

Bosch Research

Economy of Things – Contributions to the community

When vehicles negotiate with parking places – Bosch and its partners test AI-based parking using blockchain technology at IAA Mobility 2021

According to experts, German motorists spend some 41 hours each year looking for somewhere to park, which costs them around 896 euros in gas or alternative fuels. Based on the total number of motorists in Germany, this adds up to approximately 40.4 billion euros per year, as indicated in the [Digital Auto Report 2021](#). At IAA Mobility 2021 in Munich from September 7 to 12, Bosch and its collaboration partners [Fetch.ai](#), [Ocean Protocol](#) and [Datarella](#) are therefore demonstrating and testing how artificial intelligence (AI) and decentralized technologies such as blockchain can make the task of looking for somewhere to park both faster and smarter. Visitors to the “[Blue Lane](#)” in Munich can control a test vehicle and see how it looks for a free parking space, negotiates the price and parking time, and theoretically initiates payment as soon as the vehicle leaves again – all based on preset preferences. “We see this as an example of a typical ‘Economy of Things’ scenario in the mobility sector, with IoT complemented by an exchange of values,” says Dr. Nik Scharmann, who is in charge of the Bosch Research “Economy of Things” strategic advance engineering project.

The “Things” in this proof-of-concept example are a vehicle and a parking place. In the demonstration setup, both are equipped with AI-based agent technology from Fetch.ai and Datarella in suitable vehicle computers from Bosch. This means they interact cost-effectively on behalf of the vehicle and parking lot owners and can also make model-based predictions relating to free parking places. What’s more, real-time information about free spaces can be accessed via wireless sensors. The actual “deal” takes place in a decentralized test marketplace using the Ocean Protocol, which is based on distributed ledger technologies (DLTs) such as blockchain. In this marketplace, parking lot owners such as companies can make spaces available temporarily under specific conditions. Parking spaces close to the entrance that are reserved for customers but are only actually needed at very specific times are one example.

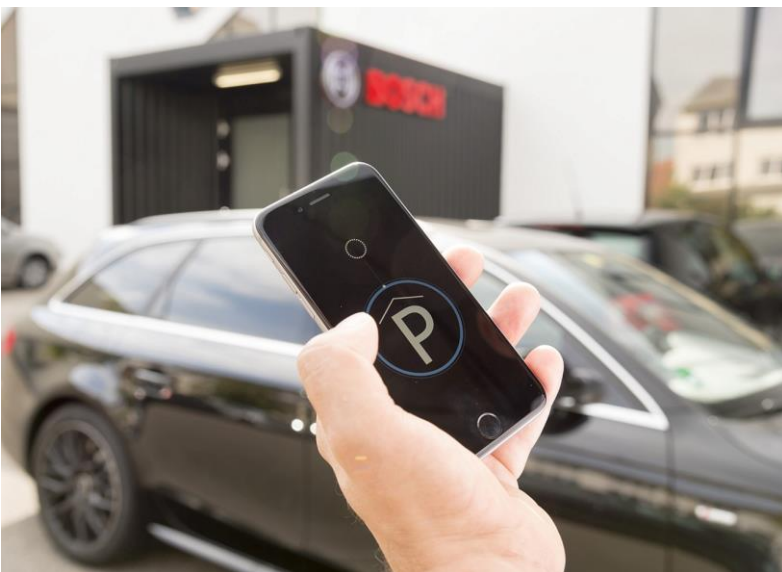
As Bosch sees it, decentralized marketplaces offer potential for using tokens and tokenomics as mechanisms for digital participation and codetermination. Digitally mapped usage rights are referred to as crypto-economic tokens, while the overall approach is called tokenomics. The EoT research team firmly believes in this approach, because two key questions are increasingly being asked in community data space projects. The first is how platform projects can become a quickly scalable ecosystem in which all participants in the value chain can become equally involved. The second is how collaboration platforms can be economically efficient despite this complexity, especially given that the exchange of data and information should be straightforward, self-determined and at the same time secure.

To enable individuals, companies and things such as vehicles to interact and network securely, a trustworthy and reliable identity system is also required. Self-sovereign identities – SSI for short – are the innovation partners’ solution. The aim is to achieve user-friendly, secure, economical and data-protection-compliant use of identity data. In the [IDunion](#) research context, too, for example, this involves creating a digital infrastructure that enables data to be transmitted and is compatible with other global networks. The defining feature of this infrastructure is once again its decentralized structure. “We need to create a digital identity system that does not require

centralized databases and is operated in a distributed manner by many participants,” explains Scharmann. As part of IDunion, the Economy of Things team is developing software based on SSI technology that is also being used as the test network during the IAA demonstration.

“The aim, together with our partners, is also to integrate the entire test scenario into community data space projects such as GAIA-X and develop it further. For the vision of decentralized mobility, leading companies with mobility, AI, blockchain and SSI expertise must team up to literally get innovations onto the roads,” adds Scharmann.

The background to all this is that the technology and service company Bosch is looking to use its competitive advantage from its wide-ranging experience in combining networking (IoT) and AI to open up future business opportunities and become the leading company for AIoT (Internet of Things based on artificial intelligence). In the years ahead, Bosch is predicting sales of AI-enabled products will be worth billions.



At IAA Mobility 2021, Bosch and its partners are testing AI-based parking using blockchain technology at the proof-of-concept stage.

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