IBM Research and Hello Tractor Pilot Digital Wallet for Agriculture Based on AI and Blockchain

Platform delivers new services for the agriculture value chain including tractor maintenance, fleet utilization, operator rankings, farm yield forecasting and microfinancing

LAGOS, NIGERIA, 11 December 2018: Scientists from IBM Research and start-up Hello Tractor are piloting an agriculture digital wallet and decision-making tool which provides demand and supply visibility for farmers, tractor fleet providers and banks to give farmers the equipment and technology they need to build a sustainable farm. The technology was unveiled today at TechCrunch Startup Battlefield Africa 2018.

In Sub Sahara Africa more than 60% of farms are powered by humans, with less than 20% provided by engines, a model which is not sustainable as food demand increases due population growth, which is averaging 11 million per year. In addition, according to the Food and Agriculture Organization 35-50% post-harvest losses for perishable agricultural products are lost annually in the region due to poor planting practices.

To address this, in 2014 Hello Tractor launched a mobile platform to enable farmers to access tractor services on demand. Using a mobile app, the service aggregates tractor service requests (e.g., ploughing) and then pairs them with recommended tractors and operators, while simultaneously tracking how many hours each piece of equipment is in the field and area serviced.

"Through valued relationships with companies like John Deere, we've been very successful in increasing mechanization access in small holder communities. To reach the next level, we need to add additional services including predictive fleet utilization and maintenance; operator and tractor scoring; financing and the crop yield forecasting," said Jehiel Oliver, CEO and Founder of Hello Tractor.

To achieve this, Hello Tractor turned to IBM's research lab in Nairobi, Kenya. Scientists at the lab are working with Hello Tractor's developers to apply several technologies, including the Watson Decision Platform for Agriculture, Blockchain, IoT and cloud, to bring new services to the app for tractor owners and dealers, farmers and banks. The new services will be tested in a pilot starting in the first half of 2019.

More specifically,

· Farmers: machine learning will help to predict crop yields, which combined with advanced analytics and the blockchain, can be mined to develop a credit score for loans. Forecasted weather data from The Weather Company, an IBM business; remote sensing data (e.g., satellite); and IoT data from tractors will also be incorporated into the app to help small holder farmers know when to cultivate, the quality of their farm cultivation, what to plant, and the appropriate fertilizer using remoting sensing and IoT data. In the future, the IBM AgroPad technology, developed at IBM's lab in Brazil, could also be incorporated to determine soil quality.

· Tractor Fleet Owners: using machine learning and IoT owners will be able to view and manage fleet utilization, predictive maintenance and forecast future tractor utilizations based on history, real-time weather and remote sensing satellite data. Using a five-star rating system, tractor operators will be

ranked and utilized based on their training (e.g., ploughing, deep ripping, harrow, fertilizing). Owners will also have financing opportunities, for maintenance and for buying new tractors and implements using historical data.

· Tractor Dealers: can benefit from improved tractor repair and servicing, after sales support, spare part inventory planning and credit administration.

· Banks and Financial Institutions: can view and track utilization of tractors to determine a credit portfolio for the farmer and tractor owner, while also evaluating forecasted utilization to make credit decisions for tractor owners based on verified and trusted data on the blockchain.

· Governments: can utilize data and actionable insights for various decision support capabilities such as for structuring incentives, enforcing regulations prioritizing investments and policy decisions.

The backbone of the agriculture digital wallet is a blockchain-enabled and AI-based decision support platform, which enables capturing, tracking, and instant sharing of data, while creating end-to-end trust and transparency for all the parties involved across the agribusiness value chain.

"Our vision is to leverage AI, blockchain and the Internet of Things to digitize, optimize, and streamline agricultural business processes to create efficiencies and new services from farm-to-fork around the world," said Dr. Solomon Assefa, Vice President, Emerging Market Solutions and Director, IBM Research – Africa.

For the next phase of the project, IBM researchers and Hello Tractor engineers are looking to use machine learning with image recognition to predict the quality of cultivation. For example, remote sensing data combined with weather data could be used to predict the next harvest. Plans are also underway to expand the platform beyond Nigeria to Kenya, Mozambique, Senegal, Tanzania, Pakistan, and Bangladesh.

For more details watch this video: https://youtu.be/d8c9zKw8GkM

About Hello Tractor Hello Tractor is focused on improving smallholder farmer's access to timely and affordable tractor services along with other farm inputs. Our technology makes it easy and profitable for tractor owners to (1) monetize tractors as business assets and (2) connect with farmers to schedule tractor services. Hello Tractor's innovative use of IoT (the Internet of Things) simplifies complex data to ensure transparency, profitability, and accountability across our ecosystem of farmers, tractor owners, tractor dealers, original equipment manufacturers, banks, and governments.

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