Digitalized infinity: Engineers present blockchain technology to verify natural diamonds

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Diamonds. Credit: NUST MISIS

Members of the Russian startup Bitcarat.com, graduates of the National University of Science and Technology, have commercialized a unique technology aimed at verifying and tracing natural diamonds. The method

is based on blockchain technology. In a situation where natural, synthetic and fake stones exist in the diamond market, the system could protect the financial assets of market participants and fully guarantee the authenticity of diamonds. Participants plan to launch a security token offering within one year.

The modern diamond industry is undergoing a period of global restructuring. For the first time in 130 years, the global diamond monopolist De Beers will begin to produce synthetic diamonds. Element Six, a subsidiary of De Beers, is building a $94 million synthetic diamond factory in Portland, Oregon. The plant will produce synthetic diamonds with a total weight of more than 500,000 carats.

This expansion is explained by scientific achievements that are pushing for an increase in diamond volumes for potential applications, both for jewelry and industry. Modern synthetic diamonds are almost as good as natural diamonds in terms of quality and chemical composition. With these trends, gemologists often cannot distinguish a good synthetic diamond from a natural one. Taking into account the growth of the market and the multiple possible diamond origins, the guarantee of authenticity is becoming crucial.

The solution proposed by Russian cryptographs, graduates of NUST MISIS and MEI is a unique system of traceability of natural diamonds. The system traces the entire history of the transfer of rights of individual stones, starting from the moment it is mined. Moreover, it is absolutely impossible to falsify this history.

"We offered a digital blockchain-based certificate for each natural stone," says Alexey Dimitrienko, one of the startup founders, leading expert of the NUST MISIS Center for Energy Efficiency. "The technology will ensure the reliability of the history and authenticity of the stone through the use of the blockchain as a special mechanism for

storing information. Also, it will increase the added value of the diamond as a financial asset, as well."

According to the concept, while being mined, each natural diamond will be provided with a special digital code. This code will be entered into a distributed database, that is, a database that is stored by all market participants. Next, the entire history of the transfer of rights to the stone will be blockchain-recorded, becoming 100 percent traceable.

This guarantee will be provided by the very principle of blockchain—it is impossible to falsify this code because of its full transparency. As a chain of information blocks, it records absolutely all transactions that occur within it. Each attempt to edit the code (or to add an allegedly natural diamond into the blockchain) is permanent and changes the entire chain, which automatically shows any attempt to falsify.

The technology of the digital certificate alongside the idea of a digital diamond exchange and a diamond token has already raised interest among a number of the world's largest diamond manufacturers. The development team plans to launch a security token offering within one year.

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