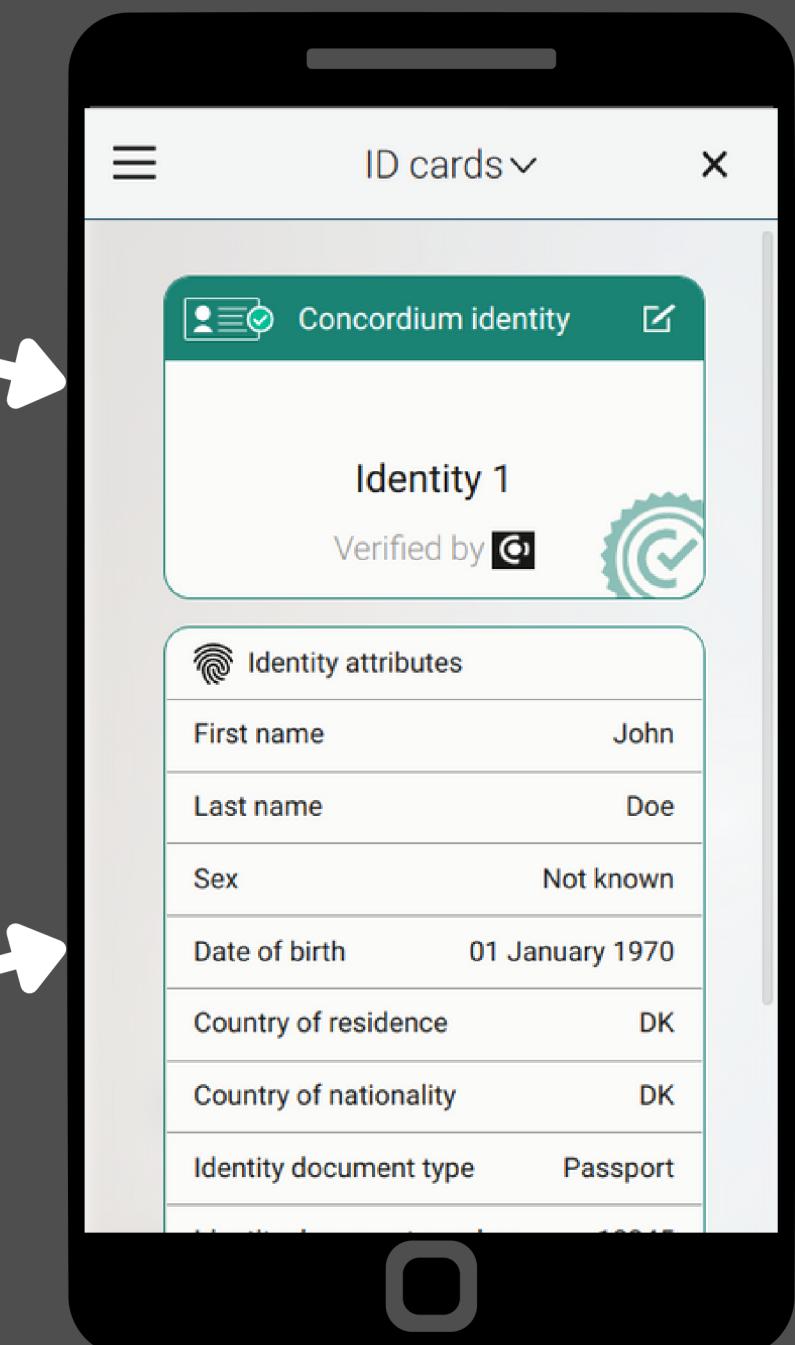
Anonymity Revokers



Identity Provider



Law
Enforcement



Your Identity



Legal
Warrant

You



Doris Benda
Kasper Dissing Bargsteen



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Concordium Smart Contracts

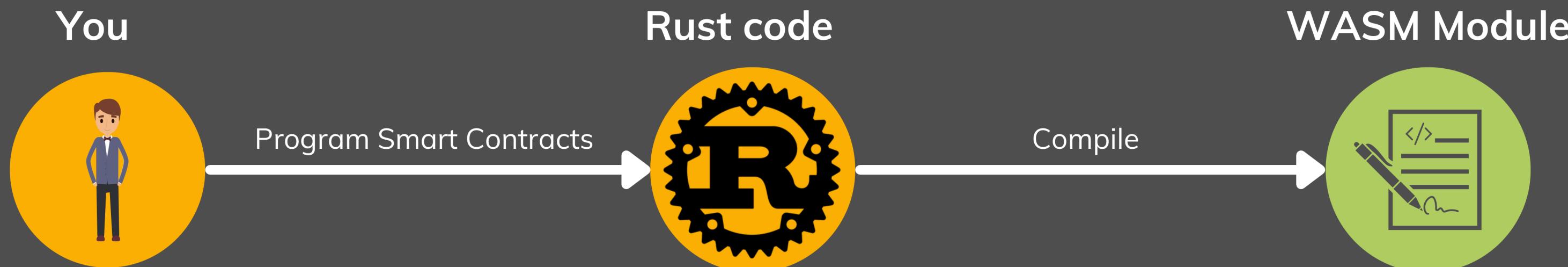
Doris Benda
Kasper Dissing Bargsteen



Introduction To Smart Contracts

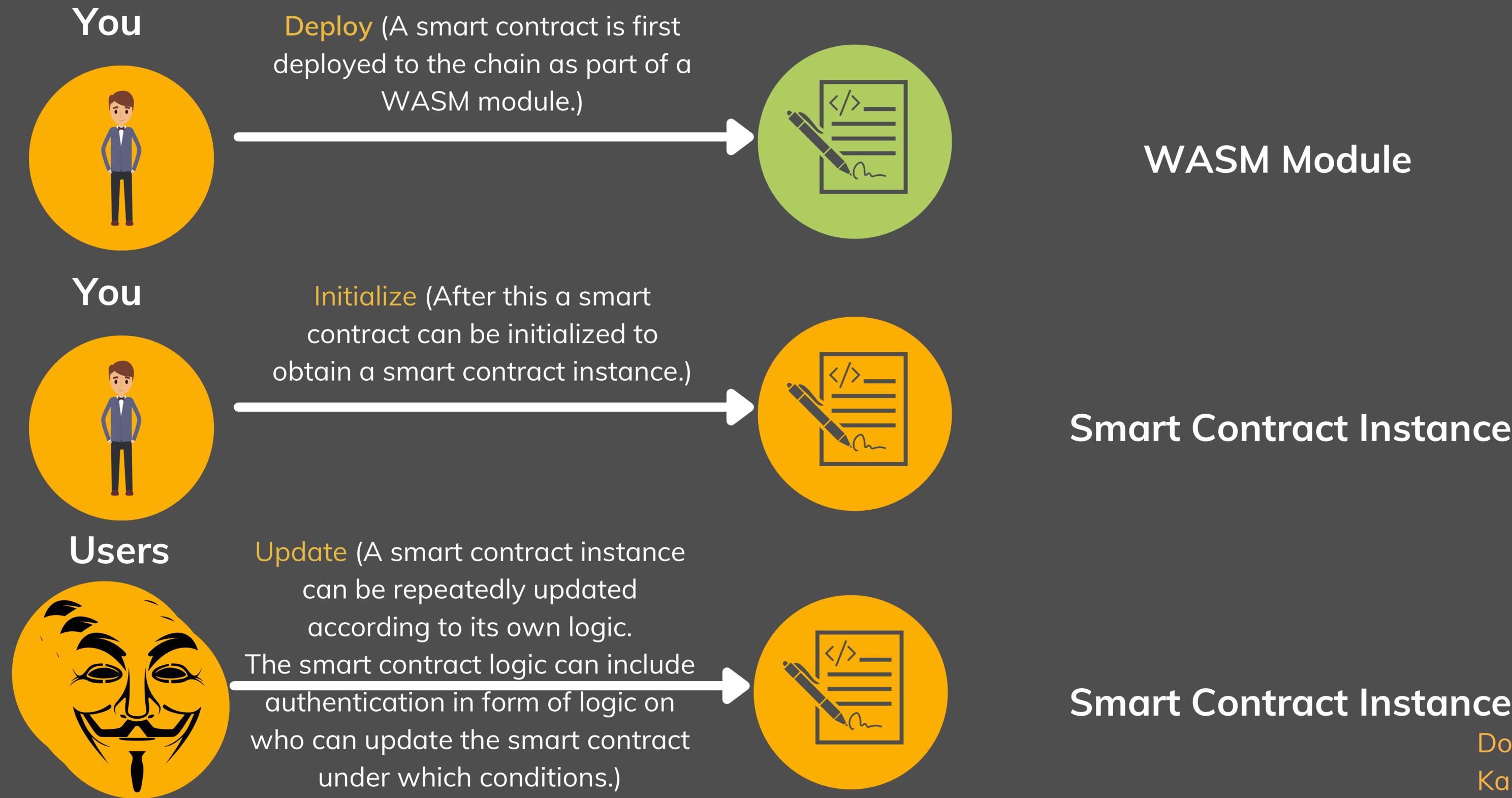
A smart contract is a user-supplied piece of code submitted to the Concordium blockchain, used to define additional behavior that is not directly part of the core protocol.

Smart contracts are deployed as WASM modules on the Concordium chain. Rust currently has the best support to write and compile your smart contract into a WASM module that then can be deployed to the Concordium chain.





Life Cycle Of A Smart Contract On Concordium





A Very Realistic Problem



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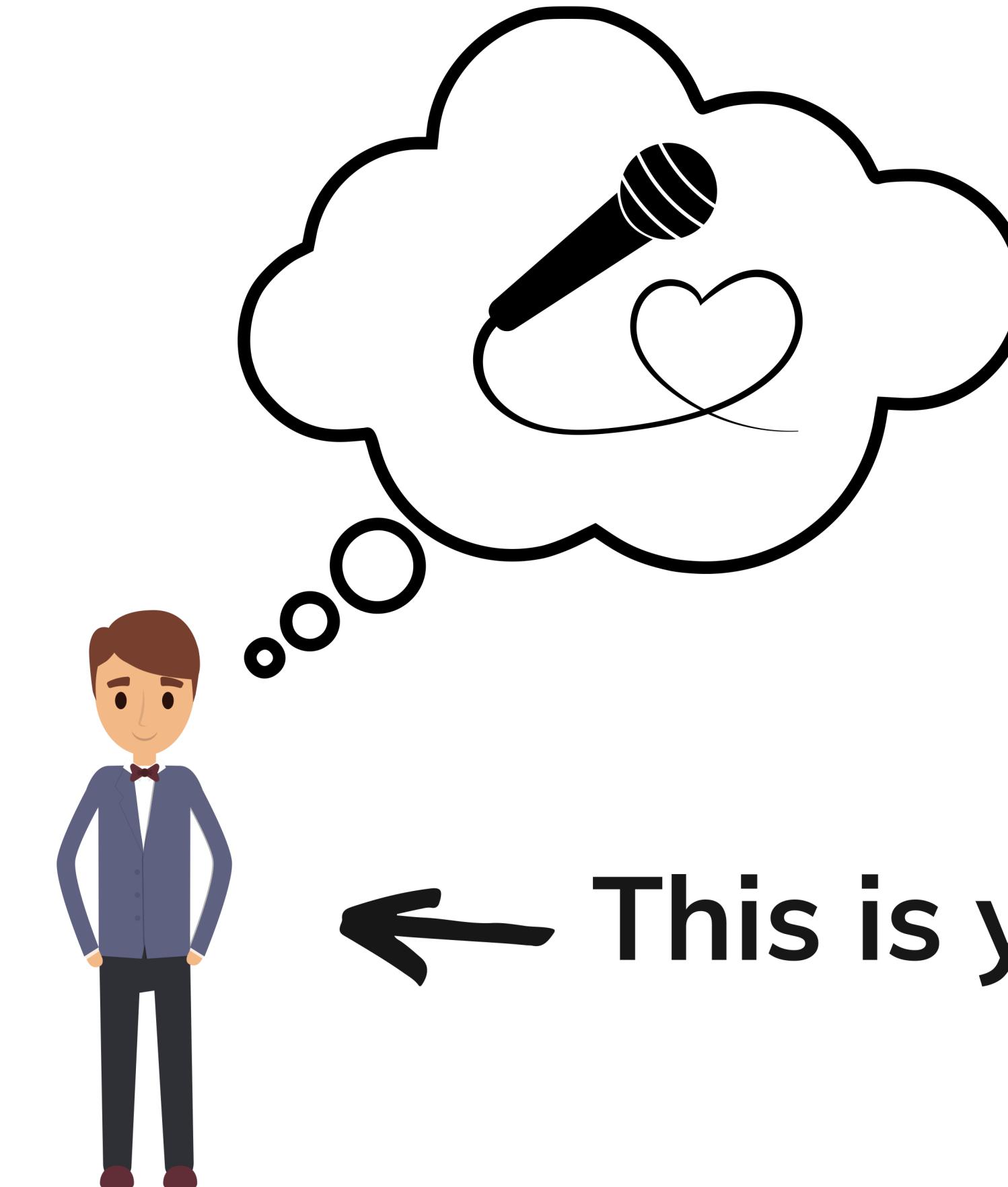
This is you..

Doris Benda

Kasper Dissing Bargsteen



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← This is you..

Doris Benda

Kasper Dissing Bargsteen



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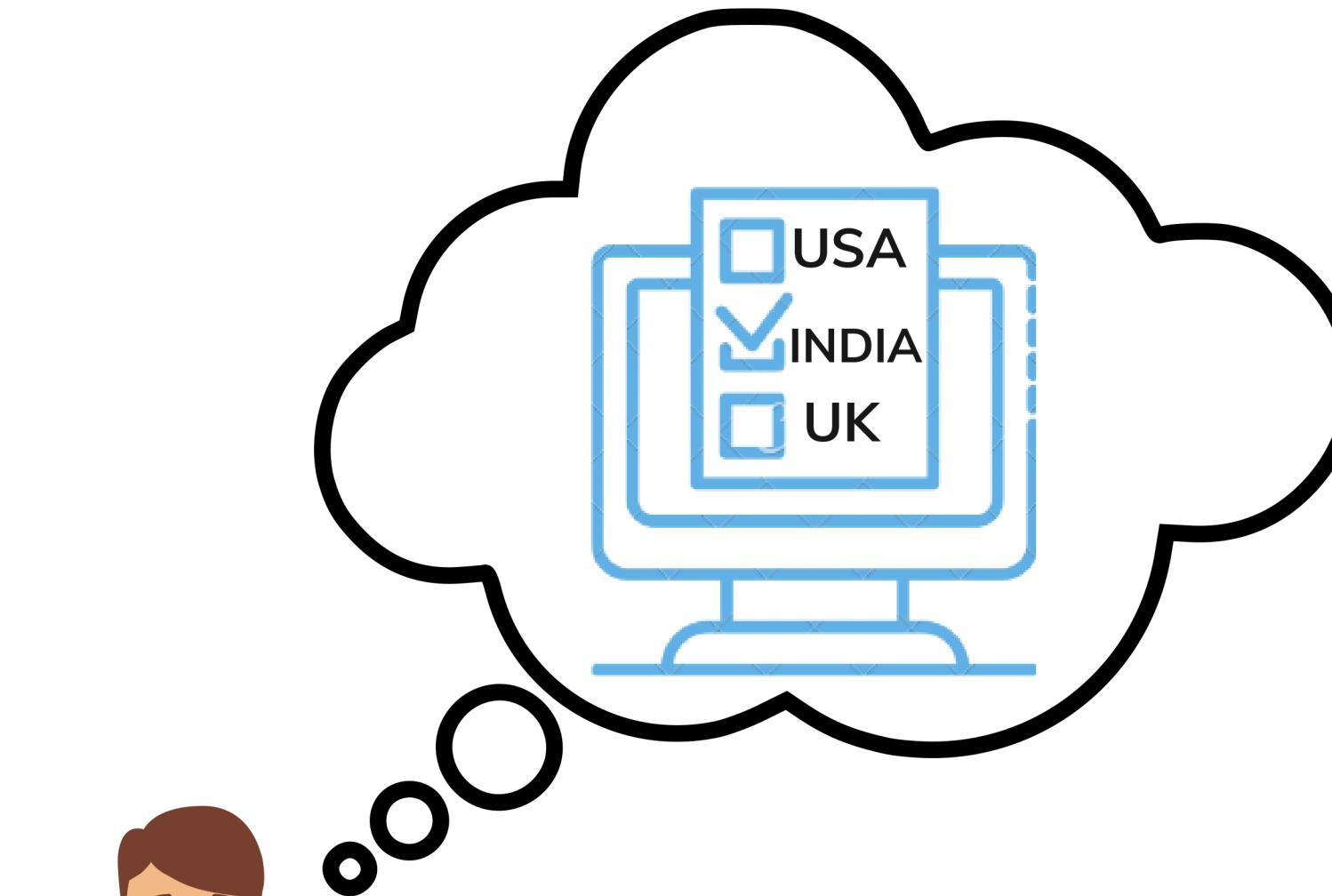


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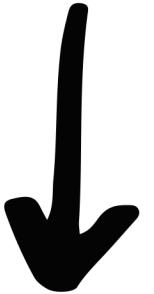


This is you..

Doris Benda
Kasper Dissing Bargsteen



**Mister X should
not be able to
vote for his own
country.**

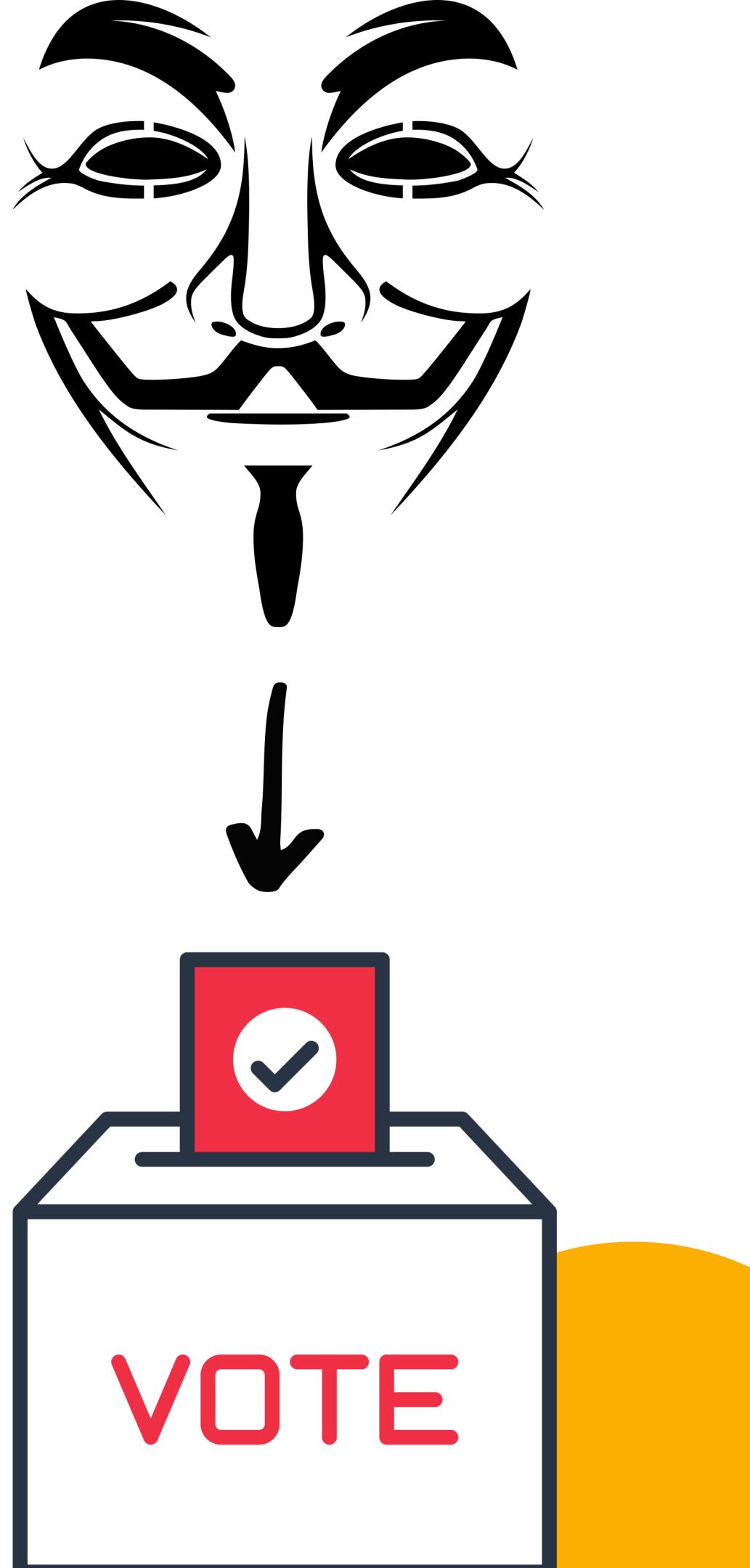




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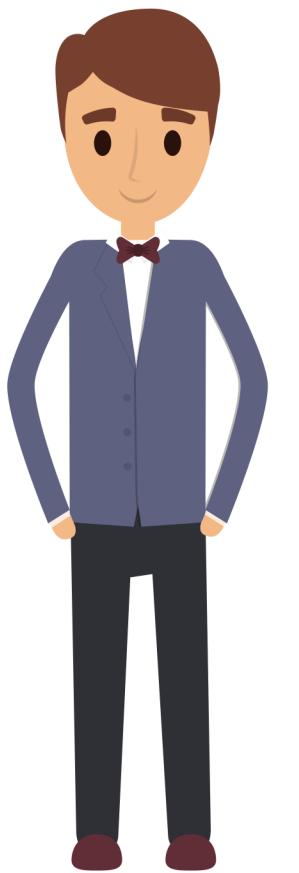
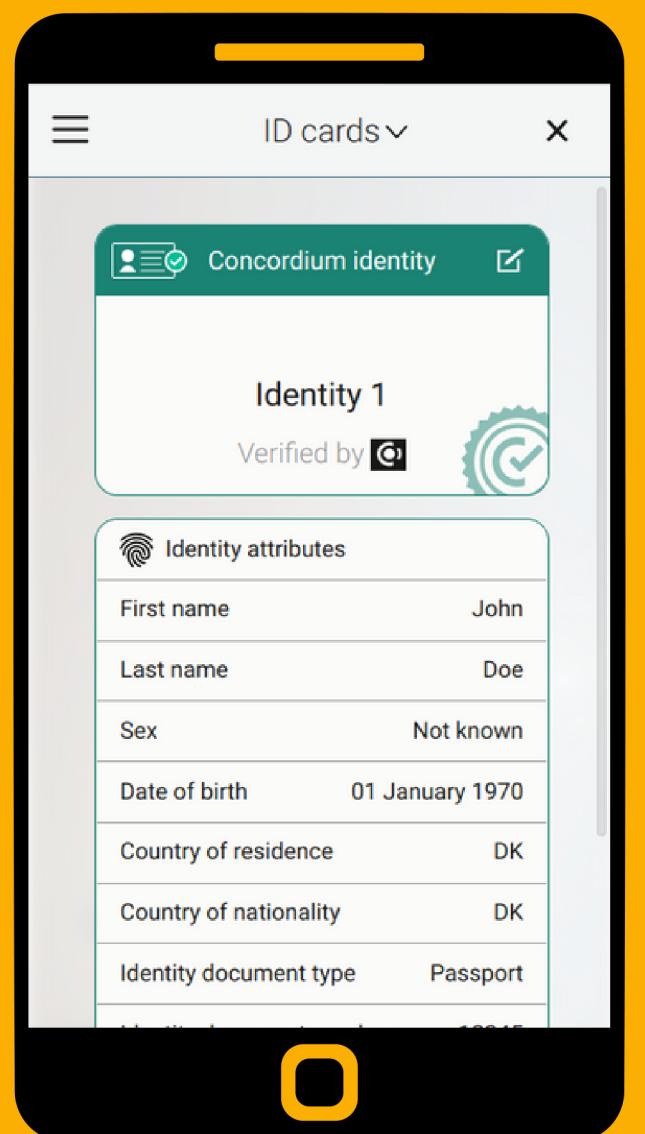


Concordium and its identity layer

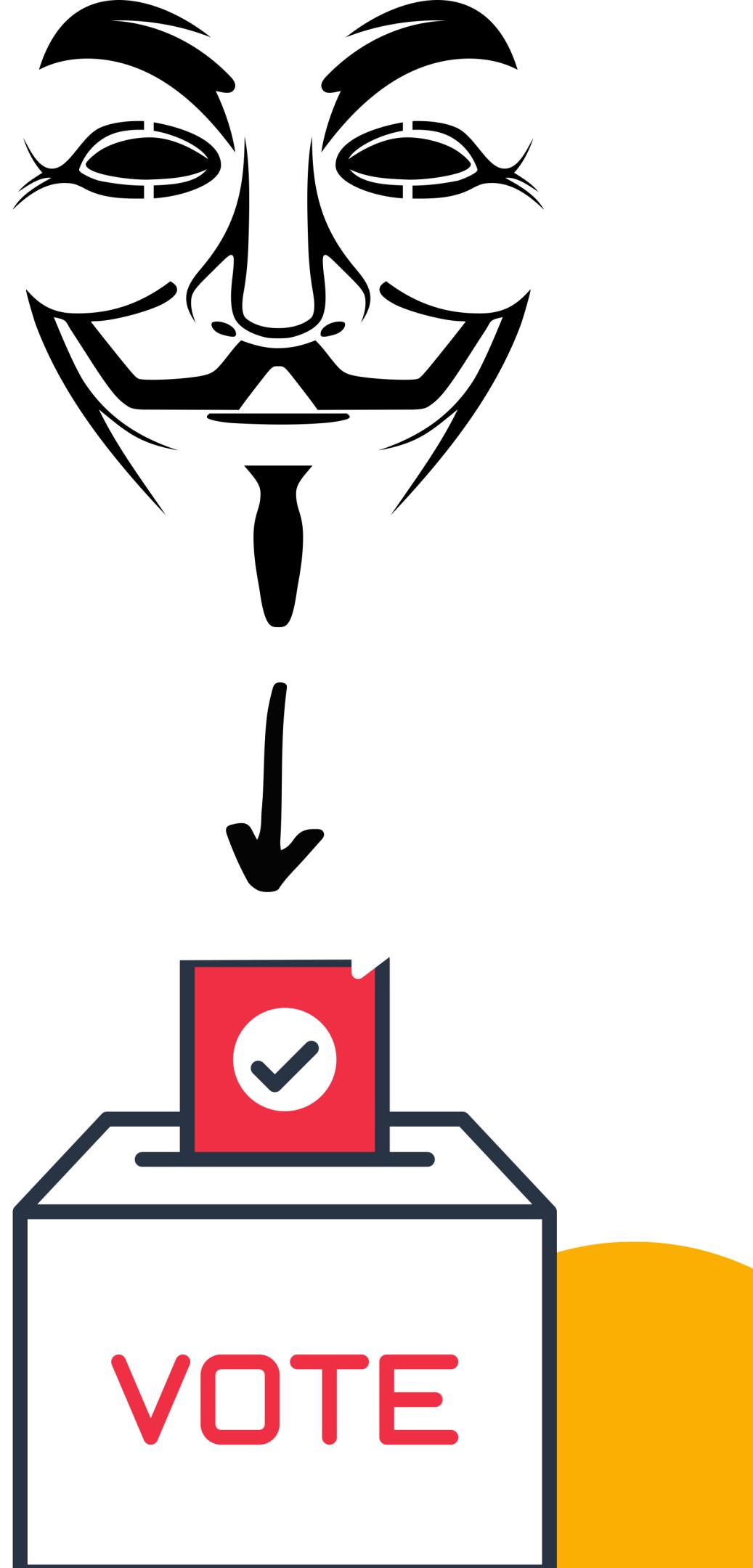




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Concordium and its identity layer





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Identity Based Voting™

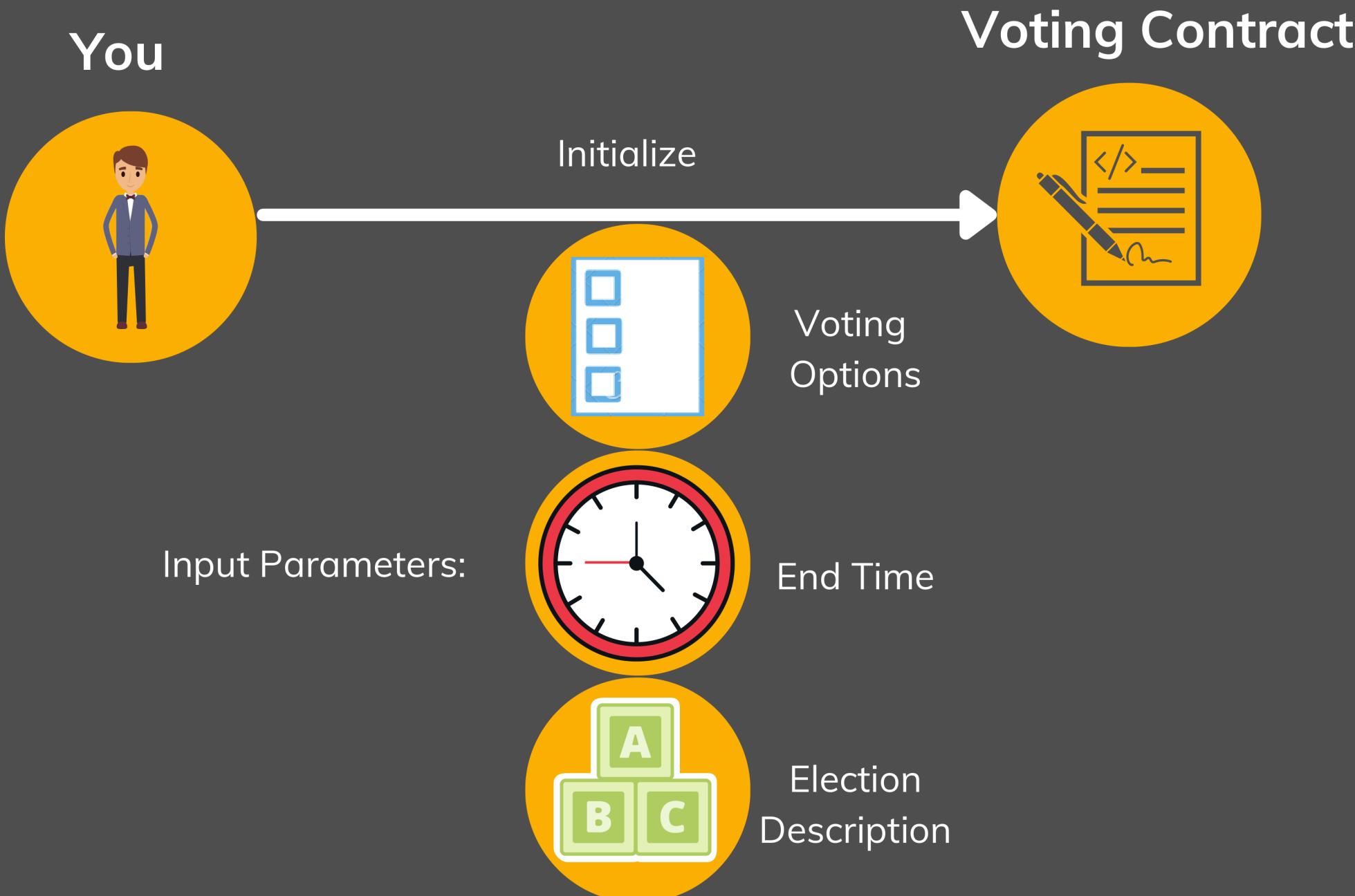
You





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Identity Based Voting™

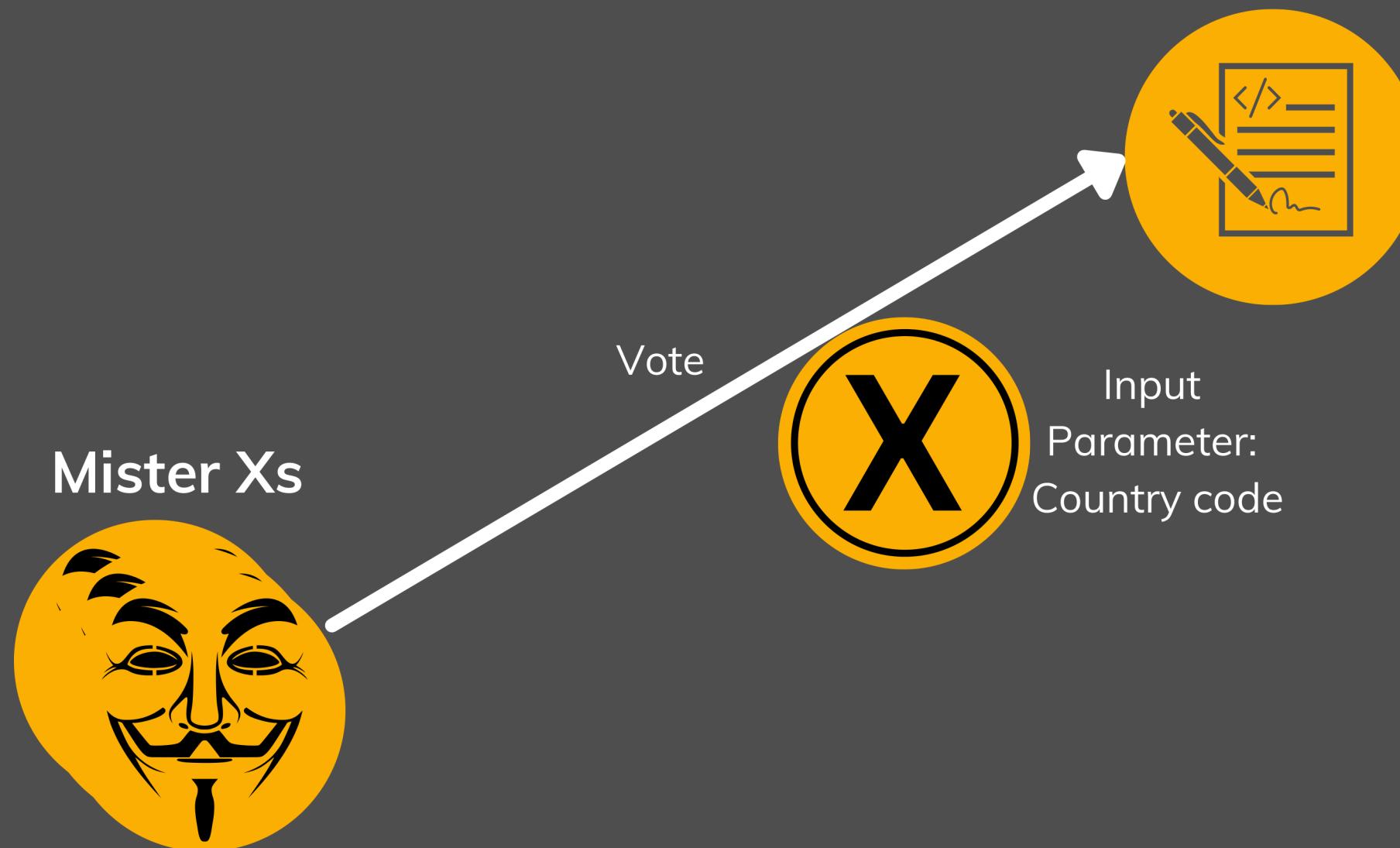


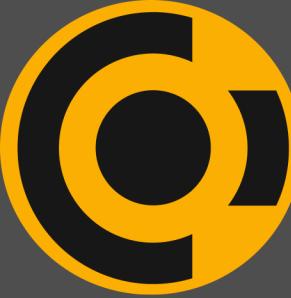


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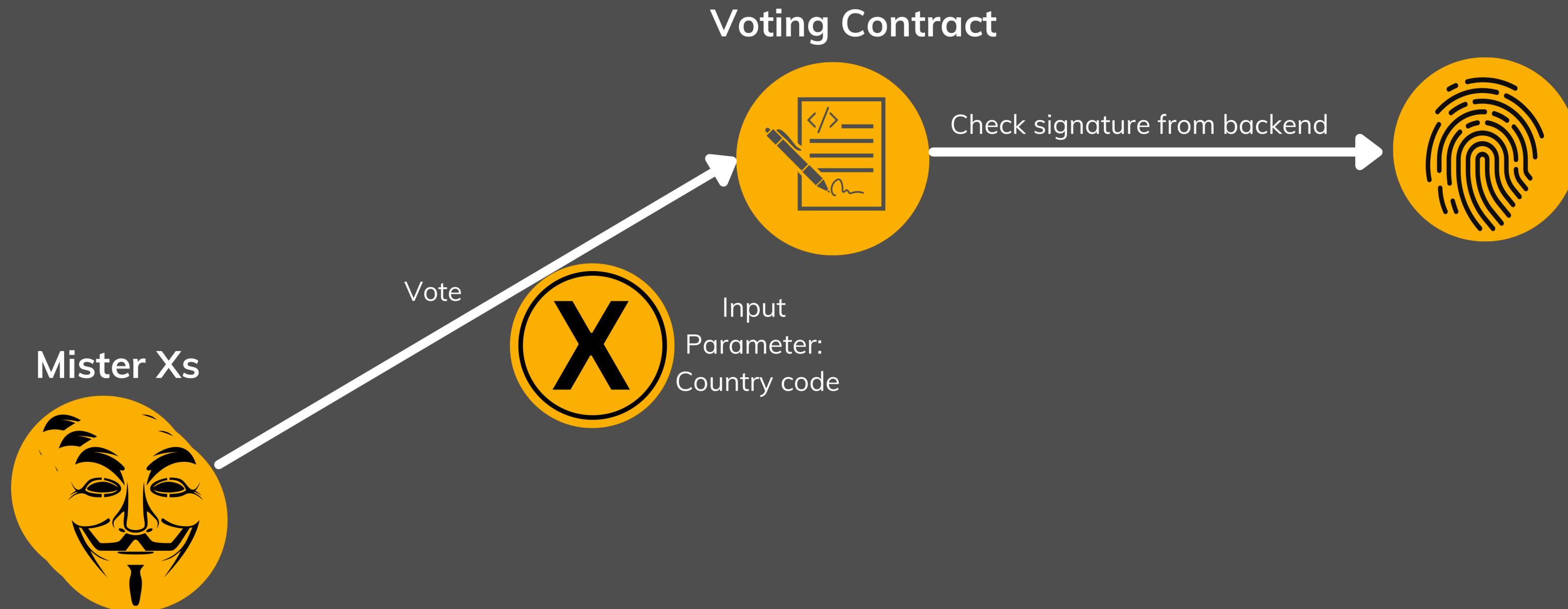
Identity Based Voting™

Voting Contract



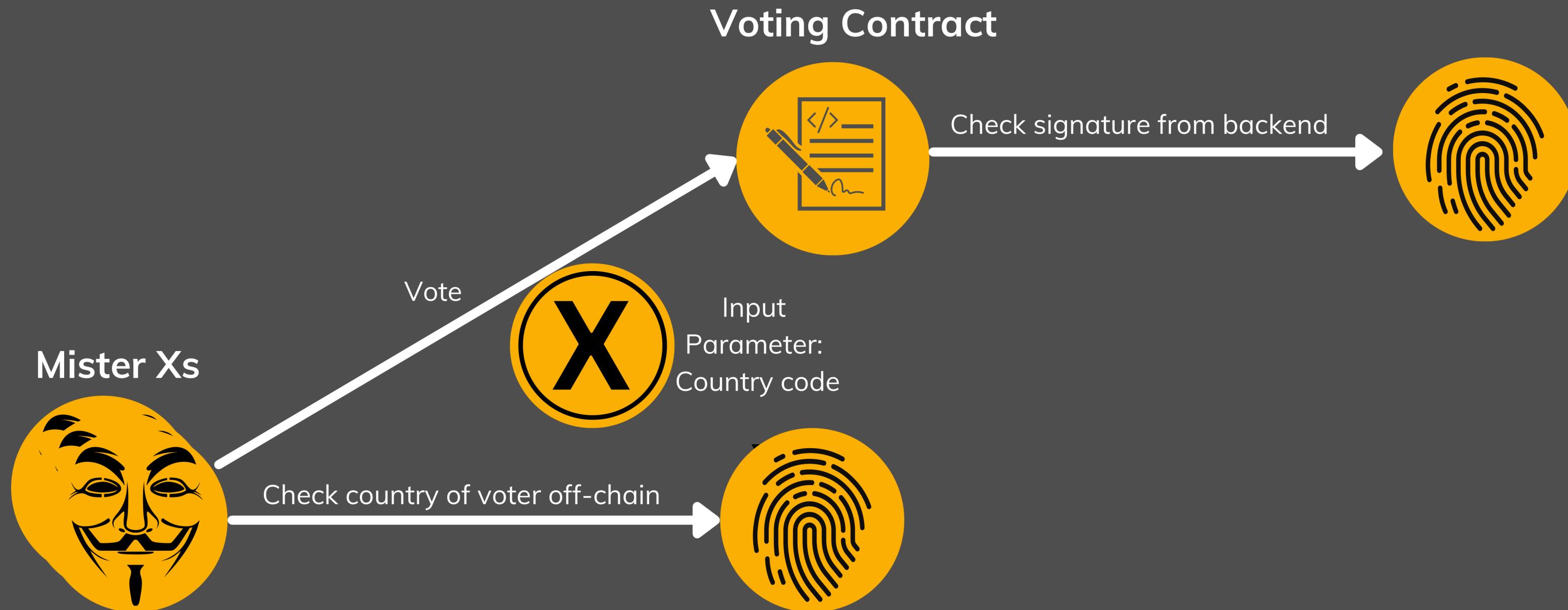


Identity Based Voting™



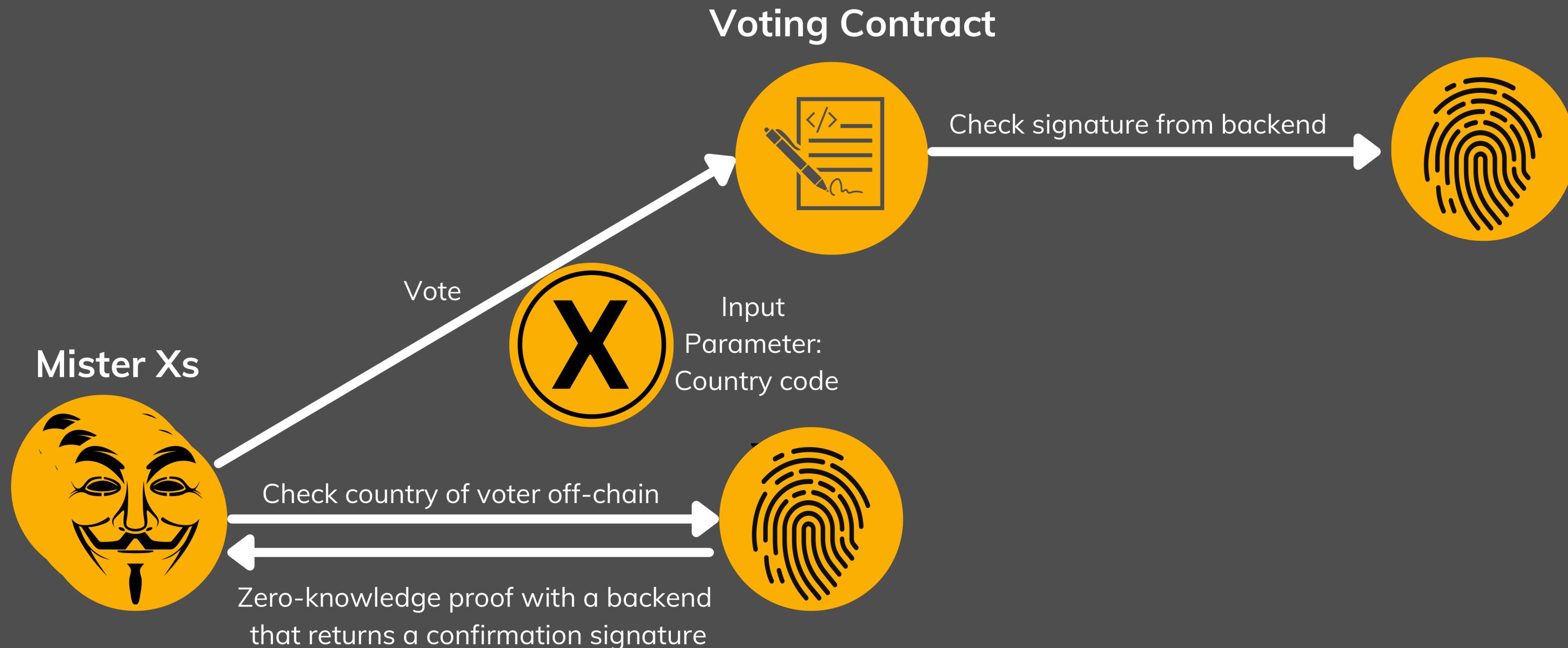


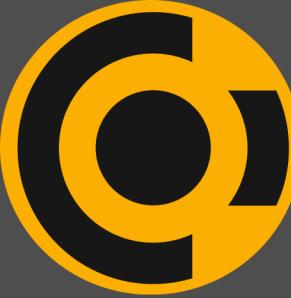
Identity Based Voting™



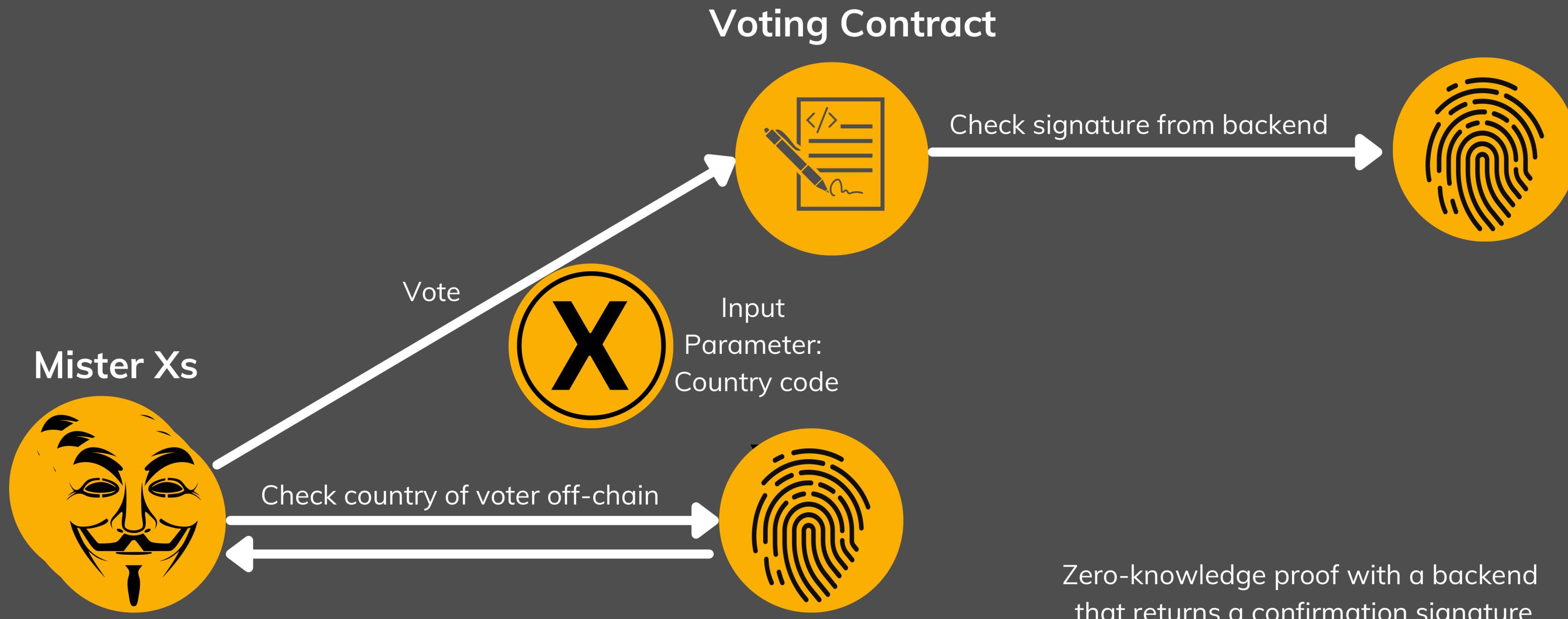


Identity Based Voting™



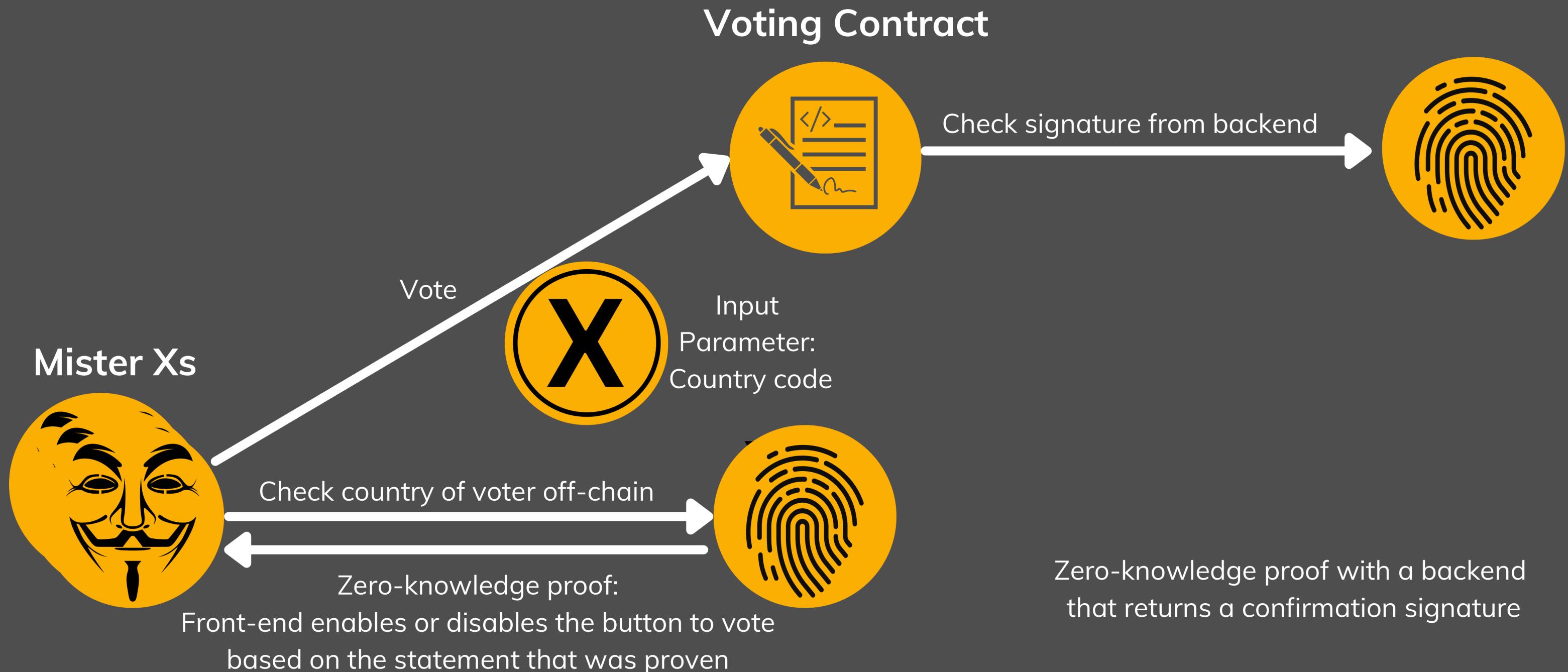


Identity Based Voting™



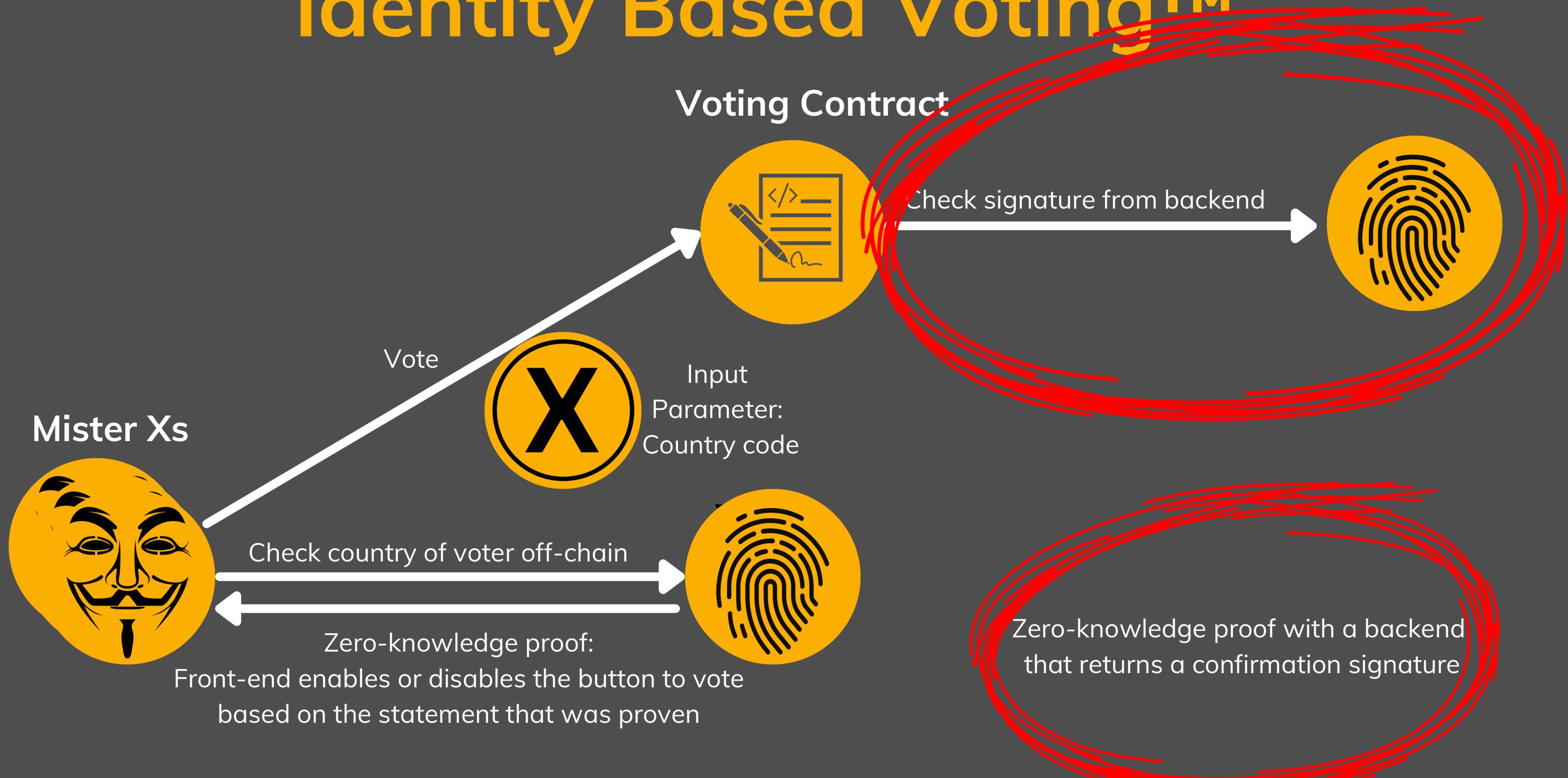


Identity Based Voting™





Identity Based Voting™





Installing prerequisites



Installing prerequisites

- Rust programming language
 - <https://www.rust-lang.org/tools/install>
- Concordium Browser Wallet
 - <https://chrome.google.com/webstore/detail/concordium-wallet/mnnkpffndmickbiakofclnpoiajlegmg>
- Cargo Concordium
 - <https://developer.concordium.software/en/mainnet/net/installation/downloads-testnet.html#cargo-concordium-v2-5-0>
- Concordium Client
 - <https://developer.concordium.software/en/mainnet/net/installation/downloads-testnet.html#concordium-client-v5-0-2>



Writing the Voting Smart Contract



**Smart contracts
onto the chain!**



Additional Resources

- Repository for the smart contract:
 - <https://github.com/Concordium/shebuilds-workshop>
- Our documentation (Best place to start)
 - developer.concordium.software
- Smart contract examples:
 - <https://github.com/Concordium/concordium-rust-smart-contracts/tree/main/examples>
- Developer Documentation:
 - <https://developer.concordium.software/en/mainnet/net/guides/learn-about-concordium.html>
- Tutorials:
 - <https://developer.concordium.software/en/mainnet/smart-contracts/tutorials/index.html>
- General support:
 - <https://support.concordium.software/>



Additional Resources

- Testnet dashboard:
 - dashboard.testnet.concordium.com
 - testnet.ccdscan.io
- Concordium testnet node available during hackathon:
 - shebuilds.concordium.com (port 10000)



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Questions?



The end

Happy hacking &
see you
tomorrow!