

Identity management (IdM)

Digital identities: representation of an actual entity (individuals, organizations, services, applications, devices)

Privacy and Security: authentication, authorization, access control confidentiality, and minimal disclosure [1]

Standards and Regulation [1,4]:

- Electronic identification (eID) - Electronic Identification, Authentication, and trust Services (eIDAS)
- European Digital Identity Framework
- General Data Protection Regulation (GDPR)
- EU Digital Identity Wallet

Blockchain

Blockchain - a type of Distributed Ledger Technology (DLT) + cryptographic enhancements

- distributed (spread between multiple nodes, each node stores a copy of the blockchain)
- decentralized by design (it is not a single point of decision, but the decision is a result of a consensus of the nodes).

IdM on Blockchain

- **Advantages:** Transparency, security, immutability, blockchains eliminate the necessity of a single point of trust or a centralized authority.
- **Precaution:** sensitive information should not be stored on-chain, not even in encrypted form.

Types of IdM solutions [1]:

- Self-Sovereign Identity (SSI): uPort Open
- Decentralized Trusted Identity (DTI): Shocard

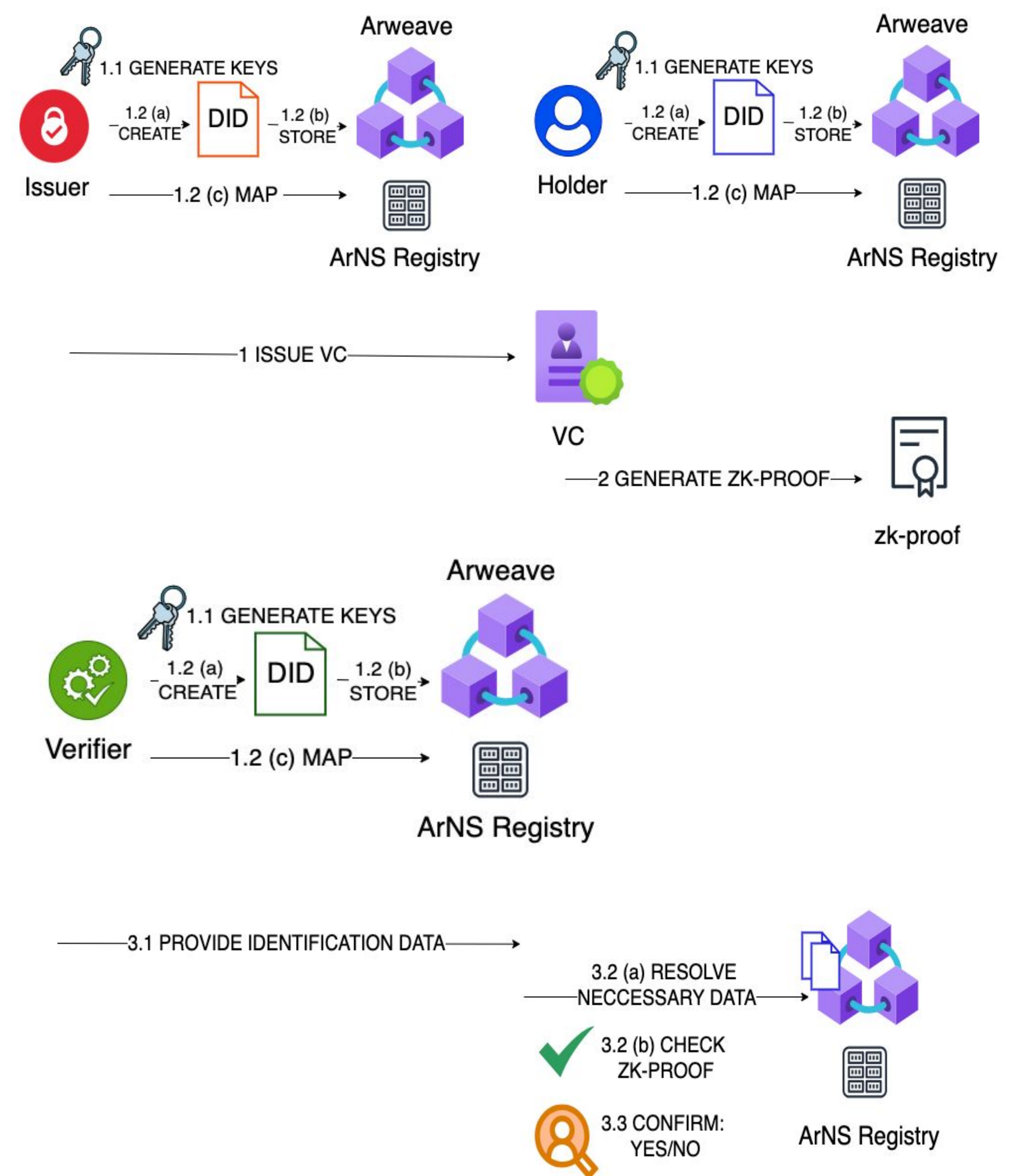


Fig. 1. IdM Framework on Arweave [2]

Arweave

- **Arweave** [2,3] emerged as a decentralized platform for permanent storage of digital information, ensuring long-term data availability.
- Technology: ArNS, ArDrive, ArConnect

Acknowledgments

This work was supported by a private scholarship offered by EntityC Consulting SRL to the first author. This work was supported by a grant of the Ministry of Research, Innovation and Digitalization, CNCS/CCCDI - UEFISCDI, project nr. ERANET-CHISTERA-V-PATTERN, within PNCDI IV.

References

1. Andreea-Elena Panait, Ruxandra F. Olimid, and Alin Stefanescu. 2020. Identity Management on Blockchain – Privacy and Security Aspects. In PROCEEDINGS OF THE ROMANIAN ACADEMY, Series A, Vol. 21. 45–52. <https://acad.ro/sectii2002/proceedings/doc2020-1/06-Panait.pdf>
2. Andreea Elena Drăgnoiu and Ruxandra F Olimid. 2024. Towards an identity management solution on Arweave. arXiv preprint arXiv:2412.13865 (2024).
3. Arweave. Meet Arweave: Permanent information storage. <https://arweave.org>. Last Accessed: June 2025.
4. European Commission. 2024. The EU Digital Identity Framework Regulation Enters into Force. <https://ec.europa.eu/digital-building-blocks/sites/display/EUDIGITALIDENTITYWALLET/The+Digital+Identity+Regulation+Enters+into+Force.LastAccessed: June 2025>

