

Proposed Classification of Blockchains Based on Authority and Incentive Dimensions

Hitoshi Okada*, Shigeichiro Yamasaki**, Vanessa Bracamonte*

*National Institute of Informatics, Japan

**Kindai University, Japan

okada@nii.ac.jp, yamasaki@fuk.kindai.ac.jp, vbracamonte@nii.ac.jp

Abstract— The potential of blockchain technology has received attention in the area of FinTech —the combination of finance and technology. Blockchain technology was first introduced as the technology behind the Bitcoin decentralized virtual currency, but there is the expectation that its characteristics of accurate and irreversible data transfer in a decentralized P2P network could make other applications possible. Although a precise definition of blockchain technology has not yet been given, it is important to consider how to classify different blockchain systems in order to better understand their potential and limitations. The goal of this paper is to add to the discussion on blockchain technology by proposing a classification based on two dimensions external to the system: (1) existence of an authority (*without an authority and under an authority*) and (2) incentive to participate in the blockchain (*market-based and non-market-based*). The combination of these elements results in four types of blockchains. We define these dimensions and describe the characteristics of the blockchain systems belonging to each classification.

Keyword—Blockchain technology, Virtual currency, Bitcoin



Hitoshi Okada is an Associate Professor at the National Institute of Informatics (NII), Japan. He got his Bachelor of Public Law (LLB) and Bachelor of Private Law (LLB) from the University of Tokyo, Japan. He completed his MA at the Osaka School of International Public Policy (OSIPP) at Osaka University, Japan. He got his Ph.D. in International Public Policy from Osaka University, Japan. His current research topic is the consumers' acceptance of IT enabled services, especially the electronic commerce services and the virtual currency systems.



Shigeichiro Yamasaki was born in Fukuoka, Japan 1957. He received the Ph.D. degree in information science from Kyushu University Graduate School and Faculty of Information Science and Electrical Engineering. He is a Professor of Kindai University.



Vanessa Bracamonte is a postdoctoral researcher at the National Institute of Informatics, Japan. She received her PhD in Informatics from SOKENDAI (The Graduate University for Advanced Studies, Japan) and holds a BSc in Informatics from Pontificia Universidad Catolica del Peru. She has previously worked as an analyst and project manager in the development of electronic commerce stores. Her research interests include trust and risk in information technology, virtual currency and consumer behavior in electronic commerce.