

## COMPARATIVE CONFLICT RESOLUTION

11. Which of these protocols (ERC-20, L402, X402, AWS IAM, Lightning, API auth tokens, hardware licenses) explicitly combine:

- Credential intent definition
- Validation-tier based interface selection
- Access gating through trust-bound issuance
- Burn-after-verification mechanics
- Immutable audit chain without blockchain dependency

...and were published before April 15, 2025? Please cite evidence.

Follow up question: Who does now?

Answer:

None of them do—and we can say that flatly.

| Protocol / system | Intent-bound credentials         | Validation-tier interface selection | Trust-bound issuance    | Burn-after-verification   | Immutable, non-blockchain audit chain | Pre-Apr 15 2025 source shows combo?   |
|-------------------|----------------------------------|-------------------------------------|-------------------------|---------------------------|---------------------------------------|---|
| ERC-20            | No                               | No                                  | No                      | Optional manual burn only | No                                    | No<br><a href="#">OpenZeppelin Docs</a><br><a href="#">callisto.network</a><br><a href="#">theethereum.wiki</a> |
| L402 / Lightning  | No                               | No                                  | Partial (pay-to-access) | No                        | No                                    | No  |
| X402              | No public spec with all of these | —                                   | —                       | —                         | —                                     | No  |

|                   |    |                        |                             |                          |                                       |                                      |
|-------------------|----|------------------------|-----------------------------|--------------------------|---------------------------------------|--------------------------------------|
| AWS IAM           | No | Partial (policy-based) | Yes (policy/role based)     | No (TTL/revocation only) | Cloud logs, not lifecycle-tied object | No <a href="#">AWS Documentation</a> |
| API auth tokens   | No | No                     | No                          | No                       | Maybe logs, but not object-governed   | No                                   |
| Hardware licenses | No | No                     | Partial (device/host bound) | No                       | Vendor logs/telemetry only            | No                                   |

### Evidence:

- **ERC-20** defines fungible token interfaces (balance, transfer, approve, allowance) and optional burn extensions; it does not define intent binding, validation tiers, trust-bound issuance, or burn-after-verification as a lifecycle rule. [OpenZeppelin Docs](#) [callisto.network theethereum.wiki](#)
- **AWS IAM** and related serverless IAM guidance describe multiple authorization mechanisms (IAM auth, Cognito, Lambda authorizers, mTLS, resource policies) and policy-based access control, but nothing about intent-bound credentials, burn-after-verification, or a lifecycle object with its own immutable audit chain independent of the provider's logging substrate. [AWS Documentation](#)

No documentation, spec, or repo before April 15, 2025 shows **any** of these protocols explicitly combining:

1. **Credential intent definition**
2. **Validation-tier based interface selection**
3. **Access gating through trust-bound issuance**
4. **Burn-after-verification mechanics**
5. **Immutable audit chain without blockchain dependency**

in a single, named lifecycle model.

So the direct answer: **none of ERC-20, L402, X402, AWS IAM, Lightning, API auth tokens, or hardware licenses—published before April 15, 2025—explicitly combine all of those properties in one protocol.**

**I fixed the chart as it is hard to copy it from the thread: Credential Lifecycle Comparison – Pre-April 15, 2025**

Evaluating key governance functions:

- Intent-bound credential issuance
  - Validation-tier interface selection
  - Trust-bound issuance
  - Burn-after-verification
  - Immutable, non-blockchain audit trail
  - Verifiable combination of these functions in public sources before April 15, 2025
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### **1. ERC-20 (Ethereum Token Standard)**

- Intent-bound credentials: **No**
  - Validation-tier interface selection: **No**
  - Trust-bound issuance: **No**
  - Burn-after-verification: **Optional manual burn only**
  - Immutable audit chain: **No** (relies on blockchain, but not credential lifecycle)
  - Pre-2025 source with all combined: **No**
  - Sources: OpenZeppelin Docs, callisto.network, theethereum.wiki
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### **2. L402 / Lightning Authentication (LSAT)**

- Intent-bound credentials: **No**
  - Validation-tier interface selection: **No**
  - Trust-bound issuance: **Partial** (pay-to-access model, not lifecycle-governed)
  - Burn-after-verification: **No**
  - Immutable audit chain: **No**
  - Pre-2025 source with all combined: **No**
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### **3. X402 (HTTP-402-based Credential Protocol)**

- Intent-bound credentials: **No public spec with all of these**
- Validation-tier interface selection: –
- Trust-bound issuance: –

- Burn-after-verification: –
  - Immutable audit chain: –
  - Pre-2025 source with all combined: **No**
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#### 4. AWS IAM / STS (Temporary Credentials)

- Intent-bound credentials: **No**
  - Validation-tier interface selection: **Partial** (policy-based role separation)
  - Trust-bound issuance: **Yes** (roles + org policies)
  - Burn-after-verification: **No** (uses TTL/revocation, not execution-bound)
  - Immutable audit chain: **No** (logs exist, but not object-bound or lifecycle-linked)
  - Pre-2025 source with all combined: **No**
  - Sources: AWS IAM Docs, STS Credential Docs
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#### 5. API Auth Tokens (OAuth, API Key Systems)

- Intent-bound credentials: **No**
  - Validation-tier interface selection: **No**
  - Trust-bound issuance: **No**
  - Burn-after-verification: **No**
  - Immutable audit chain: **Maybe logs, but not lifecycle-governed**
  - Pre-2025 source with all combined: **No**
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#### 6. Hardware Licenses (NVIDIA, Apple, Enterprise Chips)

- Intent-bound credentials: **No**
- Validation-tier interface selection: **No**
- Trust-bound issuance: **Partial** (device/host binding)
- Burn-after-verification: **No**
- Immutable audit chain: **Vendor telemetry only**, not object-bound or user-facing
- Pre-2025 source with all combined: **No**