EduCTX
A decentralized system for managing micro-credentials, based on smart contracts and the Ethereum blockchain platform

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Skills and knowledge

- Formal (formal education, certificates)
- Informal (certificates of participation in courses, participation in events, membership in organizations, publications (professional articles, scientific articles, reports, technical documentation))
- Other skills and achievements (education of the elderly)

Challenges

- Simple verification of the authenticity
- International dimension
- Language barriers
- Administrative obstacles
EduCTX platform

- Based on the Blockchain technology
  - Using a consortium type of blockchain
- Enables establishing decentralized and distributed environment
  - Transactions and data are secure and trusted
- The platform offers a comprehensive and unified digital environment
  - Managing, assigning and presenting certificates for individuals and educational institutions and other potential stakeholders
EduCTX platform

- Digital micro-credentials are
  - Transactions representing acquired certificates
  - Points acquired for completed learning units (courses, diplomas)
- Each completed transaction is recorded and kept in a publicly available ledger
EduCTX platform

- Stakeholders are nodes of the EduCTX network
  - Contributing to the robustness and security of the platform
  - Due to the use of the consortium network, nodes do not have any transaction costs
- Enables the development of digital services
  - Automated evaluation of skills and knowledge of individuals
- First prototype implementation was based on the ARK platform
- The development continued on the Ethereum platform
EduCTX platform

- The development continued on the **Ethereum** platform
  - Using smart contracts
    - Turing completeness
  - Consortium network
    - Proof of Authority consensus mechanism
    - Transaction costs set to 0
- Adding new nodes (certified authority)
- Adding certified authorities into the business logic (smart contracts)
EduCTX platform

- Skills and knowledge are saved as ECTX tokens
  - The ECTX tokens are equivalent to points acquired by the individual in the form of digital micro-credentials for completed learning units (courses, diplomas, certificates)

- Multi-currency approach
  - ECTS points for formal education
  - Simply configurable XY points for informal education
EduCTX platform - Alfa version (Ethereum)

**Individual**

- EduCTX address, where he collects tokens assigned by an institution for completed learning units
- EduCTX wallet, in the form of decentralized web application, that enables overview of received tokens

**Institutions (certified authorities)**

- EduCTX address, from which it transfers tokens
- EduCTX wallet, in the form of decentralized web application, that enables management of tokens
Assigning micro-credentials

- Institution transfers an appropriate number of tokens to the address of the individual’s wallet
- The data is stored on the EduCTX blockchain network
  - A known sender (an institution with an official name and address)
  - An anonymous individual receiver (a public, but anonymous address)
  - Title, value and URL address
EduCTX initiative

Addresses

▪ the mission and social responsibility of educational institutions
▪ the expectations of new generations

The flexibility and transparency of the digital platform

▪ Enables greater connectivity and involvement of various educational institutions and other stakeholders
  ▪ to reduce the time-consuming and costly burdensome processes of governmental and non-governmental organizations
  ▪ speeds up the acquisition of data for individuals, thereby enabling a more efficient e-state at EU level and indirectly relieving the public administration

▪ Helps modernizing business processes and introducing innovative digital services

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Thank you for your attention!

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