Land Registry Transactions with Blockchain

Save your time and money...

Project Domain
What is Land Registration?

Land registration generally describes systems by which matters concerning ownership, possession, or other rights in land can be recorded (usually with a government agency or department) to provide evidence of title, facilitate transactions and, prevent unlawful disposal. The information recorded and the protection provided will vary by jurisdiction. In our country, this is done by the land registry cadastre management.

Introducing the Problems

- *The purchaser has to pay a large amount of money to get the title deed of the real estate he/she bought.*
- *Since it is a centralized management, an attack on the center or an incorrect operation may cause data loss.*
- *Deed transactions can only be processed during business hours. Blockchain, on the contrary, enables transactions to be processed at any time.*
- *Difficulties encountered when purchasing a property from different countries.*

and much more like that ...

Why Blockchain is useful for land registry works

-Providing reliable money transfer opportunity.

-Inability to delete or change the transaction by malicious individuals

-Protected against attacks since it is not centralized. (At war etc.)

-Provides a platform for digitizing assets and selling them as shares

Land Registration Statistic For Our Country:

Total *10.924.221.197 ₺*

İşlem Tanımı	İşlem Sayısı	Değer(TL)	Harç(TL)
01-Satış	2.338.269	389.239.975.303	10.312.051.628
02-Bağış	9.693	877.857.872	33.278.635
03-ÖKBA	5.139	347.811.987	11.841.537
04-Taksim	23.478	6.139.494.779	90.472.242
05-İntikal	336.715	274.152.497	7.381.455
06-İpotek (Şahsi)	383.877	3.976.015.725.397	46.172.849
07-İpotek (Zirai)	104.495	12.253.870.276	40.921
08-Konut İpoteği	4.982	3.285.447.577	310.965
09-İpotek Terkini (Şahsi)	704.400		21.229.740
10-İpotek Terkini (Zirai)	44.241		1.407.180
11-Cins Tashihi	33.538		3.000.985
12-Diğer Tashihler	96.662	286.521.446	20.361.690
13-Kamulaştırma	48.298	764.994.845.750	6.022.129
14-Diğer İşlemler	6.178.871	29.896.046.942	370.649.241
15-İmar Uygulaması	2.487		
TOPLAM	**10.315.145**	**5.183.611.749.826**	**10.924.221.197**

Rhythm @Rhythmtrader · Jan 14

124,946 bitcoin were just moved in a transaction.

That's ~$1,100,000,000 transfered for an $80 fee.

No government, bank or third party had to verify the transaction, nor could they have stopped it if they wanted to.

Expenses

Açıklama	2018 Başlangıç Ödeneği	2018 Revize Ödeneği	31.12.2018 İtibariyle Harcama	Gerçekleşme % Oranı
PERSONEL GİDERLERİ	644.105.000,00	667.305.000,00	664.199.119,20	99,53
SGK DEVLET PRİMİ GİDERLERİ	146.673.000,00	151.222.000,00	150.512.782,21	99,53
MAL VE HİZMET ALIM GİDERLERİ	21.511.000,00	28.741.000,00	25.055.132,82	87,18
CARİ TRANSFERLER	5.440.000,00	5.440.000,00	5.440.000,00	100,00
SERMAYE GİDERLERİ	169.511.000,00	430.672.720,08	225.037.442,01	52,25
Genel Müdürlük Yatırım Programı	169.511.000,00	122.253.956,00	94.008.283,42	76,90
Döner Sermaye Kaynağı	0	103.186.829,81	84.743.424,83	82,13
Orman Genel Müd. ve Diğer İdarelerden Kadastro Yapımı İçin Aktarılan	0	205.231.934,27	46.285.733,76	22,55
GENEL TOPLAM	987.240.000,00	1.283.380.720,08	1.070.244.476,24	83,39

The state only pays 664.199.119,20 Turkish liras for employee wages.

Solution

We have designed a solution that can benefit both the state and the public by using blockchain technology to solve all these problems and facilitate people's transactions.

In our solution, every **user** *has a contact address,telephone number, name,surname,date of birth,ssn,public key,private key , wallet and properties owned. Public-key was generated by the user's TC number. So every user have a unique public-key*

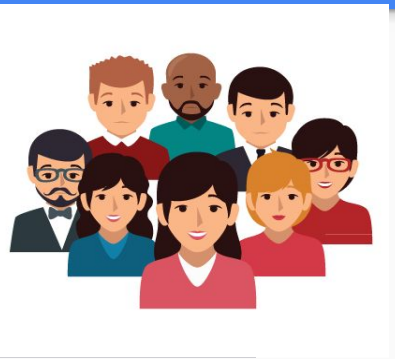
Our contract also has **managers** *who is in charge of approving transactions.Every manager have an unique address.*

The contract is owned by the state. Taxes are paid to the state for each transaction.

State Variables

```
struct Manager{
    address managerAddress;
    uint id;
    string nameSurname;
}
```

```
struct User{
    string home_address;
    string telephoneNumber;
    string nameSurname;
    data birthDate;
    string ssn; // TC kimlik no
    address userAddress;
    uint balance;
    Land[] ownedLand;
}
```



```
struct Land {
    uint area ;
    string location ;
    string addr ;
    mapping(address=>uint) shareOwned;
    //indicates that the user owns the property as a percentage
    bool verificationStatus;
}
```

Purchasing / Selling

In the purchase process, a property can be purchased completely or a certain percentage of it can be purchased for investment purposes.Therefore, a land can have more than one owner.

For the purchase, the user must send the following information to the function: ***land object, payment amount, percentage of shares, address of the landowner.***

Approve (by User)

In our design, the landowner and the buyer need to confirm the purchase/sale transactions of the land.

For this, the user (both) will enter the mapping (address => Land) in her/his structure, the user address he/she will buy or sell, and assign the Land object .

For the purchase to take place, both the buyer and the seller must approve the transaction.

Confirmation of the transaction (by manager)

Manager first checks if the buyer and seller approve the specified transaction.

*The manager can use **mapping (address => Land)** to do this, by sending the address of the landowner and the buyer to the mapping and checking whether they have verified for the specified land.*

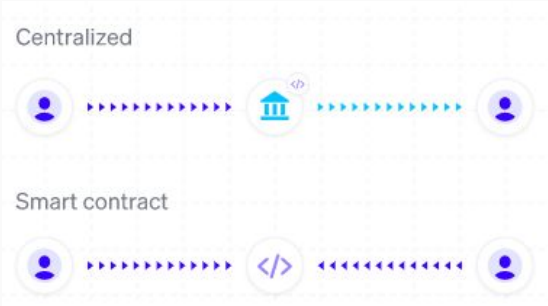
If the approval procedures are valid, the land is assigned to the new owner and the determined amount is transferred to the landowner's account.

State of Arts

1.BenBen: is a team of motivated engineers and innovators dedicated to improving government technology in **Ghana**. BenBen **is a digital land database** that leverages blockchain technology to provide fast easy access to trusted land content.

2.Blockchain-based land titling system in the **Republic of Georgia**, a pilot project developed in collaboration with the Bitfury Group, the National Agency of the Public Registry (NAPR), and the Blockchain Trust Accelerator. All the records can be made online and it will be secured **by public blockchain**.

3. Blockstack: With **decentralized data storage and accounts**, everything your users do will be private and owned by them. It's powered by the blockchain but integration is easy. =But we need a centralized system.=



How it works

1. Step

Seller and buyer contact each other and approve sales on their side

2. Step

The manager also endorses on behalf of the state. Database is updated

3. Step

It is sent to the database. The money transfer takes place here and the seller and buyer transaction is closed

Analysis

- **Database**:Instead of using traditional land registry system (they provide source database and backup databases) our system provides a shared database system. One copy to each manager and they connected to each other (P2P)
- **Trust**: We can not ignore the state so that the state is going to appoint a proxy
- **Multiple writers**: There are multiple entities which generates transactions that modify the database.
- **Validation**: Blockchain holds all blocks in a sequence. It is immutable.
- **Scalability**:The Blockchain is easily expandable. Everyone who would like to upload a transaction on the blockchain can do so.
- **Efficient:** By force of our system, people don't need to go to traditional land registry offices.Therefore, buying and selling processes will occur without unnecessary people transactions.
- **Eco-friendly:** Our system will reduce to paperwork in the land registry offices.
- **Mining**: Will be handled in the following days.

Results and Observations
Advantages

- Enables transactions to be processed at any time.
- It allows the landowner to sell a certain percentage of his land without selling all of his land. For example, the landowner can put 5% of his land up for sale.
- Everyone can see the blocks.
- Corruption and bid rigging can also be detectable. If you can figure out who is the owner of that key ;)
- The government will manage all processes efficiently.(expenditure of employees, government offices are unnecessary in our system)
- Blockchain technology will prevent the insecurity and injustice that are part of these land registries.

Results and Observations Disadvantages

- Land registration can not be **decentralized**; State would not let their own land to be sold without its permission.
- If the government lets **first clause**:Unemployment will rise.Because many people will be redundant. Also; politically, it will cause loss of votes.
- State provides **reliability**. If fraud occurs due to some sickness such as alzheimer, no one can help.

Group 5

Why shouldn't we build a new land registry system to be built in our country?

Atakan Ayyıldız

State of Arts, Analysis and Results were done.

Göktuğ CANDEMİR

Statistical data , Introduction the problems, Proposed model,Stages

Mert Emre ÖZTÜRK

Design model and results

Ahmet Kasım TOPTAŞ

Problems,Domain,State of Arts