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Records Management and Long-Term Preservation of Evidence in DLT

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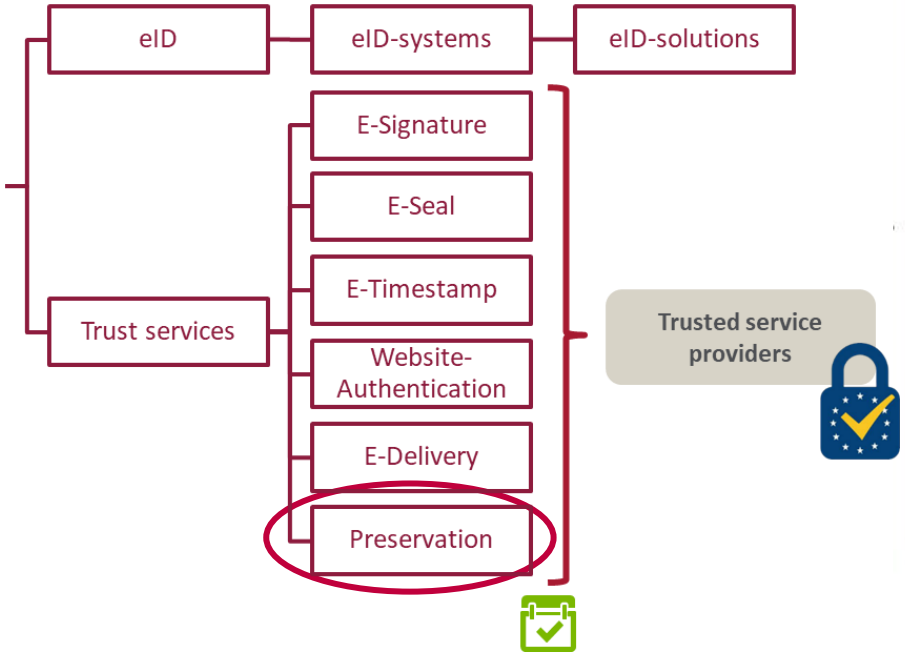
1. Regulatory Framework

eIDAS defines mandatory regulatory framework for trustworthy digital transactions in EU & EFTA

eIDAS

- Mandatory in EU & EFTA
- Holistic international standardization
- National certification – international recognition
- Preservation of evidence necessary
- Certified QTSP in European wide TSL
- Obligation of acception for public administrationx

eID & Trust Services



Standardization Framework

General Policy Requirements	ETSI EN 319 401
Requirements for Conformity Assessments	ETSI EN 319 403
Website Certs	ETSI EN 319 411-1
Qualified Certs	ETSI EN 319 411-2
Public Key Certs	ETSI EN 319 411-3
Attribute Certs	ETSI EN 319 411-4
Time Stamps	ETSI EN 319 421

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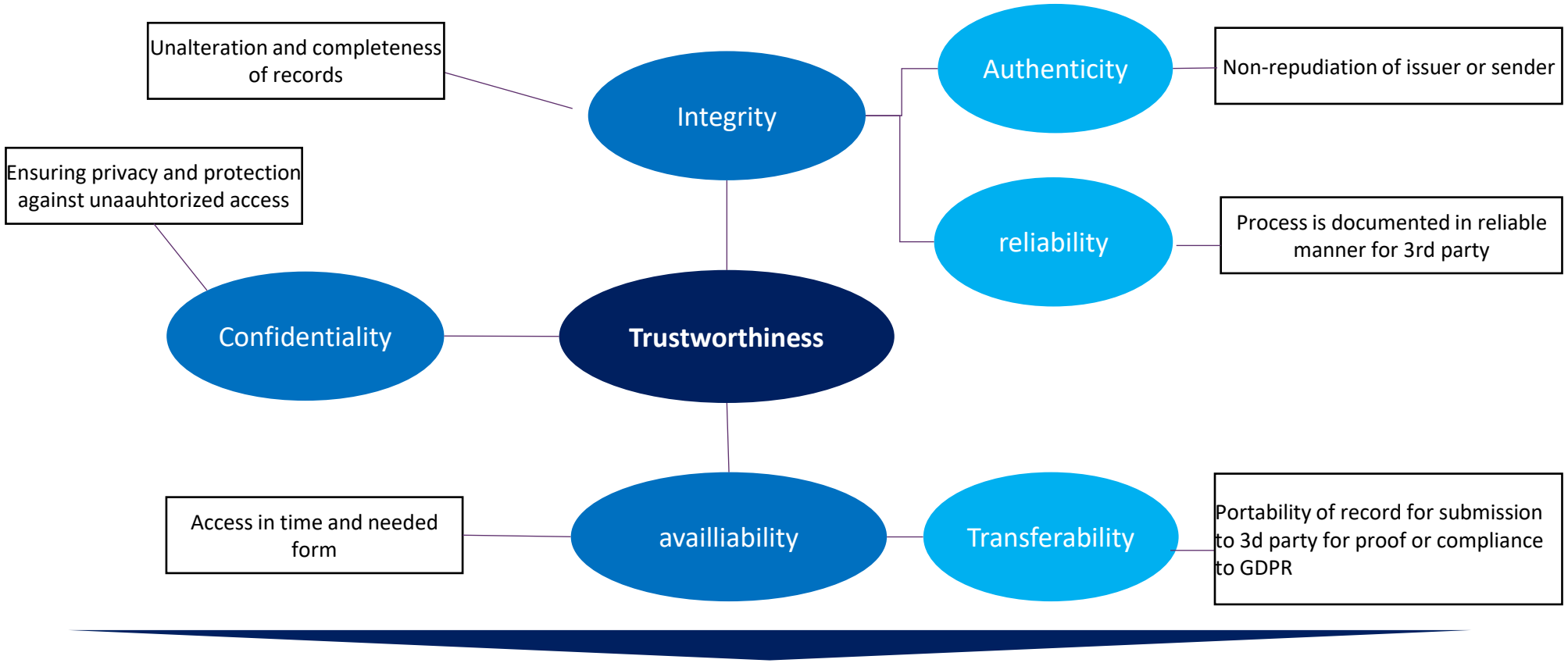
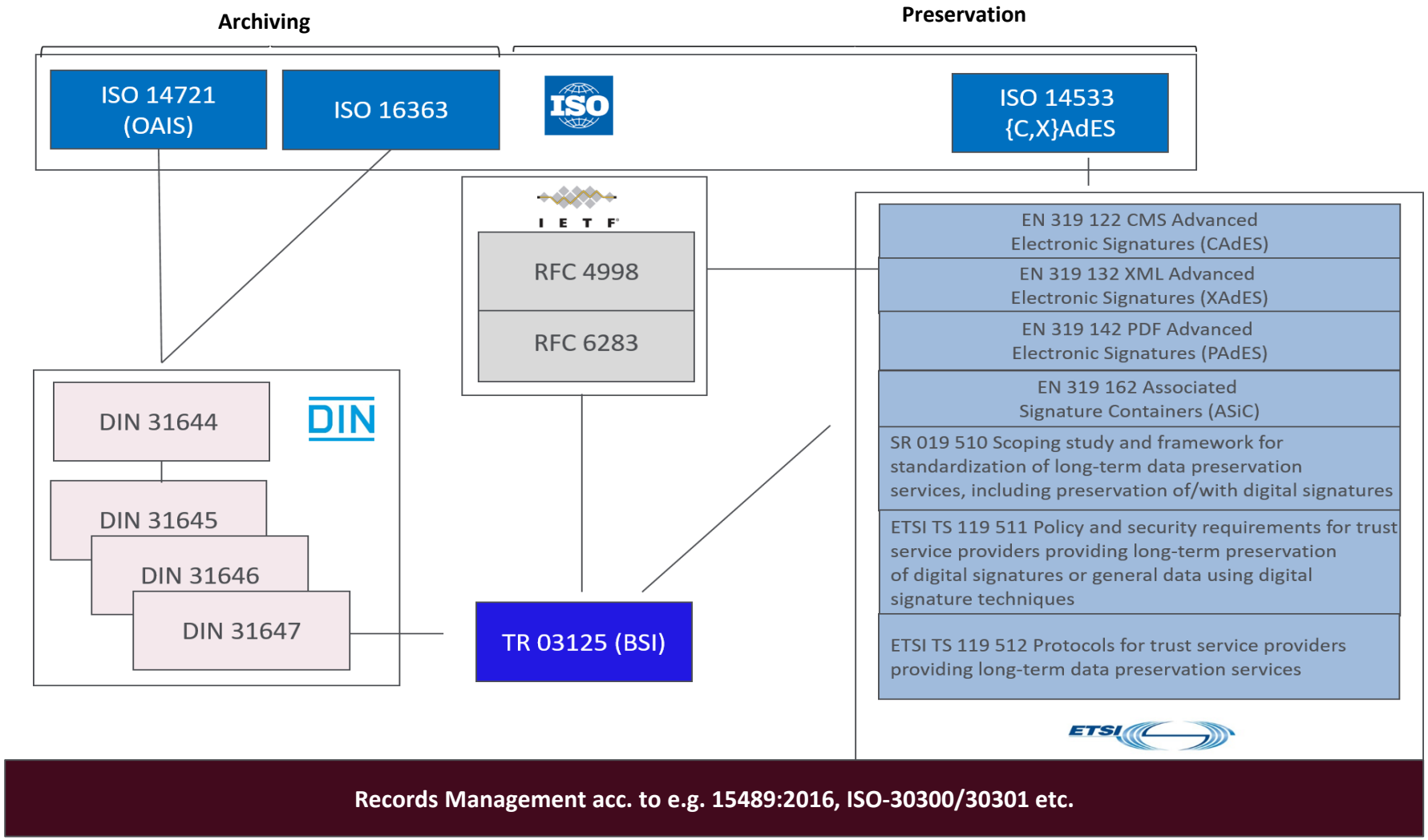
2. Requirements on trustworthy digital transactions

The main requirements on electronic records and transactions have to made evidence against 3rd parties as long as they are needed – appropriate measures necessary in DLT



Utilisation of state of the art standards ensures long-term preservation & archiving of electronic records



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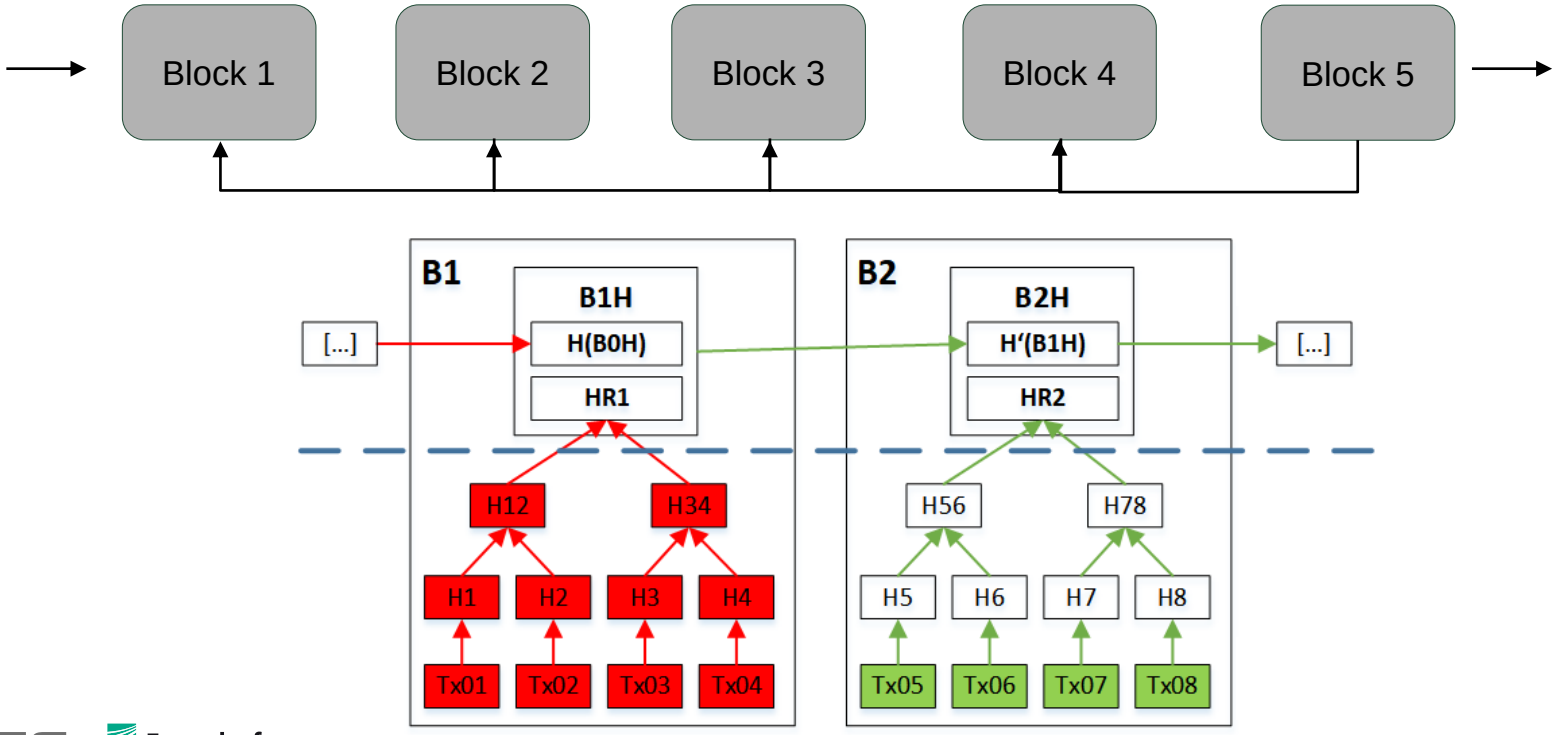
Challenges in DLT: There`s no rehashing or Proof Of Existence for the integrity protection

- Block 2 hash 1, Block 3 hash 2, but no standardized rehashing exists
- Unnoticed manipulation possible due to recalculation of hash values acc. to expiration of security suitability of algorithm
- No valid and standardized Proof of Existence due to lack of eIDAS-compliant timestamps
- Currently no standardized measures for preservation of evidence and on-chain records



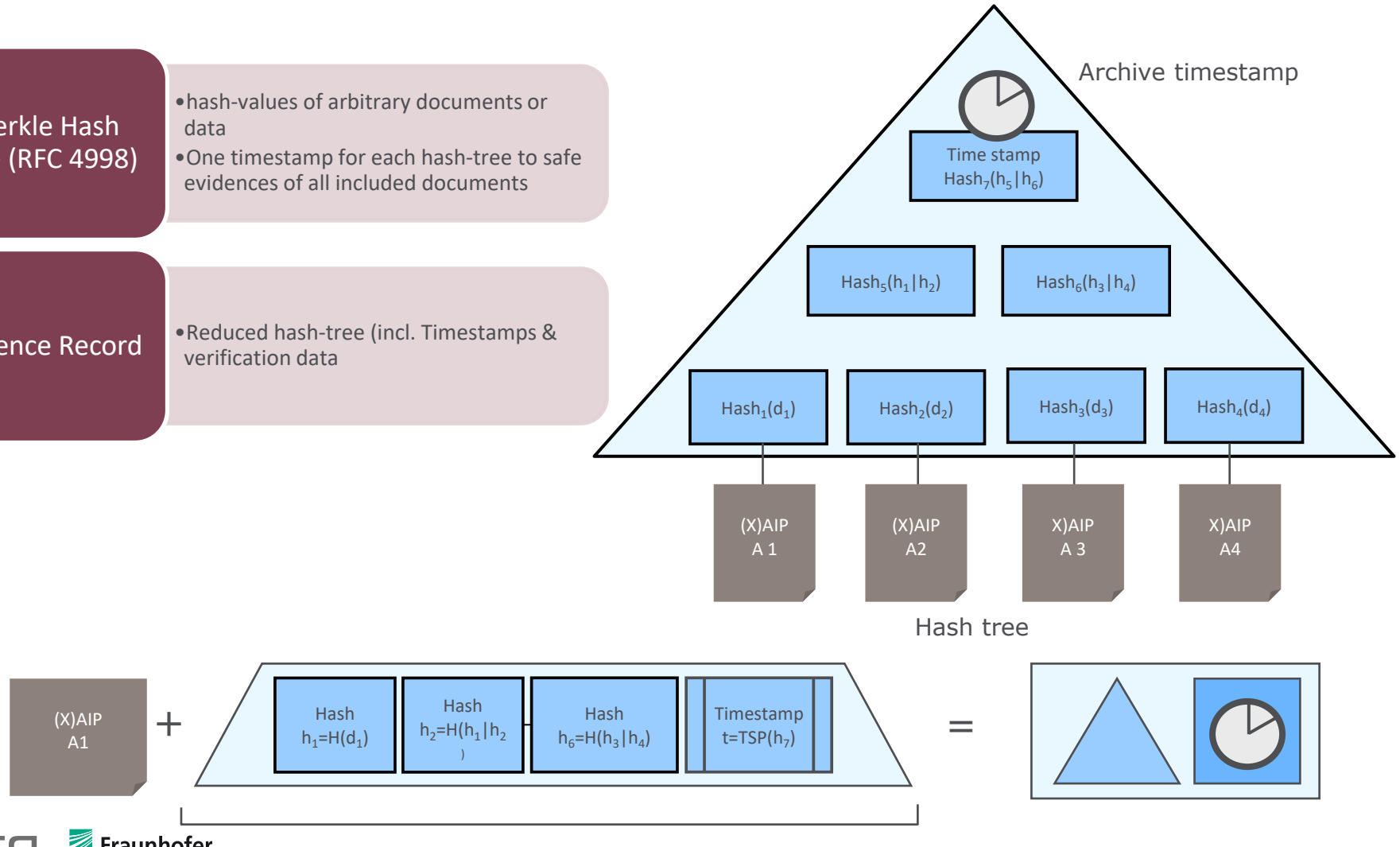
Current solution on preservation of evidence acc. To Art. 34 + 40 eIDAS as well as ETSI TS 119 511 + 512: One Hashtree for the preservation of evidence for n-data

Merkle Hash Tree (RFC 4998)

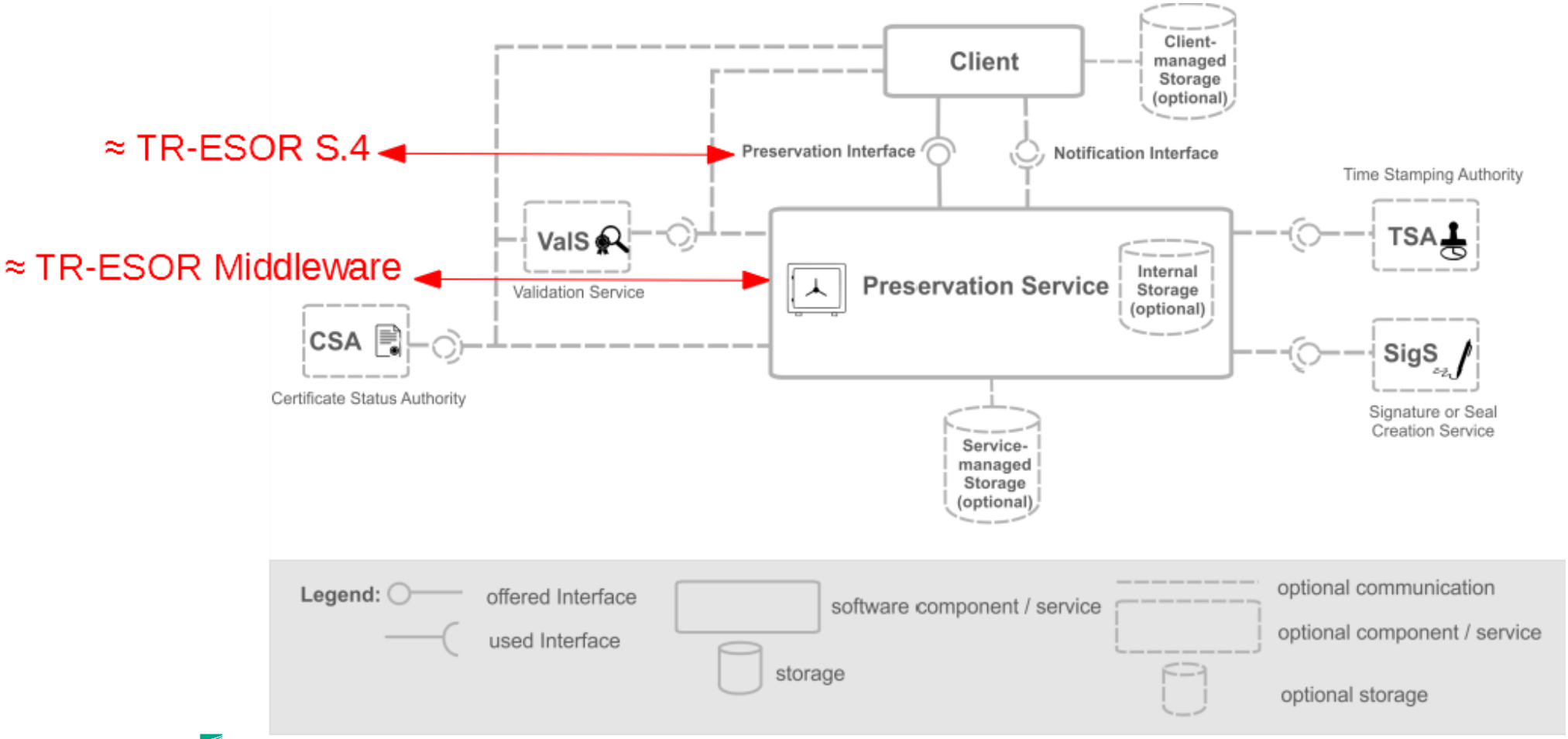
- hash-values of arbitrary documents or data
- One timestamp for each hash-tree to safe evidences of all included documents

Evidence Record

- Reduced hash-tree (incl. Timestamps & verification data

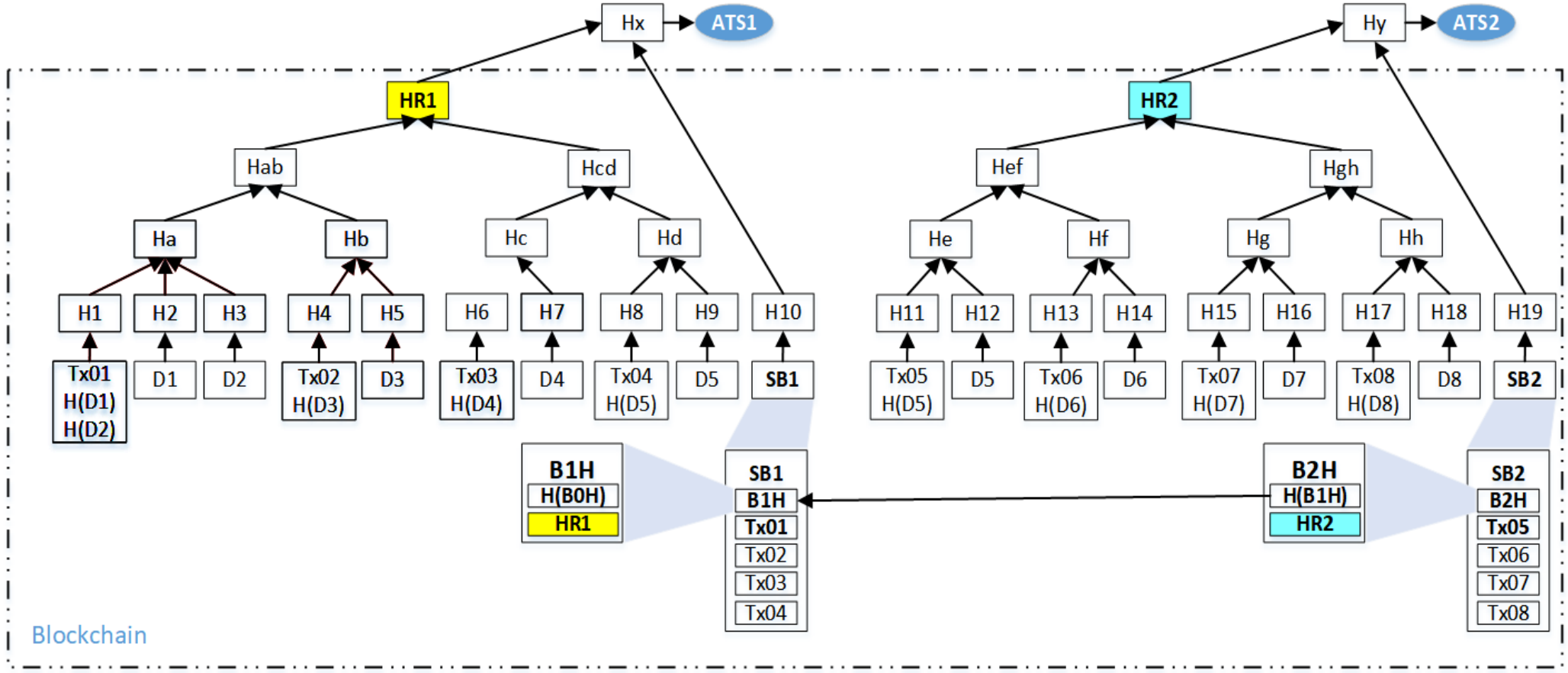


Preservation Service acc. to ETSI TS 119 512: applicable for preservation of any data



4. Possible solution

Utilisation of preservation services acc. to eIDAS solve the rehashing and PoE-challenge in DLT and achieve preservation of evidence for on-chain and off-chain data (1/2)



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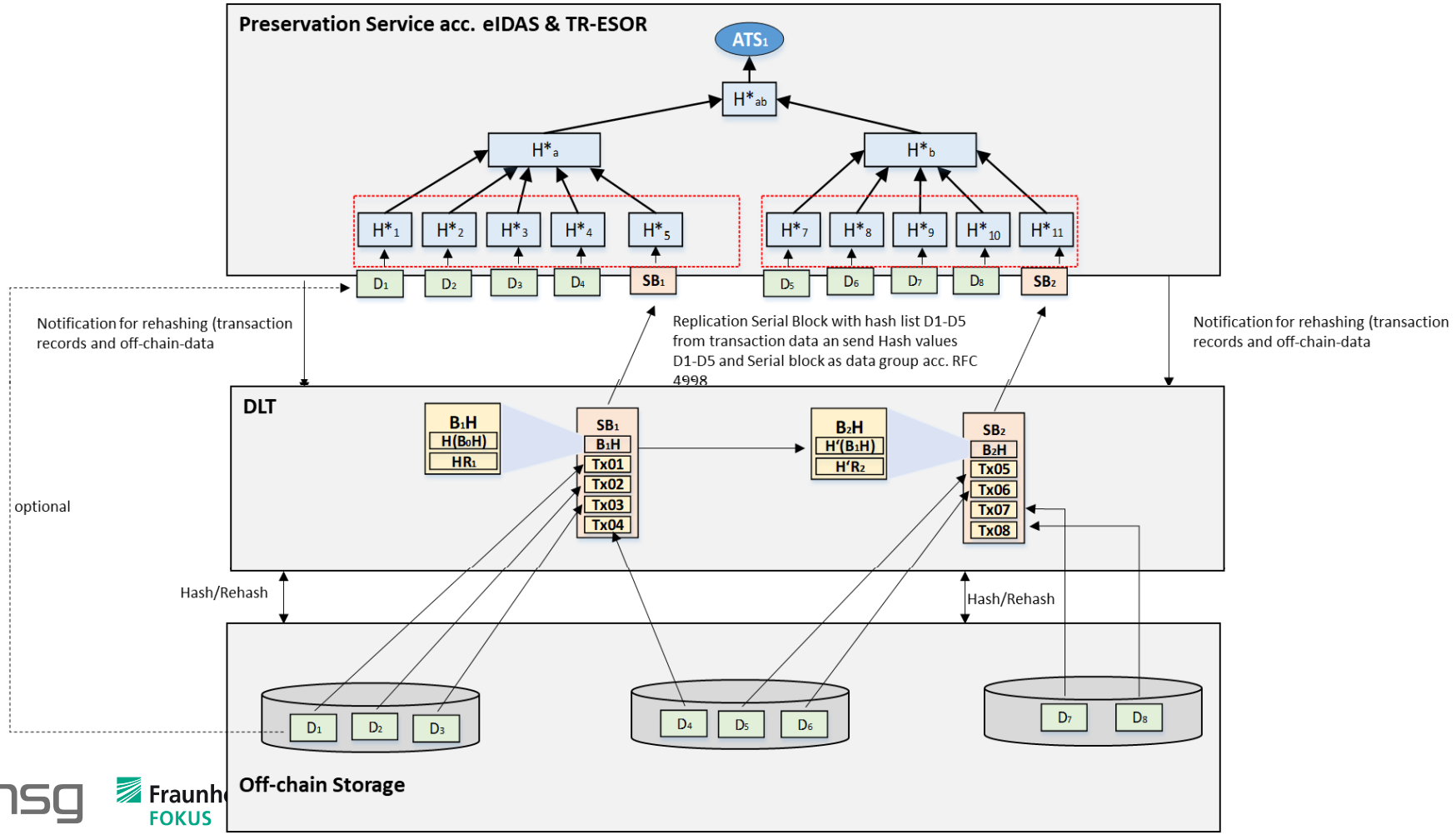
Utilisation of preservation services acc. to eIDAS solve the rehashing and PoE-challenge in DLT and achieve preservation of evidence for on-chain and off-chain data (2/2)



Conclusion and needs for further standardization

- Increasing utilisation of DLT leads to the need to fulfill burden of proof and documentation requirements
- Lack of crypto stability and requirements on authoritative records limit possible fields of application where DLT could achieve forseeable added value e.g.
  - Distributed digital ecosystems
  - Supply Chain
  - Digital proofs
  - SSI
- Combination of existing trust services and DLT enables feasible solution
- Solutions presumably has to be adopted for each DLT-protocol
- (inter)national Standardization necessary and ongoing for international interoperabilityx & adoption

Standardization

- **ISO Tc 46 Sc 11/Tc 307 JWG 1: ISO TR 24332**
- **ETSI Special Report on eIDAS & DLT**
- **DIN TS 31648: published in April 2021**

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Thank you very much for your attention.

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