Experimental FIP treatment application

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1. General presentation

FIP is a fatal disease affecting about 1% of cats worldwide, it stem from a common virus that occasionally mutate in the lethal form with high mortality rate within days or weeks.

There is no know official cure, but Dr pederson developed a cure that showed 80% of remission in a clinic trial in 2019. The disease being rare, the research is very slow and it's not very likely the cure is going to be on the market in the next years.

However some labs can manufacture the cure, but it's very expansive, 1000$ to 5000$ depending on the brand and the cat's weight, and one of the only way to get it is through a facebook group where most of the research happen with owners who attempt the cure at home and post the result on the group. Due to the drugs price, they usually have to go through a funding process, with self organization of owners to attempt at saving their cat in a peer 2 peer manner.

The process is very daunting, owner have to figure out dosage, brand, find supplier, organize a funding, going through different sites and facebook group, with some volunteering admin who try to help with the whole process, with only a few days before the disease become terminal.

The disease progress fast, with usually the cat not eating or drinking at the first stages, and symptoms progressing very fast which require intensive care only to keep the cat hydrated and fed, avoid anemia and other problems.

The identity of supplier has to be protected because of the illegal nature of the drug, and most vet won't get involved with it, or don't even know about it, and would recommend euthanasia upon diagnosis.

2. Overall process

I. Confirming the diagnosis

The disease is not easy to diagnose, the symptoms can be common with other pathology, it generally needs some advanced analysis on blood sample, or abdominal liquid sample for the wet form, and it's very often misdiagnosed either with false positive or negative.

II. Establishing treatment

There are different brands of treatment, the most reputed one is mutian, but it is also the most expansive, other cheaper brands exist such as shire, SAK, that are cheaper. It exist in pills or injection. There is not much information about which one has the best success rate, or which supplier are the more reliable, Owner have to figure it out from admin or other users feedback on the group.

Additionally to this, they need to compute the dosage depending on cat weight, type of FIP (wet, neuro, occular), establish the price for the 84 days of treatment, using some dull form from different websites for each brand.

III. Launching a funding

As the drug is very expansive, the course of action is generally buying the first dose to keep the cat alive, and then organize a go fund me through the facebook group. Some users also manage to lend each others the first doses to get the treatment started and giving more time to organize and put the fund together to pursue the full treatment which is 84 (12 weeks) days long.

Some users try to keep some emergency doses and making them available to users within a certain distance range to get the treatment started as soon as possible.

IV. Following the 84 days treatment

The treatment is 84 days long, with always risks of relapse and very little openly available information on how the disease is supposed to progress or relapse, it often involve posting blood samples or observation on the group to get feed back from other user experience or some vet who try to help figure out the situation.
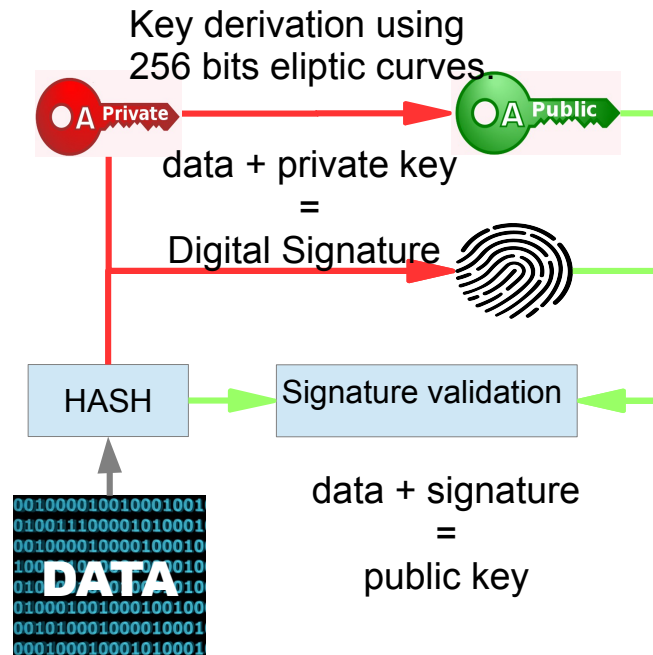
There is no real structured tracking of all cases, users just post their result and evolution on the group and help each others with their own experience and the little research available so far.

3. Application steps

1) Registering cats with the relevant information, weight, age, breed, initial symptoms, date of the first symptom, diagnosis, and all relevant information at the start of the process.

2) Getting information on confirming diagnosis or not.

3) Registering supplier, or peer users with available dose, which brand are available, with some user rating and feed back on the result.

4) Suggesting the available option to the owner to get the treatment started with the available supplier or other users who can have available dose in reachable distance, evaluating the doses, price, and options for crowd funding.

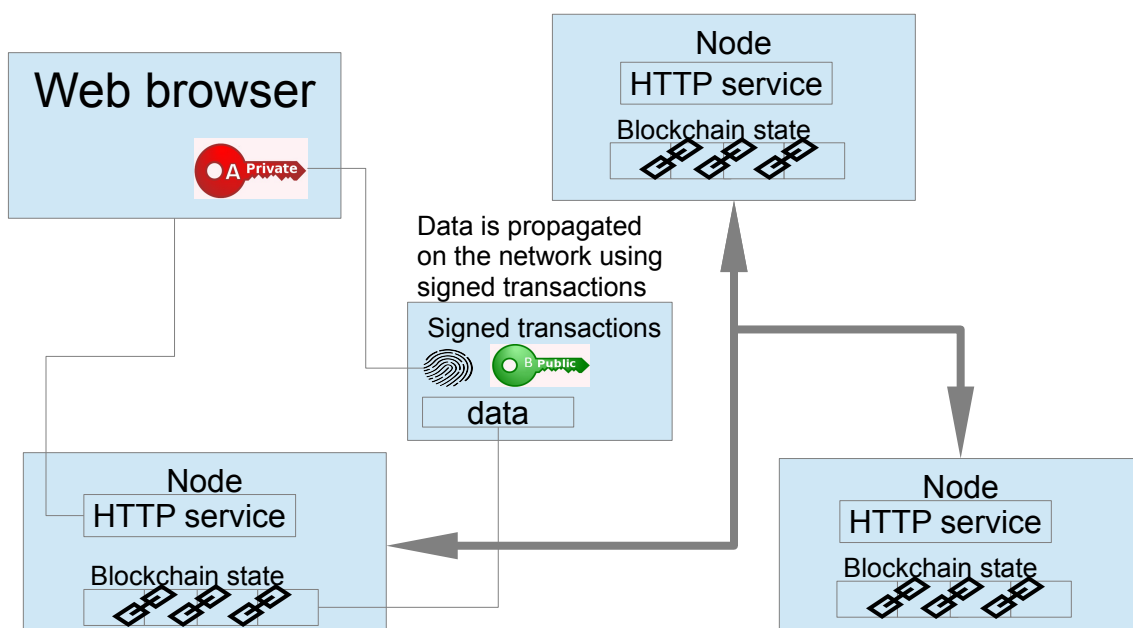5) Updating new informations and status alongside the treatment.

4. Blockchain solution

Unlike classic web applications, blockchain use asymmetric cryptography to identify users, the private part of the keys is kept by users, and a public key is derived from the private key to be used as identity on the network.

Key derivation using 256 bits eliptic curves.

data + private key
=
Digital Signature

HASH → Signature validation

DATA

data + signature
=
public key

Each new data is added to the blockchain using cryptographic signature to prove user identity that can be verified by all users on the network.

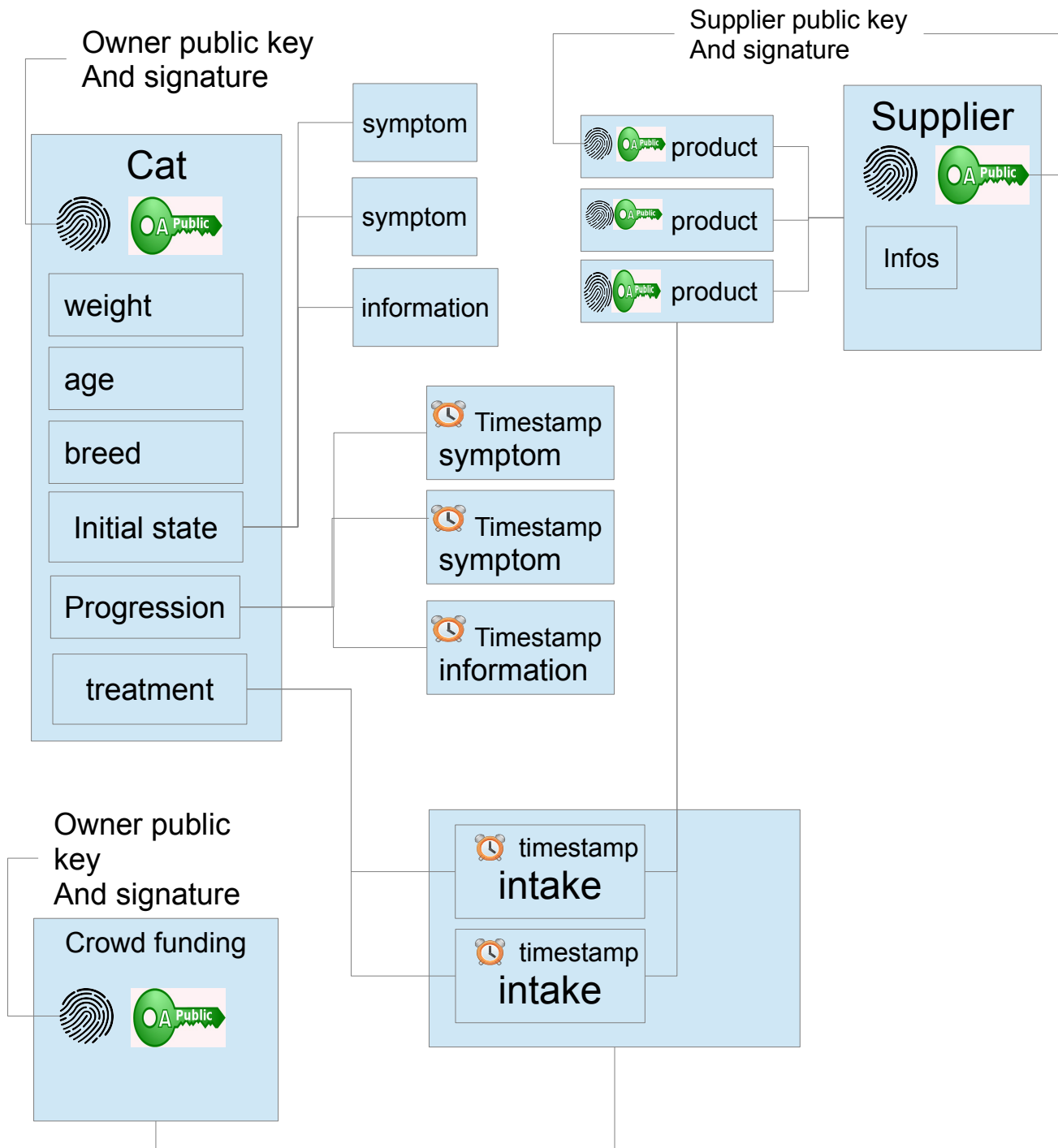New data is propagated on the network as transaction that either add new data or link existing data together as a data graph.

Web browser

A Private

Data is propagated on the network using signed transactions

Signed transactions

B Public

data

Node
HTTP service
Blockchain state

Node
HTTP service
Blockchain state

Node
HTTP service
Blockchain state

5. General data graph

Owner register their cat with initial symptom, weight, age, breed, using their private key and select a treatment option, then add the treatment intake and new information along the course.

Supplier register themselves on the network using their private key and publish available stocks.

Treatment intake can be traced back to a supplier using crytographic signature.

Crowd funding can be organized either via blockchain tokenization or external site like go fund me.

The format for the symptoms and information relative to the cat need to be determined for ease of collecting the relevant information.

HTML user friendly front end can be stored on the blockchain to display page and information and manage their identity key. The data can be queried using HTTP protocol.