Blockchains
- Socio-economic impact
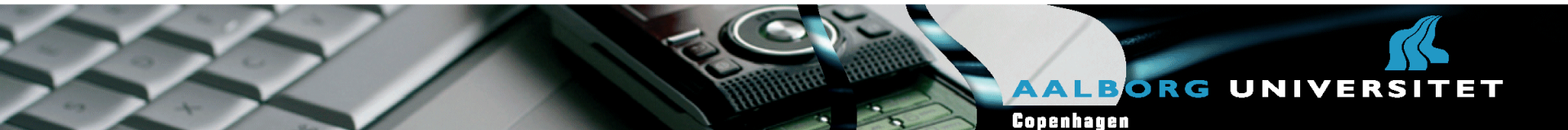
Global Forum

Copenhagen 6 November 2018

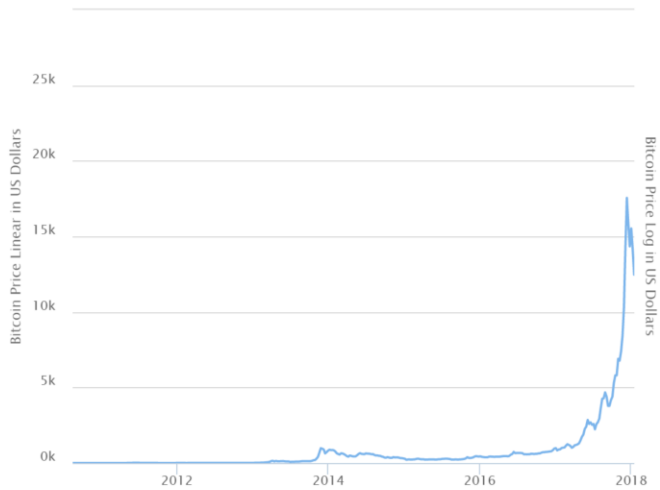### Knud Erik Skouby

CMI/ Aalborg University

Blockchain: Hyped – and 'hushed' by Cryptocurrency

Economic hype: Bubble situation

A fraud for stupid people – Jamie Dimon, JP Morgan CEO

Wed 17 Jan 2018: Double digit falls all over the place. Bitcoin, ethereum, ripple, litecoin — all of them were down.

Next generation money

Your historic opportunity to potentially make your fortune from the greatest financial ERUPTION in 5,000 years!

Interest for Blockchains followed down

Blockchain: A solid technical foundation developed by 'Satoshi Nakamoto' in a paper 2009

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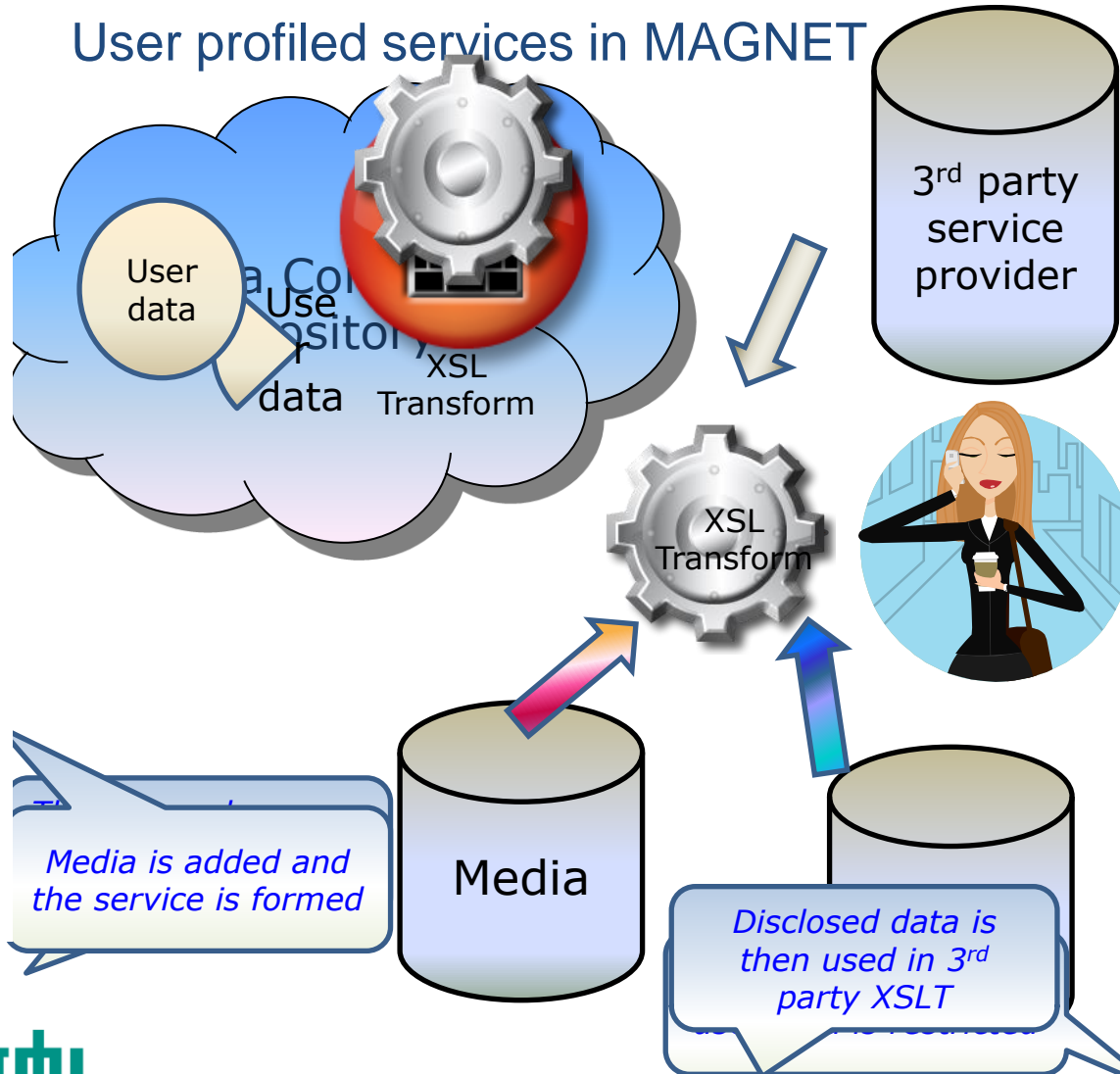
Motivation for Blockchains

○ Facilitate the digital money (Bitcoin) as a response to the financial crisis

- 'The Digital Community': Need for a new system – outside the banking system, fast, trusted, no need for special equipment

○ Evident that the technical foundation, Blockchain has much broader potentials

- a distributed ledger or decentralized database that keeps continuously updated digital records of who owns what.
- a network of replicated databases, synchronized via the internet and visible to anyone within the network
- no central administrator as a traditional database (banks, governments & accountants)

○ But 'heavy´

- 7 transactions/ sec
- Energy consuming

Blockchain - Response to an Internet quality/ challenge

User profiled services in MAGNET
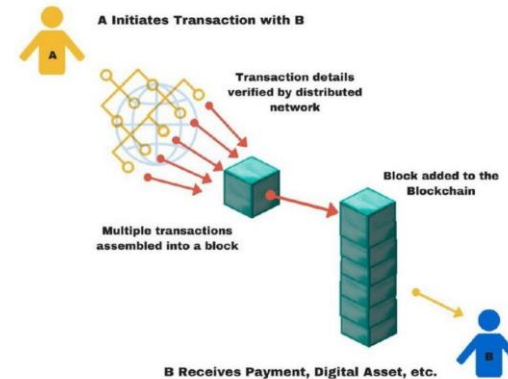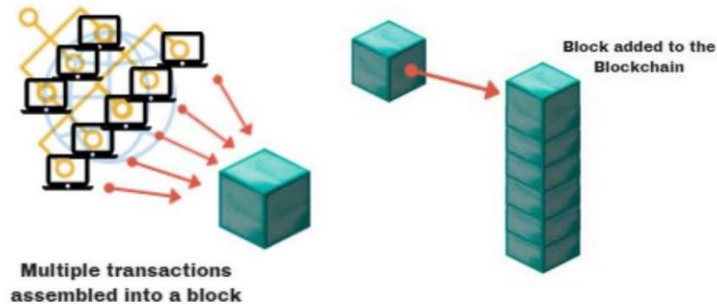
3rd party service provider

User data

Data Content Repository data

XSL Transform

XSL Transform

"On the Internet, nobody knows you're a dog."

Media is added and the service is formed

Media

Disclosed data is then used in 3rd party XSLT

Blockchain at work

Multiple transactions assembled into a block

Block added to the Blockchain

A Initiates Transaction with B

Transaction details verified by distributed network

Multiple transactions assembled into a block

Block added to the Blockchain

B Receives Payment, Digital Asset, etc.

- Digital transactions are grouped together in a cryptographically protected block every 10 minutes and sent out to the entire network.
- Block contains
  - Hash (a digital fingerprint/unique identifier)
  - Timestamped batches of recent valid transactions
  - Hash of the previous block
- Then added to a chain in a linear, chronological order with older blocks – forming a *blockchain*
- The entire chain is continually updated making every ledger in the network the same, giving each member the ability to prove who owns what at any given time.
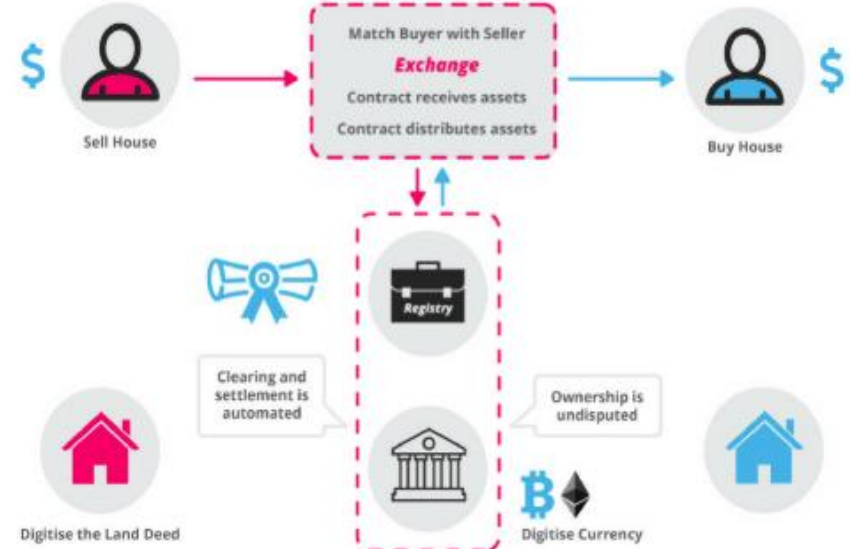
Blockchains have 're-emerged' – focus on broader potentials

Automating trust

in executing activities by

Authenticating actors

Agreement/ set of rules that govern

activities, e.g., a business transaction

* Smart Contracts

*Insurance – an efficient way to process claims/ verify an insurable event

* Health care –managing medical records, pre-authorizing payments, settling insurance claims

IoT – Mobile IoT

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WWRF Vision:
7 trillion wireless devices
serving 7 billion people by 2020

- Everybody will be served with wireless devices
  - Machine to machine communications
    - Sensors and tags: e.g. in transport; infrastructure, to provide ambient intelligence and context sensitivity
- All devices are part of the (mobile) internet

- New type of services:
  - Data exchange > 10 GB/s
  - Latency< 1ms

○ Key areas:
  - Smart Cities/ Smart homes
    ○ Health
    ○ Transport/ IoV
    ○ Energy
    ○ Waste
  - Finance – re-entering
    ○ Visa endorsing blockchains
  - Company structure/ transaction

○ **The** answer?

○ Analogy to Lucio Pacioli
  - 15 cent Math/ Munk creating double-entry book keeping – assets/ liabilities
  - A simple technology with big implications
  - 'created' the banking system
  - Paved the way for capitlism