The BBS Signatures Scheme

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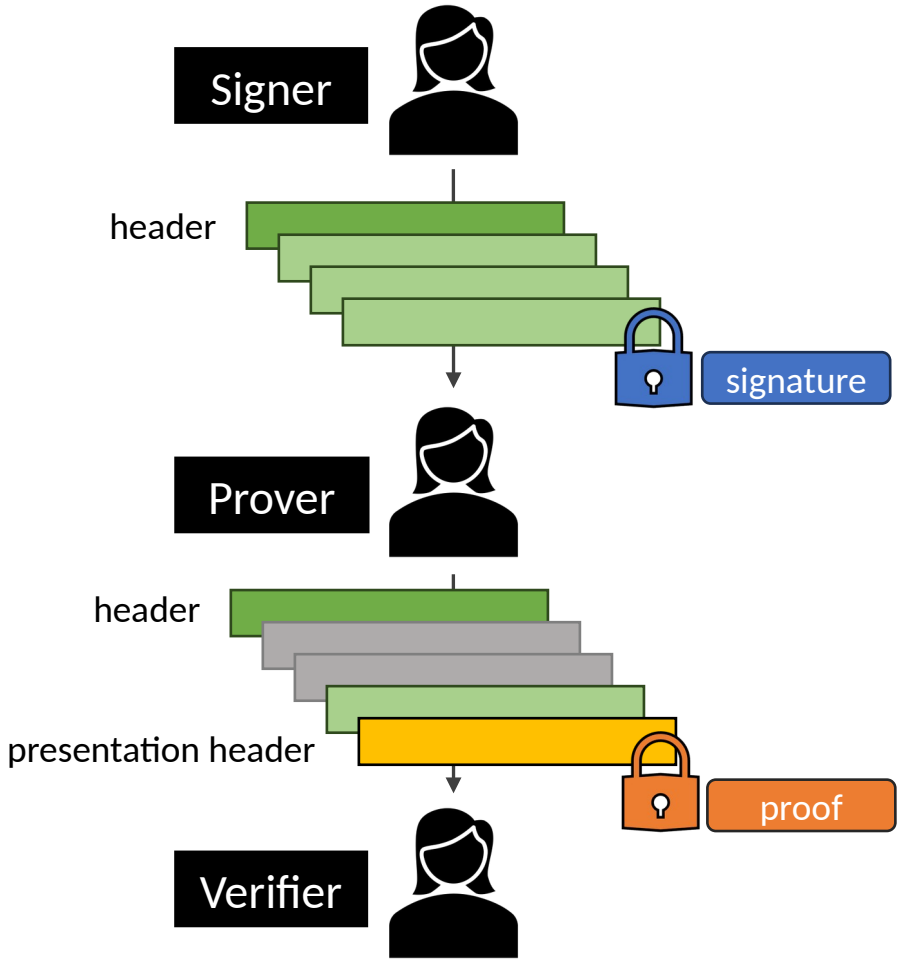
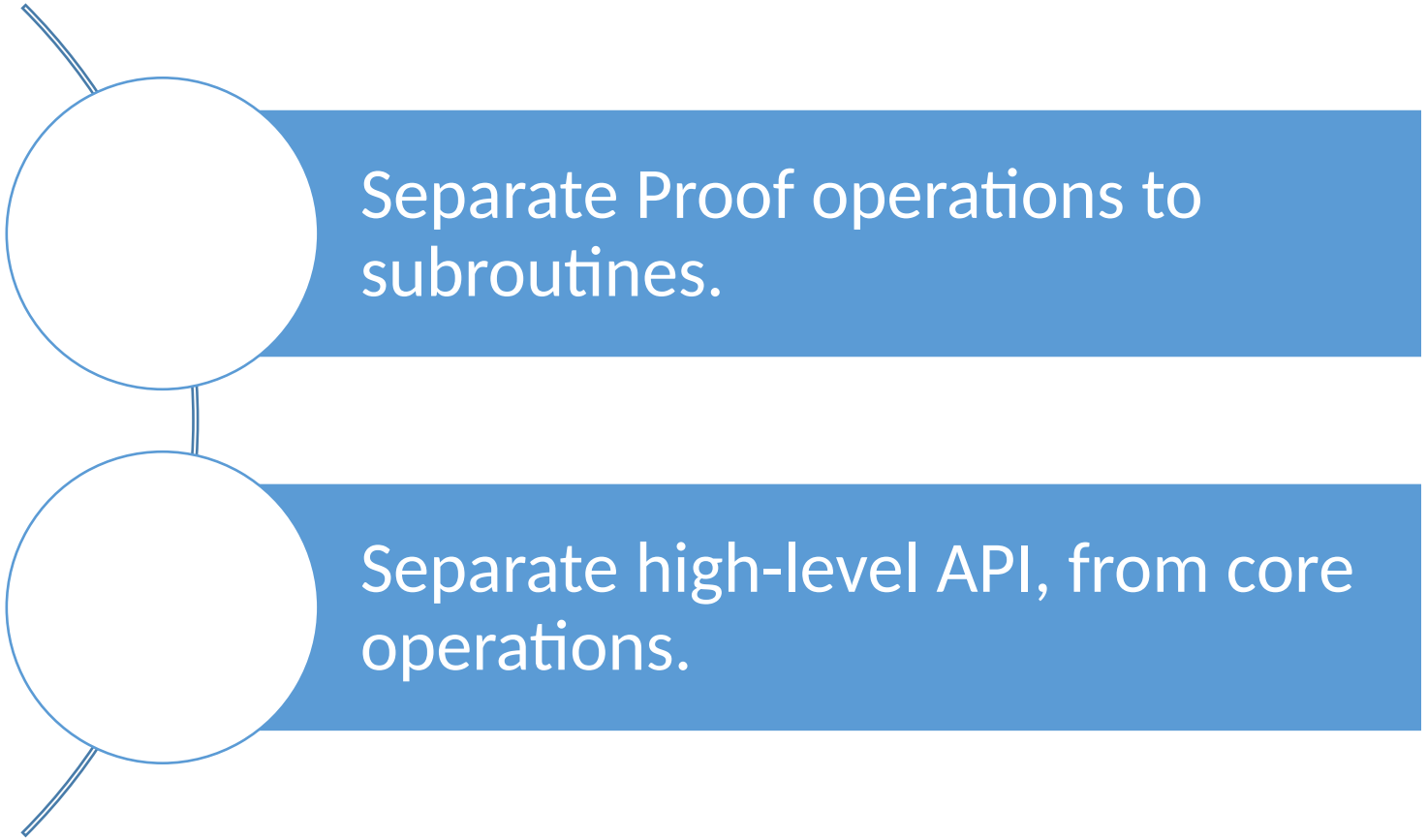
BBS Signatures Recap

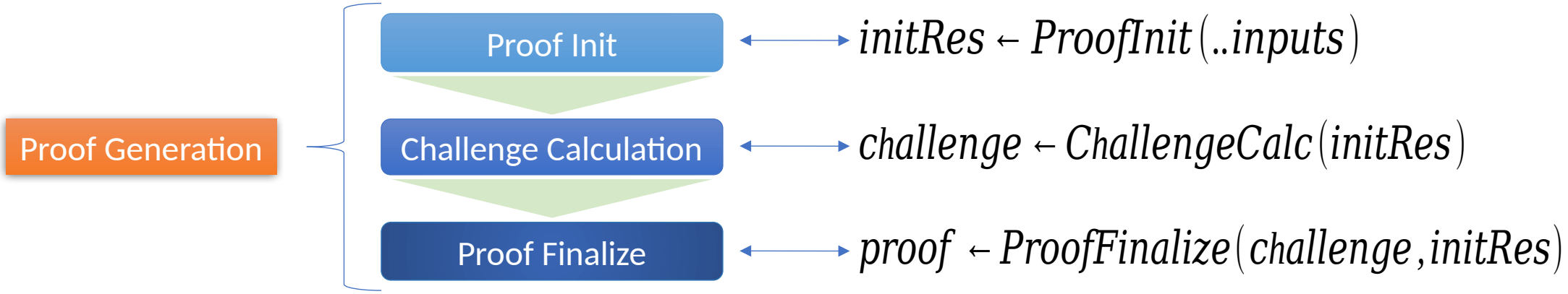


- Deterministic multi message signature.
- Unlikable proofs (zk-proof of knowledge) supporting selective disclosure of messages.
- Header: always revealed value (e.g., alg identifier, token type etc.,).
- Presentation header: value bound to the proof (e.g., random nonce etc.,).

Updates in v4



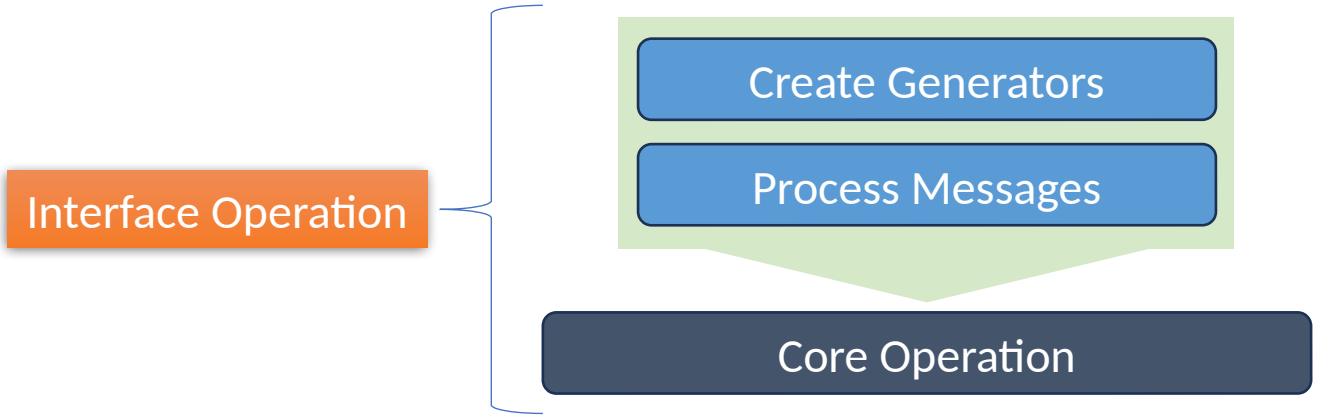
Updates: Separate Proof operations to subroutines.



Examples:

1. Pseudonyms: https://basileioskal.github.io/bbs-per-verifier-id/draft-vasilis-bbs-per-verifier-linkability.html
2. Anonymous revocation with accumulators, e.g., [VB22]

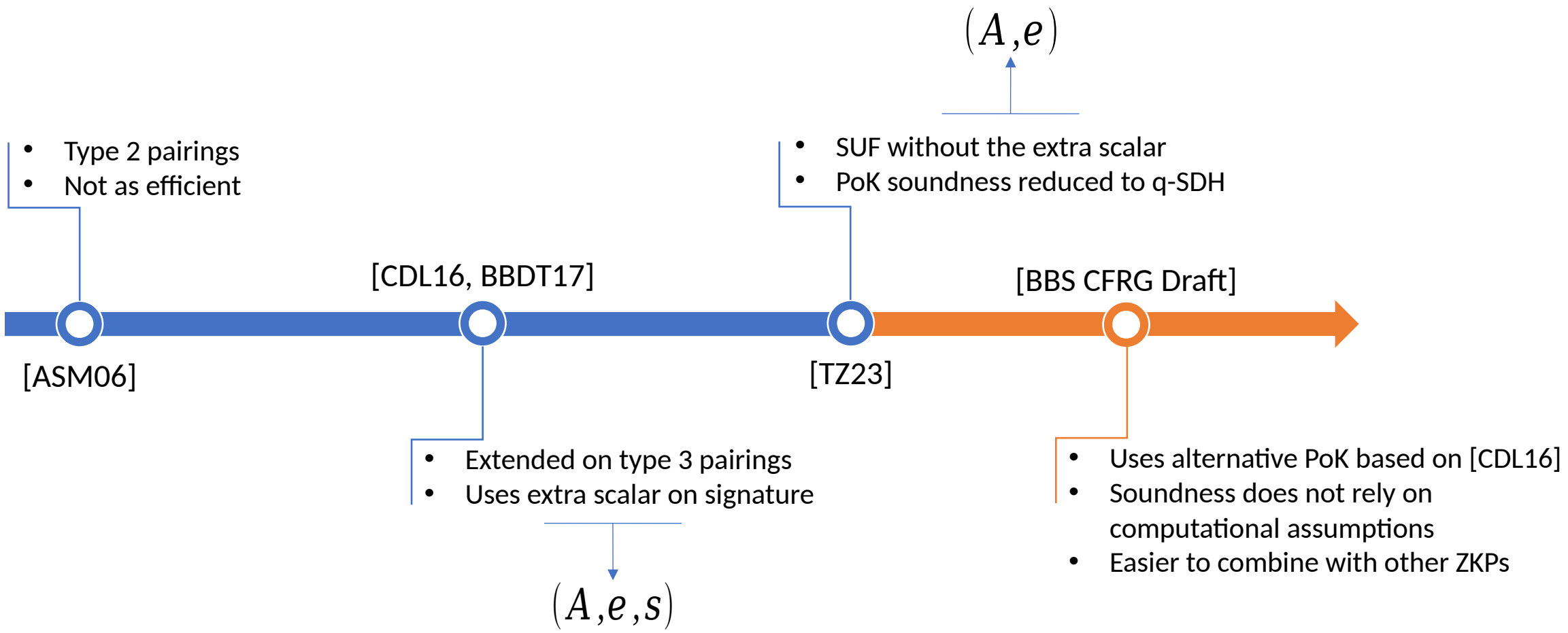
Updates: Separate high-level API, from core operations.



- Removed Create Generators and Process Messages operations from the ciphersuite.
- Interface operations manage creating the generators and processing the messages.
- Core operations accept generators and processed messages as input.
- Allows application specific generators and pre-processing of messages.

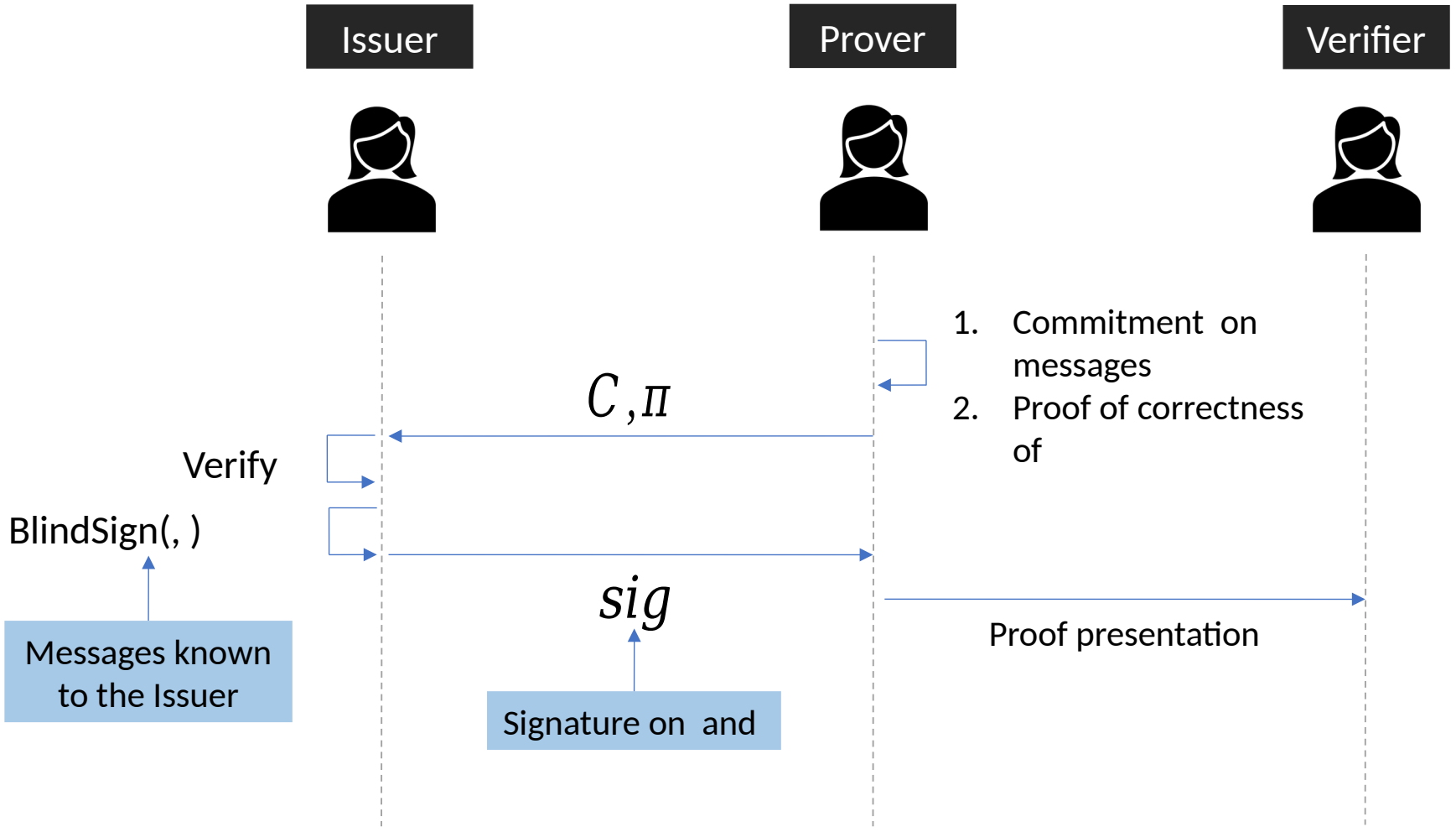
New BBS Proof

BBS Proof Generation Process

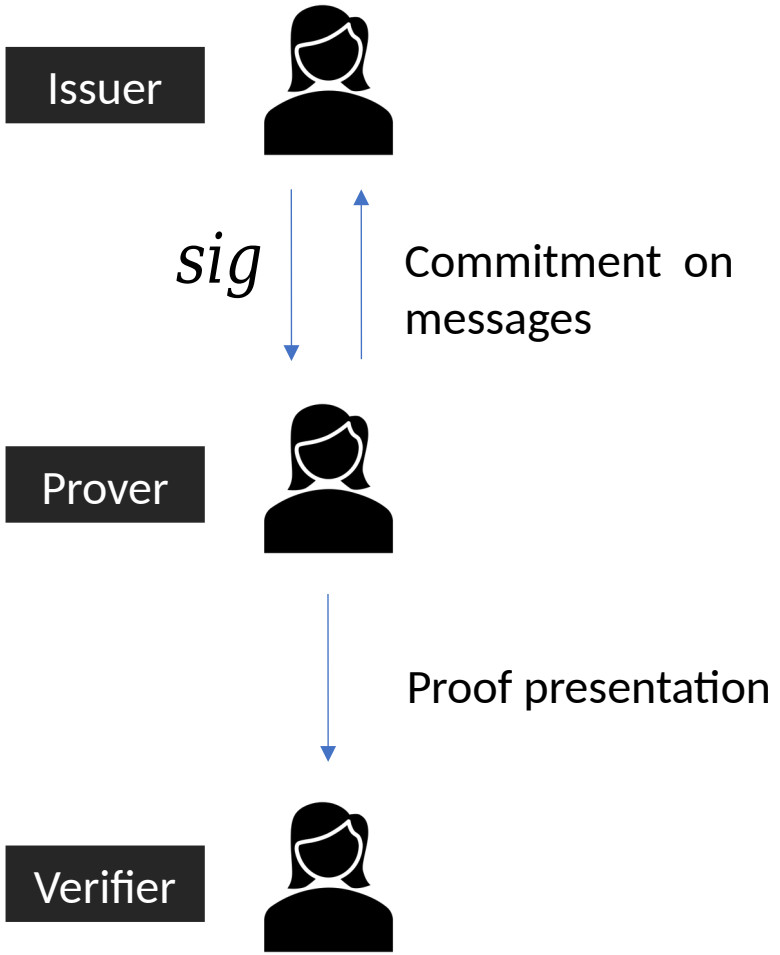


Blind BBS Signatures

BBS Blind Signatures



BBS Blind Signatures



- No “unblinding” needed. The first signed message becomes the commitments “blinding factor” (never disclosed).
- Used for User binding, hiding pseudonyms from the Issuer etc.
- The Verifier should not know if a messages is committed by the Prover or the Issuer.
- Better suited for a different document or should be merged with the “core” draft?

References

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[Editors Draft] Looker, T., Kalos, V., Whitehead, A., & Lodder, M. (2022). The BBS Signature Scheme. Decentralised Identity Foundation. <https://identity.foundation/bbs-signature/draft-irtf-cfrg-bbs-signatures.html>

Thank you!

Questions?