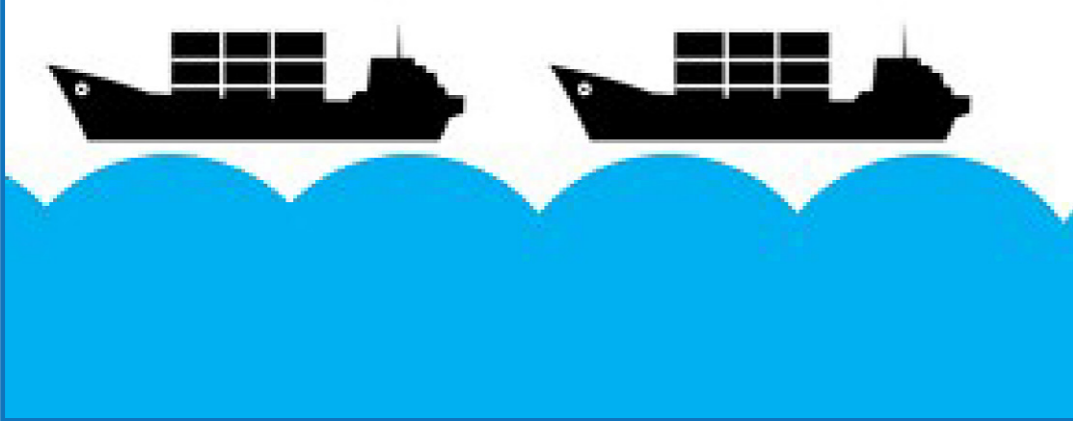


Designing a Location-aware Blockchain Distributed Ledger

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Problems



1. The processes and cost of trading is heavily burdened by paper administration and process.
2. Paper audit trails are only signed by parties that are physically present when they are passed on.
3. Paper audit trails do not guarantee the route taken between stops

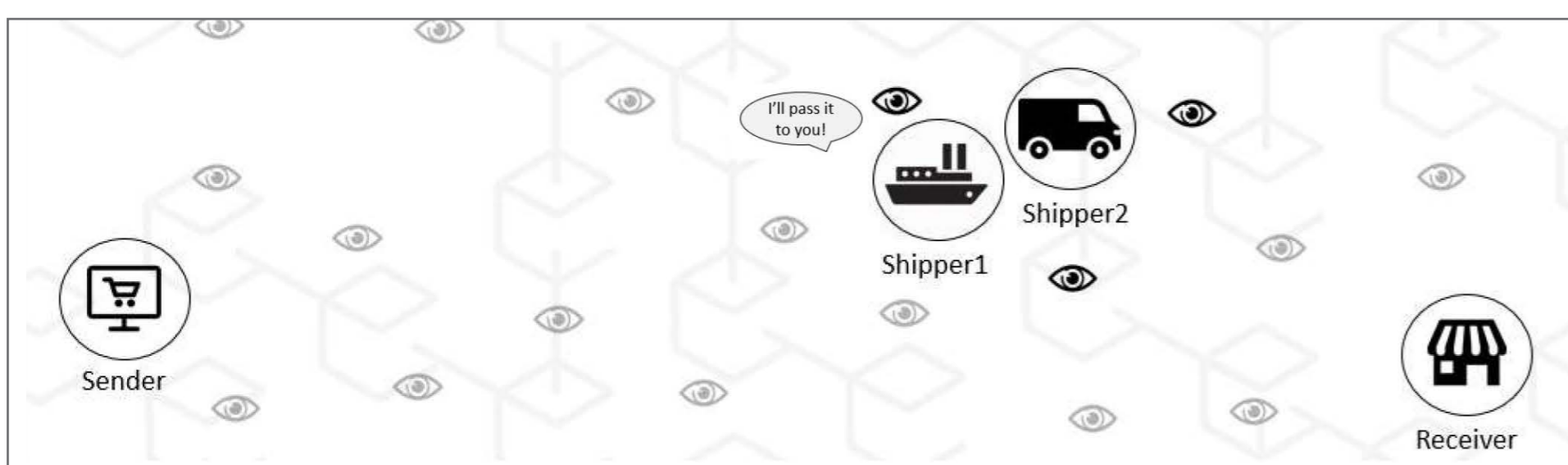
Solution



Corda is an open source Distributed Ledger Technology (DLT) that can be used by businesses to maintain a shared and synchronized ledger of transactions.

1. Digitize trade administration and process by putting it on the Corda blockchain platform.
2. Create a network of Corda nodes that acts as witnesses for parcels that passes through the supply chain

Proof-of-Concept



are all nodes in the Corda network.

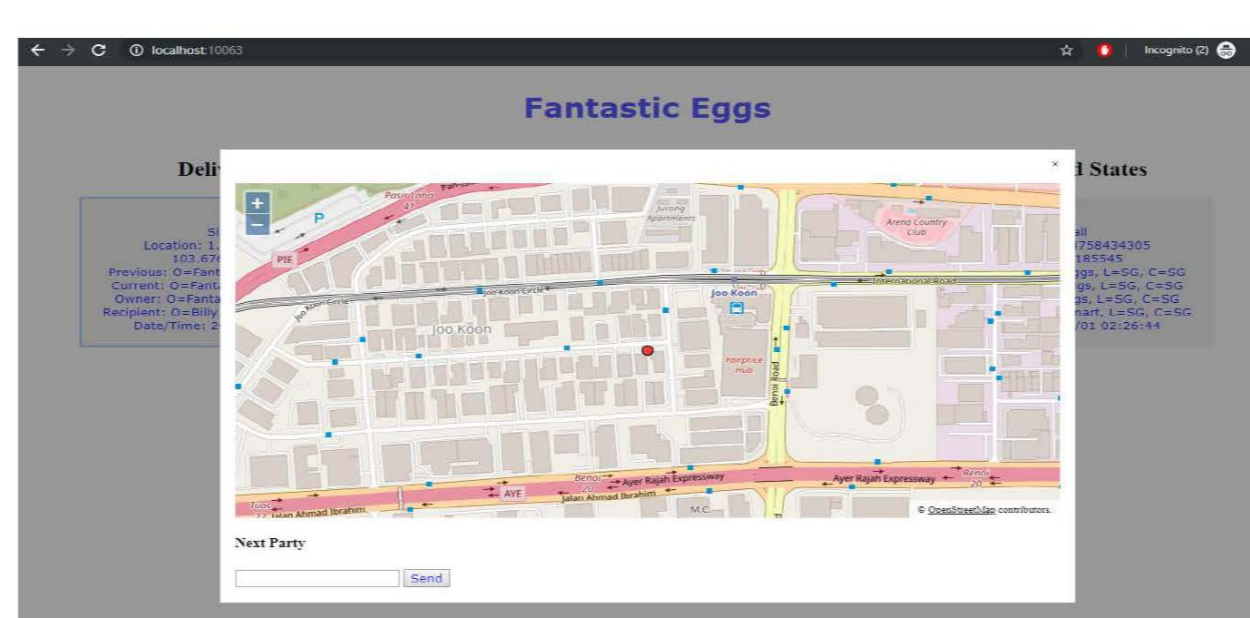
are witnesses which are supposed to be nodes as well. For this PoC, their identities and locations (GPS coordinates) are stored in a text file on all nodes.

has the parcel and wants to pass it to to continue the delivery:

- ① Propose transaction to update delivery state (current party in possession, location)
- ② Looks at text file to identify 3 nearest witnesses. Sends their signatures to sender (in this case, itself)
- ③ & & & Notary signs transaction

Sender will only sign if the 3 witnesses signatures matches the one it derives from its own record of witnesses.

Fairy Shipping Company		
Delivering	Consumed States	Unconsumed States
<p>ID: 12 Size: small Location: 1.3258130507393 103.67269952964 Previous: O-Fantastic Eggs, L+S, C+S Current: O-Fairy Shipping Company, L+S, C+S Owner: O-Fantastic Eggs, L+S, C+S Recipient: O-Billy Supermart, L+S, C+S Date/Time: 2018/10/01 02:34:16</p>	<p>ID: 12 Size: small Location: 1.3258130507393 103.67269952964 Previous: O-Fantastic Eggs, L+S, C+S Current: O-Fairy Shipping Company, L+S, C+S Owner: O-Fantastic Eggs, L+S, C+S Recipient: O-Billy Supermart, L+S, C+S Date/Time: 2018/10/01 02:34:16</p>	<p>ID: 12 Size: small Location: 1.3258130507393 103.67269952964 Previous: O-Fantastic Eggs, L+S, C+S Current: O-Fairy Shipping Company, L+S, C+S Owner: O-Fantastic Eggs, L+S, C+S Recipient: O-Billy Supermart, L+S, C+S Date/Time: 2018/10/01 02:34:16</p>
<p>ID: 5 Size: large Location: 1.3258130507393 103.67269952964 Previous: O-Fantastic Eggs, L+S, C+S Current: O-Fairy Shipping Company, L+S, C+S Owner: O-Fantastic Eggs, L+S, C+S Recipient: O-Billy Supermart, L+S, C+S Date/Time: 2018/10/01 02:34:16</p>	<p>ID: 5 Size: large Location: 1.3258130507393 103.67269952964 Previous: O-Fantastic Eggs, L+S, C+S Current: O-Fairy Shipping Company, L+S, C+S Owner: O-Fantastic Eggs, L+S, C+S Recipient: O-Billy Supermart, L+S, C+S Date/Time: 2018/10/01 02:34:16</p>	<p>ID: 5 Size: large Location: 1.3258130507393 103.67269952964 Previous: O-Fantastic Eggs, L+S, C+S Current: O-Fairy Shipping Company, L+S, C+S Owner: O-Fantastic Eggs, L+S, C+S Recipient: O-Billy Supermart, L+S, C+S Date/Time: 2018/10/01 02:34:16</p>



Web front-end

ID	Latitude	Longitude
0	1.3257	103.6761
1	1.3257	103.6764
2	1.3257	103.6767
3	1.3257	103.677
4	1.3257	103.6773
5	1.3257	103.6776
6	1.3257	103.6779
7	1.3257	103.6782
8	1.3257	103.6785
9	1.3257	103.6788
10	1.3257	103.6791
11	1.3257	103.6794

Witness records