Toyota Research Institute Explores Blockchain Technology for Development of New Mobility Ecosystem

May 22, 2017

NEW YORK, May 22, 2017 — The **Toyota Research Institute (TRI)** announced today that it is exploring blockchain and distributed ledger technology (BC/DL) for use in the development of a new mobility ecosystem that could accelerate development of autonomous driving technology. TRI is collaborating with the MIT Media Lab (MIT ML) and other industry partners to foster a digital environment where users – both businesses and consumers – may securely share driving and autonomous vehicle testing data, manage ride-share and car-share transactions and store vehicle usage information that could be used in the setting of insurance rates.

Blockchain technology sends information over a network of independent computers, known as a distributed ledger, intended to ensure that the transaction is secure and ownership rights over the data/property are protected. TRI believes blockchain may create transparency and trust among users, reduce risk of fraud and reduction or elimination of transaction costs, such as fees or surcharges applied by third party institutions.

“Hundreds of billions of miles of human driving data may be needed to develop safe and reliable autonomous vehicles,” said Chris Ballinger, director of mobility services and chief financial officer at TRI. “Blockchains and distributed ledgers may enable pooling data from vehicle owners, fleet managers, and manufacturers to shorten the time for reaching this goal, thereby bringing forward the safety, efficiency and convenience benefits of autonomous driving technology.”

Through an open-source approach to software tools, TRI is creating a user consortium and hopes to stimulate more rapid adoption of blockchain by other companies developing autonomous vehicles and providing mobility services. TRI is inviting current and future partners to collaborate on further development of BC/DL technology applications in vehicle data and services.

TRI is working with several industry partners in addition to MIT ML to develop applications and proofs of concept for three areas of the new mobility ecosystem: driving/testing data sharing, car/ride share transactions and usage-based insurance.

- Driving/Testing Data Sharing: Blockchain technology may allow companies and individuals to securely share and monetize their driving information and access the data contributed by others in a secure marketplace. This approach builds on a similar blockchain initiative to create digital property rights in the music industry, the **Open Music Initiative**. Modern vehicles are increasingly aware of their environment through onboard sensors and are increasingly connected to the cloud, roadway infrastructure and other vehicles, all of which are generating massive amounts of valuable data. BC/DL may create an opportunity to share driving and autonomous testing data in an environment that preserves ownership of the data by the creator.

- Car/Ride Share Transactions: Tools based on BC/DL have the potential to empower vehicle owners to monetize their asset by selling rides, cargo space or even the use of the vehicle itself. The blockchain can store data about the vehicle’s usage and information about vehicle owners, drivers and passengers. This

profile information can help validate a “smart contract” between two parties plus manage payment of services between them without need of a financial intermediary, thereby saving transaction surcharges. The system may also provide connectivity to vehicle functions for remote locking/unlocking doors and engine startup/shut off.

- Usage-Based Insurance: The blockchain can also be used for vehicle owners to save money on their insurance rates. By allowing the vehicle’s sensors to collect driving data and store it in a blockchain, vehicle owners may be eligible to further lower their insurance costs by giving their insurance companies increased transparency to reduce fraud plus granting them access to driving data to measure safe driving habits.

“I'm excited Toyota is spearheading this initiative that uses blockchain technology to create an open platform where users can control their driving data,” said Neha Narula, Director, Digital Currency Initiative at the MIT Media Lab. “Our hope is that other industry stakeholders will join this effort to bring safe and reliable autonomous vehicles one step closer to reality.”

TRI’s partners include: Berlin-based **BigchainDB**, which is building the data exchange for sharing driving and autonomous vehicle testing data; **Oaken Innovations**, based in Dallas and Toronto, is developing an application for P2P car sharing, vehicle access and payments with a newly created mobility token; **Commuterz**, a startup from Israel, is working with TRI on a P2P carpooling solution; Gem, from Los Angeles, is working with Toyota Insurance Management Solutions (TIMS) – Toyota’s joint venture telematics car insurance company – and Aioi Nissay Dowa Insurance Services on the usage-based insurance platform. Each partner has expertise in their specific market or area of research.

TRI is also working with Toyota Financial Services (TFS) in the United States for development of related financial tools.

TRI and its partners announced the new research thread today at Consensus 2017, a leading blockchain technology summit in New York.