Experiment 3.4: Traveller sheet for prototype products

E-PLM 2.0

Eindpresentatie

www.smartindustry.nl

Het experiment

Doel van het experiment

Main question
- ❑ Is it feasible to implement blockchain in the supply chain in such a way that ordering an article can be done more efficiently?

Other questions:
- ❑ How does 'blockchain' work?
- ❑ What can be the benefit/disadvantage of using this technology?
- ❑ What is needed to implement blockchain?
- ❑ How can the process of getting in contact with a supplier be done more efficiently?

Werkwijze en methodiek

- ❑ Specify company and supplier requirement. Thales and Demcon provided the inputs for defining the requirement.
- ❑ Benchmarking (possible technology scan) for block chain
- ❑ Feasibility of Block chain technology. See of the requirements can be met and of not what need to be changed to meet the requirement.
- ❑ Develop the use case on Blockchain from the selected technologies.
- ❑ Demonstration. The workability of the blockchain app for prototype supply chain is demonstrated.

THALES

DEMCON | nymus3D

UNIVERSITEIT TWENTE.

FRAUNHOFER PROJECT CENTER
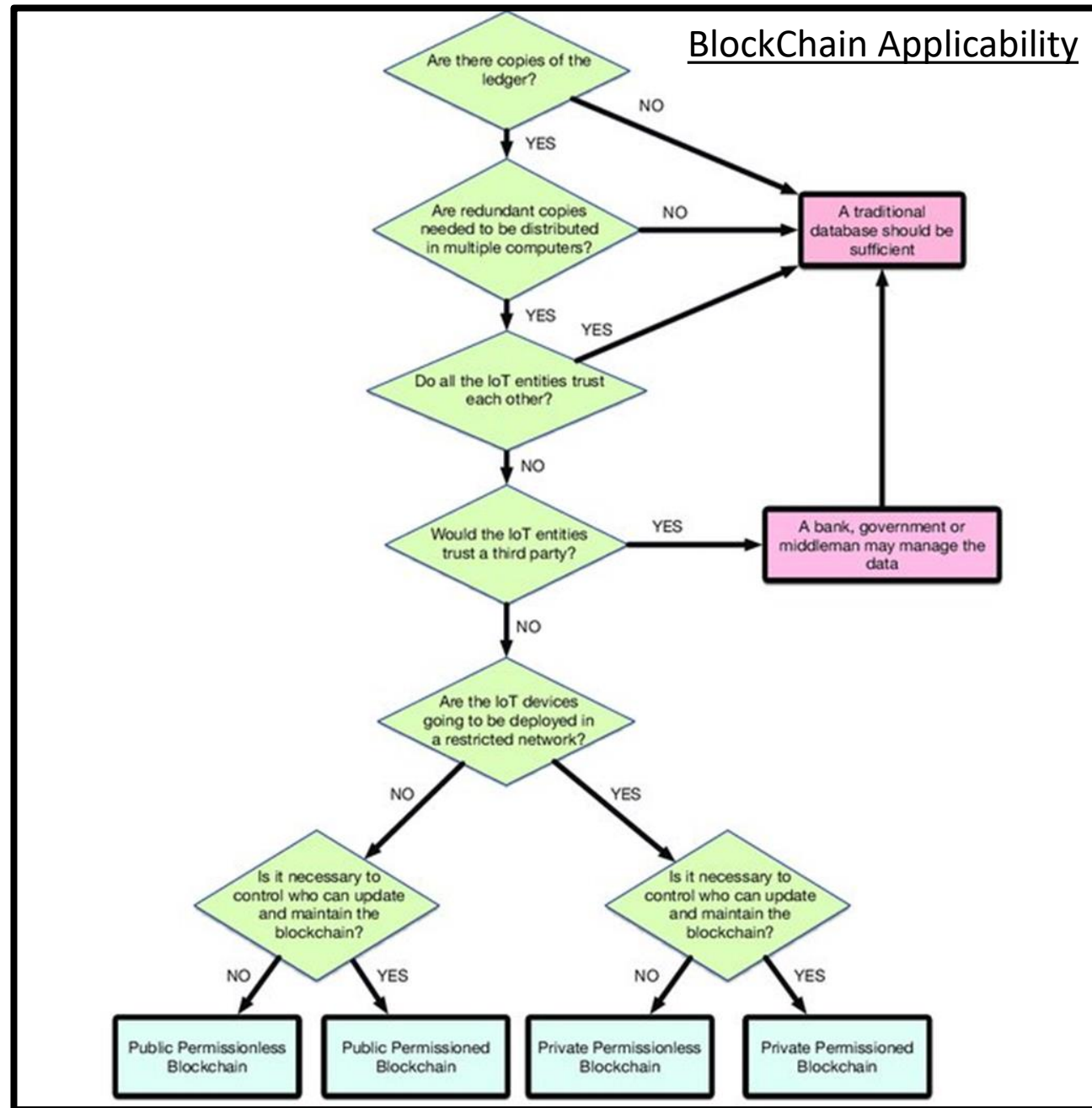AT THE UNIVERSITY OF TWENTE
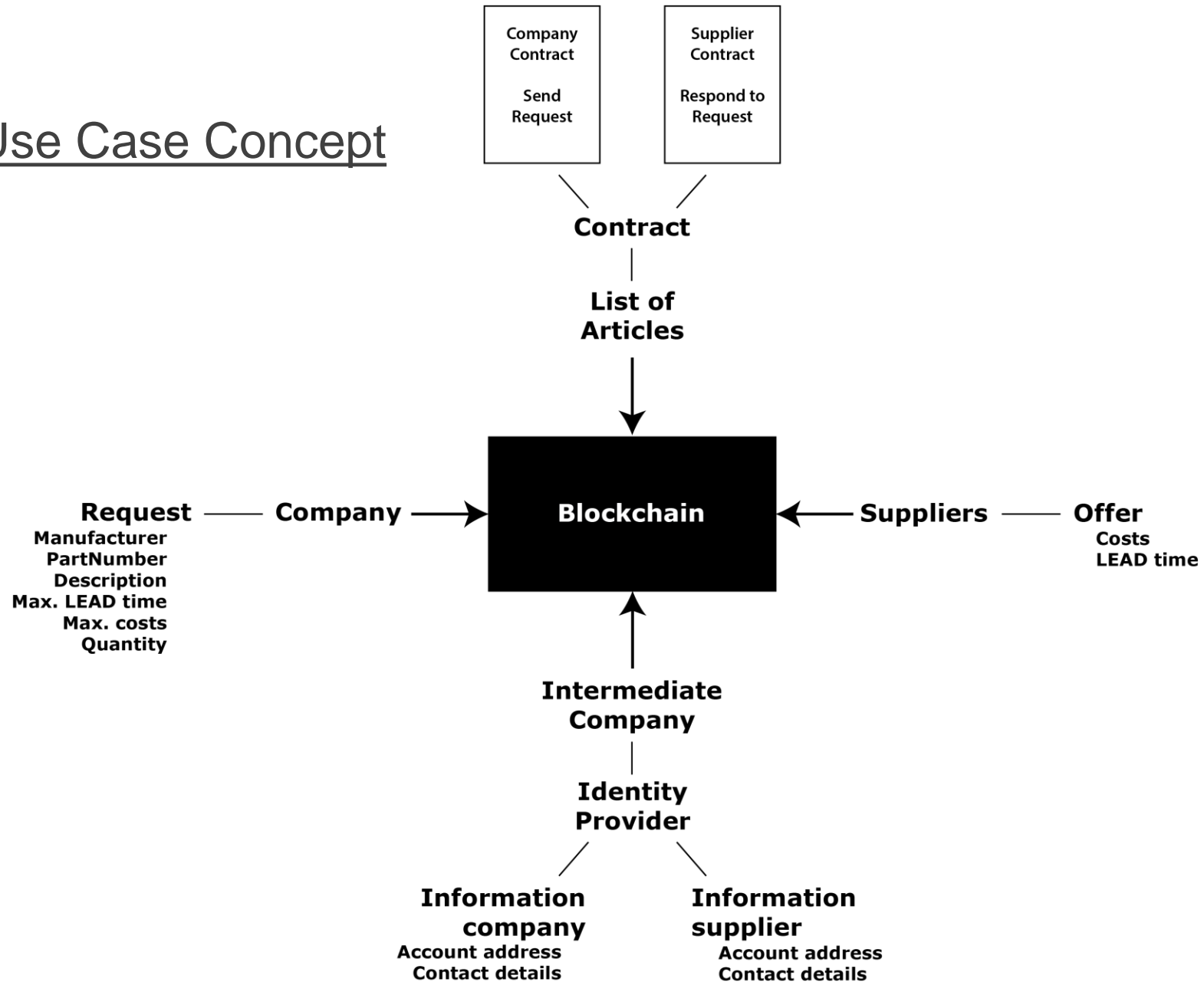
Resultaten

BlockChain Advantage

- Anonymous
- Decentralized
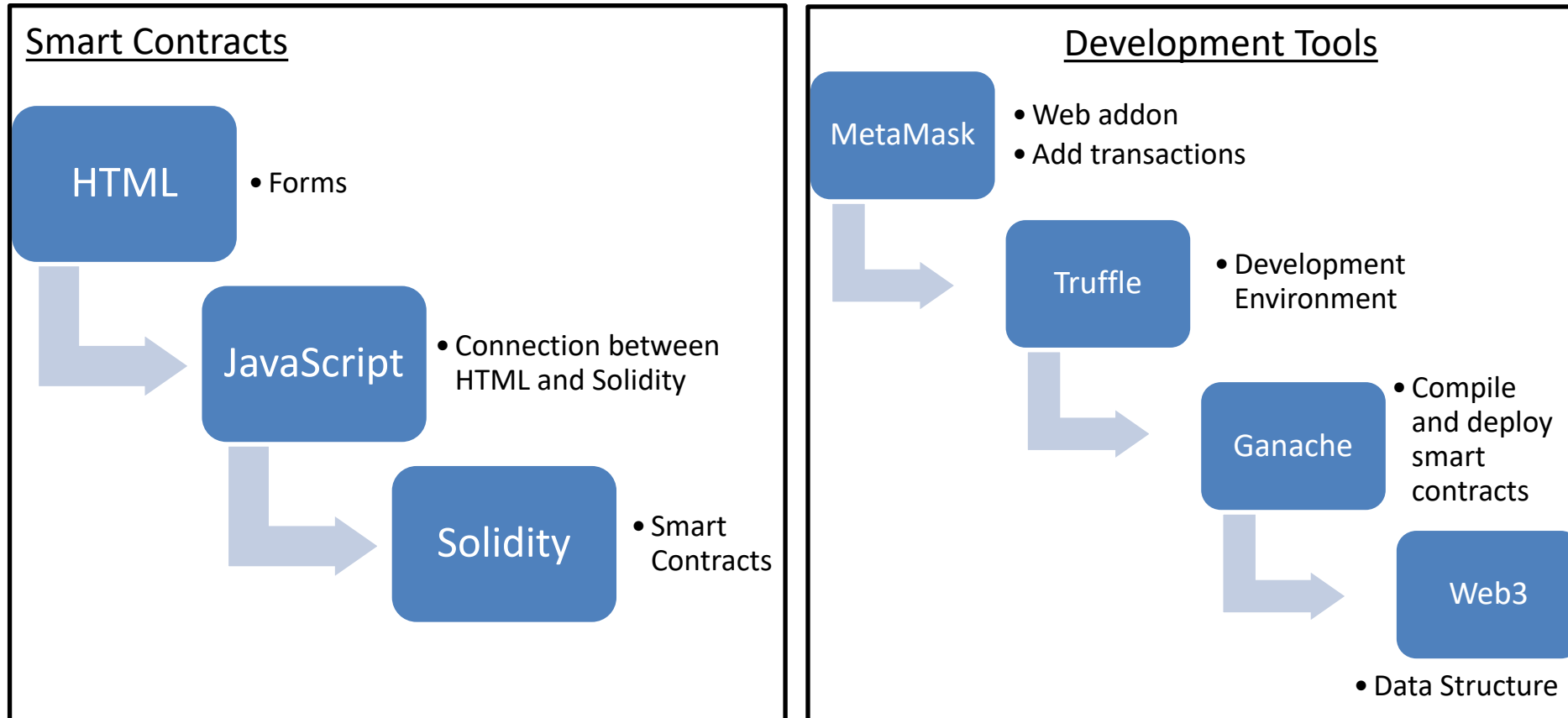- Peer-to-peer
- Trustless
- Immutable

BlockChain Disadvantage

- Immutable
- Power Consumption
- Memory space
- Attack
- Scalability

BlockChain Applicability

Resultaten

Supply Chain Use Case Concept

Lessons Learned & best practices

- The way the blockchain is structured now in this report, involves a third party, which is not ideal because the essence is a peer-to-peer distributed ledger. This is one of the main reasons to use a different eco-system because it is not possible to send the article to the company while keeping their contact information secret without having a middleman. Also, there has to be an entity that does the authorization of the companies and suppliers so no fake accounts can be added to the blockchain.
- A question that pops up is whether a company can still be fully anonymous on a blockchain when it has done some several requests. Even though not all the information in the smart contract is public, the transaction, including the public key, can be seen by every node on the blockchain. Via this public key, a profile of a company can be created. With this profile, other companies or suppliers can use it to their advantage.
- Another issue when ordering parts for a prototype is the fact the company does not know whether the article is in stock at any supplier. That is why the function of giving alternative options by suppliers was important. However, the blockchain is not the ideal platform to exchange all this kind of information and communication.
- Because blockchain improves traceability, it could be more interesting for a supply chain to trace back the articles that are ordered, instead of using the blockchain technology to make the ordering process more efficient.
- One of the main advantages of blockchain is that information cannot be altered. So, it would be impossible to tamper information about the articles. Such a blockchain would create an overview of the components out of which a product exists.
- It would help companies to see how much they paid for the article in the past, which manufacturer made the article and its part number, the lifetime of the article and information about the material.
- Even though the functions that were stated in the beginning were too complex for blockchain, the supply chain is still an interesting application for blockchain. For it to work, the functions to order a part should be kept simple, and not too much data can be stored on the blockchain.