



EUROPEAN CENTRAL BANK

EUROSYSTEM

BANCO DE ESPAÑA

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Introducing distributed ledger technologies

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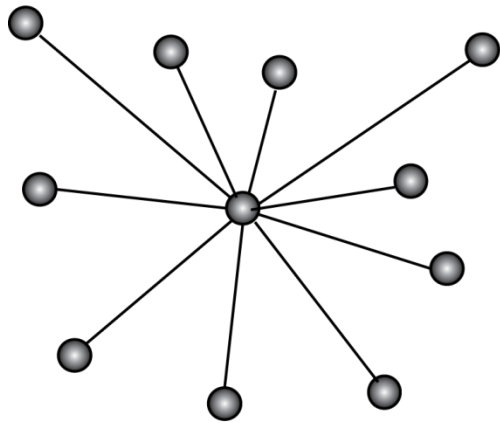
Loughborough University

Focus session, 8 April 2016, Madrid

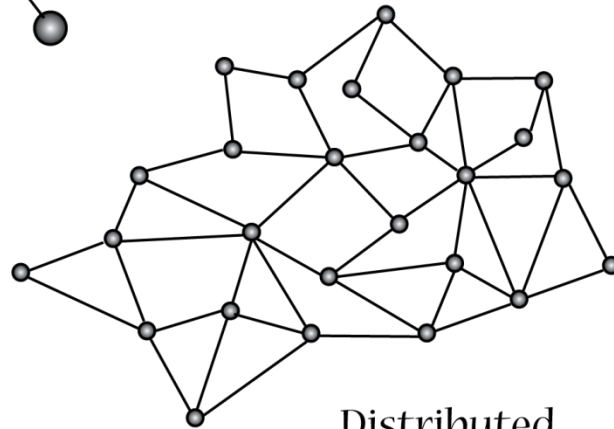
Recent research

- Forthcoming Swift Institute working paper, with Michael Mainelli of Z/Yen
“The Impact and Potential of Blockchain on the Securities Transaction Lifecycle”
- Reports outcome of interviews and focus group meetings with around 80 practitioners
- We emphasise the business challenges (80% business process, 20% technology)

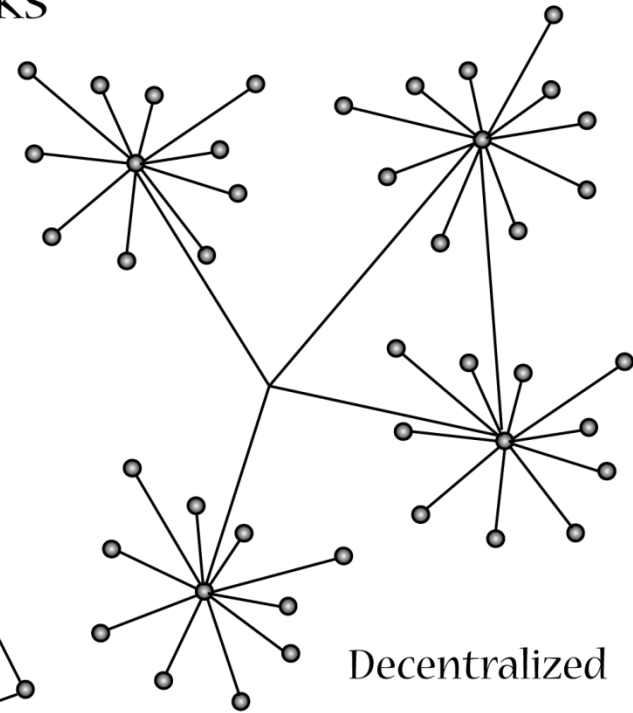
Types of Networks



Centralized



Distributed



Decentralized

The proposition ...

- Transfer of value/ ownership
 - *Without a trusted third party*
 - Open source not proprietary (e.g. Linux “Hyperledger project”)
- Security rests on cryptography
 - Most importantly digital signatures
 - + consensus on finality of transfer
 - The Bitcoin ‘Blockchain’ – challenge of an open unpermissioned network – uses “Proof of work” by miners
 - An easier challenge in a permissioned network – agreement from a small number of approved nodes (custodians ?)
- Primary benefit agreement on shared data
 - Non-financial as well as financial applications
 - Now many initiatives, including in financial settlement: Digital Assets, R3-CEV, Setl

Further reading

- Various blogs
 - I like Tim Swanson <http://www.ofnumbers.com/>
- UK Government Office for Science Jan 2016
 - Distributed ledger technology: beyond blockchain
<https://www.gov.uk/government/publications/distributed-ledger-technology-blackett-review>
 - Emphasises *non-financial applications*
- Our SWIFT institute paper with many more references