Technology challenges toward maturing Blockchain

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About me

• Director’s Liaison for Financial Cryptography at MIT Media Lab
• Project Professor at Keio University and Research Fellow at the University of Tokyo
• Co-Founder of Bsafe.network
• Program committee and editor: Scaling Bitcoin, IEEE, ACM conferences, Ledger Journal
• Ph.D. from Tokyo Institute of Technology

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Source of technology related immaturity

Unproven technology
- Security
- Scalability
- Trust model

Community Risk and Quality assurance
- Need healthy community and ecosystem

Lack of evaluation criteria toward technological due-diligence
- Standardization

Gap between
- What original Satoshi paper proposes and
- Expectation to Blockchain technology and its application
Technology Trade-offs in Blockchain technology

- Privacy
- Operational Cost
- Security
- Usability
- Performance/Scalability

Find Good Balance

How Decentralized?
Needs for multi-disciplinary research

The Security of Bitcoin/Cryptocurrency/Public Blockchain relies not only on technology but also on incentive design.

Some flaws in the current design of Bitcoin ecosystem are the cause of debates and chaos.
Competition among Blockchain technologies/services

Common to Internet-like innovation

Fail Fast
Horizontal and Vertical

Difference against Internet-like innovation

Experiment using consumers money/asset
Lack of Due-diligence: Need to have good way to realize it
Ecosystem for innovation: migration among blockchain projects
BSafe.network: Plays the Same Role as NSFNet and BSD

- A neutral, stable and sustainable research test network for Blockchain technology by international universities.
- Founded by me and Pindar Wong in March 2016. Each university becomes a blockchain node.
- Research on Blockchain and its applications
  - Not limited to Security. All aspects will be researched.

- Neutral platform
- de-anchored trust of Blockchain network
- More nodes (with Neutrality)
- Testbed for academic research
23 International Universities Already Join and We Add More…

University of British Columbia

MIT
Boston Univ
Georgetown
Duke
Univ. Illinois
St. Mary’s Law

Newcastle Univ.
Imperial College
London
Cambridge

ETHZurich
EPFL

Univ. Autonoma de Barcelona

Univ. of Nicosia

Univ. of Cape Coast

Indian Statistical Institute

Univ. of Tokyo
Keio Univ.
Toho Univ.
Ritsumeikan Univ.

SIM Univ.

Telecom Sud Paris

Univ. of Nicosia
BASE (Blockchain Academic Synergized Environment) Alliance

Open and neutral alliance of Industry-University cooperation

Joint research, development, experiment

Initiated by the University of Tokyo and Keio University

Launch: July 24, 2017