

Innovations Using Blockchain—Part 1

Jeffrey Voas, Guest Editor

IEEE Fellow

Jinan Fiaidhi, Guest Editor

Smart Health FabLab, Lakehead University

■ **ANY NEW TECHNOLOGY** experiences the well-known “hype-curve.” We have seen this in cloud computing, Internet of Things (IoT), the transformation to mobile apps, wireless, smart-phones, etc. New technologies, if successful, often become quickly ubiquitous, and oftentimes, most users and consumers know little about them, and new technologies often morph into commodities that are less and less discussed in the literature.

Today, we are seeing two new technologies emerge that may go down this path to commodization: 5G and blockchain. This issue of *IT Professional* focuses on blockchain.

Blockchain is a distributed ledger technology that “supposedly” enforces assumptions that are related to trust in transactions and data. But recognize that trust is always “in the eye of the beholder.” A few common trust assumptions for blockchain include

1. trust that the data contained in a chain is true;
2. trust that the data contained in a chain was placed into the chain in a proper order;
3. trust that the data contained in a chain cannot be tampered with.

However, unfortunately, these assumptions are necessarily not always true. As shown in,¹ blocks can be modified and deleted. This suggests that trust in blockchains may not be as guaranteed as some would believe.

IN THIS ISSUE

The four articles for this first part of this special issue of *IT Professional* cover topics identified as emerging trends and innovations in blockchain include the following:

1. In “Realization of Blockchain in named data networking (NDN)-based internet-of-vehicles (IoV),” Farhan Ahmad, Chaker Kerrache, Fatih Kurugollu, and Rasheed Hussain argue that the traditional IoV faces huge challenges due to its reliance on the IP-based network architecture. This includes high packet latency, proneness to security attacks and data losses, to name a few. To overcome these issues, they propose the use of NDN as an alternative architecture that will solve most of the problems especially if NDN is integrated with blockchain.
2. In “Blockchain-based SLA management in the Context of IoT,” Ali Alzubaidi, Ellis Solaiman, Pankesh Patel, and Karan Mitra describe a new conceptual blockchain-based framework to cope with some limitations associated with

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traditional SLA management approaches. Blockchain and smart contract technologies under the new framework provide the SLA management to be effective in a decentralized and automated fashion beyond the influence of a single central authority.

3. In “Improving Hyperconnected Logistics with Blockchains and Smart Contracts,” Quentin Betti, Raphaël Khoury, Sylvain Hallé, and Benoît Montreuil describe how blockchain and smart contracts presents the potential of being applied to hyperconnected logistics by showing a concrete example of its implementation.
4. In “Using Blockchain to Rein in The New Post-Truth World and Check the Spread of Fake News,” Adnan Qayyum, Junaid Qadir, Muhammad Umar Janjua, and Falak Sher propose a high-level overview of a blockchain-based framework for fake news prevention and highlight the various design issues and consideration of such a blockchain-based framework for tackling and preventing fake news.

In summary, the future of blockchain appears bright; however, many challenges to its widespread adoption remain.

DISCLAIMER

The guest editors are completely responsible for the content in this article. The opinions expressed are their own.

REFERENCE

1. R. Kuhn, D. Yaga, and J. Voas, “Rethinking distributed ledger technology,” *Computer*, vol. 52, no. 2, pp. 68–72, Feb. 2019.

Jeffrey Voas is the column editor for *COMPUTER MAGAZINE*. He is a fellow of the IEEE. Contact him at j.voas@ieee.org.

Jinan Fiaidhi is currently a full professor and the professional engineer with the Department of Computer Science, Lakehead University. She is the coordinator of the Biotechnology Ph.D. program and an adjunct research professor at the University of Western Ontario. She is also the editor-in-chief of the new IGI Global *International Journal of Extreme Automation in Healthcare*. Moreover, she is a department editor with *IT Professional* and the chair of Big Data for eHealth with IEEE ComSoc. Contact her at jfiaidhi@lakeheadu.ca.