

Blockchain platforms as solution for a secure data transfer and a secure payment system

From sensor supplier to service provider

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Summary:

Localization sensors, so-called intelligent UWB tags, can be connected via blockchain platforms on site at the user's premises. These can then independently conclude so-called smart contracts with applications via the blockchain. Applications can then access localization data and pay the price specified in the Smart Contracts with tokens to the tag. The application thus pays for each access to the sensor. This would transform sensor manufacturers from sensor supplier to service provider.

Keywords: sensor, blockchain, IoT, smart contracting, service supplier

INSIGHT-CHAIN

In the main title, please use initial capital letters; do not capitalize articles (like "the"), coordinate conjunctions ("and"), and prepositions ("of", "in") under four letters in length.

Within the research project INSIGHT-CHAIN of the CCASS in Darmstadt a blockchain platform was developed, to which localization sensors, so-called intelligent UWB tags, are connected on the user site.

Smart-contracting

Via the blockchain, these can then independently conclude so-called smart contracts with applications that want to access the localization data of the UWB (ultra-wide-band) localization system and which then pay a price specified in the contract to the tag in the form of tokens. In this context, tokens are cryptocurrencies that is not or not yet listed. The application therefore pays for each access to the sensor. Thus, sensor suppliers could set themselves up within the framework of the digital transformation in order to gradually change the business model from sensor supplier to service supplier as required.

Algorithms and resources

In addition to this, the tag now also has the option of buying intelligent algorithms offered as software applications via the blockchain. These

can be developed and offered for use as AI-algorithms by other suppliers and made available via the blockchain, also via payment.

In the same way, access to computing power is contractable (contractually controllable) if a sensor does not have computer resources available for an algorithm or software.

Services

In addition to the possibility to sell the entire localization system in software and hardware to the customer, another new business for sensor suppliers is the use of the blockchain platform INSIGHT-CHAIN, which allows to be paid per smart contract. This corresponds to the current requirement to pay for services offered instead of investing in a localization or navigation system.

Typical areas of application could be, for example, the flexible use of localization information within production and logistics. These are currently being developed, planned, installed and sold to customers by sensor suppliers as a complete localization system in a combination of tags and so-called nodes (reference points), gateways and an evaluation platform.

With the blockchain platform INSIGHT-CHAIN, the customers of the sensor manufacturers will in future have the opportunity not to purchase the system as a combination of hardware and

software, but rather, comparable to a leasing vehicle, to purchase access to the localization system as a service according to access (on demand). This means that the sensor manufacturer can act as a service supplier in the future and would be ideally positioned to meet the new emerging needs for bookable and subscribable services and information in the field of localization and navigation.

State of the art

A number of blockchain projects already exist in the area of data handling. However, these are essentially pure data marketplaces, mostly in B2C, i.e. business to consumer, solutions.

Furthermore, the state of the art is pure data handling platforms. In the present project it is about an exchange of evaluated data or localization information, which has been prepared by AI algorithms, for use by superimposed or administrative processes and can be used as shared services in the industrial and logistic environment.

The blockchain platform INSIGHT-CHAIN could therefore be used as an information provider.

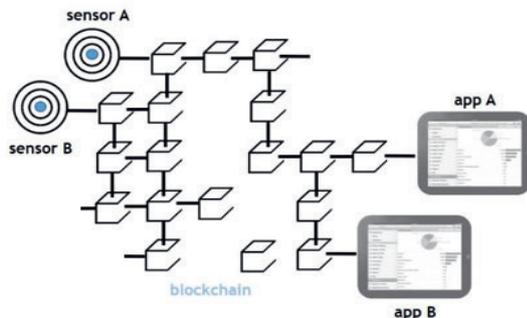


Fig. 1. Blockchain Plattform

Blockchain

Blockchain as a revolutionary technology, known as a decentralized organization system of a crypto currency, offers great potential for solving the project described here. The Blockchain technology was first published in connection with the crypto currency Bitcoin in 2009.

Basically, the blockchain forms a decentralized, distributed, common and unchangeable database, which stores all transactions between the nodes or users via a direct peer-to-peer connection. The blockchain protocol structures information in a chain of blocks, where each

block stores a set of transactions that are executed at a certain time. Blocks are linked together by a reference to the previous block and form a chain.

Before a new transaction, i.e. a new block, is connected to the chain, it must first be uniquely verified by the users of the blockchain according to the consensus principle. This ensures decentralization, the elimination of middlemen and in addition to speeding up the transaction.

The encryption technology of the block chain ensures the integrity and authenticity of the database and the anonymity of the users. Since the block chain is a distributed database, each node has the same information. This redundant storage guarantees data integrity after distribution and protects the data against compromise.

The blockchain contains a list of all past transactions, which in turn provides the verification basis for the new data block. Since every verified transaction is unchangeably chained in the block chain, it is protected against subsequent manipulation. The integration of a time stamp within each block also preserves the chronology.

References

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