Cross-Platform Mobile Application for the Cothority

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What is CPMAC ?

iOS and Android application used for Cothority.

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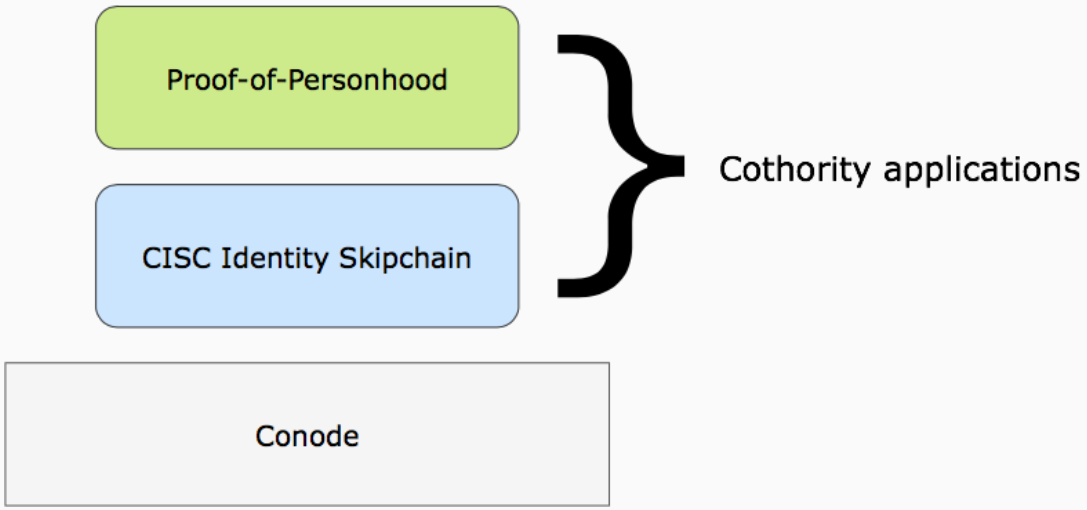


What is CPMAC ?

iOS and Android application used for Cothority.

Currently supported applications:

- Status
- Proof-of-Personhood
- Cisc Identity SkipChain

Built on top of NativeScript.

Improvements

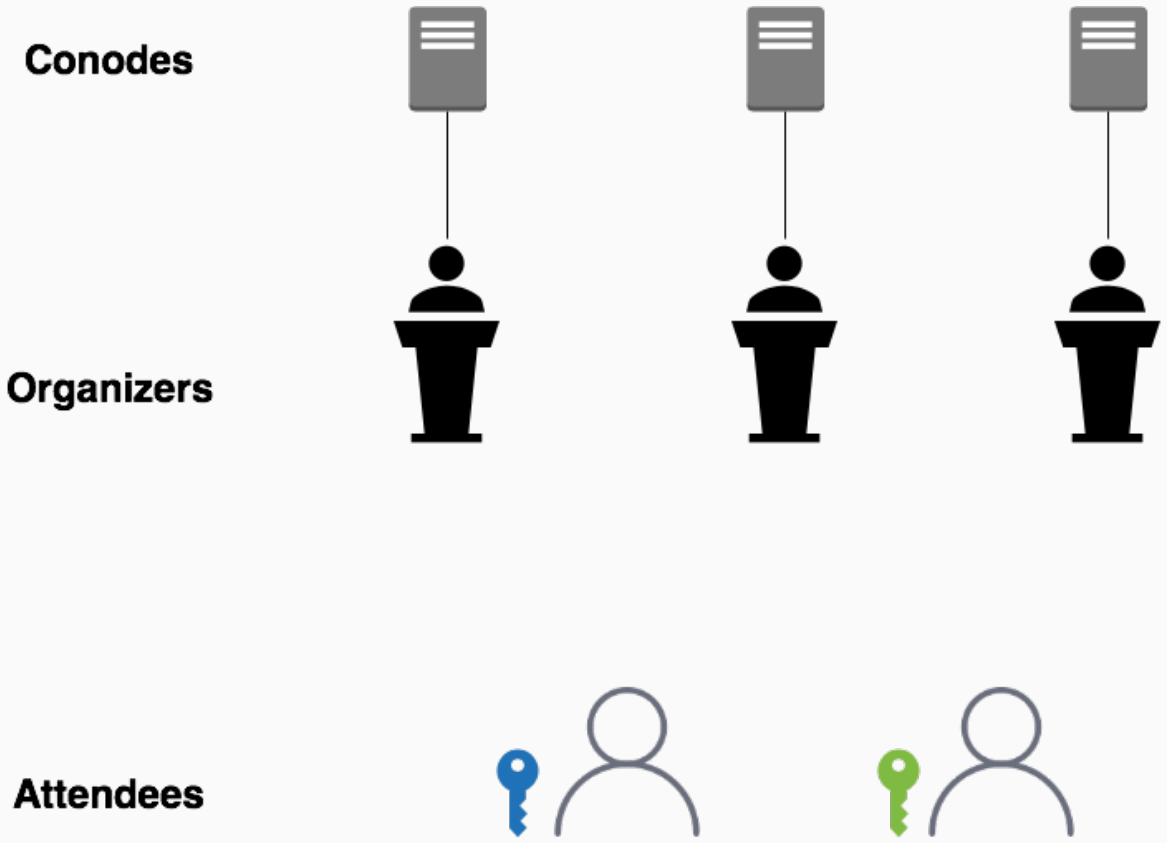
Work has been done on several points :

- PoP-Parties
  - Attendees support
  - Configuration sharing
- Usability
  - User Interface
  - Process simplifications
- New feature : BeerCoin

Proof-of-Personhood

Organizers agree on the party details

Proof-of-Personhood



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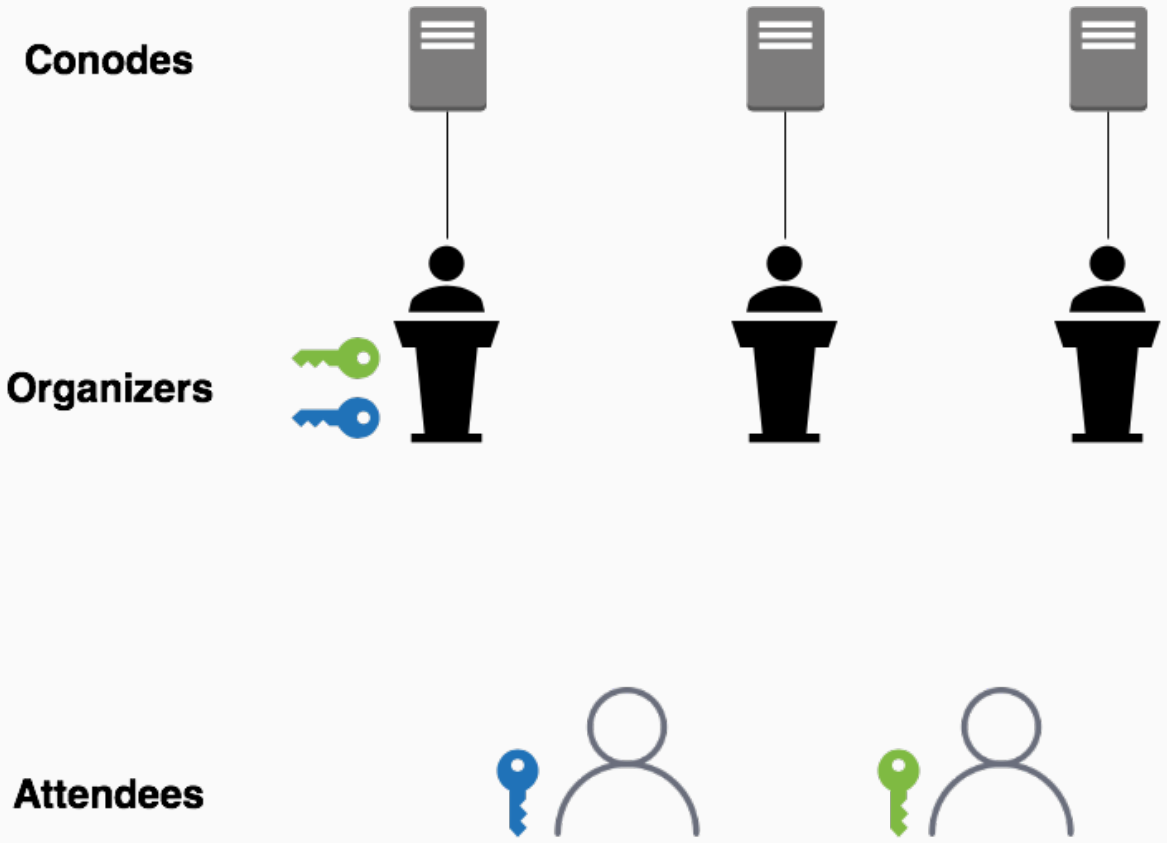

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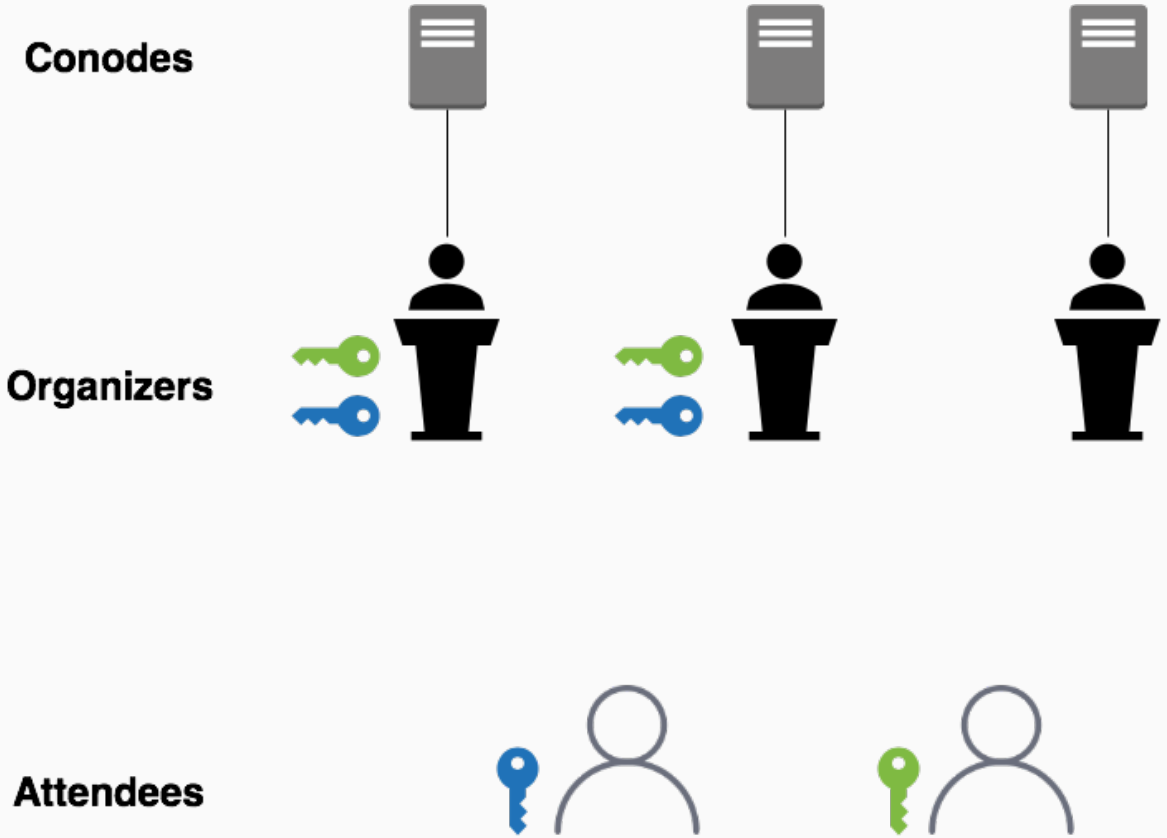

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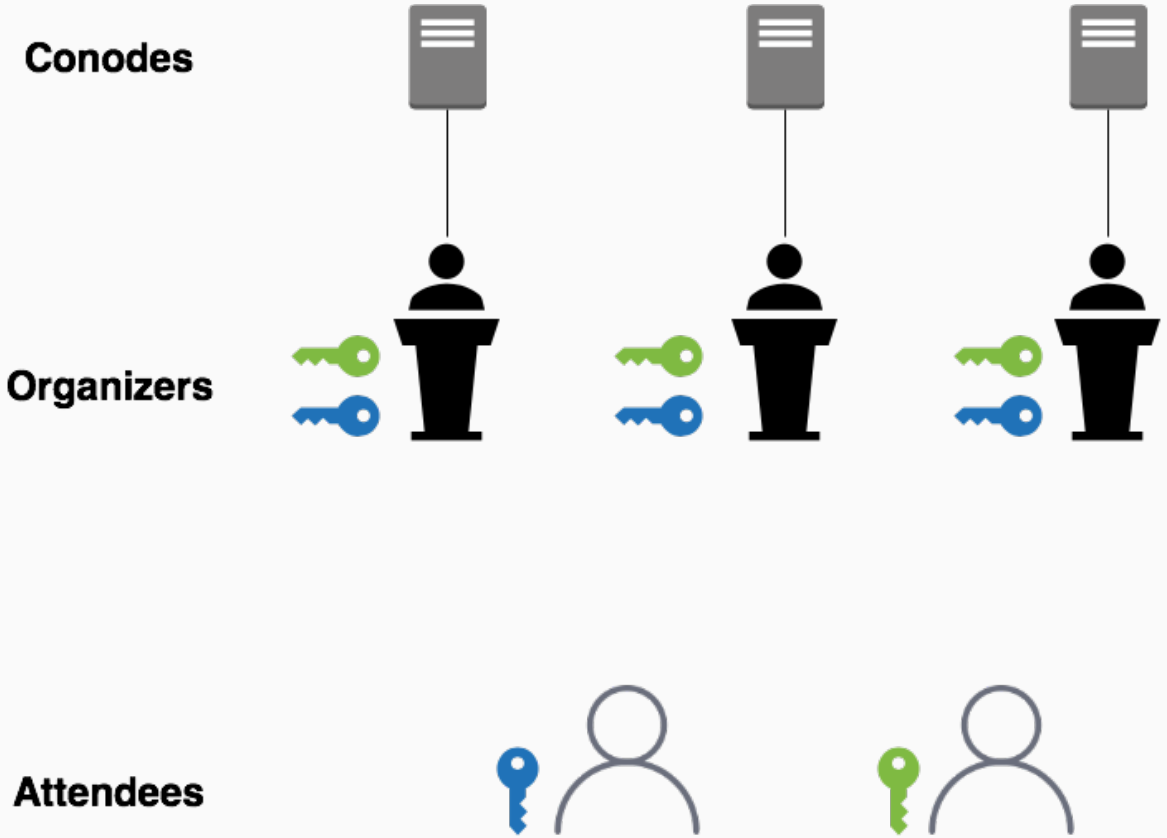

Proof-of-Personhood

At the end of the party, the conodes generate :

 + collective signature = Final statement

And each attendee can generate :

Final statement + attendee's key pair = PoP-Token

Party description sharing

Until now, CPMAC used PasteBin to share the party description to the other organizers.

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This approch has drawbacks !

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Instead, adapt Cothority to use conodes !

Party description sharing with PasteBin

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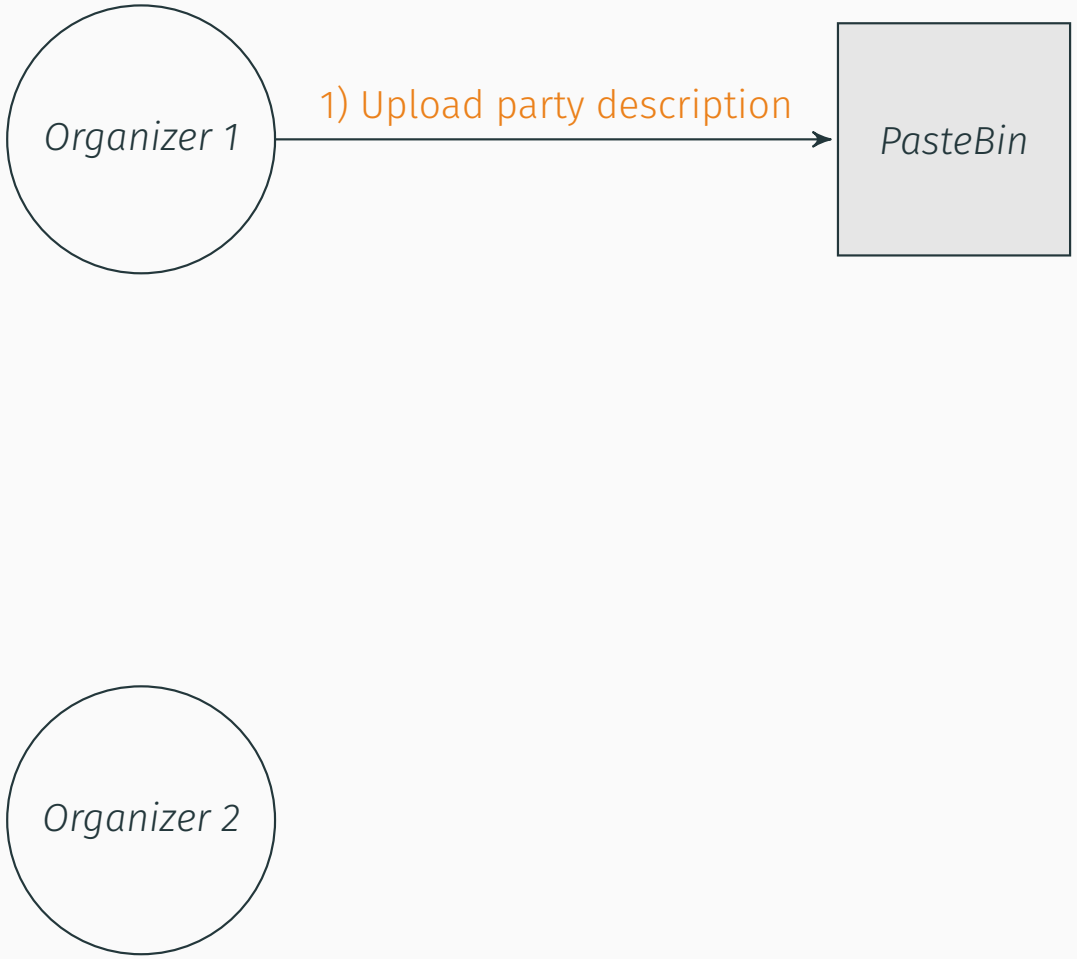
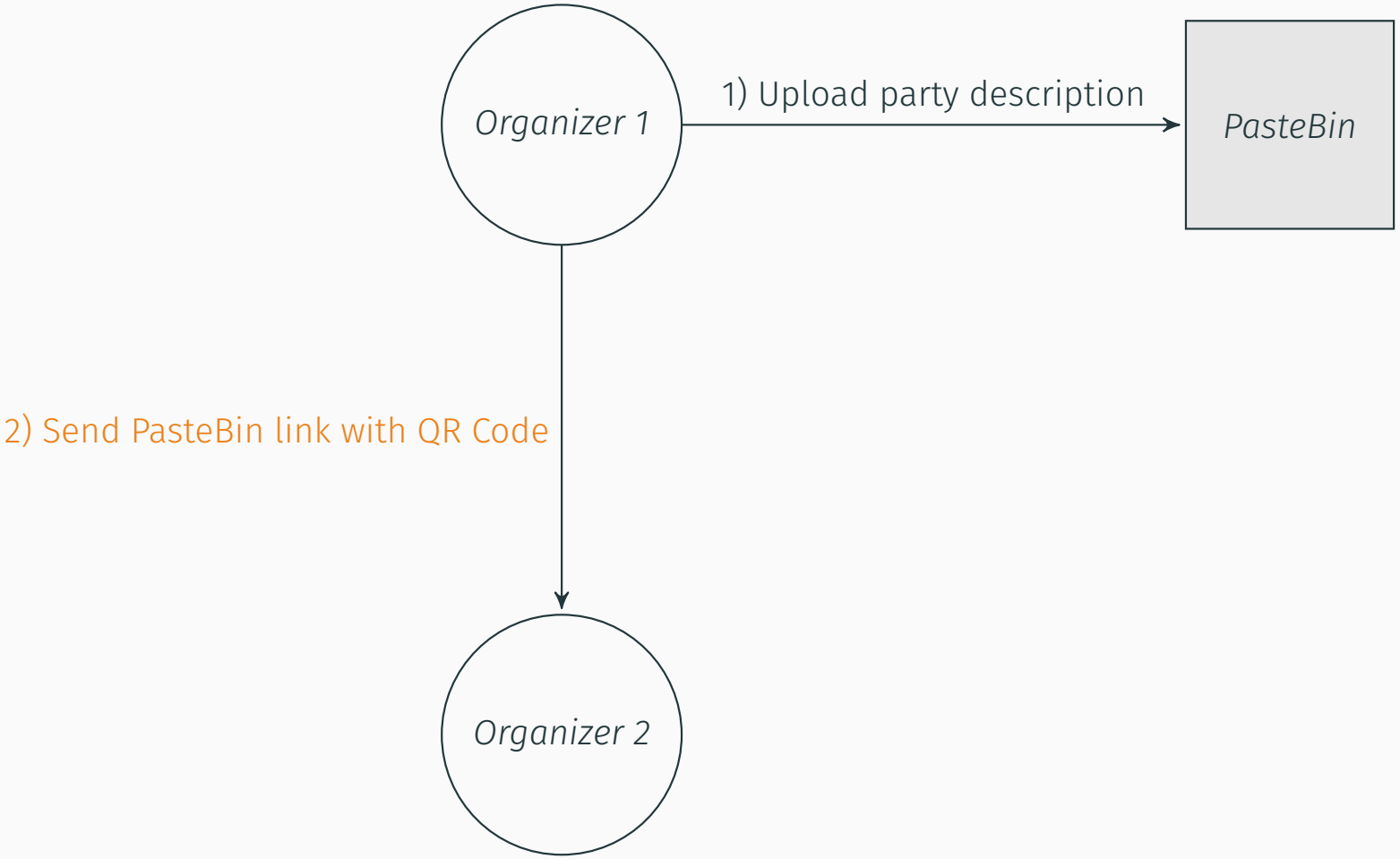


Party description sharing with PasteBin



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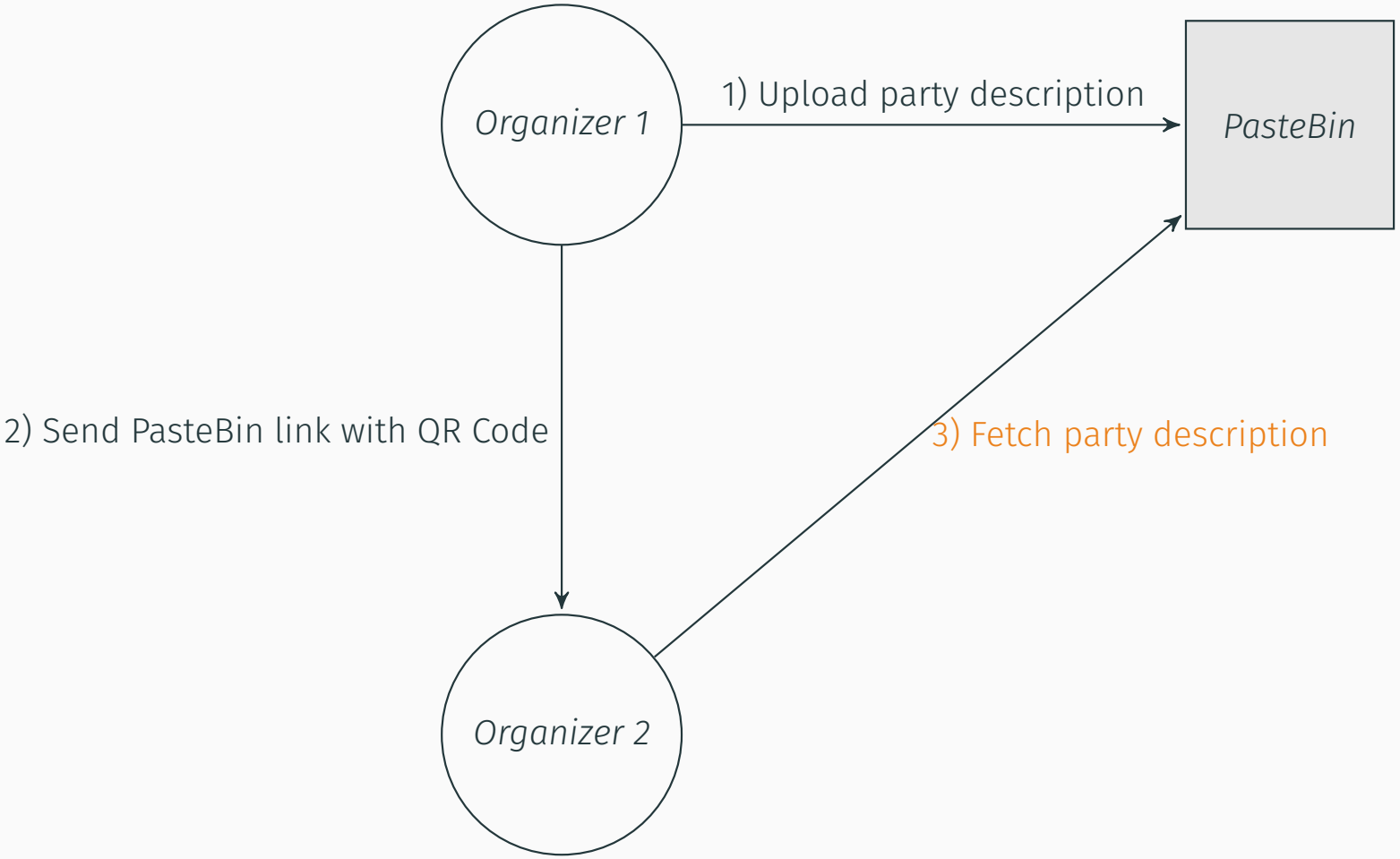

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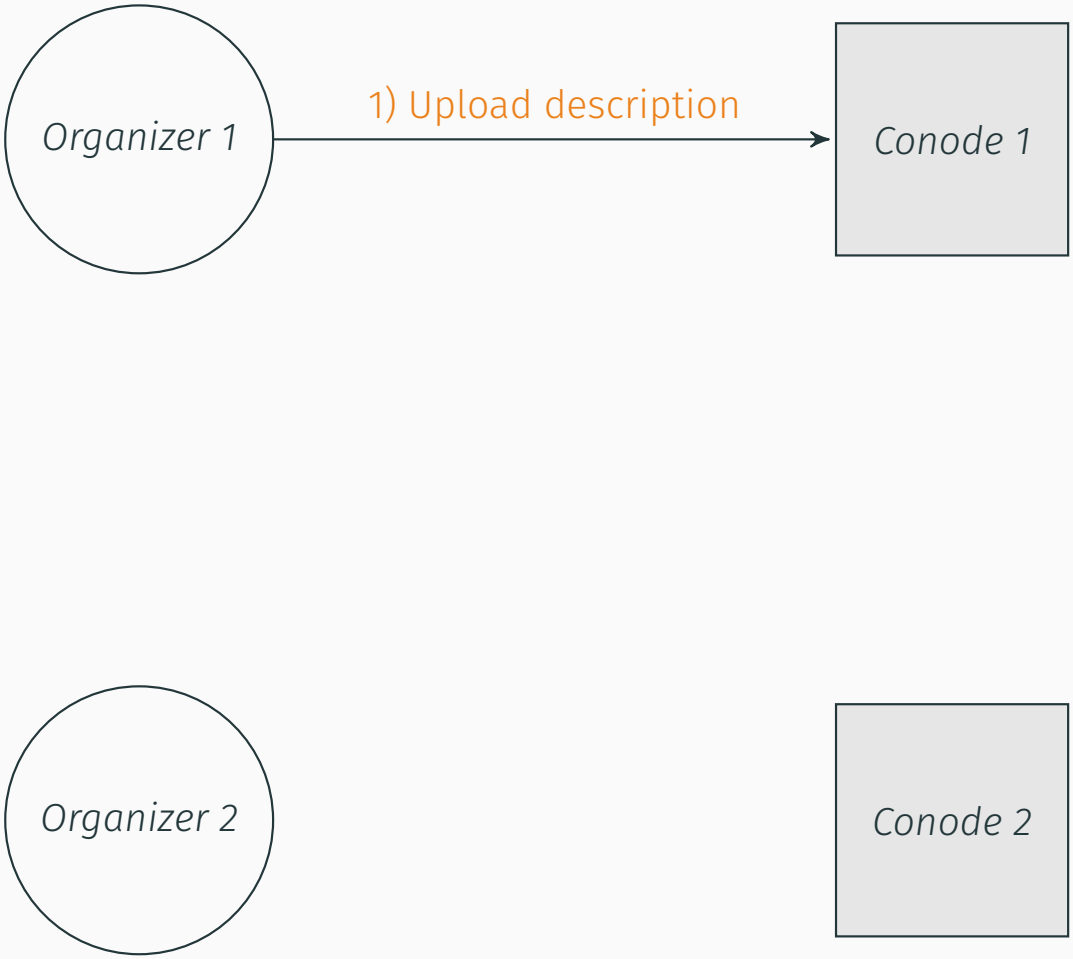

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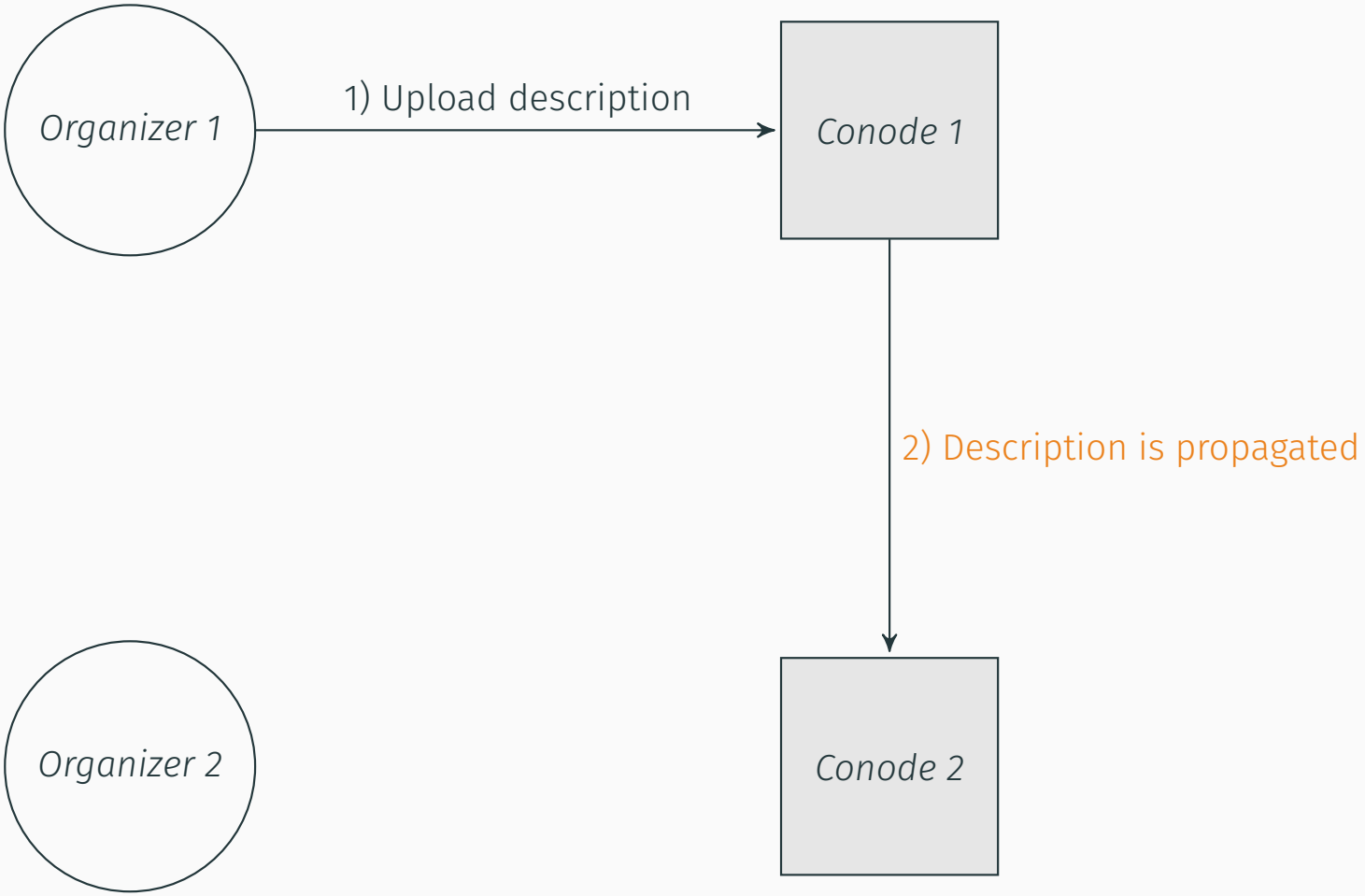

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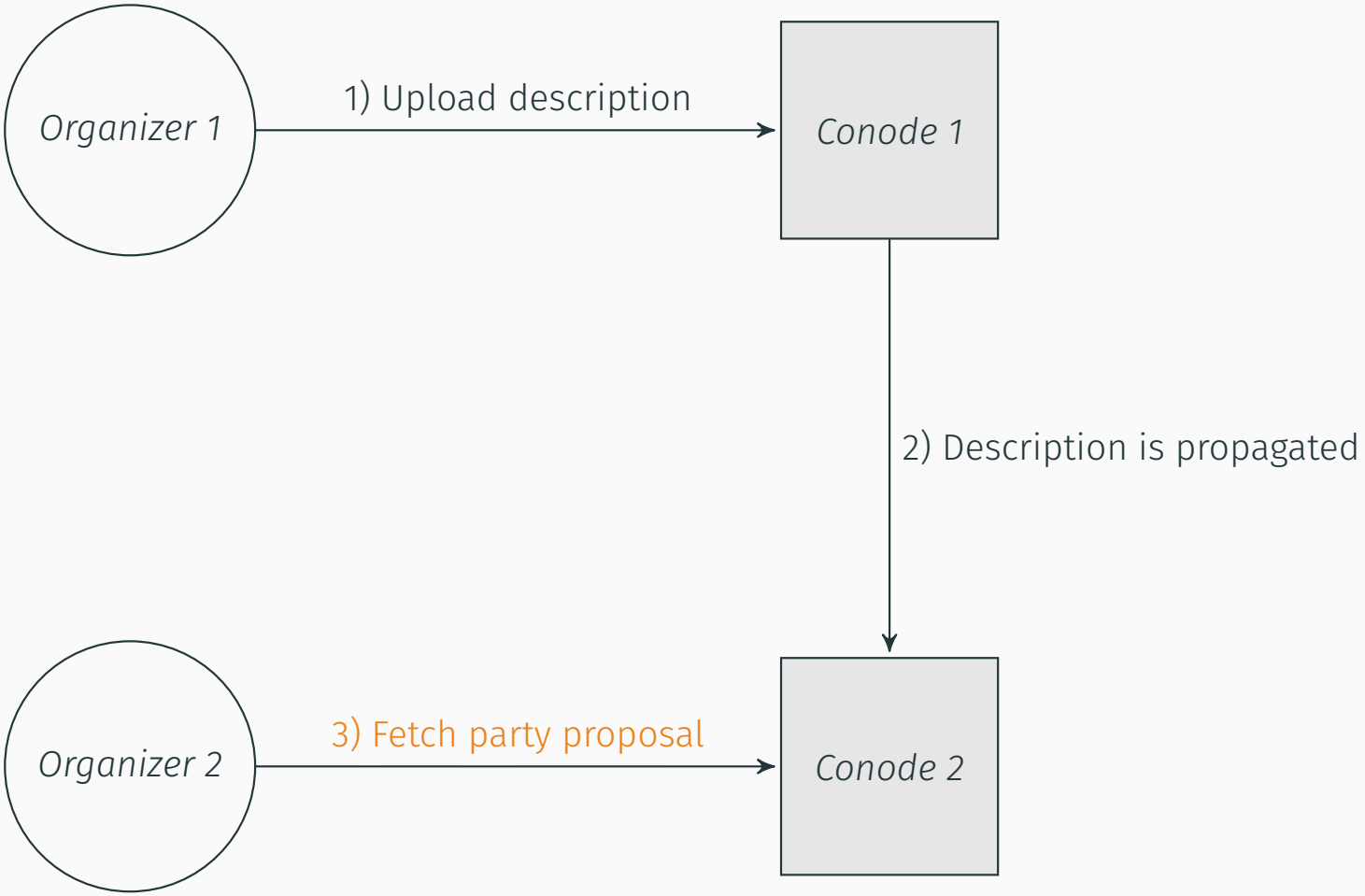

Linkable Ring Signatures

Ring Signatures:

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Linkable Ring Signatures:

- Same as ring signatures
- But a linkage scope can be defined, and the verification process will then yield a tag, which is unique to the signer under that scope

BeerCoin

A long-running joke at DEDIS !

BeerCoins are distributed in a group and each day/month/week they can have a beer. In CPMAC, it's called a Bar

It allows showing a simple example of what could be done with the current primitives implemented in CPMAC.

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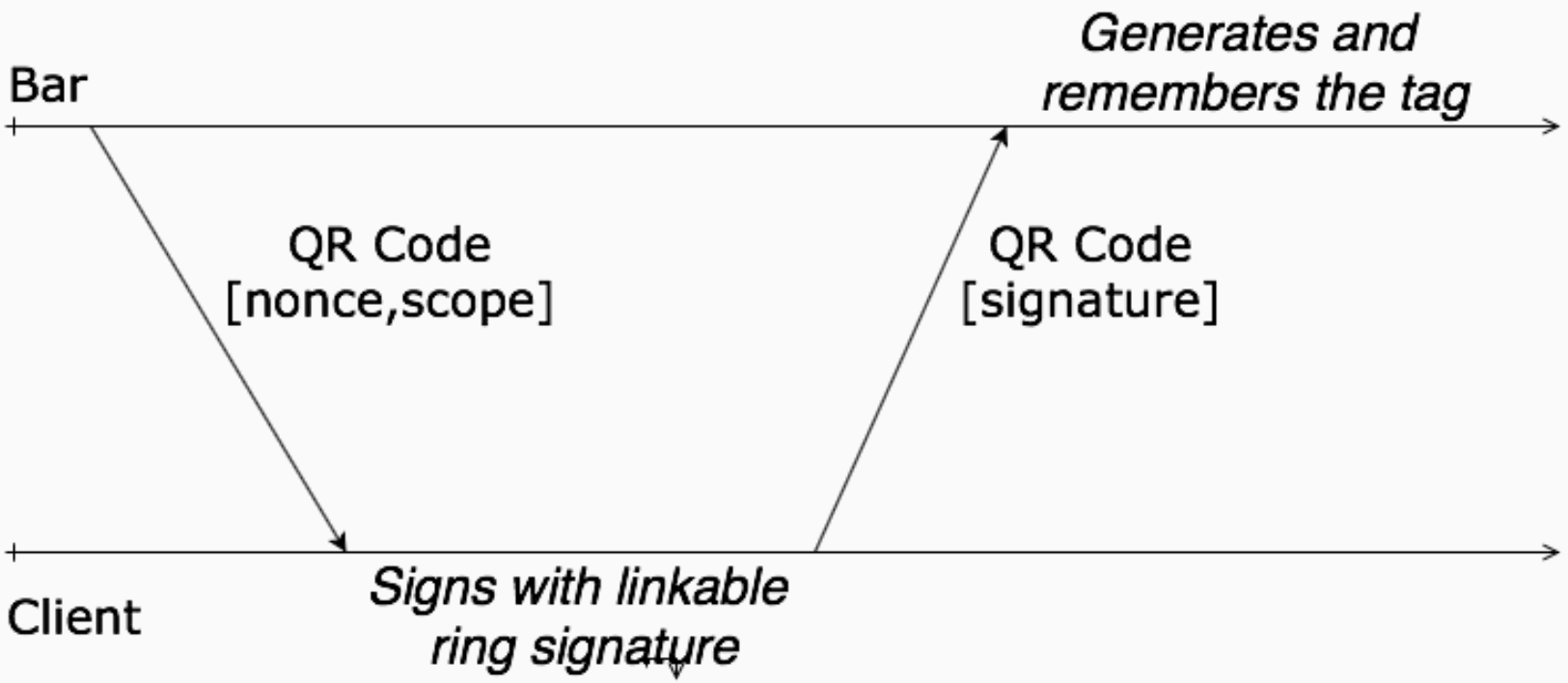
Each member of the group gets a PoP-Token and the Bar uses linkable ring signatures to verify it.

In the case of BeerCoin, the scope should be unique for each Bar **and** each period :

$$scope = bar\_name \| frequency \| year \| month \| day$$

$$frequency \in \{daily, weekly, monthly\}$$

Linkable Ring Signatures: Client verification



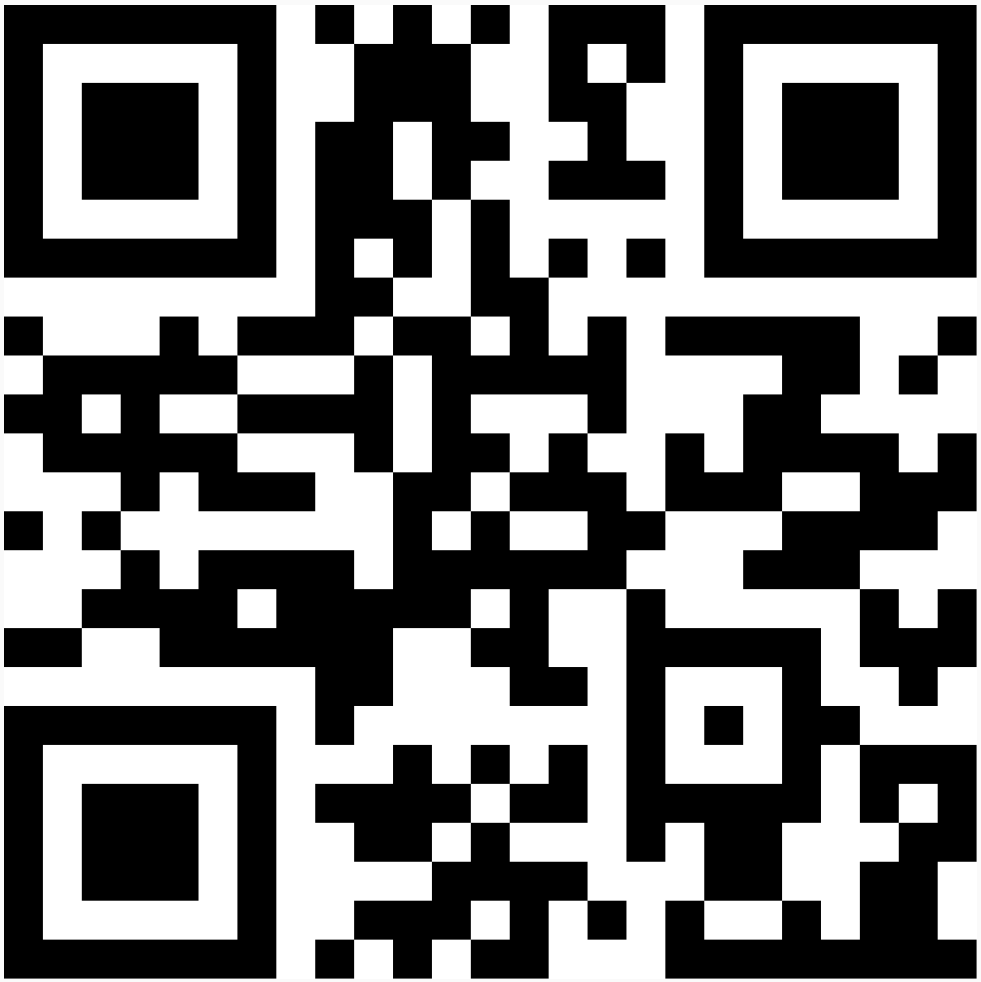
Drawbacks

One major drawback comes from the association of QR Code with linkable ring signatures :

- Length of signatures is proportional to the number of member in the group
- But QR Code has fixed capacity

Actually, CPMAC could handle a maximum of 90 members per group.

Drawbacks



Demo time !

Conclusion

CPMAC is increasingly becoming a large public app.

The primitives currently added allows some interesting applications :

- Voting system
- Online chat
- Authentication
- and many more

Questions ?