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# Blockchain Security and its Potential Applications



**Dr. Huaqun GUO**

Head of Network Security Unit & Senior Scientist

Institute for Infocomm Research, A\*STAR

## ABSTRACT

As you may know, a Blockchain is resistant to modification of the data since it is an open and distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. However, according to the Blockchain survey, key hurdles to Blockchain implementation include security of transactions (59% from all implementers) and privacy policies (62% from all implementers). This presentation will introduce two security issues.

First, the issue is related to efficiently manage access control and data sharing among large deployment of devices, and build trust among all involved parties which are totally under different domains and do not have any CA (Certificate Authority) or third party involved.

Second, current consensus protocols for permission-less large scale Blockchain are computational demanding. Many new protocols are proposed, but their security are been questioned and thus not been pushed for use. Finally, it will present some potential Blockchain-based applications.

## BIOGRAPHY

Dr. Huaqun GUO is Head of Network Security and Senior Scientist at the Institute for Infocomm Research (I2R), Agency for Science Technology and Research (A\*STAR), President of International Researchers Club, and Chair of IEEE Intelligent Transportation Systems Society Singapore Chapter.

Before joining I2R, she was a senior engineer at Kent Ridge Digital Labs (KRDL) and a senior research staff at National University of Singapore (NUS). She was also Chair of IEEE Singapore Women In Engineering (WIE) Affinity Group, and chair of IEEE Broadcast Technology Society Singapore Chapter.

Dr. Guo obtained her B.Eng and M.Eng from Tianjin University, and her M.Eng and PhD from the National University of Singapore (NUS) respectively. She has published more than 60 referred papers in the international conferences, journals and books. Dr. Guo has served as general chair, general co-chair, program co-chair, and TPC member for more than 30 international conferences.

Her research areas include Network and Communication Security, Cyber-Physical System Security, Industrial Internet of Things (IIoT) Security, Blockchain Security, and AI for Cyber Security.