Tokenomics: fast and trustworthy machine-to-machine payment systems

By cleverly combining artificial intelligence (AI) and networked devices (IoT), Bosch aims to continuously improve its products and services on the fly and thus become the leading AIoT company. By 2025, all Bosch products are set to either contain AI or be developed/manufactured using it. In that respect, it is already conceivable that everyday payment methods such as cash or SEPA transfers could be inadequate for most applications. "We are moving towards scenarios in which programmable contracts and programmable money are becoming essential elements of how people interact with machines and how machines interact with other machines," says Prof. Thomas Kropf, Head of Bosch Research. In his position, he is also responsible for the Bosch Research "Economy of Things" strategic advance engineering project, which is researching and applying tokenization and tokenomics as essential elements for digital value streams. The basic idea is simple – if we expect multiple things to be able to conduct business quickly and reliably in the digital space, then it is essential that currency for the smallest sums can be transferred at high speed.

"From a scientific perspective, we have to rise to the challenges of cryptology, economics, law, and software development if we hope to lay a resilient foundation for conducting business in cooperative digital spaces," explains Prof. Kropf. However, for Bosch and its central research efforts, cooperation and collaboration are not ends in themselves. Instead, they are rooted in economic considerations. For example, collaborative learning based on decentralized technologies makes it possible to offer customers data-based services, thus generating annual recurring revenues. One example of this is predictive maintenance for machines and devices. Although this in itself is nothing new, what is new is the decentralized approach of using distributed ledger technologies (DLT) such as blockchain to acquire knowledge from cryptographically secured data without compromising the data security and privacy of all parties involved.

Contact: Nik Scharmann, Project Director "Economy of Things", Nik.Scharmann.ext@de.bosch.com

Christian Heise, Deputy Project Director "Economy of Things", Christian.Heise.ext@de.bosch.com
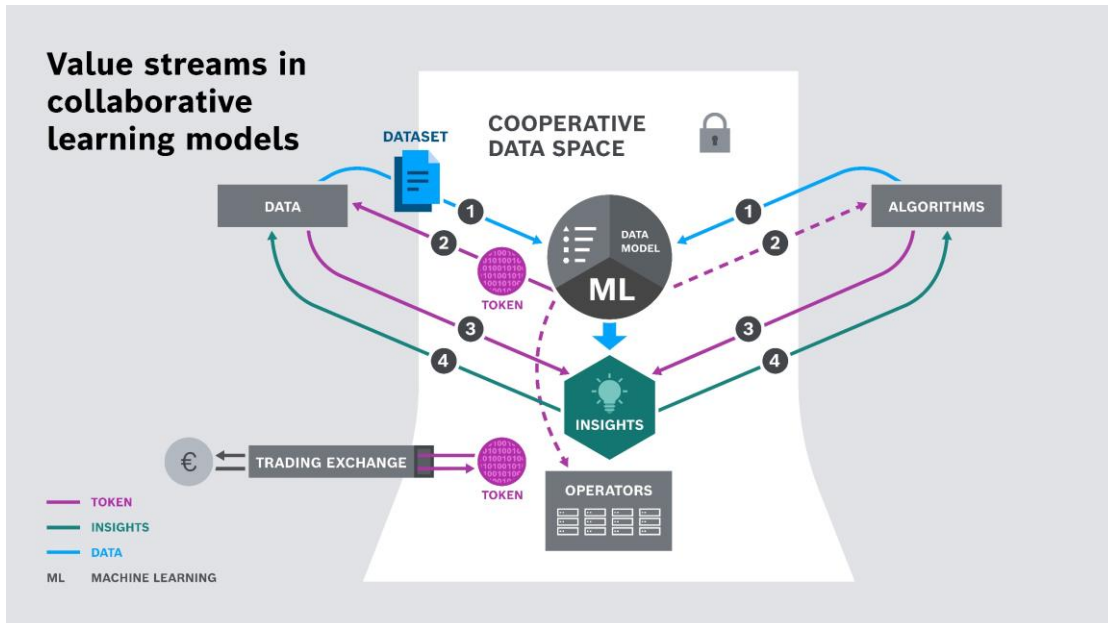
Example process from a decentralized collaborative learning model.

Collaborative learning involves several stakeholders coming together and participating in profits through machine learning algorithms. The developers of an algorithm, the providers of cryptographically secured data and the recipients of the resulting findings all play a part in an economic cycle in the digital space. During this cycle, no distinct currency is generated inside a data space, but rather a usage right is issued for the findings. These can then either be used as a means of exchange in the data space or traded in on trading exchanges. "Through tokenization and tokenomics, we are creating an economic cycle in the digital space that all participants can benefit from if they act in line with certain values," explains Dr. Nik Scharmann, Project Director for the "Economy of Things" project at Bosch Research. Bosch sees potential in principle – also in the context of GAIA-X and Catena-X – in the introduction of tokens and tokenomics as mechanisms for implementing digital participation and co-determination.

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