DE LOGISTIEKE TOEPASSINGEN VAN BLOCKCHAIN

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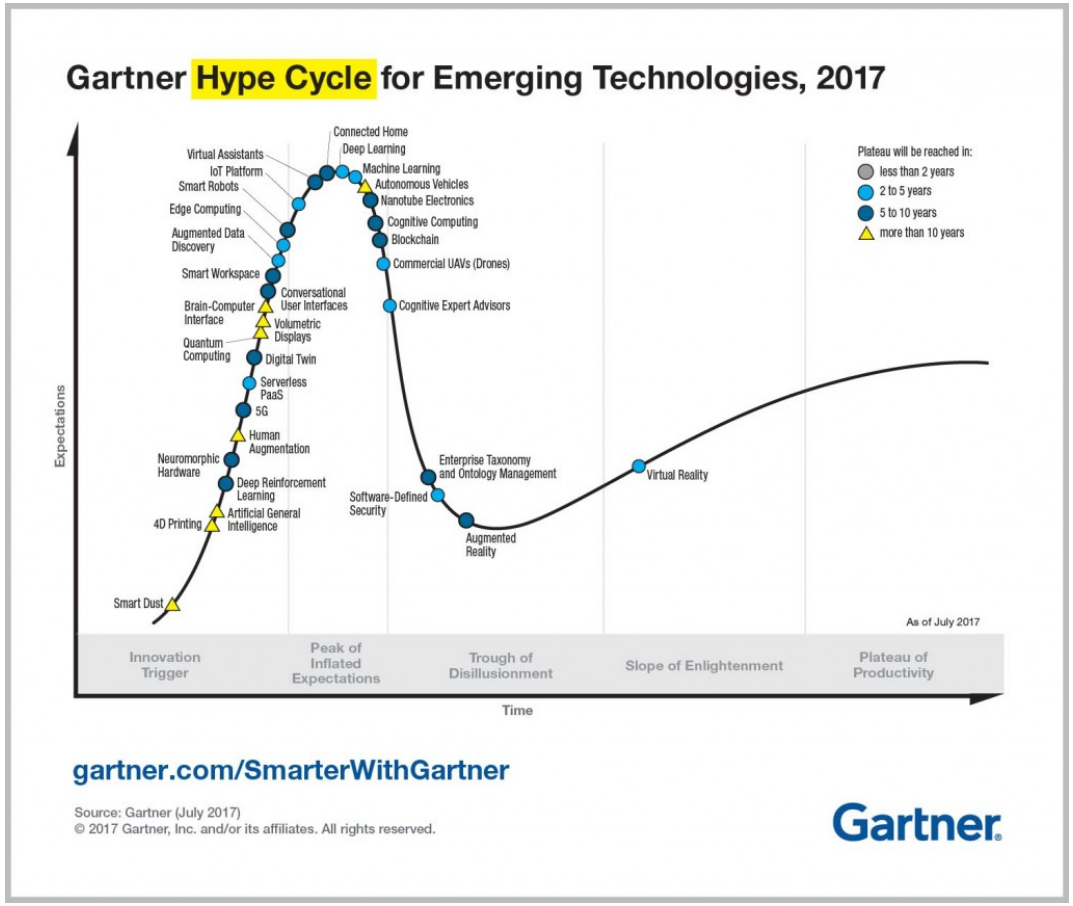
INNOVATIE VOOR HAVEN EN STAD

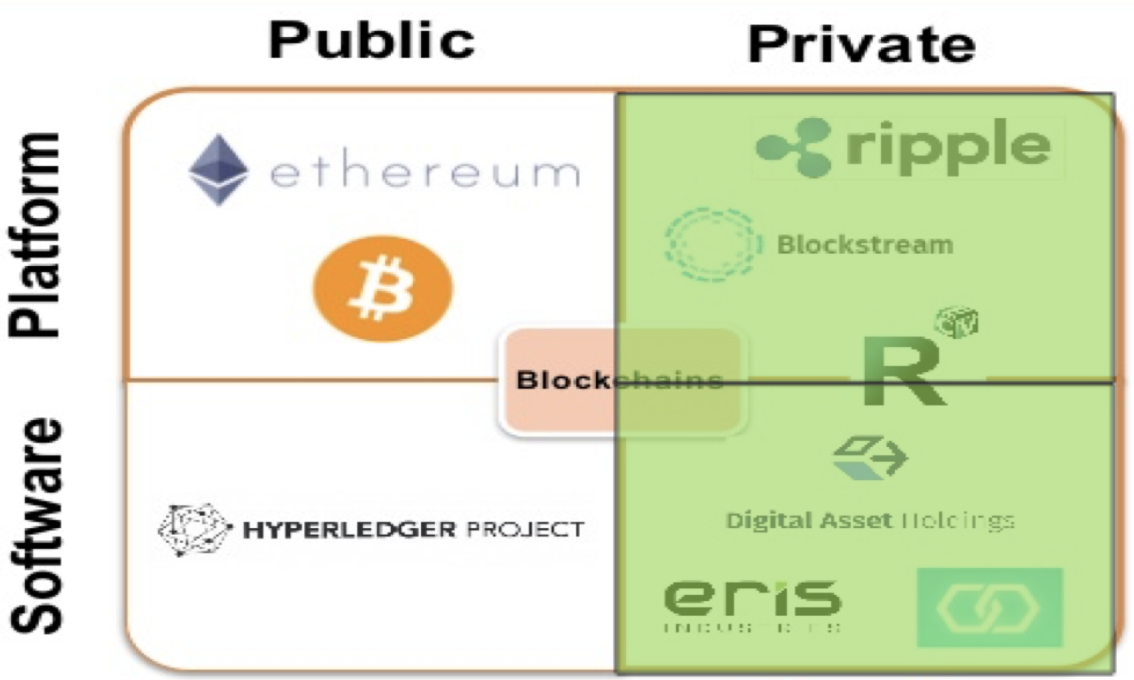
THE HYPE CYCLE OF GARTNER



- Peak of inflated expectations: 5 to 10 years to become widespread
- Blockchain projects are set up and being executed as we speak
- The technology is ready.

Source: https://www.gartner.com/smarterwithgartner/top-trends-in-the-gartner-hype-cycle-for-emerging-technologies-2017/

TYPES OF BLOCKCHAIN



Private platform

Private software

WHAT IS BLOCKCHAIN?

Account: Cash at Bank | Account Number: 1-100

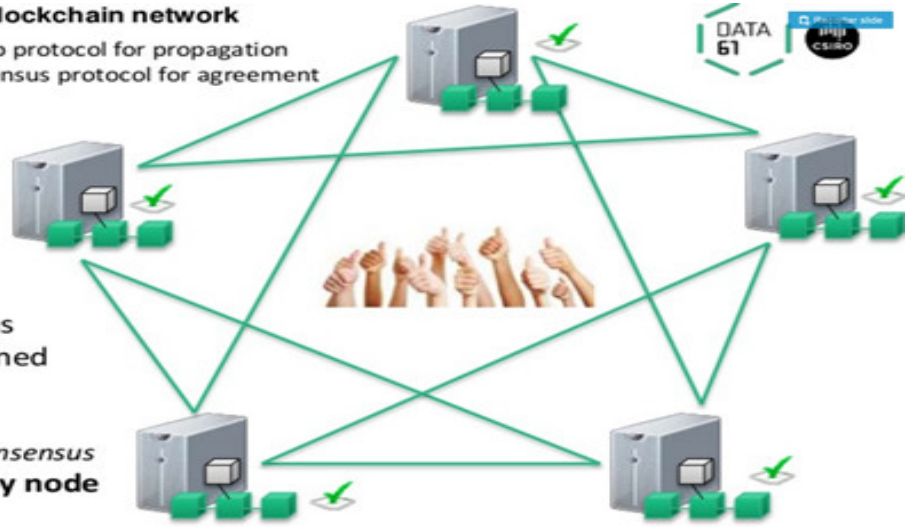
Date	Details	Debit	Credit	Balance	
1-Jan	Opening Balance	460 96		460 96	Dr
31-Jan	Cash Receipts Journal	13,920 58		14,381 54	Dr
31-Jan	Cash Payments Journal		16,468 53	(2,086 99)	Cr
28-Feb	Cash Receipts Journal	16,870 02		14,783 03	Dr
28-Feb	Cash Payments Journal		17,563 23	(2,780 20)	Cr
31-Mar	Cash Receipts Journal	38,410 10			
31-Mar	Cash Payments Journal		28,702 80		

Why?

- **Immutable public ledger**
  - Timestamped transactions
  - Audit trail of what happened
- **Every node hosts a replica**
  - Distributed consensus
    - *No central owner of consensus*
- **Transaction is verified by every node**

Blockchain network

- Gossip protocol for propagation
- Consensus protocol for agreement



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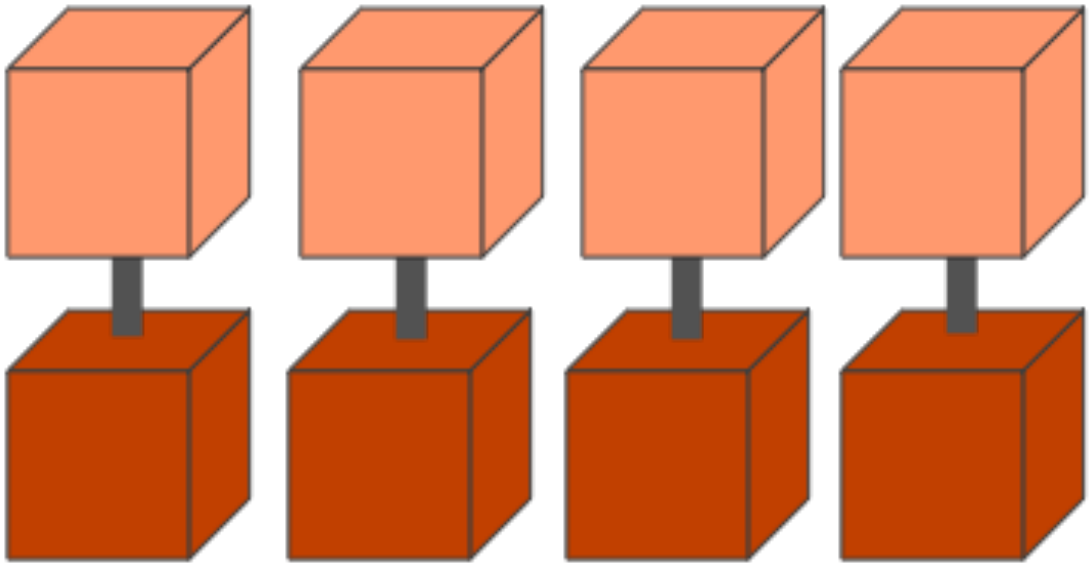
SO HOW DOES IT WORK?



A block, containing a document and a Hash is made. A hash is a coded version of the document, containing 64 characters. You can extract the code from the document, but you can not reproduce the document from the code.

The block is distributed at the network. Each node is an exact copy of the previous one.

There is a new block added to the Blockchain with a new document and a new hash. The new hash includes reference to the previous one.

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WHY IS A DISTRIBUTED SYSTEM FUN?

- Present situation: Central national government > facilitates middlemen: trusted third parties
- Future situation: parties make trusted transactions through distributed Blockchain networks, without trusted hird parties
- An example of a central information system: Portbase, all information at one place: Critical Infrastructure
  Access to data is limited.

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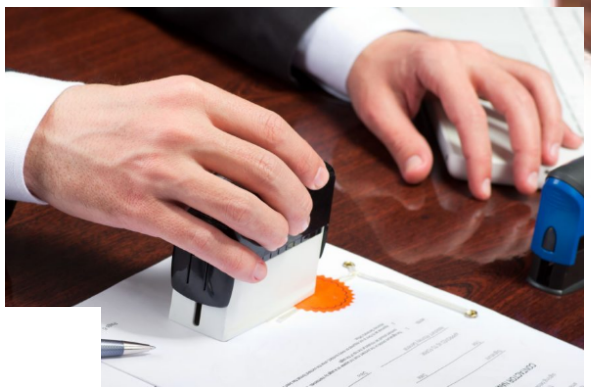
portbase®
home of logistics intelligence

IT IS ALL ABOUT TRUST…

CUT OUT THE MIDDLEMEN

These parties facilitate trusted tansactions:

- Realter
- Notary
- Bank
- Lawyer
- Forwarder
- Cargadoor…



INSTITUTIONAL CONSEQUENCES

- If national governments do not need to facilitate transactions, do we need a national government?
- For some decades supply chains were getting longer (globalization), in the last years they turn more and more into networks (global networks)
- Are national governments the best parties to facilitatie this network? Why can not the parties do business together without middlemen? > Smart contracts

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SMART CONTRACT

If > then + Internet of Things (IoT Technology) automatic processes

However:

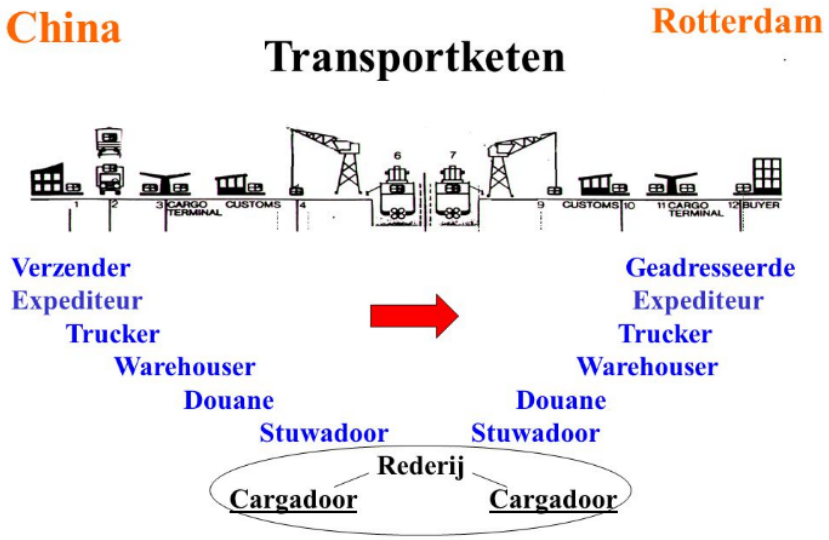
Smart contract does not equal legal contract

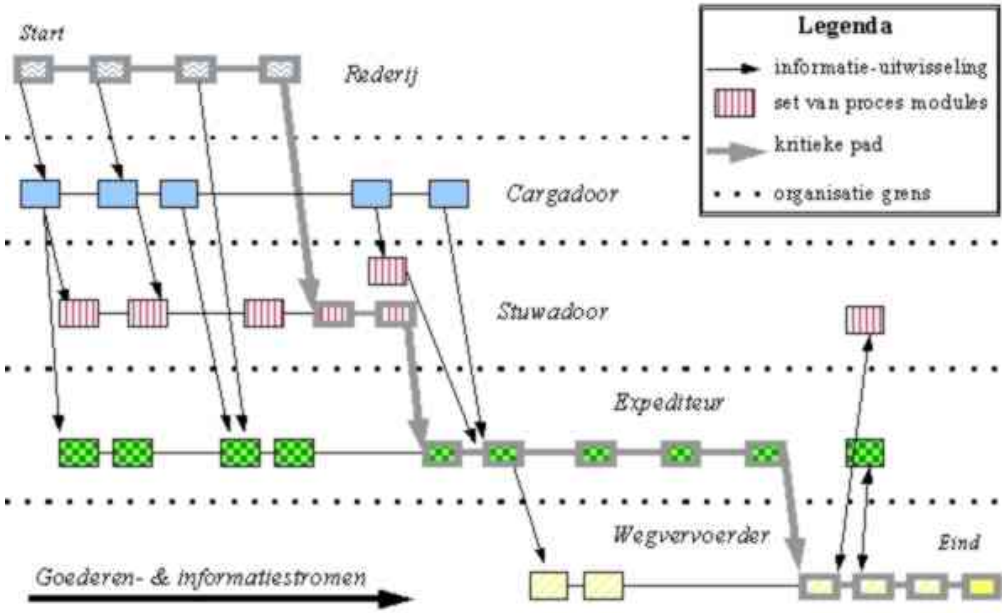
Who owns Blockchain?

Shit in, shit out…

Bottleneck: Physical element

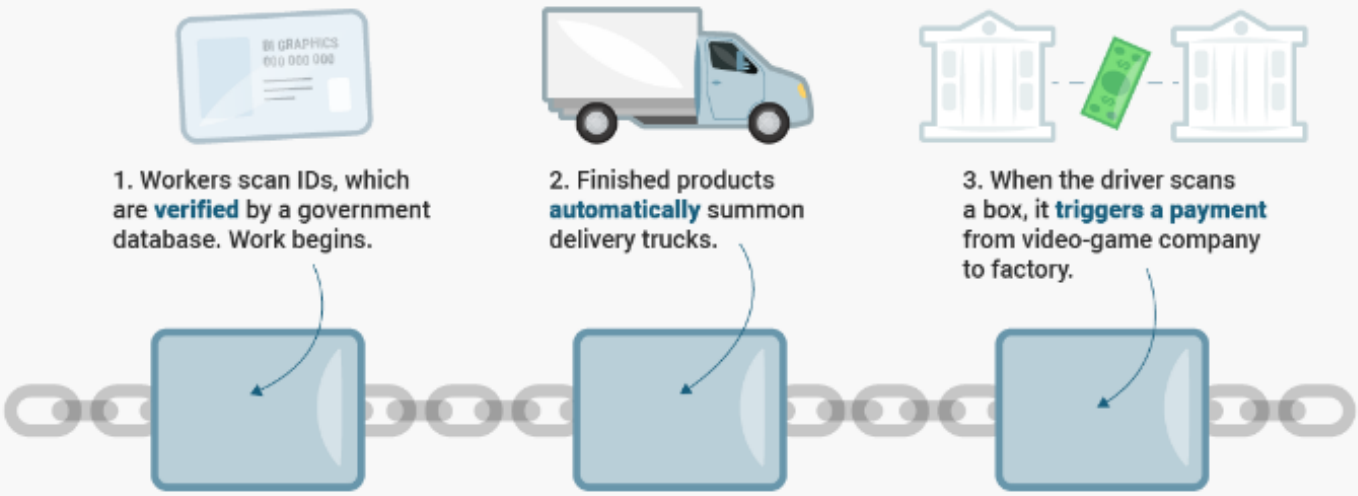
COMPLEX PROCESSES





A SMART CONTRACT

Small computer programs can execute **complex contracts.** Specific actions can be verified by third parties, and then **trigger** other events. All this gets recorded on the secure blockchain, and can **never be altered** after the fact.



BUSINESS INSIDER

More Logistic applications

Can I pick up my container

Transparency, information sharing, reducing the paperwork

Is this really an environmental friendly produced avocado?

Transparency, Trackig, food safety,
counterfeit drugs

How can we share the costs of a reachtruck?

Transparency, trust
(Combination with Internet of Things)

How can we recycle this motor?

Logging the process including materials and methods of recycling

SO, HOW DO WE DO THIS?

Who are the participants?

What is the goal? (business case)

Are the participants willing to share data?

Which party should see which data and when?

Design/ proof of concept

Involve ICT specialist

Set up Blockchain

MORE ABOUT THE LOGISTIC APPLICATIONS OF BLOCKCHAIN

http://www.kennisdclogistiek.nl/kennisboxen/blockchain

Intrested in what Blockchain could mean for the logistic processes of your company?

Contact: K.M.Paardenkooper@hr.nl

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