CarCoin

-Representing car values

By Blockchain Technology-

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Abstract

With an increasing social interest in Blockchain, the government and many companies are finding areas where Blockchain technology can be applied. Blockchain itself can be applied to a number of areas, as all data recorded on Blockchain is open to the public and cannot be modified, transparency is ensured. Therefore, it may be a solution for an opaque market, in this case, the used car market. We will handle the problems of used car market with "Carcoin".

The introduction of the famous notion "Lemon market" may be helpful to understand the objective of Carcoin. While a market is in an asymmetric structure, in terms of information, reasonable customers gradually will leave that market, it deteriorates until it collapses. This also indicates how important transparency is for a marketplace. In the case of the used car market, which also has an asymmetric structure, leaves customers not trusting the market at all. Even though many companies are trying to make their own solutions for a used car market, their endeavors often are insufficient. Customers want to buy a good used car, but still have doubts in the integrity of the supplied information about their desired asset. Therefore, it may be a great opportunity to become a pioneer and construct transparent and profitable market using Blockchain. That is why we have decided to dedicate this project to the used car market.

In the following contents, we are going to explain how the "Carcoin" ecosystem works, and how we aim to achieve information symmetry and maintain full data integrity within our system. Aside from introducing our Carcoin technology, we also point out various other incentives and components, to make the system sustainable and usable. This includes a visualization of the Carcoin technology on the World Wide Web and how its subcomponents function to form a system together. Herewith, anybody can understand the Carcoin universe in detail, and fully understand how we realized our concept in this highly competitive market.

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1. **Motivation**

The current used car market cannot give enough credibility, and customers have little confidence to spend money, because there is a certain asymmetry of the information structure. If this kind of marketplace lacks transparency, most people would not even bother using it, so if there were reliable, reasonable, creditable, and traceable deals available, people would gradually gain trust. In the end, it is certain that all used car marketplaces should follow up and start using Blockchain and use its methods of an unalterable storage system, it would be sensational and reveal a new archetype of market.

The Blockchain service itself operates on a decentralized network and whoever uses it, provides a new node to an ever growing and undying network. Our system provides plenty of appeal to actually utilize the various prepared services. First of all, the data integrity of insurance companies becomes more and more outdated, inconsistent and differs from company to company. Insurance companies could profit to use a unified system using our Carcoin contract. Secondly, the insurance companies customers strongly desire to access reliable information before making a significant purchase such as buying a used car. These two facts are our primary drive force to model a new service, allowing all sides to profit. Insurance companies can record any data related to car accidents and their customers can access trustworthy information, from wherever they are, anytime. This drive force gave us conviction to create a stable and sustainable ecosystem called Carcoin.

We so far have applied this concept to the used car market, but it may be applied to various other marketplaces. Starting to use our concept could possibly enhance any thinkable market and give it transparency and fair trade deals all over the world.

2. The product - Carcoin

Carcoin is a digital and divisible token, similar to a digital currency. Each token is a value representing the value of a car. First, an insurance company registers a new car, giving it an initial value. Whenever there is an accident or another event such as a repair made on the previously registered car, the insurance company will report it to the Carcoin ecosystem and therewith record it for an eternity. However, Carcoin is not a cryptocurrency, more so it represents the value of any car in an intuitive way. Although all the information on Blockchain is public to everybody, the Carcoin service is not free. A user has to pay a small fee to search for a registered car, has to pay on a monthly plan to be able to use the service. There is however enough incentive to use the service, for a small compensation to the Carcoin company.

At the launch of Carcoin, 100'000'000 "C-coin" will be issued, it is the secondary, the actual cryptocurrency minted. It can be mined by the insurance companies who represent the miners in our ecosystem. It is a fully tradeable property to provide an increased incentive to insurance companies to join the bandwagon. Anyone can buy C-coins and trade them to wherever they please.

As afore mentioned, the Carcoin token is a representation of the value of a car. If there is an accident reported, a vehicle will lose a certain amount of value decided by the insurance company. After the used car will become repaired a part of the lost token will be restored to its overall value. Once Carcoin has been established, customers will eventually start to naturally use the recorded information as a valuable trustworthy source of information. As a goal, more and more used car markets will inevitably jump on the boat and start displaying the unalterable data on their cars to their customers on a regular basis. If these markets will not use the service they would have a disadvantage over other used car marketplaces and eventually would die out. It will be impossible to deceive customers by concealing car defects, as the information is supposed to be publicly displayed, thinking of the used car dealers as customers of Carcoin, in business, as well as private customers and resellers. Certainly Carcoin charges users and insurance companies a small fee to maintain the service, such as the webhosting and administrative actions, such as registering new insurance companies, which should discreetly become accepted.

2.1. Product Process

Carcoin utilizes the ERC-721X, which is the extended version of ERC-721. ERC-721X creates identifications (ID) for each token. A token ID is generated by a newly registered car number, its value and its registration date. The tokens characteristics are non-tradeable values that can be minted, depending on each cars value. After all, the responsibility for managing a token ID lies with the insurance company the car is registered with. By registering a car into Blockchain, the insurance company will give the car owner an idea of the cars value as well as possible insurance fee rebates. This should give the car owner motivation to use the system as well incentive for the insurance company to keep advertising a transparent coverage system. If there is no drop in a cars history by an accident, car owners can prove a reliable report for resale of their asset. On the other hand, if there is an accident recorded, the cars value will diminish, and the exposed data will make it impossible to be concealed which in turn is relevant to the insurance model sold to any car owner. Also the insurance company can review the recorded data and create new probability models for the profit of the car trade business as well as set a new ratio for a cars insurance rate.

By fully using this process, a verified insurance company will be encouraged to report car accidents and repairs in Carcoin, as they can trade the secondary cryptocurrency C-coin between other insurance companies as well as users. This service and C-coin will also be sold to car owners who desire to get valid information to verify their acquisitions value. C-coin may as well be traded between insurance companies and users. By doing so, the entire Carcoin ecosystem may be maintained. A prospect new used car owner wants to get correct and exact information about a deal they are eyeing. At a later point, C-coin can be used to trade all of the information.

We will buy information from insurance companies and make it public, so Carcoin will represent a reliable product. This service will be sold to customer, like this the Carcoin token will be used as an additional pillar for trade information. As such is our overall service process model for the Carcoin ecosystem.

2.2. Product Structure and Implementation

2.2.1. Blockchain

Carcoin is composed of three contracts.
The first contract is the database contract, the second one is the token contract and the third one is the Carcoin interface contract, which communicates with the other two contracts. By dividing the contracts, Carcoin may be upgraded, as a deployed contract cannot be modified. If there is a problem detected, usually a deployed contract has to be abolished and redeployed, destroying the token and data. On contrary, if Carcoin is any issue with transactions, we can easily replace the interface contract, by first detaching the connected contracts, updating the interface and reattaching it to the database and token contracts. With this distributed structure, Carcoin is enabled to grow up and remain stable.

The database contract represents the warehouse of Carcoin. Carcoin specifies the permission level assigned to each user account or groups. There are three types of permissions, "Read-Only", "Read-Write" and "All-Permitted", controlling the execution of functions within the contract. "Read-Only" permission will be granted to users who paid for searching the Carcoin database. "Read-Write" permission will be given to insurance companies to record new cars, accidents and repairs. "All-Permitted" will be assumed by the contract owner, the main administrator, he is able to register insurance companies within the system, as well as suspending the database while editing the Carcoin interface. Furthermore, the owner can reevaluate the credibility of an insurance company, which should be monitored closely.

The second, contract, the token contract, represents the bank of Carcoin, where C-coin tokens are transferred. This contract also serves for recording car values. Using ERC-721X, C-coin can be used as ERC-20 tokens similar to any cryptocurrency such as Ethereum. The correspondent tokens will be used to attain information from the warehouse of Carcoin, the database. The tokens will also be used to indicate the car value, which is public to everybody who paid for the Carcoin service, users and insurance companies alike. Detailed C-coin information will be dealt across the warehouse.

The third contract, the interface contract, it represents the market. This contract is for the UI access, be it on remix or by the web frontend, the Dapp. By these means the owner can register a new insurance company, users can query the database for car searches, as well as insurance companies who can register new cars and record accident and repair data respectively. This contract serves as the bridge and portal to the Carcoin universe.

2.2.2. Dapp – Web Frontend

To provide a convenient and rich user experience, the Carcoin front end utilizes ASP.net to its fullest. A user can create a new account and has to provide the registered Blockchain address of a valid insurance company upon registration. Having previously paid the usage fee to the Carcoin Company, the user will be provided with the insurance company Blockchain address under which the desired car has been registered under. After providing Name, nickname and the address, the user can log in and access the search mask within the Dapp, where he can search for any car registered under the corresponding insurance company. There is absolutely no need to disclose or a private Metamask account; all "transactions" to search for a car are signed offline from within the Dapp. Searching a car is free and consumes gas from the insurance company the car is registered with. The user itself does not require having any connection to the Ethereum network whatsoever, the Carcoin Dapp webserver independently handles any requests to the Blockchain network. Carcoin hits two birds with one stone; it provides both a splendid user experience and the reliability of the Blockchain network.

Additionally, the second use case chain, is represented by the insurance company using the very same Dapp, once provided access by the owner and being set as such, can log into Carcoin and register cars, or report accidents on a separate mask. Using the very same process as regular users, all transactions are signed offline from within the Dapp, there is no need to log into Metamask whatsoever. There is a small amount of gas being consumed for the process of registering a new car which can easily be covered by the companies Ethereum balance, and if missing can be provided by the Carcoin company per se.

Furthermore the Carcoin Dapp, as mentioned, is a ASP.net web application using Microsoft .NET framework 4.7, as well as a Microsoft SQL server in behind to record user, insurance company user, and super user (owner) logins. All other data is accessed and recorded by the Blockchain networks Carcoin contract. In terms of security the Carcoin universe is an unbeatable partner, offering state of the art technology on both front and back end. Making use of Microsoft SQL Server and ASP.net dataset secure connections are granted, last but not least every login input mask is specifically guarded against SQL injection.

2.3. Practical Problems

Three practical problems need to be addressed. Firstly, how high should the reward be for reporting an accident? Secondly, what if the user base is too small to provide sufficient data to make an insurance company creditable, and furthermore with few users the token seems rather useless? Lastly how can Carcoin maintain the relation between actual used cars and their virtual representation within the Carcoin universe?

As for the first and third issue, Carcoin uses the credibility concept for rewards. Each insurance company has a credibility value, and should be rated monthly. The rating may be based on the amount of cars reported, and of course as the user base stabilizes, and the reported car rate depletes, should be adapted to a different reward model. An insurance company may aim to get a high rating by registering as many cars as possible, but over time may run out of opportunities; a different reward model then might come into consideration. As the credibility is an evaluation criteria for rewards, and the primary aim for insurance companies to get a higher credibility, may in turn be incentive for other companies to join.

As for the second problem, insurance companies may not want to receive C-coins for compensation, hence the idea for Carcoin to use stock options as a concept to tackle this problem. At first, Carcoin will hand out a combination of half money and half C-coins as compensation. After the Carcoin universe becomes well established with a big user base and becomes stable, the reward model may switch to C-coin only. As such, the Carcoin company can solve the three main problems.

2.4. The potential developments

The Carcoin Company is preparing two specific updates. The autonomous credibility setting and using the Carcoin token as stocks. Right now, Carcoin does not support credibility evaluation on contract level; the setting is recorded manually by the contract owner manually and subjectively. To ensure fairness, Carcoin needs a self-sustaining mechanism to set the credibility automatically. This process should be achieved in a more logical, mathematical and objective way.

Furthermore, the Carcoin token right now is merely indicating the current value of each used car, it may however be used as "stock" shares for any registered car. The Carcoin token could represent the real value of a car based on a conversion rate to real money. To achieve this part, Carcoin will need support from the government, as there are many obstacles within current regulations on recording such information. If this update could be achieved, Carcoin truly may become a leading pioneer on transparent markets, as everybody wants.

3. Conclusion

With the dawn of the Carcoin universe, people can buy a used car with reliable information and at a reasonable price. The number of markets within Blockchain will radically increase once Carcoin becomes an established source. A marketplace is not just a tool for dealing merchandise; it is an essential human cultural property that affects the daily life of everybody. In conclusion, the Carcoin Company believes that the idea of constructing symmetry for information, will spread to many parts of our live and hereby make it more reasonable.

As a paradigm, the Carcoin Company achieved a platform that enables fairness and transparency, providing consistent and unalterable information within a deceitful society. Our goal is to bring a revolutionary reverse of where the spear is pointing to, creating a more reliable society. For now it is just one step, but it will be a giant leap into a transparent society.