

IMPACT OF BLOCKCHAIN ON THE STABILITY OF OUR SOCIETY

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TNO innovation
for life

BLOCKCHAIN RAISES MANY QUESTIONS

- › What is this "blockchain" stuff that everybody is talking about?
 - › Concrete examples of use, financial, voting, other
 - › Who guarantees the correct operation and security of the system?
 - › Legal aspects, risks, uncontrollability, opposition by "middle man"
- › What does blockchain mean for my organisation?
 - › What are blockchain applications for my business?
 - › How does it make my organisation better, faster, cheaper, ...?
 - › How can I use blockchain against my competitors?
- › **What does blockchain mean for our society?**
 - › The bright side: less bureaucracy, faster more efficient administration, also for Defence
 - › The dark side: blockchain in the context of disinformation, manipulation and destabilisation



A PRACTICAL DEFINITION OF BLOCKCHAIN *

“A blockchain is a shared ledger that everyone trusts to be accurate forever”

* David Siegel, <https://medium.com/startup-grind/what-is-this-blockchain-thing-a5d2abb99297>

CATEGORIES OF BLOCKCHAIN USE *

- › Store value
 - › Currency, ownership, tokens
- › Exchange value
 - › Trade currency, ownership, tokens
- › Store permanent records
 - › Provenance, registry, identity
- › Execute programs
 - › Add business logic to the above



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BLOCKCHAIN USE IN DEFENCE CONTEXT

Blockchain use cases identified in a multi-stakeholder session @MinDef 18-9-2017

1. Screening process MIVD, Counties (GBA), Min VenJ, Banks
 - › Benefit: faster, cheaper, more reliable
2. Auditable intelligence chain
 - › Track and trace of documents and crypto keys
3. Track & trace for Defence Purchases
 - › ITAR compliance, preventing fake components
4. Schiphol visitor information exchange streamlining
 - › KMar, Customs, FIOD, (police), airlines, handling, Schiphol
5. Whiteflag information sharing in “samenwerkingsruimte”
 - › Defence, locals, police, hospitals



BLOCKCHAINS - VITAL INFRASTRUCTURE

- › Blockchains may become vital infrastructure, like gas, water, electricity and internet
 - › Renewable energy networks relying on blockchain
 - › Harbour logistics relying on blockchain
 - › Heat network relying on blockchain
 - › Government services relying on blockchain
 - › Food provenance relying on blockchain
 - › Defence operations relying on blockchain
 - › ...
- › Unfriendly forces will try to penetrate and disrupt this vital infrastructure as well
 - › IF (big if) blockchain indeed becomes vital infrastructure



GARBAGE IN, GARBAGE OUT

- › Blockchain is just technology, humans make it work
 - › It is humans that enter and sign transactions on a blockchain
 - › One of those may be corrupt
 - › It is humans that lose keys, or have them stolen
 - › This is how bitcoins are stolen
 - › It is humans that together can change a blockchain's history
 - › Cf. the infamous Ethereum DOA hack, and its subsequent reversal
 - › It is humans that decide on the fate of a blockchain instance
 - › This is how Bitcoin and Ethereum got forked
 - › This is how many cryptocurrencies disappeared or got destroyed

- › “Blockchain says no”



DESTABILISING POTENTIAL

- › The cryptocurrency hype lures stupid consumers into dubious investments.
 - › Bitcoin may be the “woekerpolis” of 2018
- › Many cryptocurrencies are intrinsically deflationary, like gold
 - › Deflation is destabilising, cf 1929 crash
- › Cryptocurrencies simplify drug trade, money laundering and other destabilizing activities
 - › Monero: sender and receiver remain anonymous and repudiable, amounts remain untraceable
- › Smart contract technology makes it easier to break the law, and harder for law enforcement
 - › Smart contracts for illegal gambling
 - › Smart contracts for contract killing (“prediction market”)
 - › Blockchain poisoning with malware and child porn
 - › ...



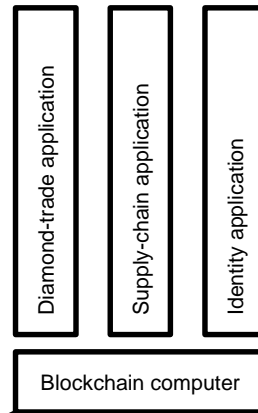
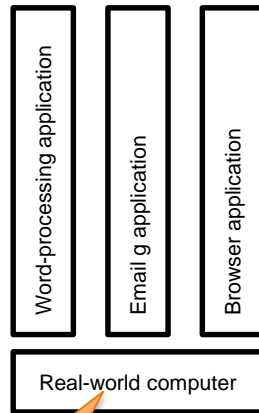
TNO SAYS: “MORE RESEARCH NEEDED” 😊😊

Thank you!

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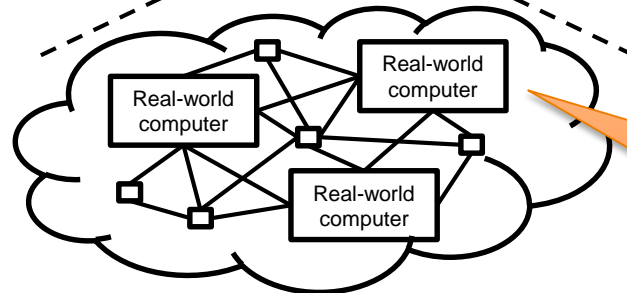


A BLOCKCHAIN IS LIKE A COMPUTER



ETHEREUM

Applications
Operating system
Hardware



Consensus protocol achieves consensus about the state of a blockchain computer