

KITTYCLUB

A social blockchain experiment

A-Labs © 2016

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What is the Kittyclub?

The Kittyclub is a social experiment.

The Kittyclub, created by A-Labs, is a beta test for a decentralized social tool. We want to learn how people interact with this new tool and how they interact with each other within the app. Because of its straight forward content and its limited functionalities, we aim to learn and improve fast.

The Kittyclub is decentralized.

Decentralized is the absence of a central authority, of central storage... By being decentralized, the Kittyclub is an autonomous application, owned by everyone and no one.

To make this real, we use the blockchain- technology, more in specific, the Ethereum protocol. A-Labs, being a digital innovation lab, wants to try out these technologies to improve a community.

What makes the Kittyclub work?

A few essential concepts

Blockchain ([https://en.wikipedia.org/wiki/Block_chain_\(database\)](https://en.wikipedia.org/wiki/Block_chain_(database)))

A database, distributed over the entire network and maintained by miners, recalculating transactions. By combining decentralized architecture, encryption and verification by miners, the blockchain coordinates the approval of all parties.

Ethereum (www.ethereum.org)

A decentralized platform for smart contracts, that runs applications without intermediaries, without risk of downtown, censorship or fraud.

Ether (<https://www.ethereum.org/ether>)

The cryptocurrency of Ethereum needed to execute a smart contract. The Ethereum miners are paid in Ether.

Smartcontracts (https://en.wikipedia.org/wiki/Smart_contract)

Computer protocols that facilitate, verify or ratify the negotiation or execution of a contract.

MQTT (<http://mqtt.org/>)

A machine-to-machine connectivity protocol.

Kittyclub v0.1

The concept

By opening the Kittyclub app, you become a new member. Once member of the Kittyclub, you can pick a cat, name it and have it validated by two other validated members.

Once your kitty has two validations, you are a validated member of the club. You can now open the box. You can start validating new member as well.

Social economics: the value of validating

A decentralized network has to be autonomous. It can expand and is supported by a community, without central nodes. To achieve this, Ethereum calculates a gas cost, the cost of executing a transaction. This cost is called "gas". A small amount of gas is needed to execute a transaction.

In the Kitty Club-demo, we push this a little further and we apply 'social economics': we add a value to the validating itself: 1 validation = 1 ether. For every validation, the validator pays a small cost. Validating a kitty costs 1 ether. The validated kitty receives this ether. This keeps every node in the network equal so no one node can achieve a more central or more important position in the network (f.i. one node that does 100 validations).

In practice, every new member gets 1,1 ether in their wallet. Per validation, 1 ether is added. When the kitty is fully validated, the member has a balance of 3,1 ether:

- 1,1 (account creation)
- 1,0 (first validation)
- 1,0 (second validation)

With these 3,1 ether, the member can validate 3 other kitties and execute actions on the smart contracts.

This mechanism protects the decentral network structure of the club.

Technical description step by step

I open the app

- A wallet with private and public key and an account balance are created and stored locally on my device.
- A new line is added on the membershipcontract in Ethereum, my new membershipaccount is added.
- A validationcontract for my account is created in Ethereum.
- I receive 1,1 ether in my wallet.

I choose a picture and a name for my cat

- These data will only be stored locally on my device.

To get my kitty validated, I request the pincode of a member with a validated kitty

- Over MQTT a message is sent to the topic ".../pincode-validator". This message contains the picture and name of my kitty who is getting validated, the command "validate my kitty", my pincode and my validationcontractaddress.
- The validator receives this message over MQTT from the topic ".../pincode-validator" and his app shows the data he will be validating.

The validator confirms the data in the app

- Over MQTT a message is sent to the topic ".../pincode-aanvrager". This message contains "validation ok".
- +1 validation is added on the validation contract of the new member.
- 1 ether from the validator's wallet is sent to the wallet of the new member, i.o.w. validating someone costs 1 ether.
- Over MQTT the new member gets a confirmation from the validator.

I request a second validation from another member.

- All steps as described above are repeated.
- New features are enabled once the validationcontract has two validations, starting with the ability to validate other new members.

To open the box, I enter the box's pincode in the app

- Over MQTT a message is sent to the topic ".../pincode-box". This message contains my validationcontractaddress, my pincode and the command "check contract".
- The box receives this message and checks the number of validations on my validationcontract.
- The box opens if there are two validations on my validationcontract.
- A new pincode is generated for the box.

I close the box

- Over MQTT a message is sent to the topic ".../pincode-box". This message contains the command "close box". The box receives this message and closes.

What do we want to learn from v0.1?

Do all technical components work?

- Is Ethereum the right protocol for these kind of application?
- Is the interaction with a blockchain from the front-endapp (Polymer) userfriendly?
- Is the architecture of the two contracts correct?
- Are these two contracts sufficient or do we need more?
- Are there any tech pitfalls that can make the system fail?

Do the social economics work as foreseen?

- How many members are created by the hour, by day?
- How many members get validated by the hour, by day?
- How many members get ni validations?
- How many members use all validation options?

- How many people come asking for help?
- Can we read from membershipcontract what time a new member assigns?

How does the app influence the participants?

- Do the participants see the potential of the app? Do they see the potential beyond the Kittyclub?
- Does the network expand beyond the closed community of colleagues, f.e. at home?
- Do the participants search for more information about the technology? Or are they not interested?

Kittyclub v0.2

The concept

In this version, validated members of the Kittyclub can cast their vote on the next content of the box. They're given three options: m&m's, cookies or fruit. The voting round is limited in time: a deadline is set and a timer will indicate how much time is left to cast a vote. Every member gets 1 vote, that can be changed up until the deadline. Each week there's a new voting: the voting starts on monday and closes on wednesday evening.

When the voting round is closed, there will be 1 winning item and 2 losing items, based upon the number of votes (the item that gets the most votes wins). On thursday morning the Kittybox will be filled with the winning item. Only the members that voted for this winning item will be able to open the box (on thursday or friday). All members that voted for the losing items, will end up with nothing. Every week everyone gets a new chance with a new voting round.

Technical description step by step

I cast my vote

- For every voting round, a voting contract is created
- In the app, I cast my vote
- My vote is saved on the voting contract

I change my vote

- I change my vote in the app
- On the votingcontract, my vote is overruled by the new vote

To open the box, I enter the box's pincode in the app

- Over MQTT a message is sent to the topic ".../pincode-box". This message contains the votingcontractadres, my pincode and the command "check contract".
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- The box receives this message and checks my vote on the votingcontract
- If my vote is on the winning item, the box opens

- If my vote is not on the winning item, the box stays closed. A message is sent over MQTT to topic ".../my pincode". This message contains the command "show in app "Very sorry, you didn't vote for the winning item, you don't have access"
- A new pincode is generated for the box.

What do we want to learn from Kittyclub v0.2?

- Organising voting on ethereum (technical).
- Will people influence each other to get more votes for a specific content?
- Will people change their vote at the last moment, to make sure they will get something?
- How many times does someone change his vote?
- Will there be rivalry between groups of people, or more cooperation to achieve consensus?
- Will people ask to suggest a self-chosen content for the box?
- Do people think about the possibilities of voting through blockchain, as a means to organise a society?