Blockchain for social good and local communities

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What is Social Good

- Social (and public good) challenges aim to create a world more:
  - Sustainable
  - Ethical
  - Inclusive
  - Cooperative
  - Transparent
  - Accountable
- Often associated to the 17 UN Sustainable Development Goals

Why blockchain for Social Good

- The Web3 differs from Web2.0 in redecentralization of
  - Network infrastructure
  - Equal access to the market
  - Governance
- New digital modules
  - Identity
  - Voting
  - Wallets
  - Tokens
  - Storage (IPFS)
- New user experience patterns

Why BC4SG is not so developed as DeFi and NFT market?

- DeFi is mainly based on speculation, while SG requires stable markets
- Many DLT projects are accessible to a very specialized audience
- The shift in technological design and development is consistently under-estimated
- Difference in organisational cultures between DLT innovators, public sector and non-profit organizations
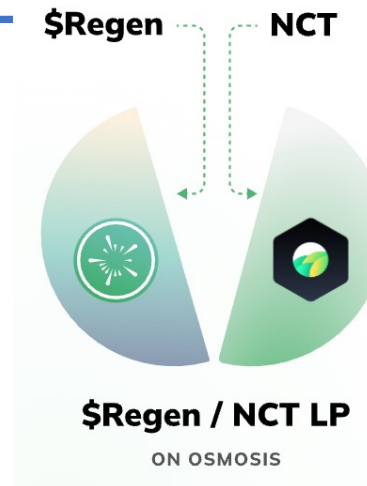
- Regulatory support for cross-jurisdictional primitives is needed
- Public funding is required in order to speed-up the blockchain adoption for social good!

https://www.dlt4.eu
http://ledgerproject.eu

Sustainable environment - Energy communities

- Problems
  - Inefficiencies in centralized power distribution systems
  - inadequate tracking and monitoring of production and consumption data
  - Poor utilization of self-generated energy by citizens through renewable sources (e.g., solar)
  - High energy prices and opaque bills

- What blockchain offers
  - Fair P2P energy exchange
  - Grid energy balancing, keeping track of production and consumption
  - Constant and transparent monitoring of consumption data
  - Smart billing and market place
- Some projects
  - LO3Energy
  - PowerLedger
  - Prosume
  - EGC Chain

Sustainable environment - Carbon credits markets

- Objective: democratizing the market of carbon credits

- Carbon credits
  - can be emitted in the form of tokens from virtuous projects
  - can be purchased by companies that need them
  - can be used as asset for DeFi

- Governance mechanisms through DAO

https://www.regen.network/
https://www.klimadao.finance/
https://universalcarbon.com/
https://ipci.io/

(Fair) Supply chain traceability
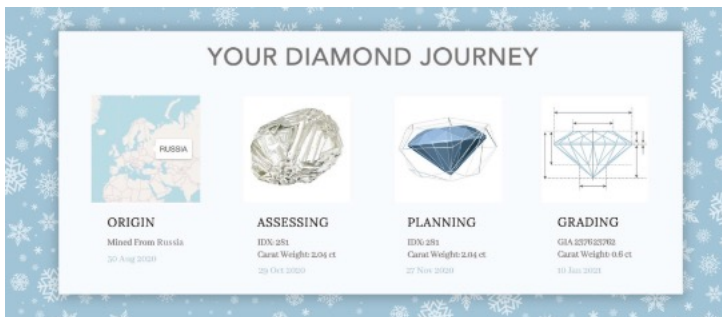
- Problems
  - Lack of trust among supply chain participants
  - Lack of trust from customers
  - Lack of perception of the quality of the products

- What blockchain offers
  - Transparency
  - Tamper-proof records
  - Increase social impact
  - Increase customer perception about product quality and provenance

- Some projects
  - BanQu
  - Provenance
  - Everledger

YOUR DIAMOND JOURNEY

ORIGIN	ASSESSING	PLANNING	GRADING
Mined From Russia	IDX-251	IDX-251	GIA-257625701
30 Aug 2020	Carat Weight: 2.04 ct	Carat Weight: 2.04 ct	Carat Weight: 0.6 ct
	29 Oct 2020	22 Nov 2020	10 Jan 2021

JTI uses BanQu to protect children and source responsibly

Blockchain technology: progressively eliminating child labor

https://banqu.co/
https://everledger.io/

Supply chain and health - AidTrust

- Donation of medicine and vaccines distribution

- Increased visibility and trust in supply chain and distribution

- Based of a decentralized knowledge graph

https://www.bsigroup.com/en-GB/healthcare/donated-medicines-and-vaccines/
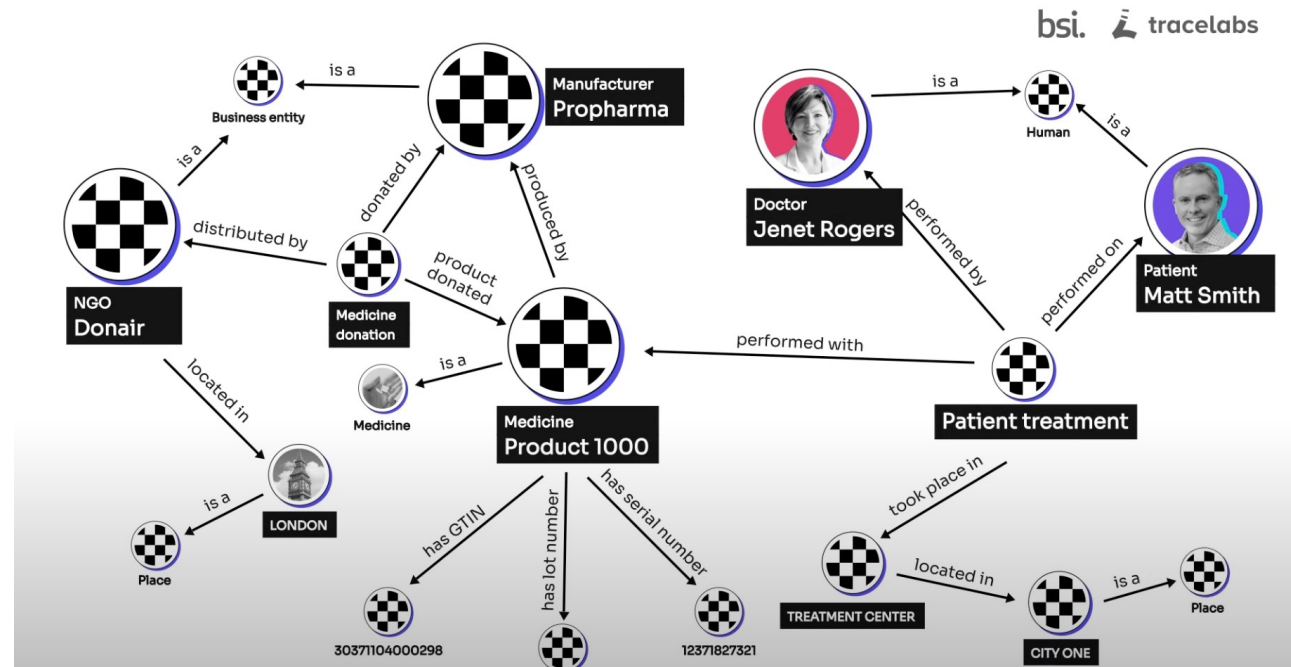
PININ project

- Objectives
  - increase the quality and perception of high-end Piedmontese agri-food products
  - protect the brand and optimize and reduce the quality certification and traceability costs,
  - facilitate the controls in the food chain to certify sustainability starting from cattle breeding in alpine pastures
  - improve the access to traceability information by the final user

https://www.pinin-project.eu/

PININ: four use cases

1. **Traceability** in the provision of **European funds** for the breeding of cattle in alpine pastures
2. **Traceability** of quality food for the meat and dairy products supply chain with innovative services for the consumer
3. **Anti-counterfeiting** of bottled products (wine and spirits)
4. Search for **fake branded food products** on e-commerce sites

Traceability in the provision of European funds for breeding

- Proposal:
  - New IoT solution for geo-localized tracking of livestock (**electronic collar**)
  - Update and certification of **grazing areas on blockchain**
  - Ex-post **verification**, not necessarily in real time
  - Used also for the traceability of dairy products
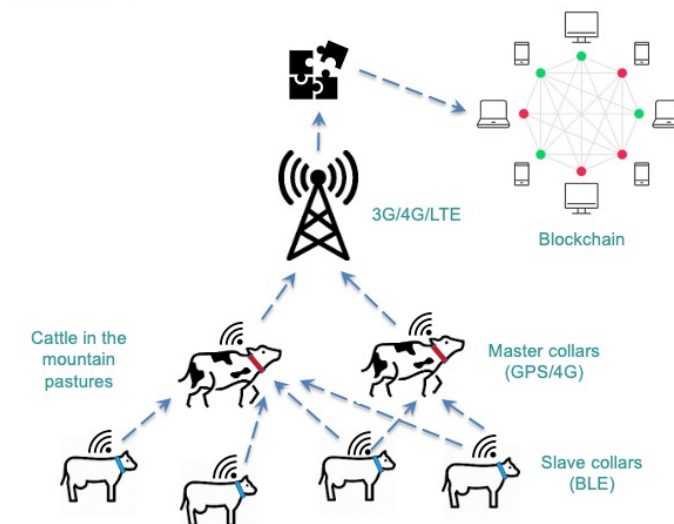
Traceability in the provision of European funds for breeding

- Map-based web application for
  - Breeders
  - Forest guards
- European Funds verification
  - ex-post using smart contracts interacting with a spatial database through blockchain oracles
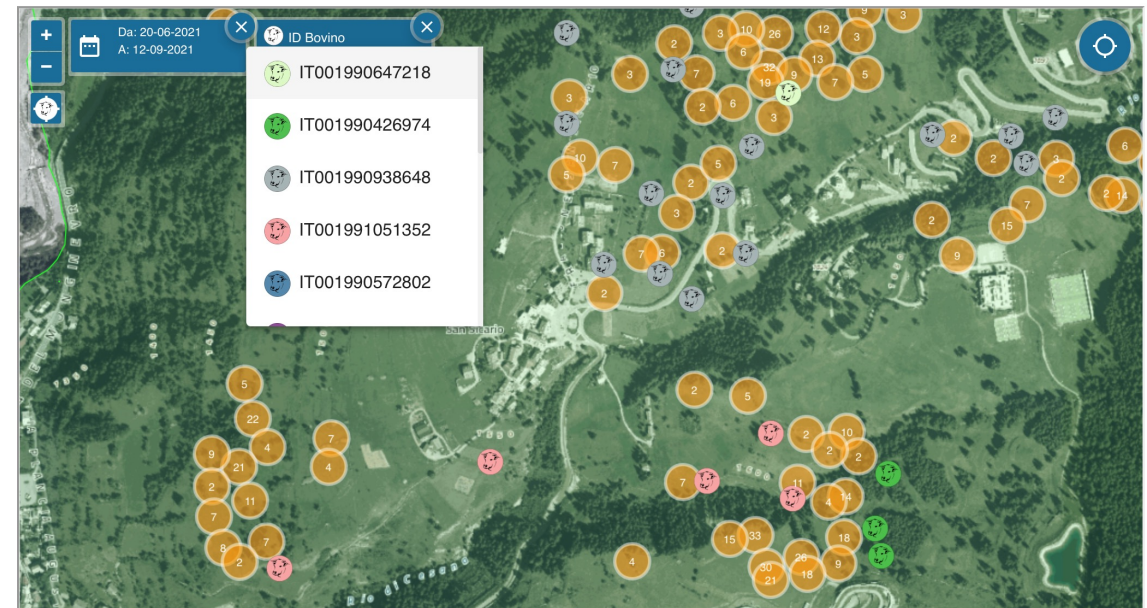
Traceability of quality food with innovative services for the consumer

- The problem
  - Lack of a comprehensive supply chain traceability system
  - Lack of quality awareness from the customers
- We considered dairy products (integrated approach with UC1)
- Tools for customers
  - Supply-chain data from the blockchain
  - Social features provided by FirstLife
  - Geo-localized visibility of products in restaurants, bars, local markets
  - Advanced interaction modalities for customers
    - chatbot
    - immersive experience
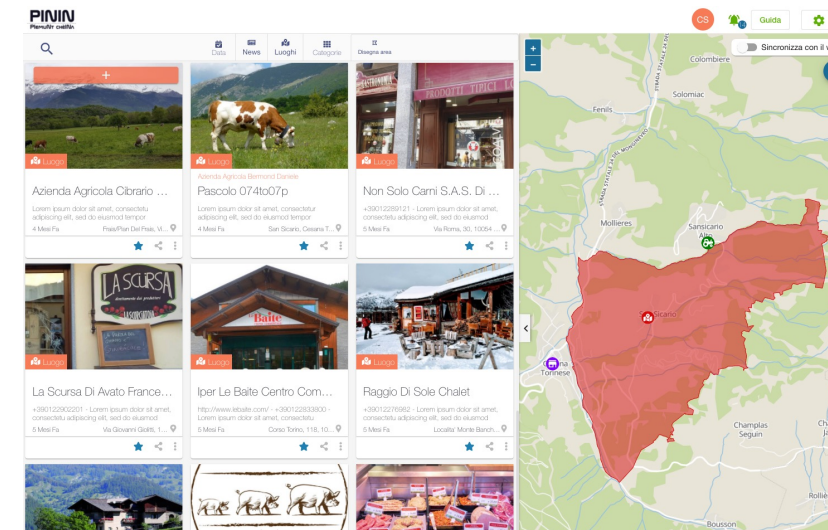
Financial inclusion

- Problems
  - Limited access to banking institutions and financial instruments in some geographic areas
  - Financial services too expensive
  - Lack of trust in the banking system
  - Complex onboarding procedures

- What blockchain offers
  - Reduce costs
  - Democratizing access
  - Support for smart communities

- Tools
  - Complementary currencies
  - Value transfer
  - Microcredit
  - P2p transfer
  - Donations

Donations - Giveth

- Users can donate to verified projects, receiving some GIV tokens

- GIV tokens can be used
  - In the decentralized governance platform
  - In a liquidity provider (staking)

Similar project: https://pledgecamp.com/
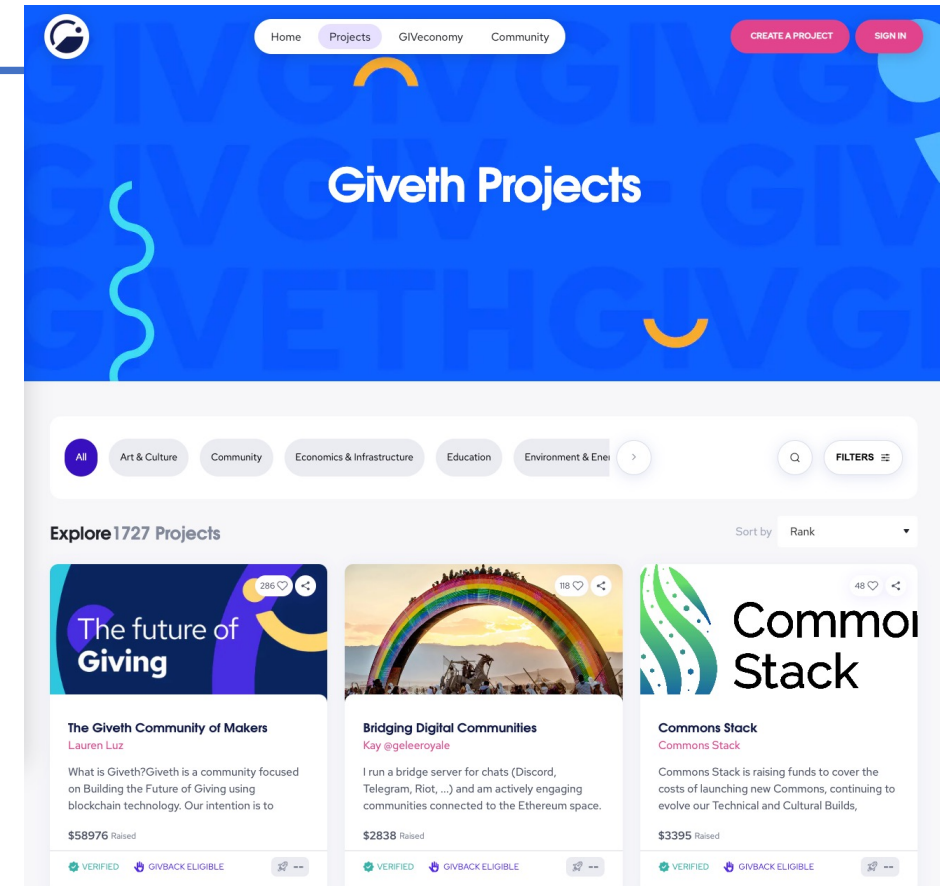
Kaluana – AID:Tech

- Decentralized volunteering platform

- Based on
  - User reputation
  - Digital ID NFT
  - Transferable VAE token (Volunteer and Earn)

- Proof-of-Reputation protocol
  - Users will be rewarded for their time, effort, energy and contributions with VAE tokens.

https://www.aid.technology/kaulana
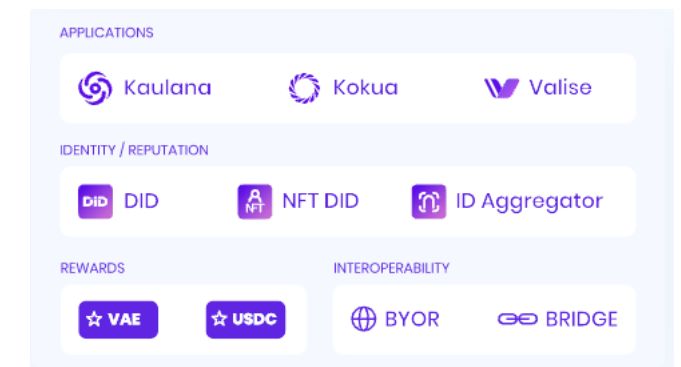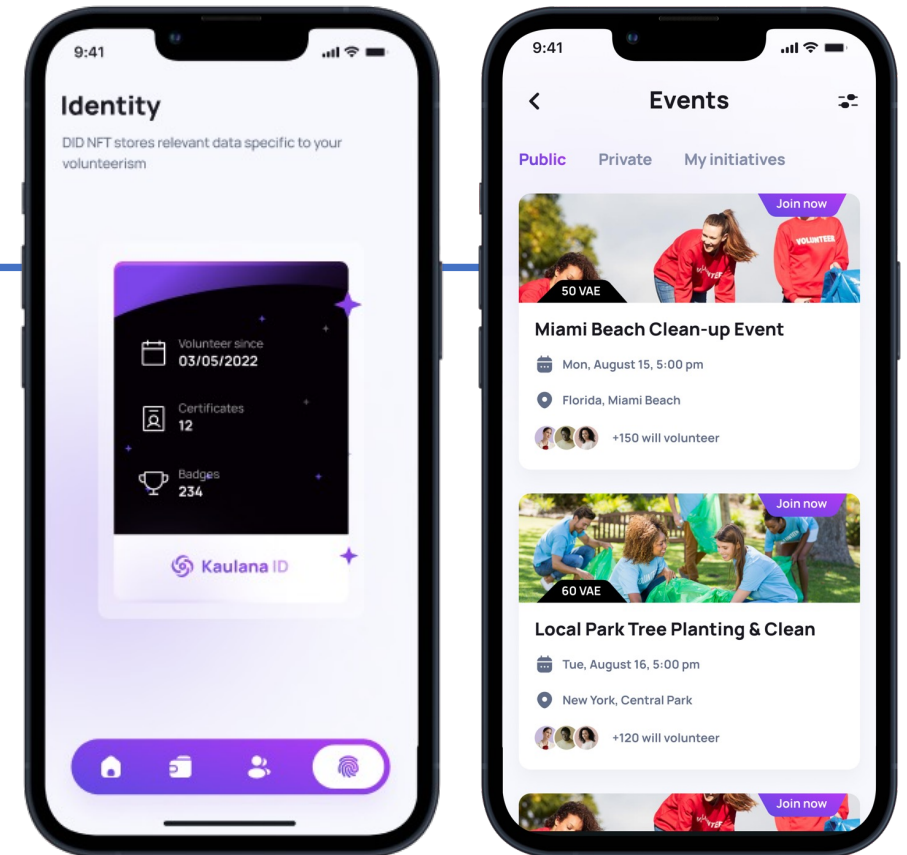
Plastibank

- Ethical recycling in vulnerable coastal communities
- Reprocess the material
- Reward
  - Plastic market value
  - Tokens
- Exchange rewards with services
  - Health
  - Work and life insurance
  - Digital connectivity
  - ….
- Similar project: Plasticoin

https://plasticbank.com/
https://www.plasticoin.com.uy/
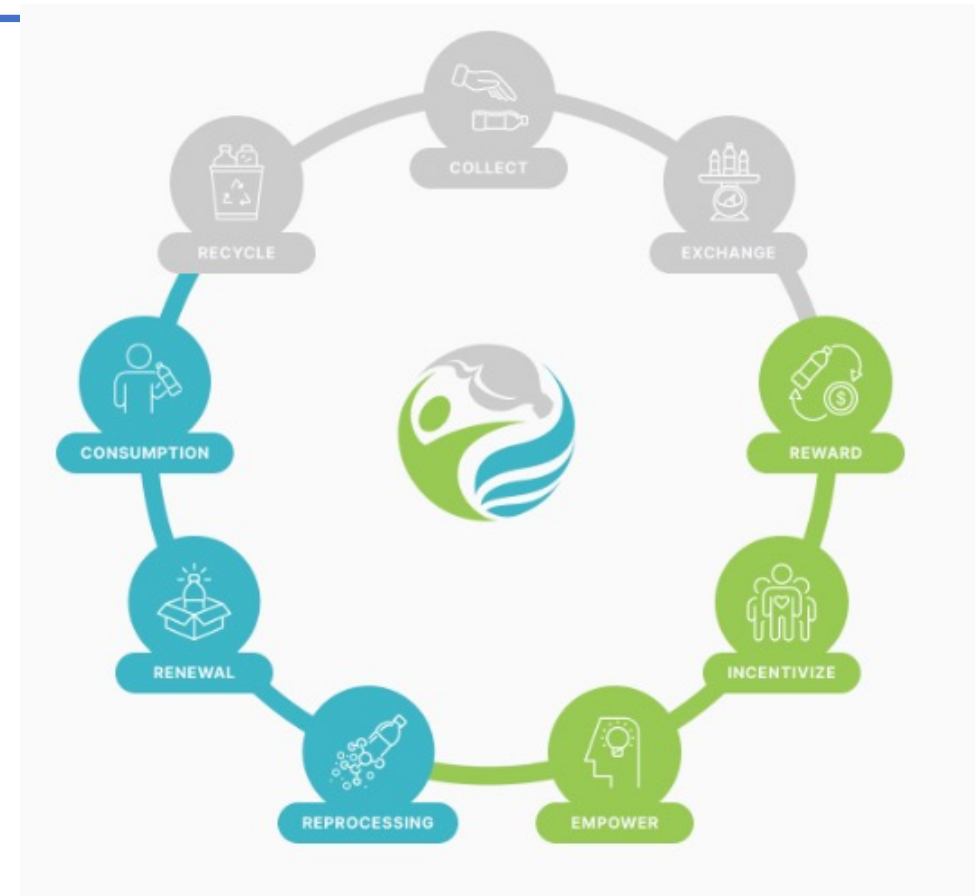
P2P Credit: Trustlines

- Accounting system based on p2p credit

- IOU, "I owe you" represents a **credit line** between two people who trust each other

- Each credit line has a limit

- Multi-hop payment allowed

- Multi-currency network

https://trustlines.network/
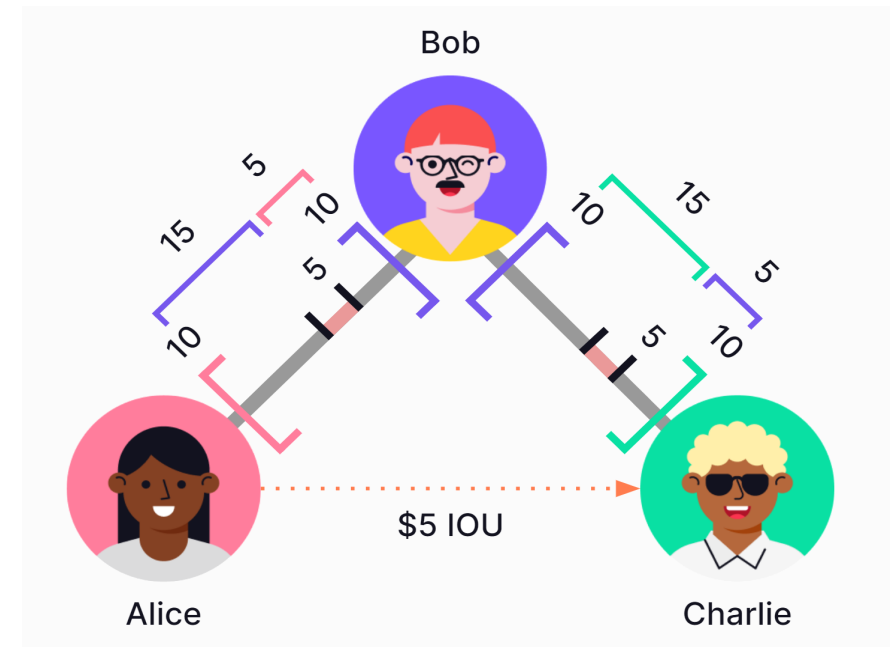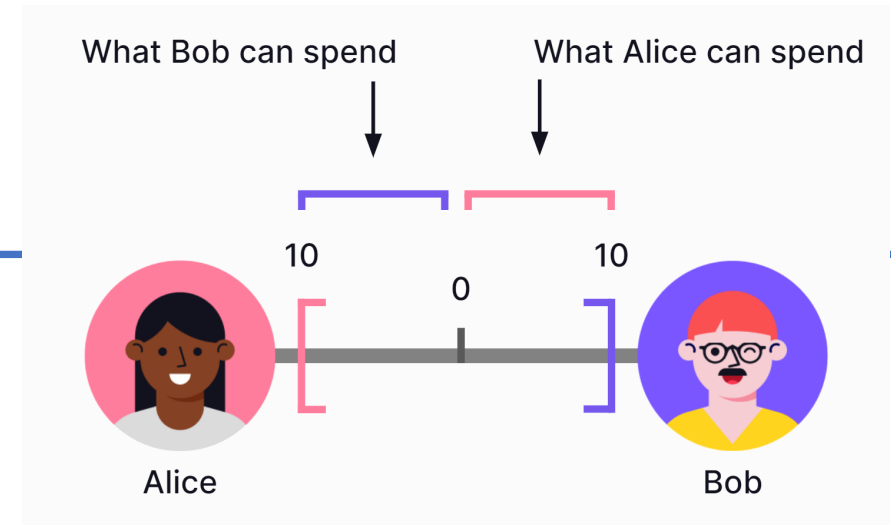
Universal Basic Income: Circles

- Based on
  - individual cryptocurrencies
  - social graph of trust

- New user
  - New cryptocurrency
  - Regularly minted (UBI)

- User can trust other personal currencies
  - He can receive only currencies he trust
  - Transitive and multi-hop payments are possible

https://joincircles.net/
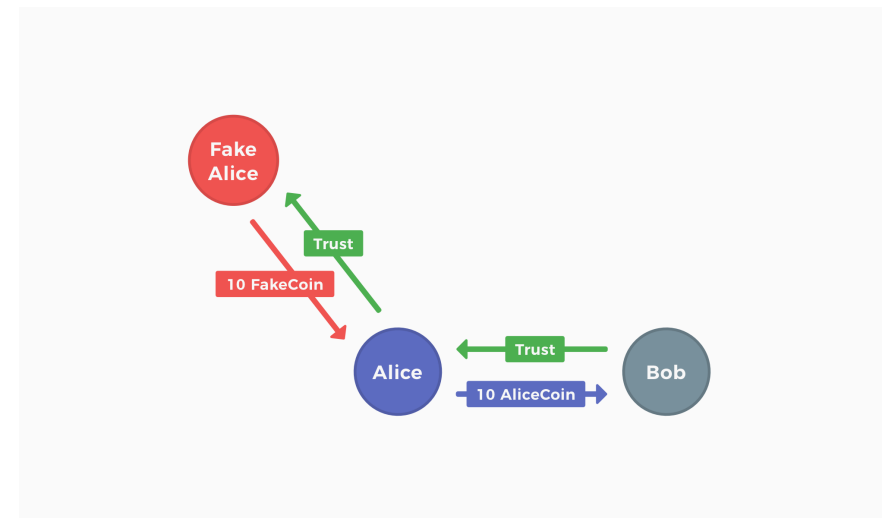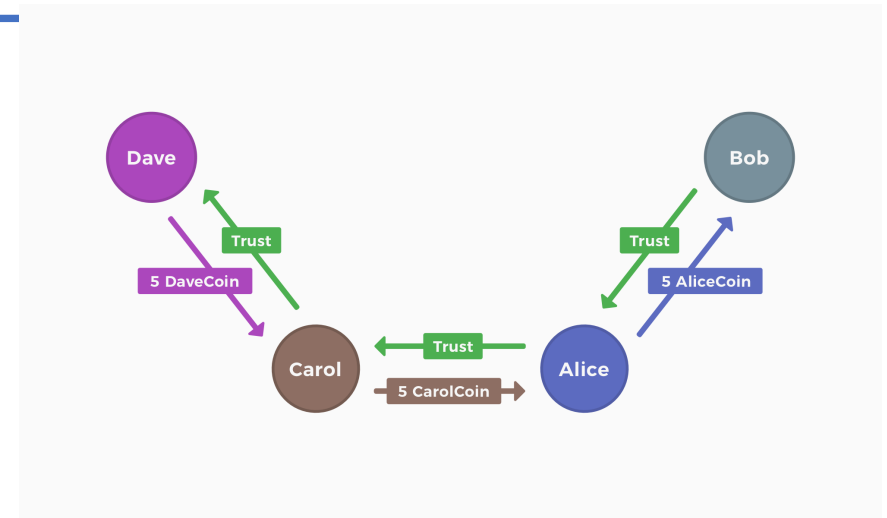
Blockchain for public administration The Token project

- Experimental ecosystem that simplifies the implementation and adoption of Blockchain and Decentralized technologies within Public Services via:
  - The Token Platform offers plug and play services and components
  - 4 use cases to showcase the simplicity of working with the Token Platform and the benefits of adopting blockchain and decentralized technologies

Blockchain based Notarization

APIs: STAMP & Anchoring
Components: Canis Major

Decentralized Identity

API: Token Connect
Component: Certh SSI

Decentralized Storage

API: TOKEN Storage
Network - IPFS

Messaging and Events Streaming

API: Token Streams

https://token-project.eu/

Blockchain for public administration
The Token project

CO3: Augmented Co-creation, Co-production and Co-management of Open Public Services along with Citizens

https://www.projectco3.eu/

Project objectives

- **Pilot in three sites** the application of several transformative technologies which can enhance the capability of Co-creation, co-production and co-management of public services, namely: **Blockchain**, Augmented Reality, Geolocated Social Network, Interactive Democracy tools and Gamification.

- **Evaluate the outcomes** of the new model of interaction between PA and citizens in three dimensions: 1) social and cultural; 2) economic; 3) legal; and address the societal challenges raised by the technologies in the new model.

- **Devising a business plan**, ensuring long-term sustainability for the PAs on the basis of the metrics applied on the data available from the pilots.

The era of participation

- The centrality of people is a cultural shift that is been occurring in several fields.
  - Information technology
  - Design and innovation
  - Public sector and Policy
- The participatory culture grounds
  - on the very active role of people
  - enabled to act in new and unprecedented ways by facilitating conditions.

Norman, 1996 - IDEO, 2011 - Design Council 2013 - Jenkins, 2006

From citizen to commoners

- Addressing the engagement challenge is the goal of the CO3 project, where an innovative participative model inspired to the Common (Ostrom, 1996) and augmented by disruptive technologies was defined, implemented, experimented and assessed
- The CO3 platform supports the evolution of citizens from casual users to expert commoners
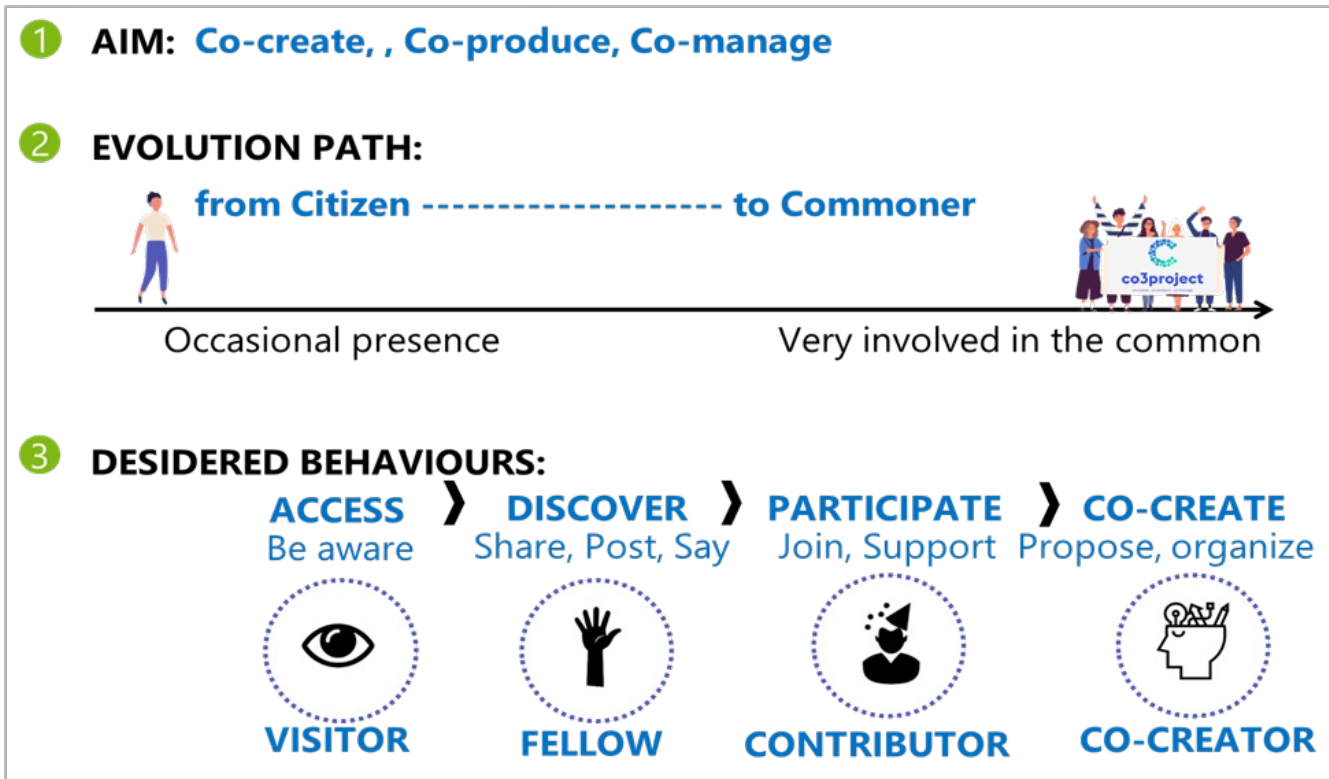
New service scenarios

- The Aumented Commoning Areas allow linking people and resources through novel forms of socio-economical interactions, participation and mutual support among all the actors

SOCIO-ECONOMIC NETWORKING
- Augmented Commons
- Grocery on hold

DIGITAL URBANISM
- Urban Mapping of Community Needs
- Urban Modeling in Augmented Classrooms

KNOWLEDGE SHARING
- Contributive Clinic
- Knowledge registry

The CO3 platform

- Desktop web app

- Mobile app
  - Min. requirements
    - Apple devices: iOS 11
    - Android devices: Android 8 and compatibility with the AR Core Framework
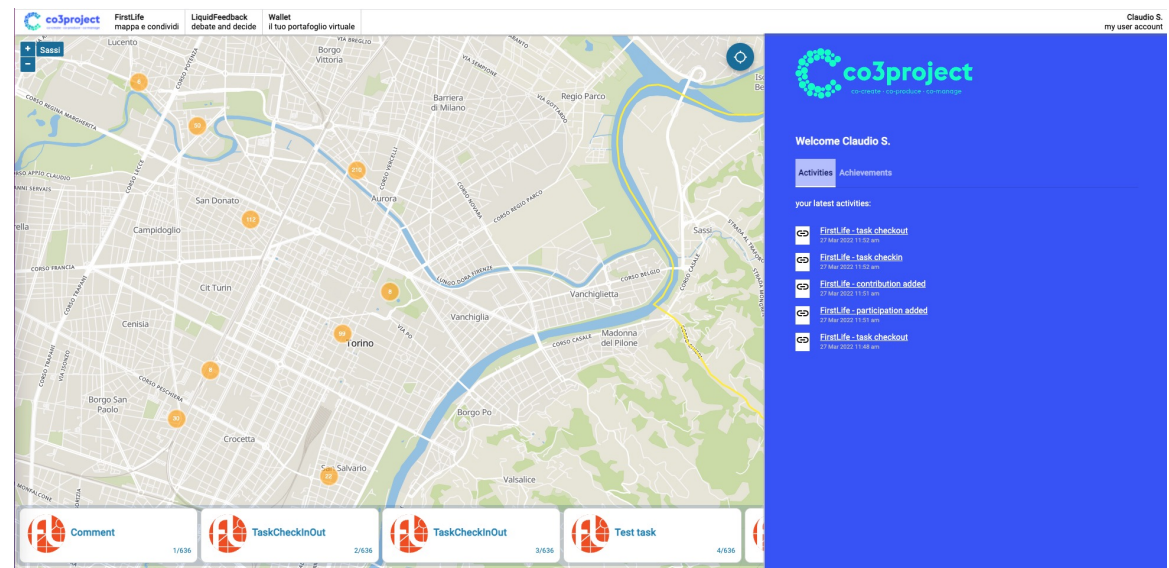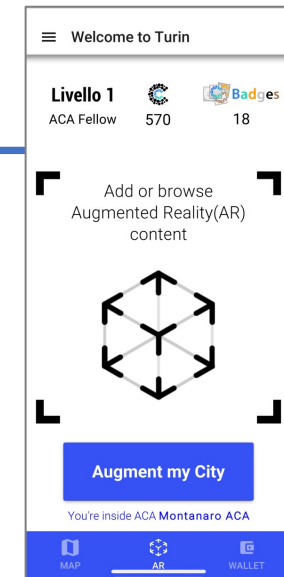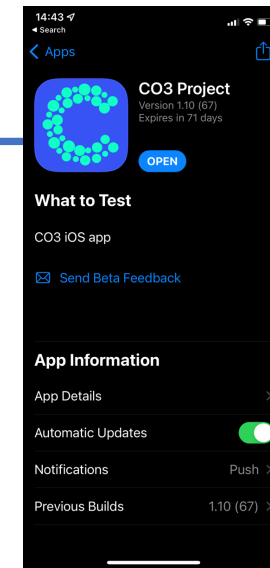
Augmented reality: augmented commons

- The CO3 app allows the users to place 3D artifacts in the environment

- Other visitors of the augmented space can discover new entities and interact with them
  - Coupon
  - Task
  - Activity
  - Multimedia contents
  - 3D models
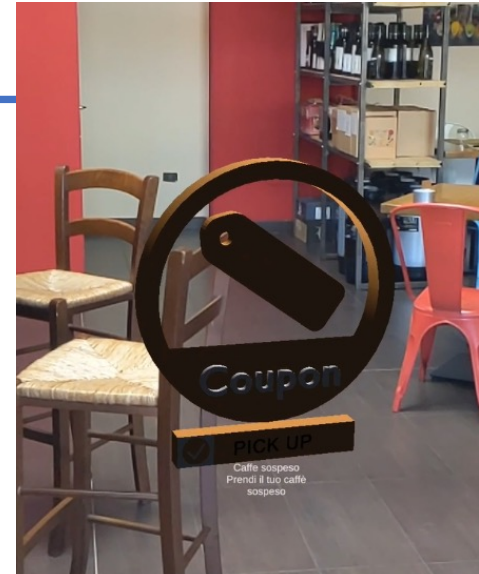
Location-based services

- Entity types
  - Augmented Commoning Areas
  - Places / Point of Interest
  - Multimedia contents
  - 3D objects
  - LiquidFeedback initiatives
  - Tasks
    - CheckIn/CheckOut
  - Initiatives
    - Participation
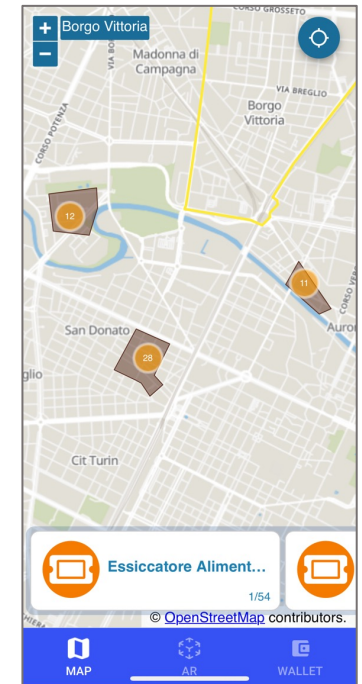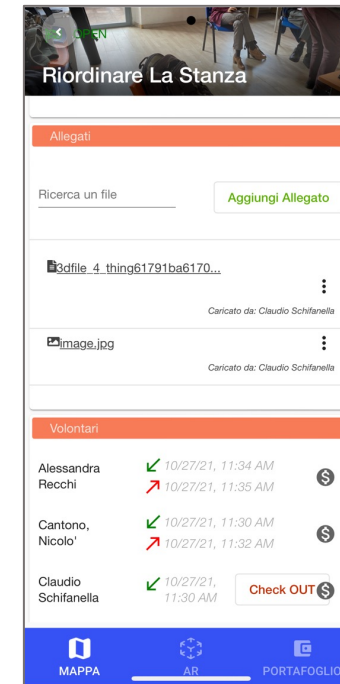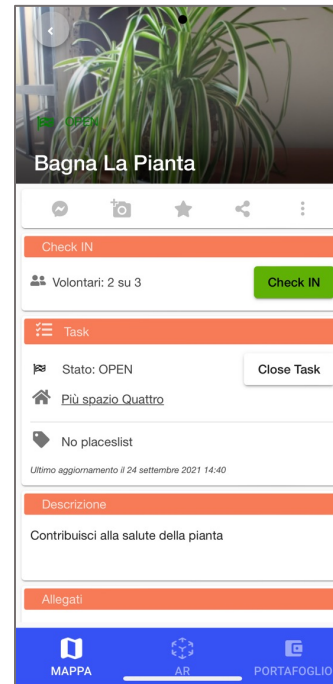
Location-based services

- Entities can be retrieved by
  - Augmented Reality: Markers + 3D view
  - Proximity: FirstLife map component
  - Desktop version of the CO3 platform
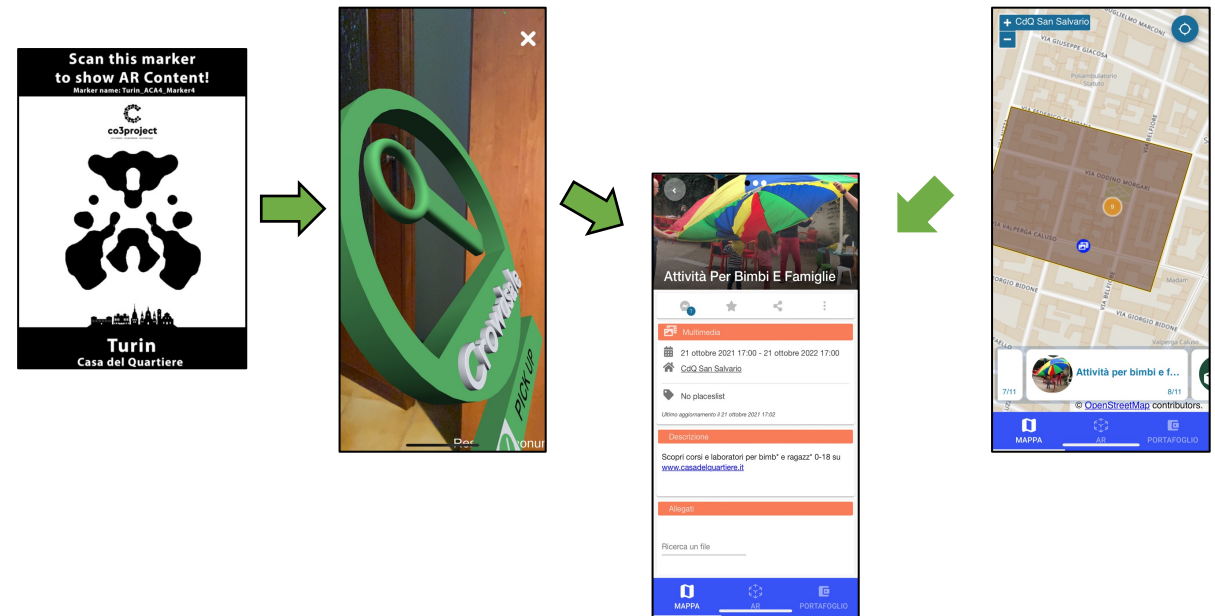
Blockchain wallet

- Provide to all citizen and ACA managers a personal wallet
  - Keys management (creation, backup, recovery)
  - Create tokens
    - Coins
    - Coupons

- Transfer tokens
  - In presence (via QR code)
  - Remotely
- Create/redeem geolocated Coupon boxes
- Create/participate to Crowdsales
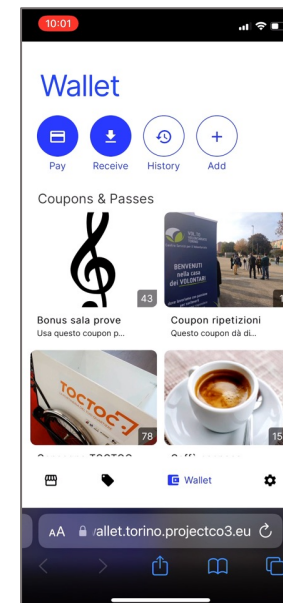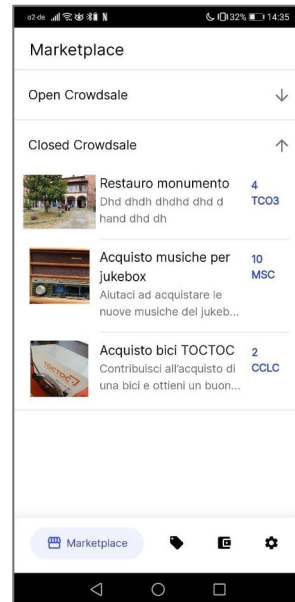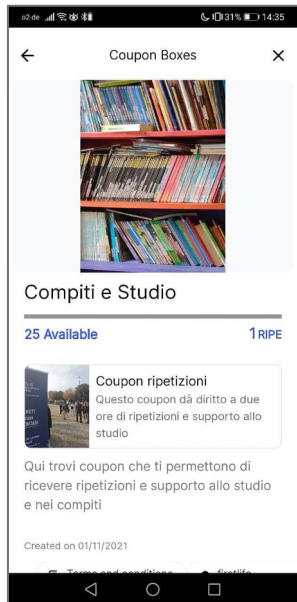
Gamification
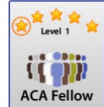
- ACA managers can define gamification rules
- Citizen performing actions within an ACA can acquire
  - CO3 points
  - Badges
    - Individual badges
    - Competitive badges
    - Cooperative badges
    - Temporal badges

Integration example: Coupon Boxes

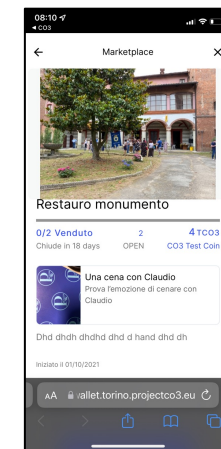- Integration with AR and the blockchain wallet
  - Coupon boxes
  - Crowdsales
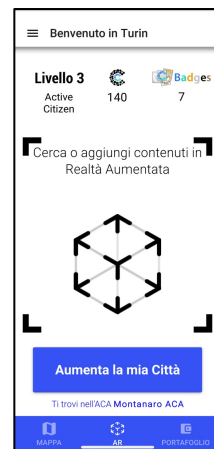
Mobile app

Marker


Augmented Reality

FirstLife

Wallet

Turin Pilot: Implemented scenarios

- Interaction with blockchain-based augmented contents
  - augmented spaces where CdQ managers, associations and citizens can create and visualize different contents

- Creation of the House's coin
  - blockchain currency managed via a wallet app for making transactions for enhancing the services

- Management of volunteers' activities
  - Augmented Reality, First Life and the blockchain wallet used to advertise, manage and reward volunteering activities

Watch the video

Turin Pilot: Implemented scenarios
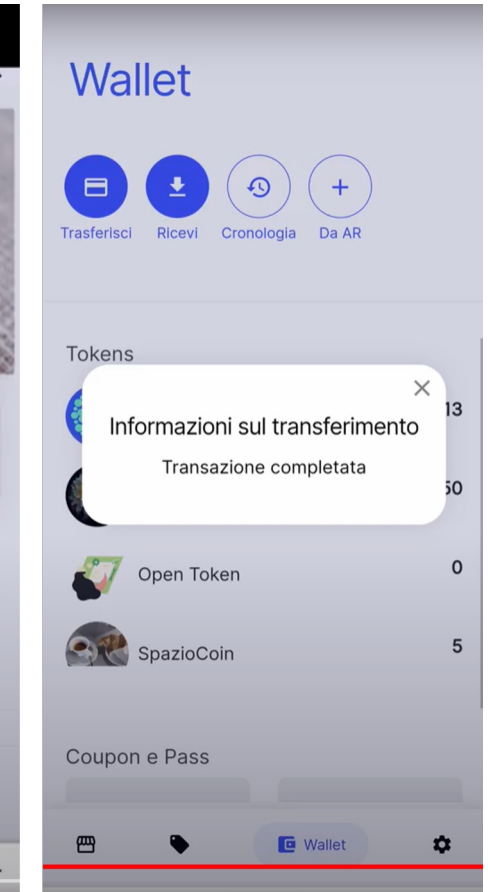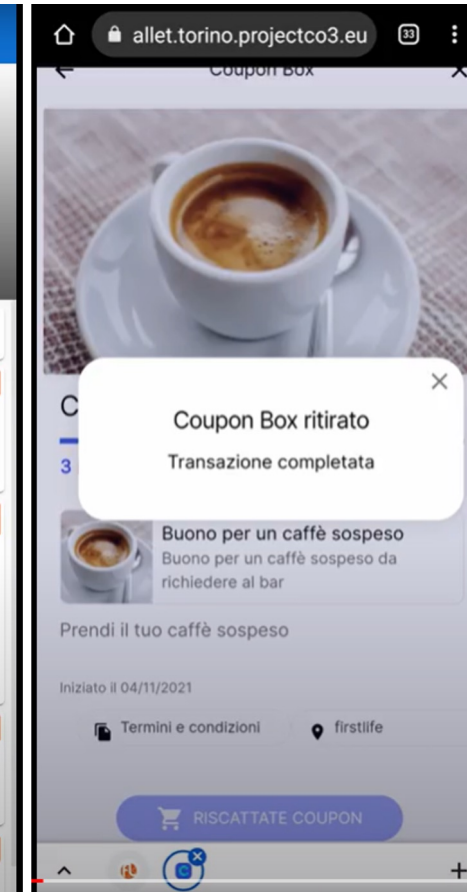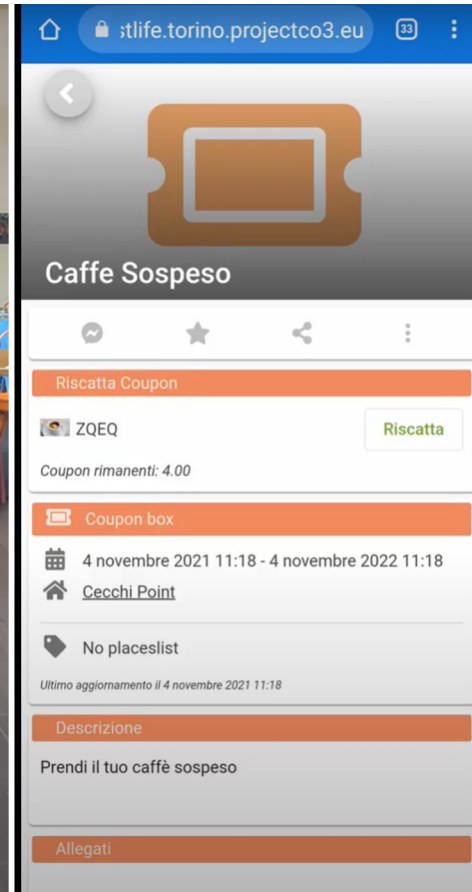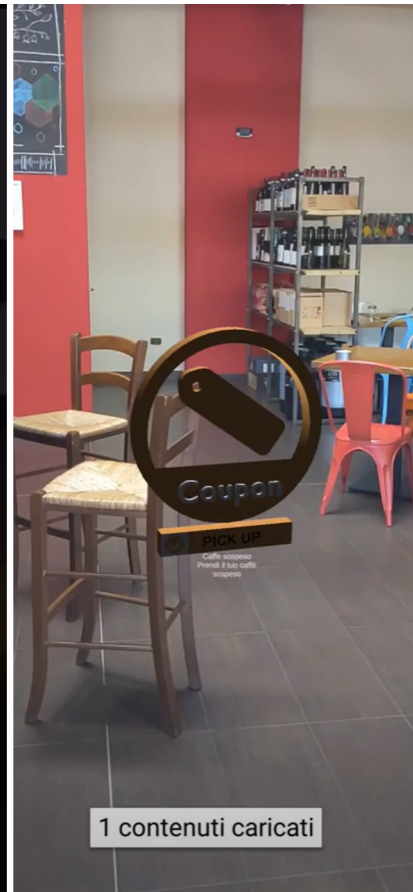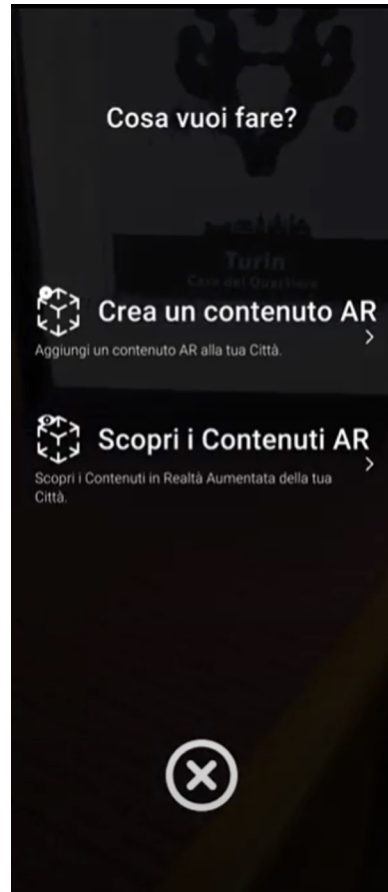
Athens pilot – Implemented scenarios

- Grocery on-hold, social distribution of quality food excess

- Presence in markets for CoopBox installation

- Donations from buyers

- Tokenization of donations through CO3 and distribution to beneficiaries

- QR code as a public address for the merchants' digital wallet

- Scanning of QR code and consumption of tokens from beneficiaries

- Merchants are compensated from the Coopbox cash

CO3 benefits

- For the city
  - better management and monitoring of commons can lead to a:
    - cost saving for the PA
    - strengthening the social fabric throughout an offer of effective proximity
  - improvement of services offered to citizens. The use of disruptive technologies and App functionalities can be enlarged and tailored to other territorial services (cultural services, mobility, public health, social services)
  - Empowerment of social cohesion
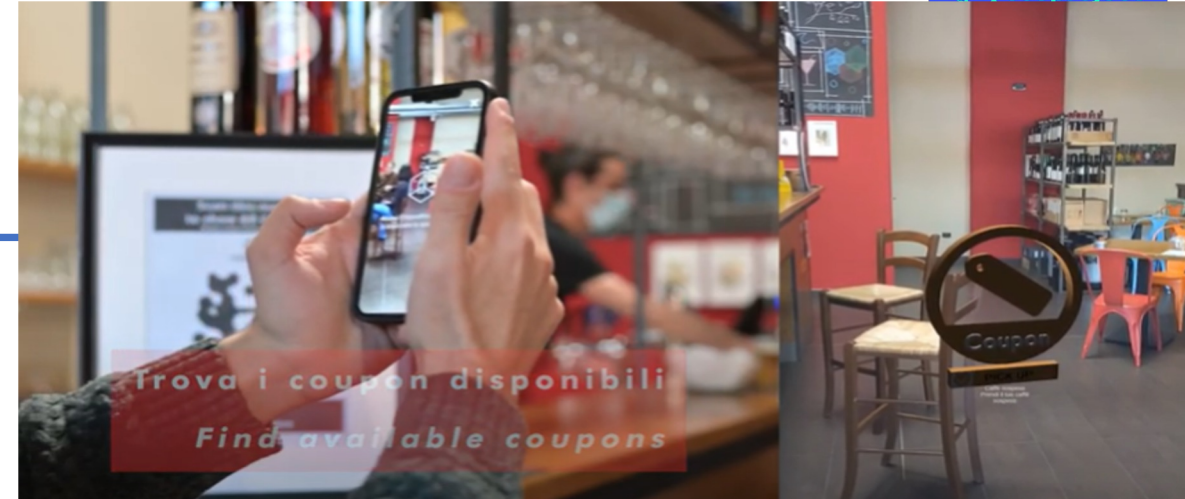
CO3 benefits

- For the Citizen
  - creation of a circular economy within the Houses (e.g. citizens can benefit from rewards for voluntary activities to have access to some of the Case del Quartiere services) and improvement of inclusiveness
  - provision of seminar and trainings for approaching new technologies
  - active participation in commons management and maintenance that can lead to a greater appropriation and care of common spaces
  - Perception of city assets as commons

CommonsHood

"Some of the most promising, mature and active DLT projects currently serve developers' needs, but could potentially be tested for other types of uses"
EU JRC - https://publications.jrc.ec.europa.eu/repository/handle/JRC127939 - 2021

CommonsHood objectives

- Provide communities with instruments for financial inclusion

- Support sustainability of the local economy

- Avoid the fees and data control on services

- Create a toolkit for financial inclusion replicable in different communities

United Nations Sustainable Development Goals

# CommonsHood and the Internet of Values 2.0

- CommonsHood promotes an Internet of Values 2.0 revolution
- CommonsHood is designed to democratize local financial instruments to support local communities and urban commoning efforts by offering to users a single wallet DApp
- In analogy with the Web 2.0, CommonsHood allows non-technical users to create and distribute different types of tokens
- Focused on the local dimension through geolocalization
  - Integrated with the civic social network FirstLife

Why blockchain for local communities

- Cities are often organized in small interconnected communities

- Local communities are made up of citizen, associations, CdQ

- Each local community / association is managed with different tools and rules

- Tokenization and smart contracts can provide a layer to:
  - Represent communities' rules with common tools
  - Enhance interoperability
  - Create new inter-community services
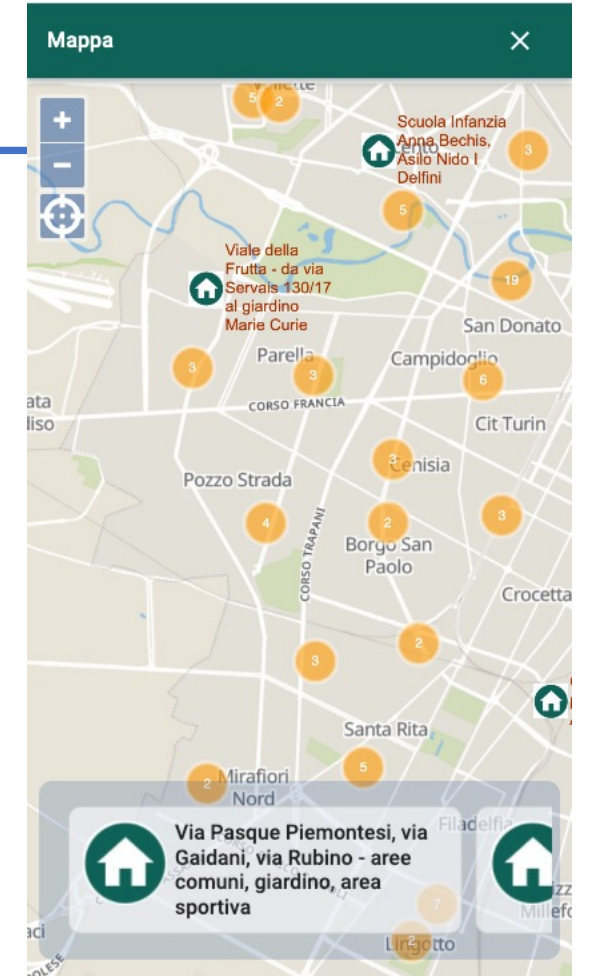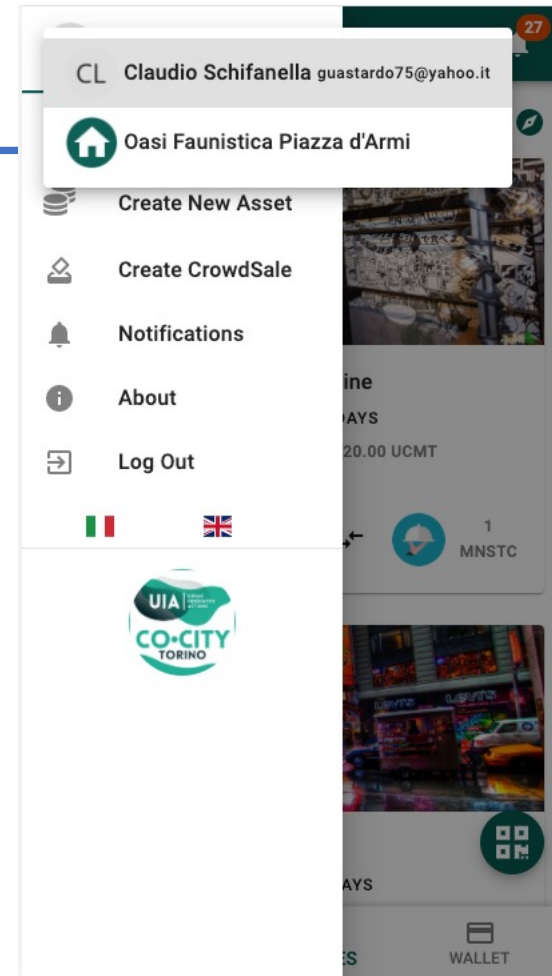
Assets and local financial instruments

- Coins

- Coupons

- Crowdsales

- Token exchange

- NFT
  - Auctions
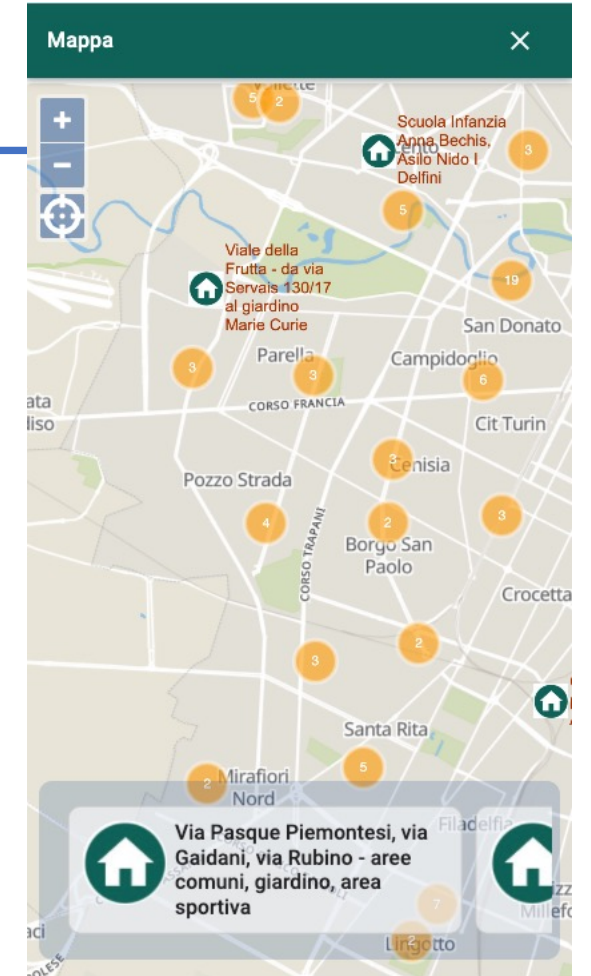 - Marketplace
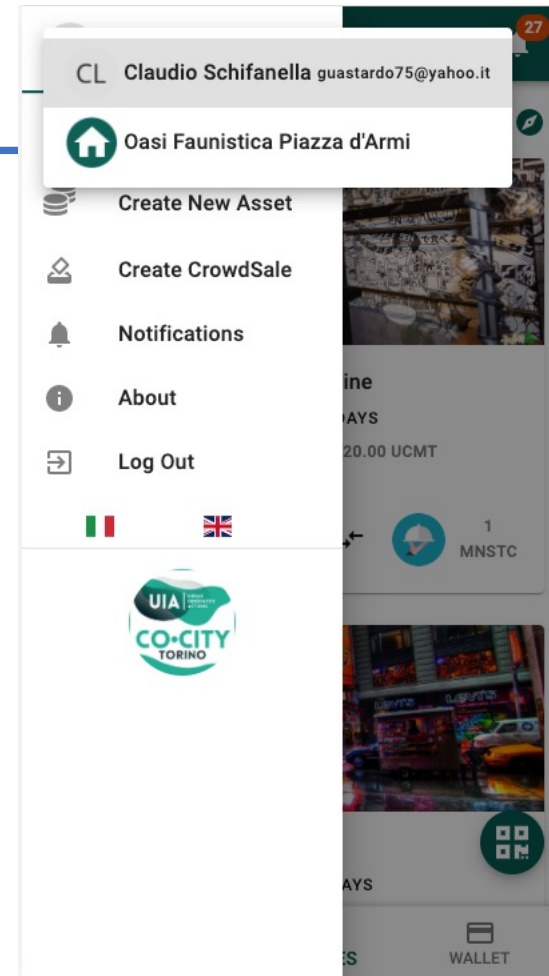
- "Biblioteca delle cose"

- ...
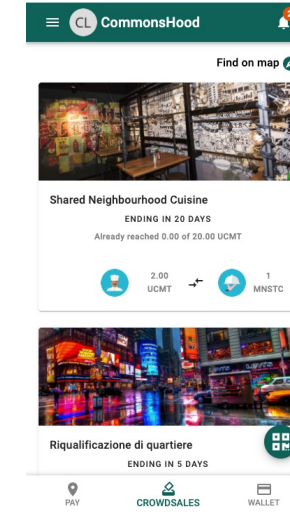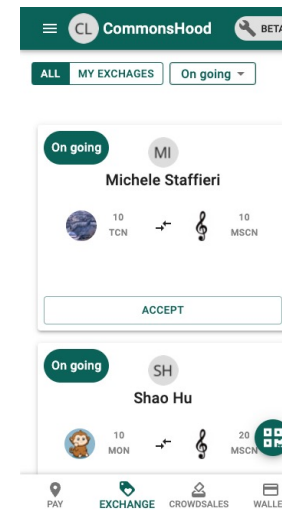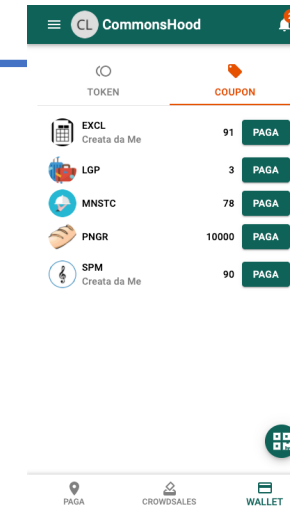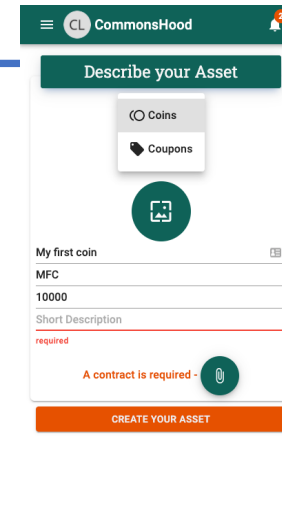
Actors

- Two categories of actors
  - Individual users
  - Activities
    - Civic associations
   - neighbourhood shops
    - …

Activities

- Modeled by DAOs
  - Different roles
  - Delegation in the administration of tokens and initiatives

- Geolocated through FirstLife
 - Location-based discovery

Crowdsales

- Enable the creation of fundraising initiatives

- Accept a specific token

- Distribute coupons representing the right to obtain a real asset or a service

- Liquid participation
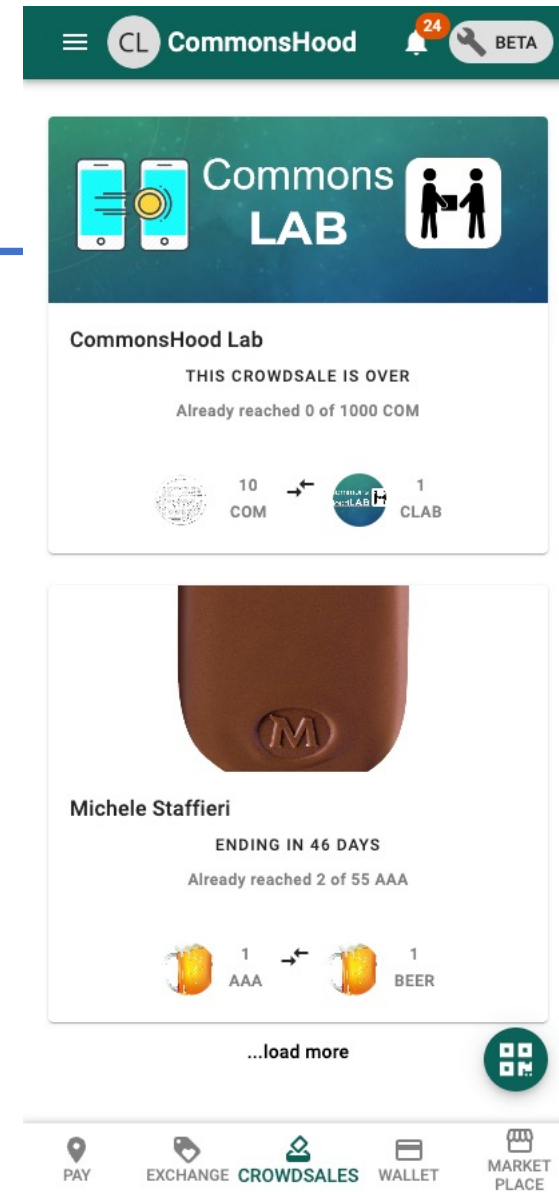
Token exchanges

- Allow citizen to acquire different tokens to enable the participation to other initiatives
- Based on the order-book metaphor
- m-to-n time constrained exchange pattern
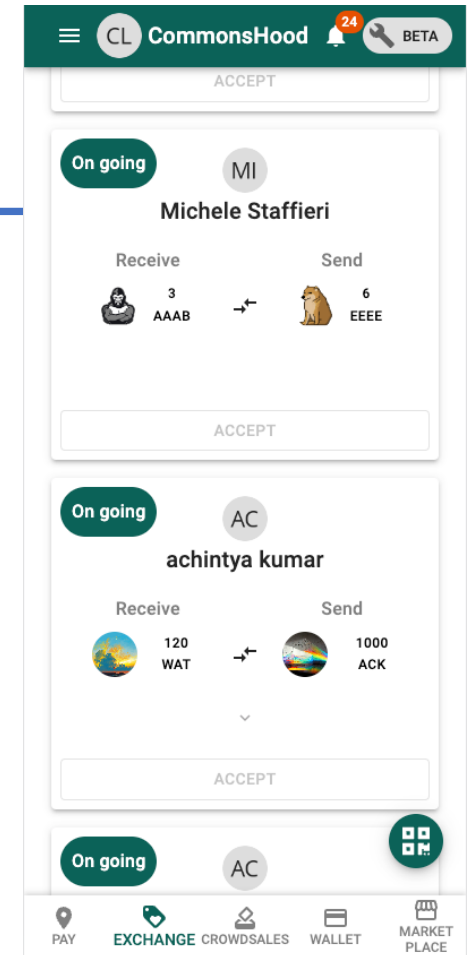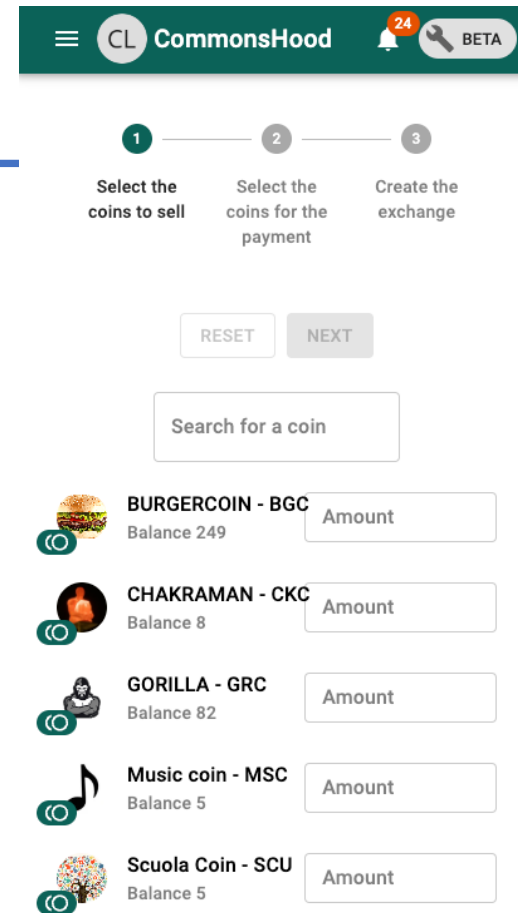
Biblioteca delle cose

- Implements a loan system of tools
- The citizen/association
  - Creates a digital twin of the tool, represented by an NFT
  - Select a specific token (ERC20) required for the loan
- The citizen/association
  - If it owns the required token, it can proceed to the reservation an then the loan (in presence, deposit and loan cost are locked by the contract)
- The loan ends with and the deposit is returned
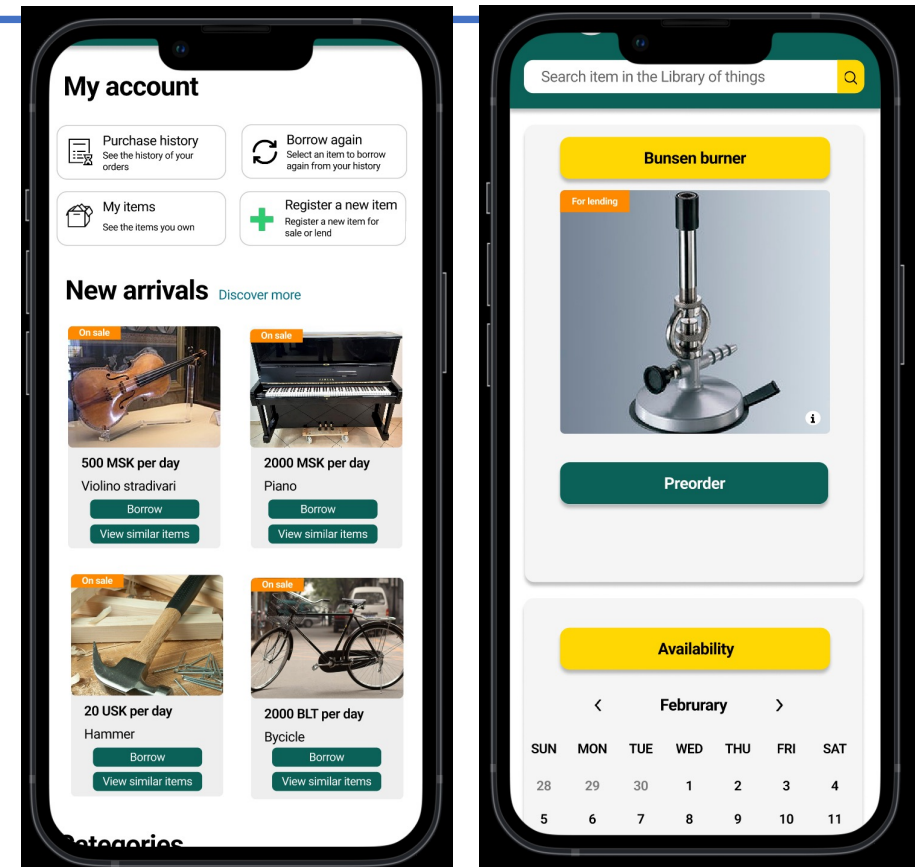
Use cases

- Prepaid cards
- Discount coupons
- Crowdfunding
- Access rights
- Group buying
- Time banks
- Complementary currencies
- Digital collectibles
- …
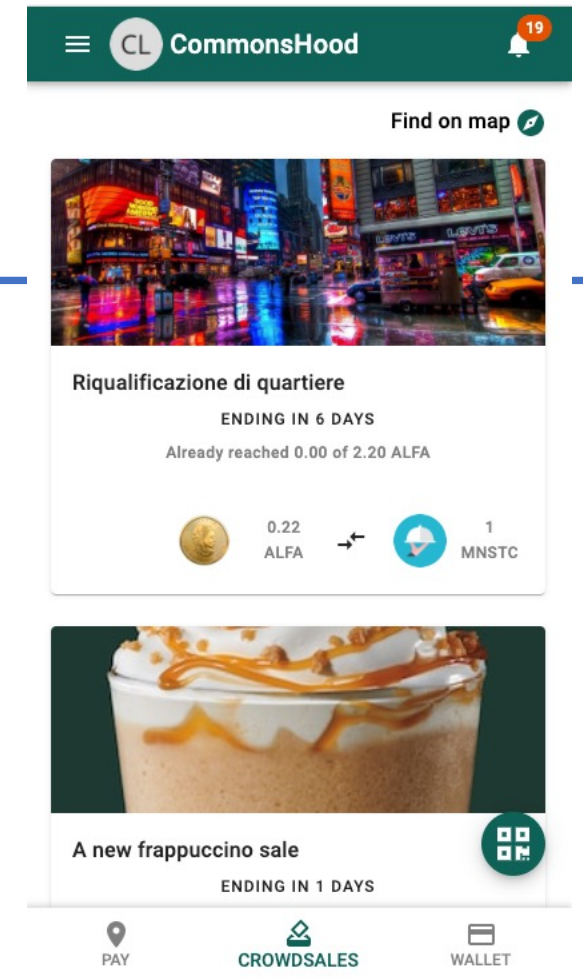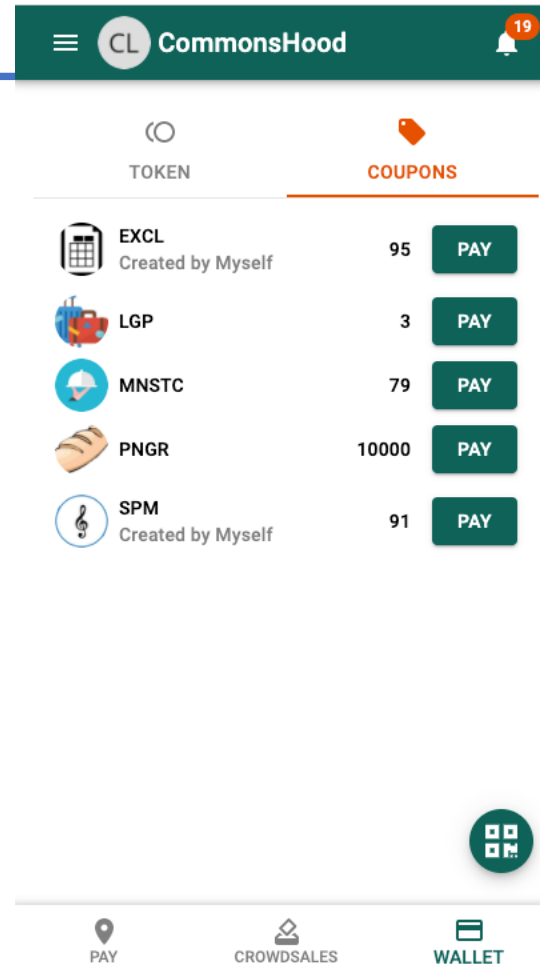
NLAB4CIT
Network of laboratories for civic technology co-production

- Objectives
  - **Online Repository** of tangible use cases of digital solutions and service cocreation methodologies
  - A **Network of Local Laboratories** on Civic Technologies
  - Exchange of **good practices**
  - Identification of **common strategies** for the adoption of digital solutions by the local administrators

  https://nlab4cit.eu/

- Use cases
  - Municipality of Collegno
    - services fostering participation and social exchange of different stakeholders (associations, CSOs, citizens, etc)
    - digitalization of the Collegno Youth Pass through the CommonsHood platform
  - Municipality of Kesariani
    - Digitalization of the infrastructure based on IoT for Forest Firefighters
  - Municipality of Roeselare
    - Engage young people in the co-creation of public spaces (VR and Minetest)

Thank you!

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