

Researchers propose a blockchain data network to boost manufacturing

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Credit: North Carolina State University

Researchers at North Carolina State University are proposing the creation of a public, open-source network that uses blockchains – the technology behind cryptocurrencies – to share verifiable manufacturing data. The system could be used as a peer-to-peer network that allows companies to find small- and medium-sized manufacturers that are capable of producing specific components on a reliable basis.

"Small- and medium-scale manufacturers often lack the resources and [network](#) reach necessary to make all of their potential clients aware of their manufacturing capabilities," says Binil Starly, corresponding author of a paper on the work and head of NC State's Data Intensive Manufacturing Environment Lab.

"A public network like the one we're proposing would help potential clients find manufacturers with relevant expertise and equipment in an efficient way," says Starly, who is an associate professor in NC State's Edward P. Fitts Department of Industrial & Systems Engineering.

"Our approach, called FabRec, would allow companies to automatically report about their manufacturing activities: which machines are being used, what materials they are working with, raw material inventory levels, whether the work is being completed on time, and so on," says Atin Angrish, a Ph.D. student at NC State and first author of the paper.

"Because these updates are automated, users can be fairly certain that the information is accurate," Angrish says. "And because it's being done through the blockchain, which allows event logs to be traced to their source, there is accountability. So clients can find the right manufacturers, and manufacturers can find new clients, without relying solely on claims made in marketing materials."

To demonstrate the viability of the concept, the researchers created [FabRec](#) – a publicly-accessible, prototype network that currently accepts input from a handful of machines.

"Our network shows that the concept is viable, but the next step would be to establish agreed-upon protocols with participating manufacturers," Starly says. "That would allow the creation of code that permits users to report – and search for – any given set of parameters, such as type of product, production time, cost, and so on."

"Future steps also include developing software that would allow us to authenticate sources entering data into the system – as well as identifying any unreliable sources," Angrish says.

"We are now looking for manufacturers and IT sector partners to help us build up the network and establish it as a reliable, publicly accessible resource for supply chain professionals," Starly says.

The paper, "A Case Study for Blockchain in Manufacturing: 'FabRec': A Prototype for Peer-to-Peer Network of Manufacturing Nodes," will be presented at the SME North American Manufacturing Research Conference, being held in Texas this June.

More information: A Case Study for Blockchain in Manufacturing: "FabRec": A Prototype for Peer-to-Peer Network of Manufacturing Nodes. arXiv:1804.01083 [cs.CY] arxiv.org/abs/1804.01083

Provided by North Carolina State University

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