



# TRUCKCOIN (TRUC) WHITE PAPER

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*Self Supporting Blockchain by*

 **TRULOS.COM**

# VISION

Create a low cost or free secure digital ledger of the transaction between a shipper and carrier for the trucking industry. This blockchain will be able to be integrated into other technologies and be independent of any entity. Basically it will be using a blockchain as a store of shipping contracts rather than value.

# WHY

To ensure that there is a low cost solution available to small fleets and owner operators that enable them to compete with larger companies who may have an unfair technology advantage. As blockchain technology becomes a part of the transportation industry there will be a need for trucking companies to participate either because shippers will require it or because government regulation will require it or both. Participation in this technology should not be a barrier to entry for a trucking company to obtain work.

Create a solution for carriers and shippers to do business business directly and eventually facilitate payment for shipping. A solution for this does not exist today.

# HOW

Trulos will provide a simple online application where a shipper and carrier are able to create a contract for shipping. This contract will be able to be stored on a blockchain distributed ledger. Phase 2 will include payment to the carrier on the completion of the contract.

## TRANSPORTATION INDUSTRY

Transportation industry is approximately 10% of the US Gross Domestic Product. It is really really huge. Like 1 trillion dollars huge.

Approximately 85% of the trucks that haul freight are small carriers that service smaller shippers. Small carriers are 5 truck and less fleets.

The industry is changing rapidly. Electric vehicles and driverless technology are coming on board fast.

Drivers are retiring faster then they can be replaced. This helps onboard new technology and adopt new practices.

Fragmented industry that is made up of 85% small independent businesses.

### Three main participants

**Shippers** - Are manufacturers, importers, producers. Most or small to medium size like much of the US Economy small business out number the large corporations. Generally large fleets service large customers. Think of JB Hunt would service companies like Target, JC Penny, Proctor and Gamble and AB Beverage

**Brokers** - Brokers connect smaller shippers to carriers. They serve an important role in bridging the relationship between carriers and customers.

**Carriers** - Mostly made up of small business owners and owner operators

Technology in the industry is relatively simple. Email and phone are primary communication methods.

With all of these small business running transportation cash flow is tight and the use of factoring companies is high.

Traceability of freight, starting point for integration with other applications, low cost way for small carriers to access a secure traceability smart contract.

Example:

Because of new government regulation on food safety (this is speculation and not actually happening at the time of writing this) that a lettuce farmer will need to trace the product from farm to table and this includes transportation. As part of this regulation the producer must require that all transportation be documented on a secure blockchain. So if the Food Processor tenders this shipment to a broker who tenders this to a carrier. There may be a need for every transaction to be documented on the block chain so that in case of issues traceability is easy to perform. We can also envision that GPS data points are also stored in this smart contract.

### **HOW HARD IS THIS TO DEVELOP?**

Kind of hard but technology exists today to store a peace deal between North and South Korea on the Ethereum blockchain so we feel that storing some transport data is doable in the technology today. The best thing about blockchain is there are significant resources and platforms to allow anyone to set up a blockchain and create smart contracts or create a new project based on open source technology.

### **WHY DOES TRULOS WANT TO BUILD THIS**

We want enable the small truck driver to have the same opportunities as the large trucking companies by taking away any cost barrier for entry in any future technology products that. ... plus if this project takes off we would make a lot of money while helping the industry create a self sustaining blockchain network everyone will have access too.

## WHY TRULOS

Trulos is the largest free load board today and has thousands of daily users. Trulos provides users with technology products that help carriers and shippers transact business.

Trulos has thousands of users already and by enabling a block chain ledger to document the transaction between a shipper broker and carrier is very easy to build smart contracts our system. There is a need for this service today to connect the shipper and or broker and carrier.

If we help the average trucker and the shipper do business with each other the industry wins. Trulos is facilitating that relationship today.

Success of this project is based on successful implementation of industry enhancing technology not on profit or by keep this proprietary to Trulos.

If this works then anyone will be able to use the network and it will be independent of Trulos. Trulos does not need to own the technology and all source code for the blockchain will be posted on Github or other central repository for everyone to use and develop.

## COMPETITION

There are others working to develop private blockchain networks that will “Disrupt” the industry. We believe in enhancing technology so that the industry will evolve and communication will be improved. We are not looking to replace or disrupt the current process of today.

We believe that a proprietary network is the exact opposite to the founding principle of blockchain.

We feel that building an adaptive and all inclusive platform that will interface with any other technology plus almost no transaction fees will beat out any private network all day long.

## WHO ARE THE CUSTOMERS?

Brokers, Carriers and Shippers are all potential customers in this marketplace. Brokers are a huge part of the process today and offer services to shippers and carriers that may not be easily replaced digitally.

Shippers may face increased government regulation on the traceability of their products and require that the transportation is documented.

In today's process a shipper tenders the shipment to a broker who then tenders it to a carrier. The TruckCoin Blockchain will store the negotiated rate details in a smart ledger and traceability will now exist forever in a secure distributed ledger on the block chain about who hauled the shipment.

The Trulos bidding system will also support direct negotiation between the shipper and the carrier and the final negotiation will initiate the smart contract. This smart contract will be a rate confirmation that will give carriers confidence to do business directly with shippers.

Our system will be built so that if a digital record is required for traceability then a carrier could use the Trulos website or app to create a record for the customer that will be stored in a distributed ledger on the blockchain.

Our system will also enable any 3rd party or app to integrate with the block chain.

This system will create Invoicing and BOL and Rate confirmations for all parties involved with the basics of each transaction stored in a blockchain. This blockchain will be stored permanently on a decentralized ledger.

## **ON CHAIN VS OFF CHAIN**

Not everything will be able to be stored in the chain and many pieces of data will be stored in off chain databases. These databases may be distributed software as well or they may be using standards like mySQL and MSSQL .

### **Items that may be off chain.**

- Bidding and negotiation that will happen through before settling on a final bid.
- This may be done using telephone or through an app or website.
- Notification texts and GPS data and Image sending

### **Items that would be on chain.**

- Change to fees. Waiting time is an example of this.

### **Items that may be a side chain**

- Factoring integration
- GPS ELD data points
- Payment processing

## TECHNOLOGY ROAD MAP

**2018** - Build bidding and contract creation into the Trulos Load Board

- Allow carriers to bid directly on loads posted by shippers and brokers
- Allow shipper or broker to tender shipment to carrier
  - ◆ This will create a rate confirmation that can be printed and signed

**2018 to 2019** - Raise money and or collaborators for implementation of technology.

- Truck Coins will be distributed for any help whether it is time or money.
- Development of block chain and app development cost is TBD
- Future development and marketing may require additional funds.
- Funds can be secured in exchange for coins

**2019** - Implement Blockchain and ledger for smart contract

**2019** - Implement Blockchain integration for 3rd party brokerage

**2019** - Launch app for IOS and Android

### Events with no real timeline

- Partnership discussions
- Integration with other partners

## HOW IS REVENUE GENERATED TO BE A SELF SUSTAINING PROJECT

Revenue will be generated from the mining of the coins. The cost of production will be paid upfront and be determined by the miner network.

One example might be. It will cost 1 Truck Coin to confirm a smart contract. This 1 coin would be paid to the miner network to validate the transaction.

If a side contract is added then that would be another validation event for the miner and generate another 1 Truck Coin fee.

Fees are paid by the creator of the main smart contract or side chain.

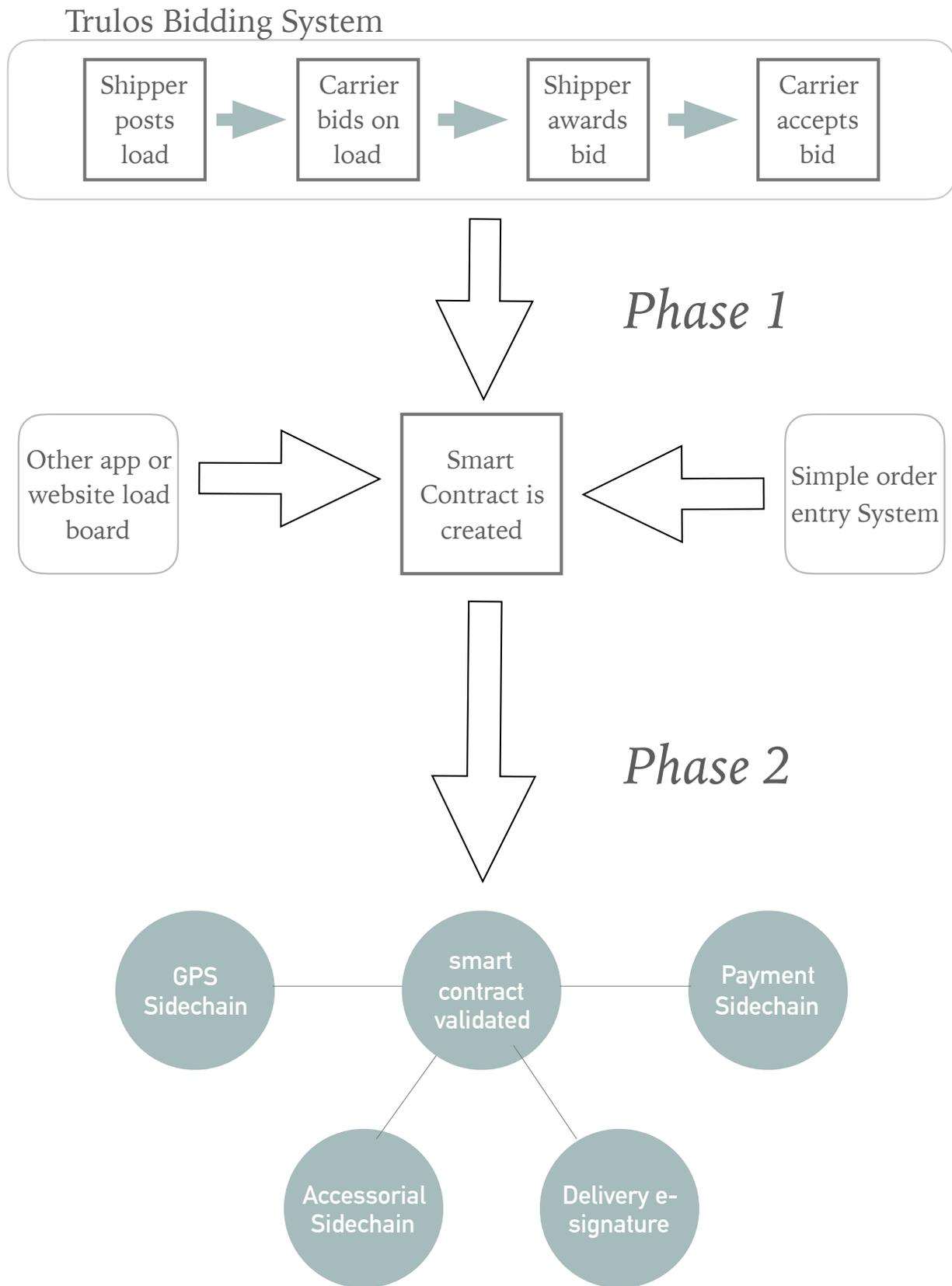
For example if a shipper would like to do business with a carrier and create a smart contract to document the transaction the shipper would initiate the smart contract and pay the fee. Then if there was 4 hour waiting time and the carrier wanted to update the rate to include his waiting time he could add this to smart contract and pay the fee to do so. Conversely this fee could be paid by the shipper as well if they add the side chain on behalf of the carrier.

Another example of this model is Bitcoin. When transactions are made the miners get a transaction fee.

Transactions fees could be decimals because as the coin increases in value the fees need to stay reasonable.

The mining fees may not need be paid in the beginning of the project as coins will be mined privately by Trulos, shippers, carrier and partners in this project. After traction is generated then coins may be placed on exchange.

# DIAGRAM



## TRACKING AND STORING INFORMATION DECENTRALIZED

The goal for the application is to create a stored record of the transportation contract and various data points that go along with that contract.

Storing part of the data in an application and part of the data in a decentralized network is not a plausible solution. It will lead to fragmented information that is essential still controlled by a central app.

Our goal is to create the smart contract that is stored on a decentralized network that can be accessible by other applications that will have the permissions to access data for a specific user.

User permissions will be needed to access some details of the smart contract. There will be two user accesses for each smart contract. Both will have access to the same data.

For example Brokerage company and a carrier have a contract. Both can view that contract. Then the same carrier does business with a different broker. Then the carrier will have access to both shipments and each broker would have access to only one of the contracts.

If you lose your private key it may not be recovered and you would lose access to the transaction data you had stored in the blockchain.

If you are using the Trulos application then this transaction level data would also be stored in a centralized database where you could recover your information.

If you would like to use more than one application to manage your shipments or move from one application to another as long as you have your private key your data could be accessed from another application that would be able to view all the smart contracts you have created or been involved in.

## PRIVACY OF DATA

Smart Contracts that will include sensitive data like pricing and contact phone numbers and address will not be accessible to everyone.

To accomplish this we will need to develop an authorization layer around the smart contract. So that only people with acceptable authorization are granted permission to see sensitive data.

Access will be granted to the originator and the receiver of the smart contract. These keys will be created automatically and allow the two parties in the main contract access to the information.

Similarly the access to side chain information will be granted to the people in the same way. Once the contract is created by default it can only be viewed by the two parties to the smart contract.

This permission can be managed by creation of private and public keys when the user is created. In our scenario access to the information will be granted by sharing your public key with another user to view the data.

If you share your private key you will be giving someone permission to make changes or create smart contracts on your behalf.

A company that has figured out how this works for protecting digital content is the <http://lightstreams.network/>

Your data will be stored on the blockchain and it will only be accessible by having a private key or visible with a public key.

## WALLETS AND STORAGE OF DIGITAL ASSETS

The digital assets will need to be stored in a wallet. This wallet can be an application of iOS and Android or a program on your computer or stored in a hard wallet or stored in the Trulos Website under your account.

You will be able to send TruckCoins from one wallet to another by providing an address. Sending a smart contract initiates the payment of transaction fee so that miners can be paid for mining the coins and validating the blockchain.

Truck Coins will be a method of payment and also a method of paying for the smart contract to be stored on the blockchain.

## POW VS POS

At this time we believe that Proof of Work is the right way to set up the mining of the blockchain. We feel that POW will ensure that miners will benefit from the network and will provide a self sustaining blockchain.

## HOW WILL THIS SUSTAIN DEVELOPMENT AFTER INITIAL LAUNCH?

After the initial blockchain there will be funds set aside to pay for a management and development team. This will help drive integration with other technology and help others integrate with the Truck Coin Blockchain.

All information will be hosted on Github or other central repository where the code can be forked and modified to benefit the users. Blockchains work this way today. An example of this is Bitcoin and the recent forks that are set to improve the usability of the coin.

Once the blockchain is established it will be independent of Trulos and be able to be integrated into any load board or bidding system or dispatch system or phone app.

## WILL ANYONE PROFIT?

There is a possibility that the people who decide to help build this blockchain will not make a penny and there is also a possibility that they and their family will never have to worry about money ever again.

# **PHASE 2 – SIDE CHAIN AND PAYMENTS AND SMARTER CONTRACTS**

## SIDECCHAIN TECHNOLOGY

*Put simply, sidechaining is any mechanism that allows tokens from one blockchain to be securely used within a completely separate blockchain but still moved back to the original chain if necessary. By convention the original chain is normally referred to as the "main chain", while any additional blockchains which allow users to transact within them in the tokens of the main chain are referred to as "sidechains". For example, a private Ethereum-based network that had a linkage allowing ether to be securely moved from the public Ethereum main chain onto it and back would be considered to be a sidechain of the public network.*

**Side Chain** - This Smart Contract will enable a secure contract between the shipper, broker and the carrier to be stored in a decentralized blockchain ledger.

From this smart contract Sidechains may be implemented . This would allow someone like an ELD provider who is able to capture and send GPS today the ability to integrate into the smart contract. This example could permanently store information in the ledger.

Another example of a side chain would be for payment to be made from one wallet to another wallet. The confirmation of this event could be set up as a sidechain noting that the shipment was paid for. In this scenario a factoring company may settle the transaction and add their side chain to the smart contract showing the carrier was paid.

In sidechain technology it is possible to update and store information and link two smart contracts.

Flexibility to add as much or as little to the traceability of the smart contract.

Since we don't know what the future regulations are we are building this in anticipation that all existing parties will want to be able to integrate to the blockchain using side chain technology and conversely the negotiated smart contract could be a sidechain to a different application that is or is not yet developed.

## **WILL PAYMENTS BE MADE USING TRUCK COINS**

Payments would be able to be made using Truck Coins but will not be required.

If a payment is made using Truck Coin then the payee could purchase Truck cCoins or use Truck Coins already bought to pay the carrier.

Truck Coins will eventually have value and be traded on exchanges. This value will change and could go up or down daily. The price of Truck Coins will be known at the time of payment.

If the shipper wants to pay the carrier in Truck Coins and the carrier doesn't want to take payment in truck coins then the carrier can receive payment in a fiat currency via ACH deposit to the bank. This payment will be done seamless and fees associated with this service will be paid by the receiver of funds. The fee can be documented upfront and paid for by the shipper as well

## **MINING OF COINS**

Anybody will be able to mine coins. Mining Truck Coins may be even be done by a shipper who would like to generate coins to spend on transportation costs.

Mining will be a function of securing the smart contract on the ledger and generate revenue for the miners.

There will be a maximum number of coins and the difficulty for mining will increase.

## **PURCHASE OF COINS**

People will be able to purchase and trade Truck Coin on exchanges and use Truck Coins as a store of value. Truck Coins will be able to be sent form one wallet to another wallet.

## SMARTER CONTRACTS

A second phase of the smart contract could also issue payment to the carrier from the shipper once the delivery has been accepted.

Part of the function of the smart contract is create a contract and based on an If Then scenario release the funds to the carrier.

This is a great way for carriers and shippers to gain trust when their is no current trust set up today.

Business Need is there. Currently there is no way to have a carrier be able to validate the credit of a shipper and ensure they are getting paid. A majority of payments are made on delivery for the carrier using a cash advance or a factoring company.

Our smart contracts could be funded by a 3rd party that is taking a fee to facilitate the fast payment or directly from the shipper. These are terms that could be determined at the time of shipping and the relationship the carrier and shipper have together.

**A simple example** is that when the freight is delivered and verified by both shipper and carrier the funds will be released.

The contract is funded by the shipper and the carrier is able to trust that when the load is delivered the funds will be available.

**A complicated example** is when something goes wrong and deliver is not made or damages occur or accessorial charged need to be added. Then in this scenario the smart contract would be added to and both amounts agreed upon by both parties and then the amount would be released. In the event of a dispute the shipper and the carrier would have the funds locked in the smart contract until the agreement is resolved and both either validate the contract canceled where funds go back to shipper or agreed where the funds are sent to the carrier.

## CONCLUSION

Trulos will be building this blockchain technology through the help of not yet existing partnerships. The goal will be to enhance the transportation network through a smart contract that is stored on the blockchain and not try to change the existing way business is done today.

Trulos is not a disrupter of the industry but that being said we will be creating a smart contract that would enable shippers and carriers to do business together in a trust less environment that exists today.

We are seeking partners that will be able to donate time or money. Trulos is also seeking qualified members to form an advisory board to help guide the blockchain development.

In you are interested please email Winfield Rinkle at [winfield@trulos.com](mailto:winfield@trulos.com)

## USE CASE FOR A FACTORING COMPANY

Factoring companies could benefit from a smart contract where two parties have already agreed upon a rate and they just have to verify the transaction exists to process the payment.

In a smart contract essentially all the terms are in place between the carrier and the shipper. A factoring company could simply verify the contract exists and issue payment.

### Why this would help?

It would streamline operations and create a trusted validation of an existing smart contract. Today when a carrier uses a factoring company the factoring company needs to verify that the contract is correct. That means they need to reach out to the shipper b email or phone and verify the rate and that the load is delivered on time. If the carrier and shipper have already entered into a smart contract then the funds could be paid to the driver and invoice sent to the shipper without any verification of the contract.

With trustable smart contracts factoring companies could even be set up to originate a business model directly funding shippers logistics business in addition to funding specific carriers. One Truck Coin for a validated contract is a lot more efficient then spending resources on validating it on their own contracts.

