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Distribution

CENITALIZED (A)  DECENTRALIZED  (B)  DISTRIBUTED  (C)
Distributed (2)

- Centralized:
  - One actor does all the work
- Decentralized:
  - Several actors do part of the work
- Distributed:
  - All actors do all of the work
Benefits of distribution

- Immutability
- Transparency
- Cost
- Scalability
Issues in distributed governance

- Bitcoin segwit
- Parity mistake
- Bitcoin transaction performance
- DAO hack
- Mt Gox (and others)
Governance

The goal of governance is to ensure the results of an organization's business processes meet the strategic requirements of the organization.
Or: it’s about trust

Trust has two parts:
- Competence
- Intention

(Rachel Botsman - global authority on the new era of trust)
Or: it’s about trust

- Competence
  - Does it work as designed
- Intention
  - Does it protect our interests
Governance

- Competence
  - Work, expertise
    - Central, decentral or distributed
- Intention
  - Power, control
    - Central, decentral or distributed
Governance

- Hierarchy
- Paper - scissors - rock
- Majority
Levels of governance

- Institution level
- System level
- Transaction level
Competence

Institution level
- Land administration

System level
- Record keeping

Transaction level
- Transaction processing
Intentions

Institution level
- Legal certainty

System level
- Immutable records

Transaction level
- Valid transactions
Distributed systems

Institution level
- Transparency

System level
- Cost
- Scaling

Transaction level
- Predictability
- Cost
Distributed systems - issues revisited

Institution level
- Function boundaries (Bitcoin currency or asset)
- Legal certainty (Parity mistake)

System level
- System management (Bitcoin performance)
- Crisis management (DAO hack)

Transaction level
- System edges (Mount Gox and others)
What could possibly go wrong?

Institution level
- Function boundaries: land, mortgage, investment funds, insurance, ...
- Legal certainty: fork, leading to multiple truths

System level
- System management: slow (no) final settlement
- Crisis management: disappearing land

Transaction level
- System edges: identification, funds
System governance - zooming in

- How to control access to the system
- How to manage code and process feature requests
- How to monitor and manage system performance
- How to manage system security
- How to handle intellectual property
- How to prevent and repair damage to the system
Conclusions

Distributed governance models can improve competence, by providing:
- Transparency
- Immutability
- Security
- Cost

But are immature with respect to:
- Legal certainty
- Crisis management
- Responsibility and accountability
Recommendations

For distributed systems, in the current situation:
- Limit functional scope to work execution (competence)
- Create checks and balances using decentralized control approach (paper - scissors - rock)
- Have crisis management procedures
- Use open source
- Manage system edges