TransTrans: Blockchain Hackathon Stuttgart

15/03/2018 Karthick Perumal is data science consultant at the Porsche Digital Lab. Together with his colleagues he took part in a hackathon. But how does such an event actually work?

There is a lot of excitement surrounding the Blockchain technology. It is basically a digital and distributed ledger technology that can be used to record any kind of information in it in the form of cryptographic hashes, with a hash of each block referring to the hash of the previous block. As it is distributed and each block is added to the Blockchain based on a set of consensus mechanisms, it is difficult to modify or alter something that is recorded on the Blockchain. There is also a possibility to have certain smart contracts on the Blockchain, which can be used to pay someone only if certain conditions are met. A smart contract is basically a program run on the nodes of the blockchain. Being open source, decentralized and with the ability to add smart contracts, it offers a great deal of transparency and trust between the people who use it, thus avoiding any third-party intermediaries. The technology behind Blockchain can solve a wide variety of problems where transparency and trust between different parties are needed.

Stuttgart, meet TransTrans

Dr. Karthick Perumal and Pascal Pflüger from the Porsche Digital Lab, their colleagues Lukas Weiß and Moritz Papenfuß from MHP and Erik de Graaf with Fatih Salikutluk from Targens participated in the Blockchain Hackathon organised by Baden-Württemberg: Connected e.V. (bwcon) at Merz Akademie in Stuttgart.

We named our team TransTrans, which is an acronym of TRANSparent TRANSport. That is what we intended to do during the 2-day hackathon. The idea was to implement a smart supply chain management system on an Ethereum based Blockchain using smart contracts right from production up until the sale to the end customer.

The Plan: Blockchain-powered pharmaceutical transports

We took the healthcare industry as an example for our hackathon. Consider drugs that have to be maintained under certain temperature conditions, above or below which the effect of the drug weakens or becomes nullified. Under the current scenario, when a customer buys some drug from the pharmacy, they do not have any knowledge of how the drug was stored or transported. Therefore, a customer has to trust the pharmacy at which they buy the drugs, and the pharmacy has to trust the logistics provider and the pharmaceutical company, hoping that they maintained the drug at the right conditions throughout the manufacturing and transport process.

How do you build this trust? The only way to gain this trust is make the whole process transparent by having it on a distributed ledger that records all the relevant information at regular intervals, right from the production to the storage at the pharmacy. The end customer can use their smartphone to see the history of the product and buy it, knowing that it was not compromised in any way. This can be applied not only to healthcare, but also to any industries where quality of the product can be compromised.

Here is a workflow of the implementation of our supply chain management model:

48 hours later

To show the steps we created a short clip at the hackathon (no audio). The technical implementation was done using Ethereum. We used a local testnet on which to deploy our smart contracts. A web frontend was used to simulate the different steps from the various parties. We used web3 to interact

with the smart contracts and create transactions on the Blockchain. Even though we only had the two days, we decided to develop the smart contract test-driven. This approach helps to avoid bugs, which is a serious problem for code on the Blockchain, as it can't be fixed as easily as in other software.

Conclusion

To sum it up, we learned a lot and had two very interesting and funny days in Stuttgart. With our project and all the others presented at the hackathon, one can see some of many use cases, where the Blockchain could solve problems in the future. The development of real applications is already going on, for example at the Porsche Digital Lab in Berlin. They already brought the blockchain to the car. This shows us for the TransTrans case that, in the future, it is also possible to log sensor values in the trucks directly, on the blockchain.

MEDIA ENQUIRIES

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