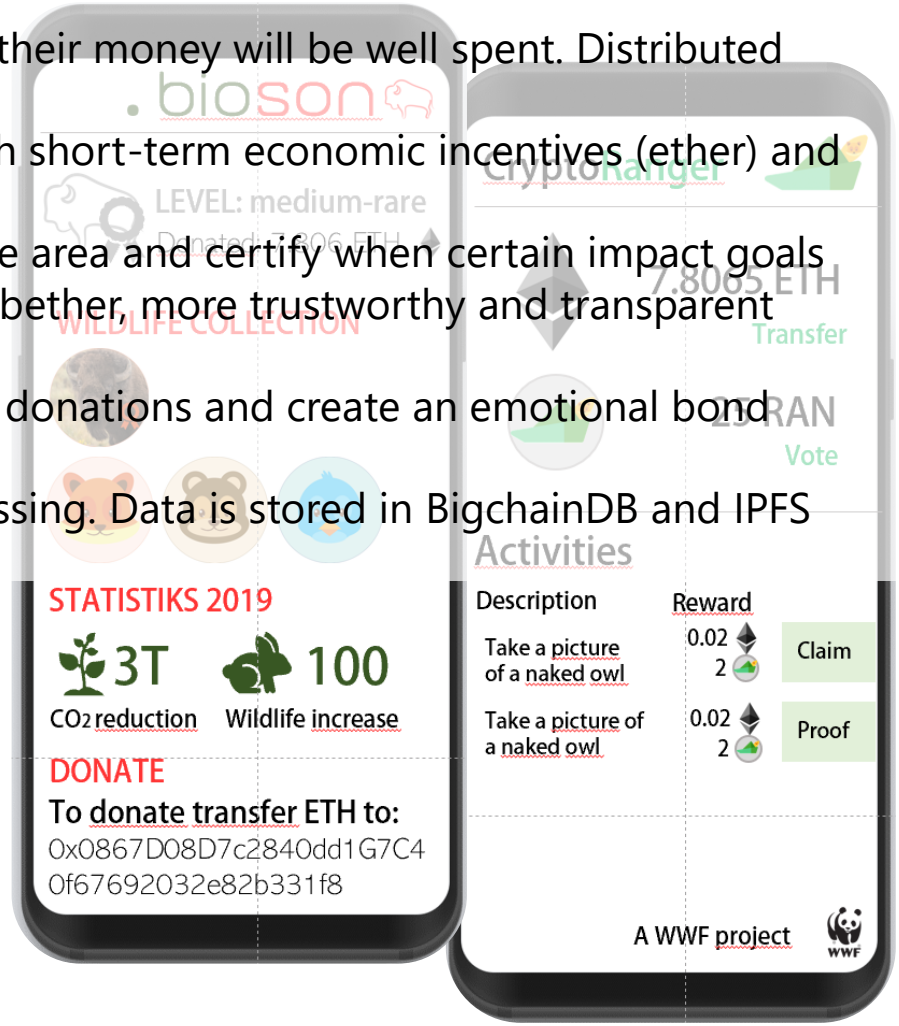
Project Byson – WWF Challenge

https://github.com/betherworld/byson

The WWF Challenge

- **Trust**: Currently, donors rely on WWF's good faith. Nothing ensures them that their money will be well spent. Distributed Ledgers overcome the issue, taking the trusted third party out of the equation.
- **Incentive design:** data hunters, or Rangers as we like to call them, receive both short-term economic incentives (ether) and voting right (RangerToken) for future development projects in their area.
- **Proving mechanisms:** IoT devices installed by Rangers are used to monitor the area and certify when certain impact goals are met. In this virtuous circle, Rangers help themselves and donors to receive bether, more trustworthy and transparent proofs.
- **Gamification:** unique collectibles (CryptoBisons and Wildlife Tokens) promote donations and create an emotional bond with nature!
- **Energy efficiency:** we only use the Ethereum Blockchain for transaction processing. Data is stored in BigchainDB and IPFS



Alessandro Tarantola

Chaoran Chen

David Ittah

Sergiu Soima

Severin Kranz

bioson

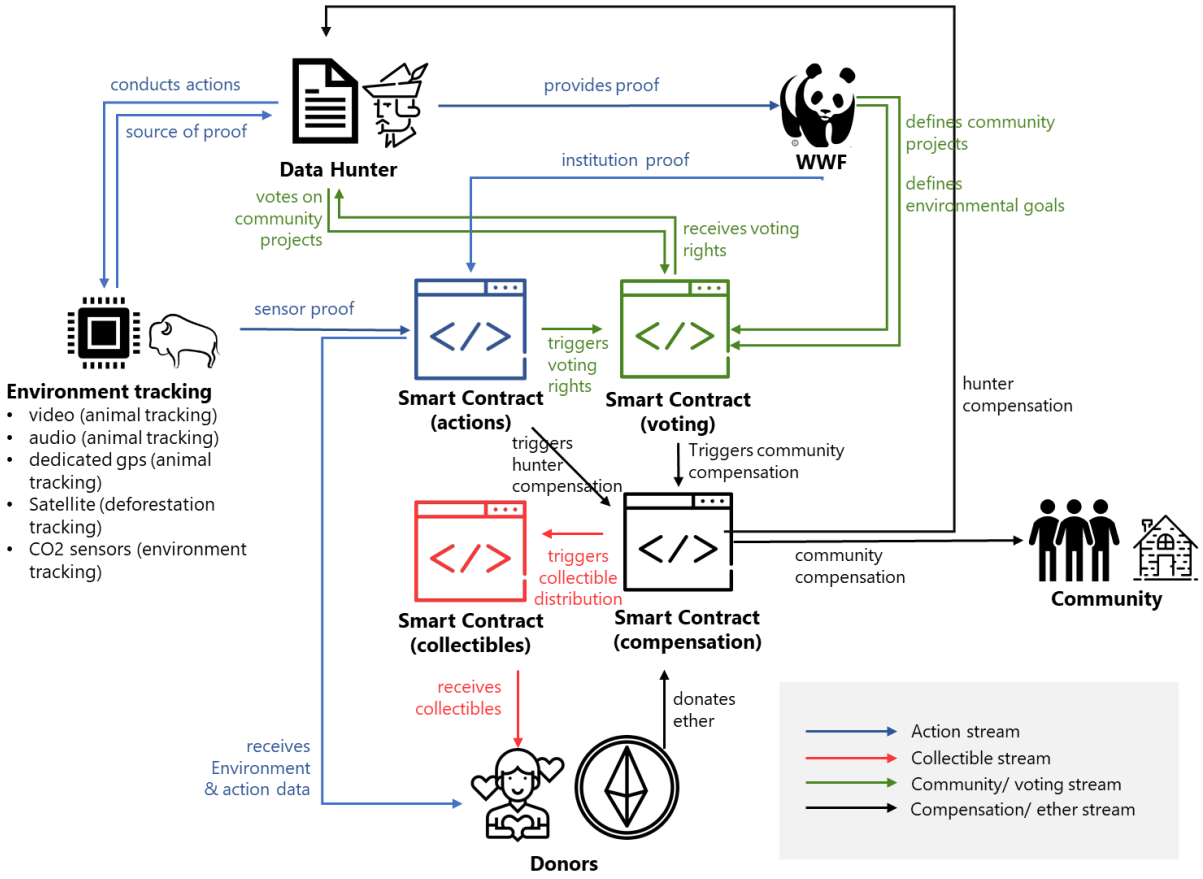
CryptoRanger

ethereum

The Idea

The goal of the project is threefold: **incentivize locals** to become an active part in environmental preservation; **promote donations**; **grant total transparency** to all involved parties. The first one is achieved by **rewarding useful actions** performed by locals with money, as well as the possibility to actively shape the future of the community by voting for their favorite project. The second relies on **gamification** and on the perspective of a future value of the **unique CryptoBisons** (each linked to a real animal) and Wildlife Tokens. The third exploits the advantages of distributed ledgers, implementing a **fully decentralized network** shared by a community of peers.

Crypto-Economic Design

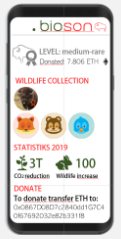


System Architecture

Application

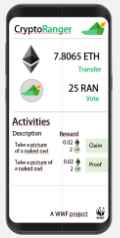
bioson Webapp

Display sensor data,environmental impact collectible tokens,



CryptoRanger Webapp

Conduct environmental actions, proof actions, receive rewards, vote on projects



Sensors

Sensor Proof of conducted actions

Interaction

Ethereum Smart Contracts

Conduct transactions based on pre-defined rules

Fin4 Token Management

ERC20 Tokens, ERC721 Tokens, Voting rights

Storage

Ethereum Blockchain

Store transactions

BigChain DB

store asset details & sensor data

IPFS

store proof data (video, text)

Disruption Potential

The digital revolution brought about by the use of DLT-connected technologies might yield an unprecedented impact. The keywords for the new era are: decentralization, sustainability, transparency. The successful implementation of our model could hopefully generate all three of them: empowering the local community, granting donors total control over their money and providing them with reliable up-to-date data, and protecting the environment in the process.

For the Environment

The manpower provided by the rangers exponentially speeds up the installment of the monitoring system in the area. More control over the area allows WWF to plan more efficient and precise interventions.
Eventually, the local community learns the value of a healthy environment and takes care of it, making the physical presence of a third party (like WWF) unneeded.

- **Increased manpower for preservation and requalification of the forest**
- **Improved IoT monitoring system**
- **Reduced effort from WWF**
- **Better awareness of Nature's value and needs**

For the Community

Locals can decide to actively contribute to the preservation and development of their area, entering a decentralized alternative governance system that really values their efforts and rewards them in the short (economic incentives) and long term (community projects). The more actions they perform, the more their voting power for sponsored community projects increases.

- **Get paid to install IoT devices or help WWF volunteers in their activities**
- **Obtain voting rights for future community development projects**
- **Contribute to the well-being of nature and humans at once**

For the Donors

Donors will have the possibility to specify the percentage of their money that should be allocated to Ranger activities or to community projects. A preset and publicly stated percentage will be retained by WWF to sustain their usual activity in the area.
Overall, they receive decisional power and every mean to check the progresses made with their help…as well as cute and unique non fungible tokens!

- **Have a high influence over how his donation is being used**
- **Receive WildLife Tokens or CryptoBisons**
- **Receive KPI updates for their donations through a dedicated app**

Challenges

In our final solution, we have 4 smart contracts with 33 different functions, 1100 lines of code, 2 front-end applications and an integration with the Fin4 backend. The main challenge we faced was choosing which features to develop. Another issue was the Fin4 integration. It was rather cumbersome to setup the system and familiarize with it in such a short time.

Potential Negative Outcomes

- Error-prone smart contracts
- Badly defined tasks for CryptoRangers could harm nature
- Tracking of bisons might be misused
- Romanians in the mountains may not know how to use the app
- Internet connection may be limited in the mountains
- Low adoption of ether as a method of payment
- Possible high energy consumption if not optimized
- Requires some degree of familiarity with technology

Future Work

- Resolve remaining Fin4 integration issues
- Implement social proof mechanisms
- Connect the sensors as oracles
- Support a higher amount of non-fungible tokens by additional genes (types of animals, etc.)

- Identify optimal incentive parameters
- CryptoRangers should be able to propose necessary environmental actions
- Donors' voting on projects

Software Demo

Listen to the users of our application and checkout our software demo to get an idea of how our ecosystem concept.

https://www.youtube.com/watch?v=96EcTxF43JE