



Blockchain in circular economy

CIRCULODS



ALASTRIA



About Alastria (alastria.io)

- A **public-permissioned blockchain** for a **multisector** ecosystem.
- **Connects** companies, academia, and public institutions.
- **Builds real-world blockchain infrastructure** and use cases.
- Supports **trusted and regulation-aligned** digital collaboration.
- Alastria is a large public-permissioned multisector platform with **500+ members**.
- Alastria **contributes to CIRCULOOS' distributed architecture**, resilience, security, and secure data sharing **aligned with EBSI**.
- Alastria is in charge of **ISBE (*Spanish Blockchain Services Infrastructure*)**
– **RedISBE.com**



Alastria in CIRCULOOS

Vision

- Blockchain provides trust to end users
- Blockchain enables *trust-less* data sharing across worldwide participants

Challenges

- Blockchain is not easy to use for end users (*crypto wallets, private keys, Smart Contracts, etc.*)
- User Centric Approach for SMEs to benefit from Blockchain

Mission

- Build web3 components with standard integration (REST APIs)
- Deliver web3 components that make Blockchain usage simple for SMEs



From Bitcoin to Business Blockchain

- **Blockchain** was introduced with Bitcoin in 2008.
- The first goal was **peer-to-peer digital value exchange**.
- The key innovation was to **solve double spending** (in the digital world).
- The solution used **cryptographic proof (PoW)** instead of central trust.
- Satoshi Nakamoto's paper presents Bitcoin as peer-to-peer electronic cash, **designed to avoid trusted intermediaries** and solve double spending through a **peer-to-peer network** and **proof-of-work chain**.
- Later, the model expanded **beyond money into shared records**.
- **In 2015, Vitalik Vuterin launched Ethereum**, a blockchain which enable the creation of **decentralized apps**, based on Smart Contracts.
- Since then, **Blockchain has ben used to build trustless applications**.



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What Blockchain Really Is

- A shared ledger across multiple organizations.
- A system for recording agreed facts.
- A network that validates updates by common rules.
- A history that is time-stamped and auditable.
- A foundation for digital trust between parties.



Why Blockchain Creates Trust Between Organizations

- One shared version of the truth.
- No single actor controls the record.
- Every change is traceable.
- Evidence is easier to audit.
- Shared rules reduce disputes.
- Smart contracts automate commitments.



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How Blockchain Works

1. A **new transaction** (containing data) is proposed.
2. The **network checks the rules**.
3. **Valid transactions** are grouped into a **block**.
4. **The block is linked to previous blocks**.
5. **The ledger is updated** across the network.
6. **Smart Contracts** live in transactions containing **business logic**.
7. **Smart contracts can trigger actions automatically**.
8. Transaction blocks create a **chain of linked blocks** with data.



When Blockchain Fits Best

- **Many parties share one process.**
- **Trust is limited** across organizations.
- **Auditability** is a business requirement.
- Records must be **tamper-evident**.
- **Shared rules** must be **enforced automatically**.



Blockchain for Circular Economy

- **Tracks lifecycle** of products, parts, and materials.
- **Proves origin, ownership,** and transformation events.
- **Supports** reuse, repair, refurbish, and remanufacture flows.
- Enables **trusted digital product passports.**
- **Improves ESG evidence** and **compliance reporting.**
- Reduces reconciliation time between supply-chain partners.



Blockchain in CIRCULOOS

- Enable a **trust framework aligned with EBSI**.
- Uses blockchain-based registries for **transparency and robustness**.
- Logs transactions so **data usage can be audited**.
- **Registers tamper-proof evidences** of data platform.
- Makes **procurement agreements traceable** through smart contracts.
- Strengthens **secure collaboration** across manufacturing **SMEs**.



Key Takeaway

- Blockchain is **not only about crypto.**
- It is **infrastructure for trusted collaboration.**
- **Trust enables data sharing.**
- **Data sharing enables circular processes.**
- *That is why blockchain matters in CIRCULOOS.*





Thanks!

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