

One Potential use of Blockchains Payment Scheme for the “Bush”

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There has been an explosion of proposals for using blockchains ranging from the provenance of data of health records to numerous IoT applications. One of the initial applications of blockchains is digital banking. However, Digital banking, which is an essential service today in most cities, it can be hard to access in remote, rural regions where the network connectivity is unavailable or intermittent. In these regions, micro-banking has been made possible by Short Message Service (SMS) or Unstructured Supplementary Service Data (USSD) messages. The security and session-based nature of SMS and USSD based systems prevent them from wider adoption. Global-level cryptocurrencies, in contrast, enable low-cost, secure and pervasive money transferring among distributed peers, but are still limited in their ability to reach people in remote communities because of the intermittent connectivity to the internet. This talk will present a blockchain-based digital payment scheme that can deliver reliable services on top of intermittently connected networks. Using a scenario where a community-run base station, such as a Nokia Kuha base station, provides reliable local network connectivity, we demonstrate that is possible to provide secure and pervasive money transferring system. The proposed system uses distributed verification guarantees of Blockchain technology and leverage smart contracts for secure service management. Through probabilistic modelling, we show how the parameters for the blockchain network can be adjusted to provide the service and then done so, the transaction processing time will not be significantly impacted due to network unreliability. The through extensive emulations on a private Ethereum network. The talk will conclude with a description of the demo that has been built to show the practical viability of the proposed system.



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He is the Foundation Chair of Telecommunications at the University of New South Wales (Australia) where he holds the Mahanakorn Chair of Telecommunications. Prior to that, he was the Director of the Cyber Physical Systems research program at Data61, CSIRO and the Director of the Australian Technology Park Laboratory of NICTA, Australia's Information and Communications Technology (ICT) Centre of Excellence. His area of research is in physical analytics, which focuses on the analytics on the physical actions of humans and machines. He is particularly interested in how physical analytics can be used to guarantee the security and privacy of users and applications. He has published over 200 refereed technical

papers and book chapters. He has supervised more than 30 PhD dissertations. He has a PhD from the University of Bath, UK and is a Fellow of Australian Institute of Engineers.