Self Sovereign Identity for Circular Economy

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ALASTRIA

Self Sovereign Identity for Circular Economy

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- Circular ecosystems need **trusted digital participants.**
- Companies must **identify who can access** and **share data.**
- **Trust** must work across **multiple organizations.**
- SSI enables **secure collaboration at scale.**
- Blockchain strengthens **trust across the network.**

What Self-Sovereign Identity Means

- **SSI gives users control over their own credentials.**
- **Identity does not depend** on one central authority.
- Credentials stay **under the holder's control.**
- Data is shared **only when needed.**
- This supports **digital sovereignty by design.**

The Core Building Blocks: DID, VC and VP

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- **DIDs** identify issuers, holders, and verifiers.
- **Verifiable Credentials** contain trusted digital claims.
- **Verifiable Presentations** share selected proofs with others.
- **W3C standards** ensure interoperability across systems.
- **Identity** becomes **portable, reusable, and verifiable.**

Why Blockchain Is Needed

- Blockchain acts as the **shared trust layer.**
- It allows **instant credential verification.**
- It supports **immutable proof of issuance and status.**
- It **reduces dependence on manual checks.**
- **It helps prevent fraud** and credential tampering.

How the Identity Flow Works

- An authorized **issuer creates a digital credential.**
- The **user receives and claims it in a wallet.**
- **The credential is stored** securely by the holder.
- **A verifier checks its authenticity** on blockchain.
- **No direct call to the issuer** is required.

User Control Through the Wallet

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- The **wallet** is the user's **digital identity container.**
- **Credentials are stored encrypted** in the wallet.
- The **holder decides what to share** and when.
- **No passwords** are needed for core identity actions.
- Identity becomes **secure and user-centric.**

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Lifecycle Management and Revocation

- **Credentials can be active, suspended, or revoked.**
- **Issuers** can **update credential** status when needed.
- **Status changes** are **recorded immutably.**
- **Verifiers can always check** the latest state.
- **Trust** is maintained over the **full credential lifecycle.**

Why It Matters in Circular Economy Projects

- **It proves who participates** in the ecosystem.
- **It enables trusted access** to marketplaces and services.
- **It supports certified roles** in circular value chains.
- **It helps prove compliance** and environmental claims.
- **It reduces friction** between ecosystem partners.

European Alignment and Interoperability

- **The model aligns with the European SSI direction.**
- **It fits the logic behind eIDAS 2.0 and EUDI Wallet.**
- **It follows W3C credential standards.**
- **It is compatible with broader European trust frameworks.**
- **This improves future scalability** and adoption.

CIRCULOOS Identity Architecture

- **Alastria** provides the **blockchain trust infrastructure.**
- **Smart contracts manage** trust and credential status.
- **Wallet technology** enables secure **user interaction.**
- **Verification services** enable instant **decentralized checks.**
- **The result** is trusted digital **identity for circular collaboration.**

Key Takeaway

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- **Circular economy needs trusted digital relationships.**
- SSI gives **control back to users and organizations.**
- Verifiable credentials make **trust portable and instant.**
- Blockchain makes **verification auditable and resilient.**
- Together, they enable **secure data sharing at ecosystem scale.**

Thanks!

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