TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

A Blockchain for Traceability in the Supply Chain

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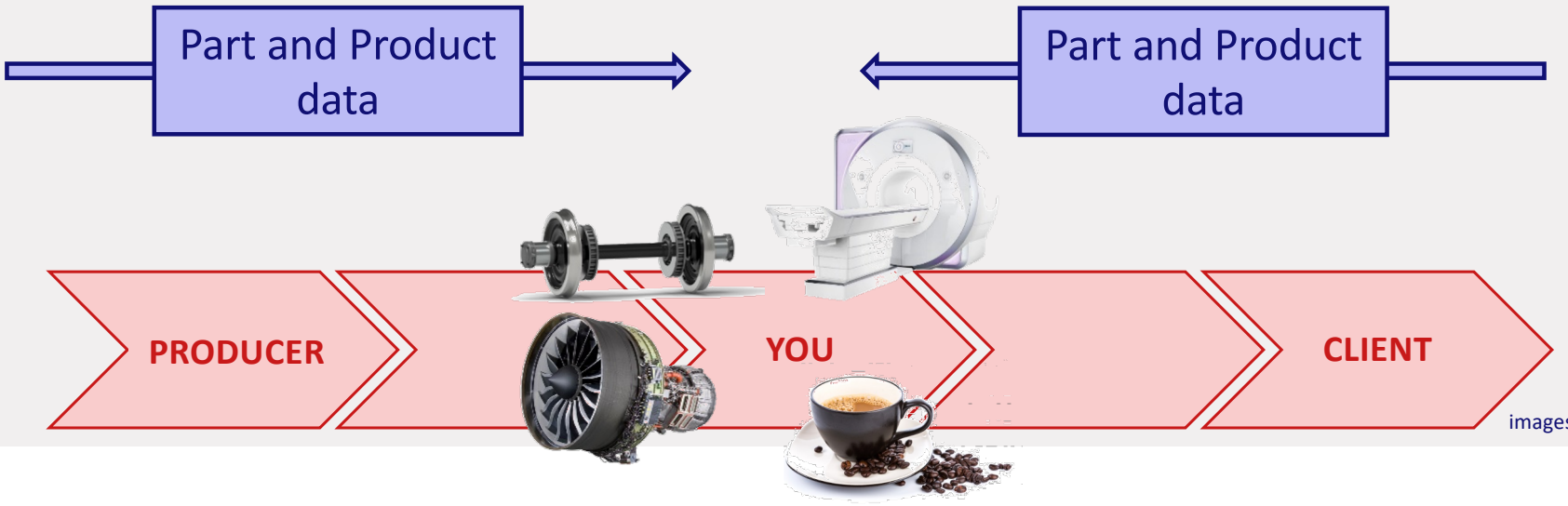
with help from many others

Industrial Engineering and Innovation Sciences

Traceability

- Is this part certified for use in this product?
- Which customers have components from this series?
- Has the product always been handled according to regulations?
- …



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A Blockchain for Traceability in the Supply Chain

1. Desired Functionality
2. Prototype Tool
3. Potential Benefits

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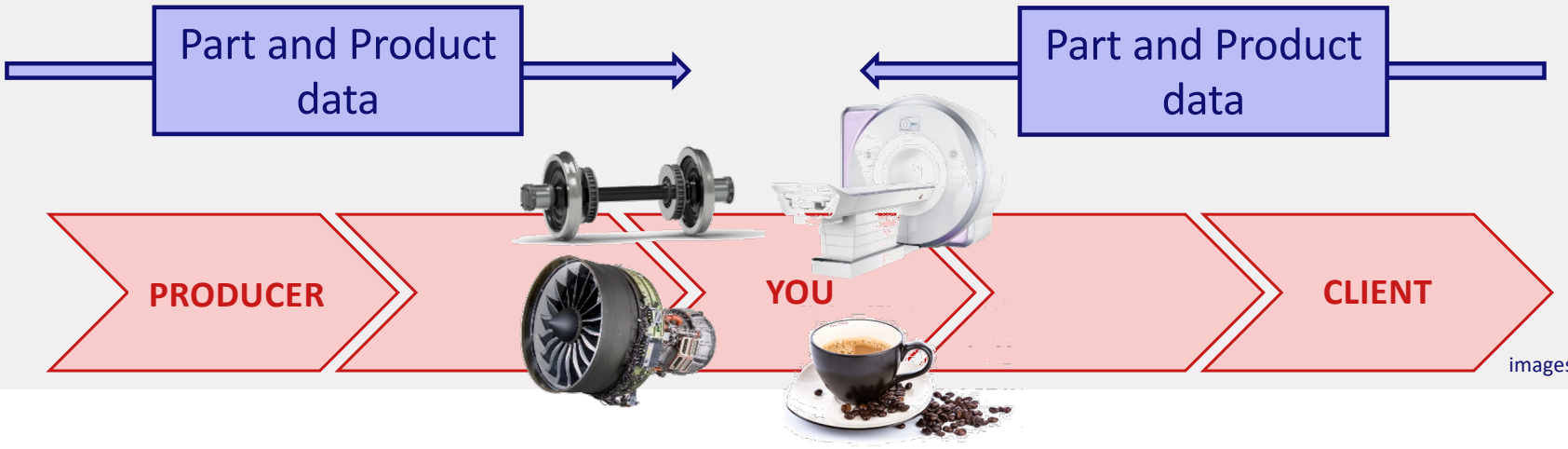
Desired Functionality

- Data
- Rules
- Trust
- Technology



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Desired Functionality

Enforce rules:

- product must be certified (by a certified manufacturer);
- product must have been handled correctly;
- client must pay within 4 weeks;
- seller must observe contractual obligations;
- recall must be enacted through the entire chain;
- …

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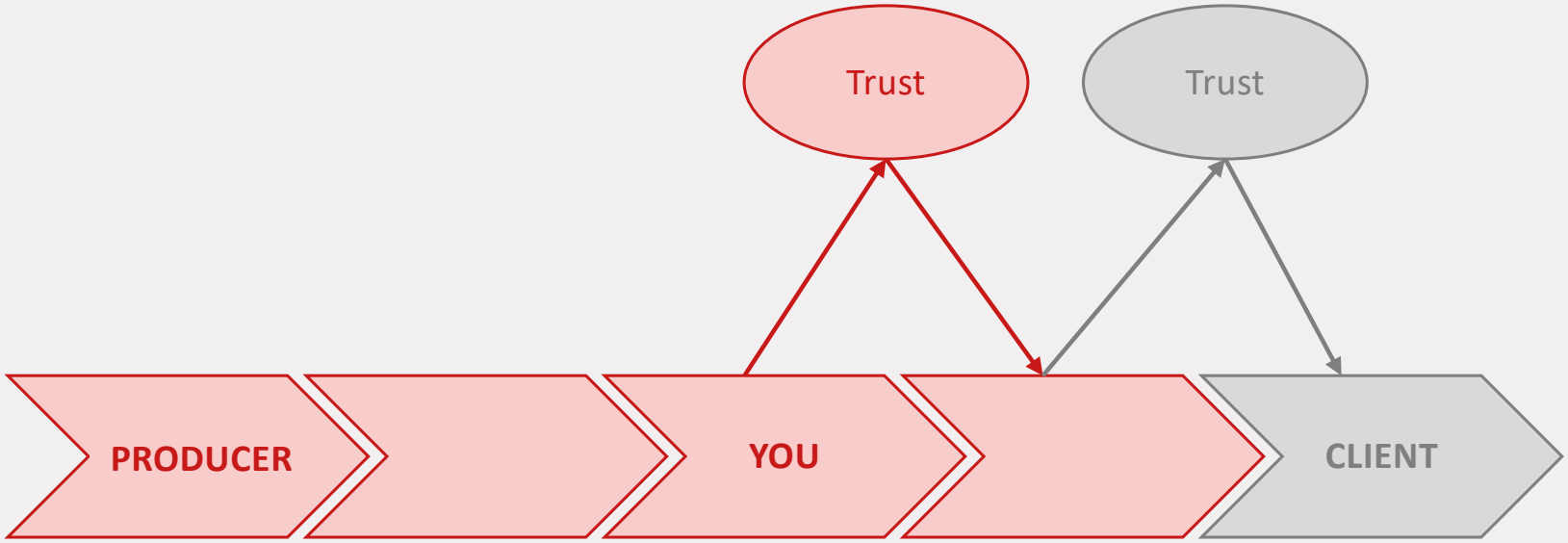
Desired Functionality

Organize trust:

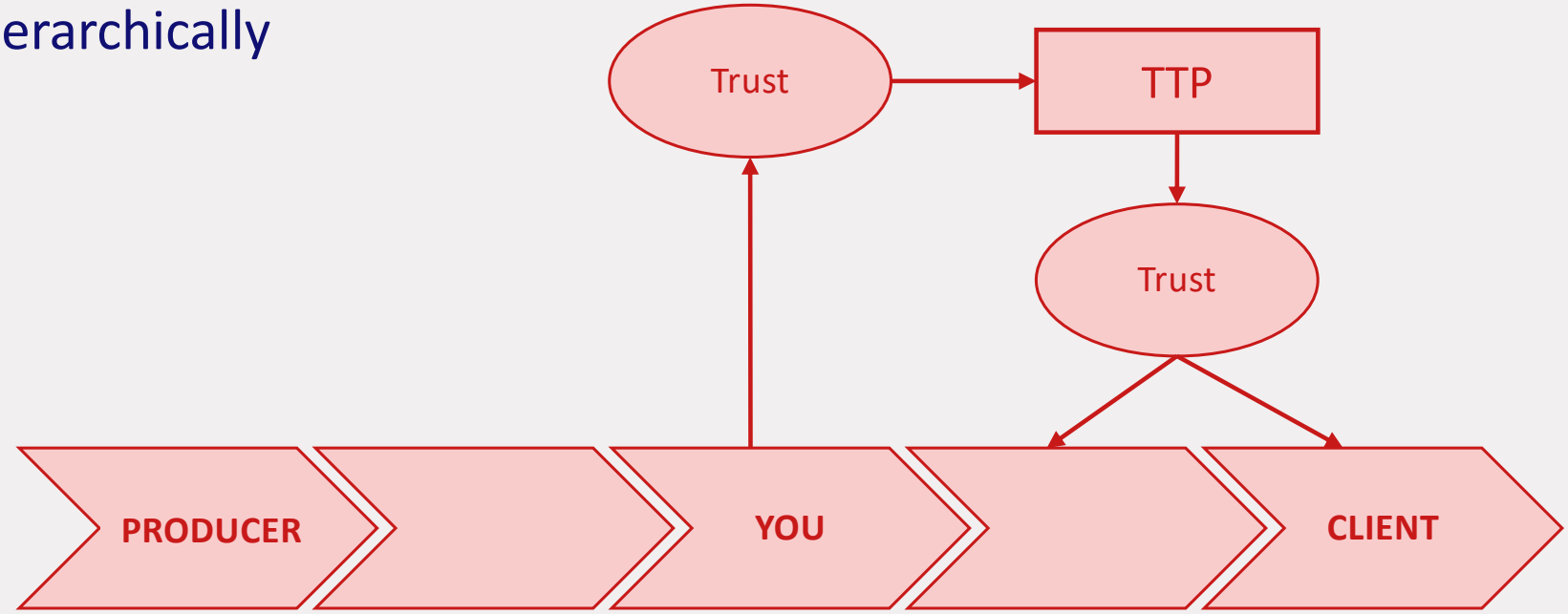
- directly



Desired Functionality

Organize trust:

- directly
- hierarchically



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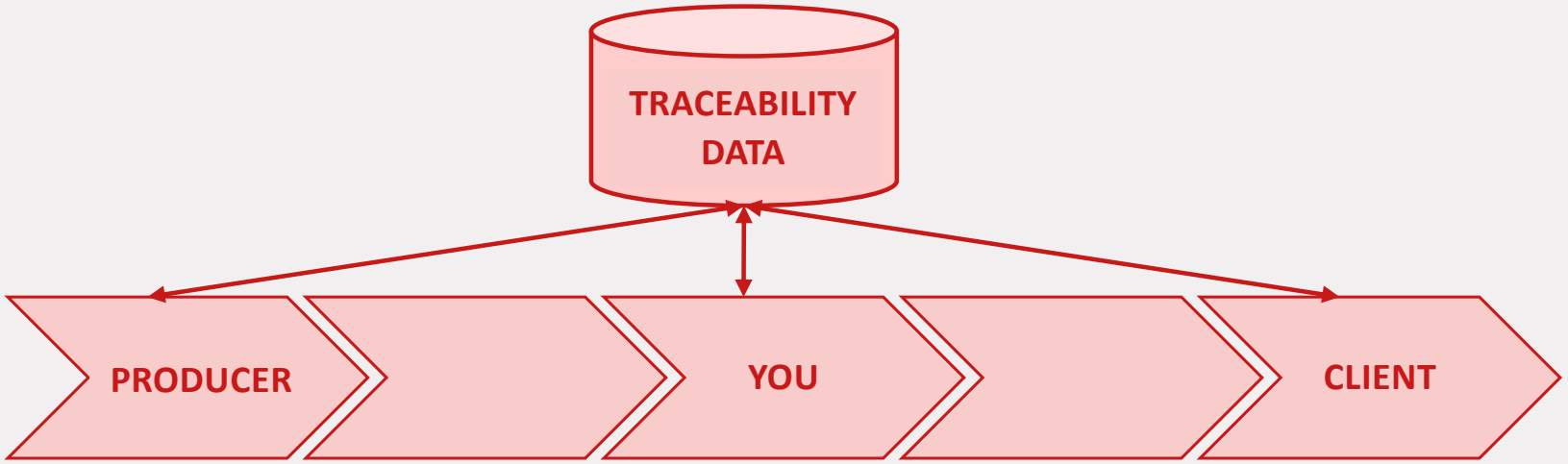
Desired Functionality

One party controls all data

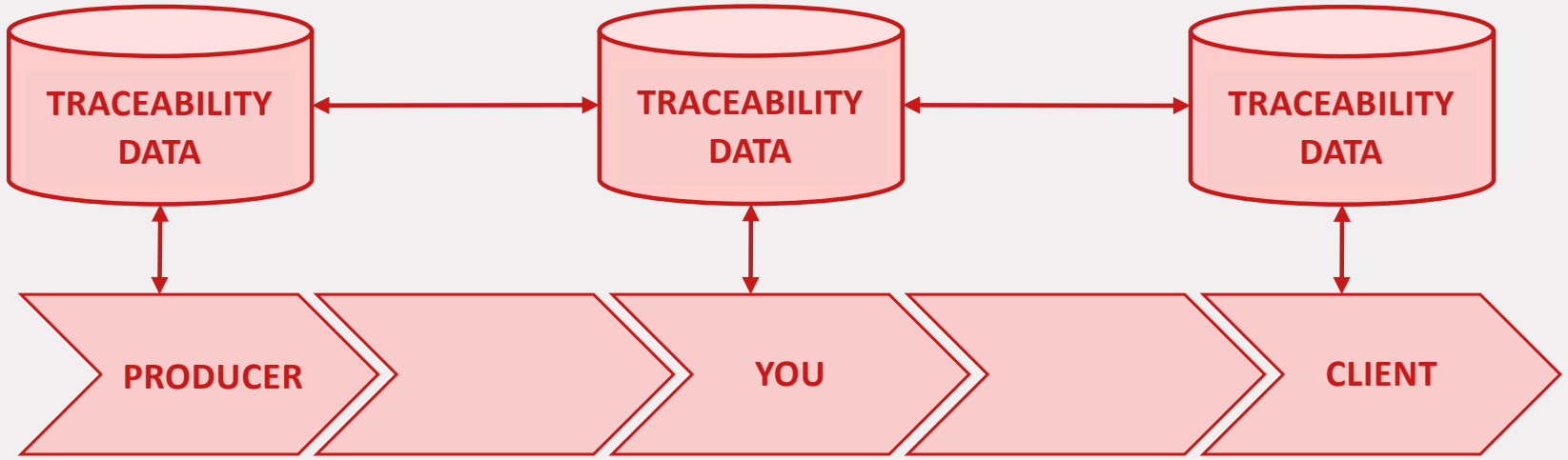


Desired Functionality

Everyone controls their own data and only shares with trusted partners

Or:

- **no-one controls the data, but**
- **data is available to everyone, according to automatically enforced rules**



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Desired Functionality

- Data
- Rules
- Trust
- Technology

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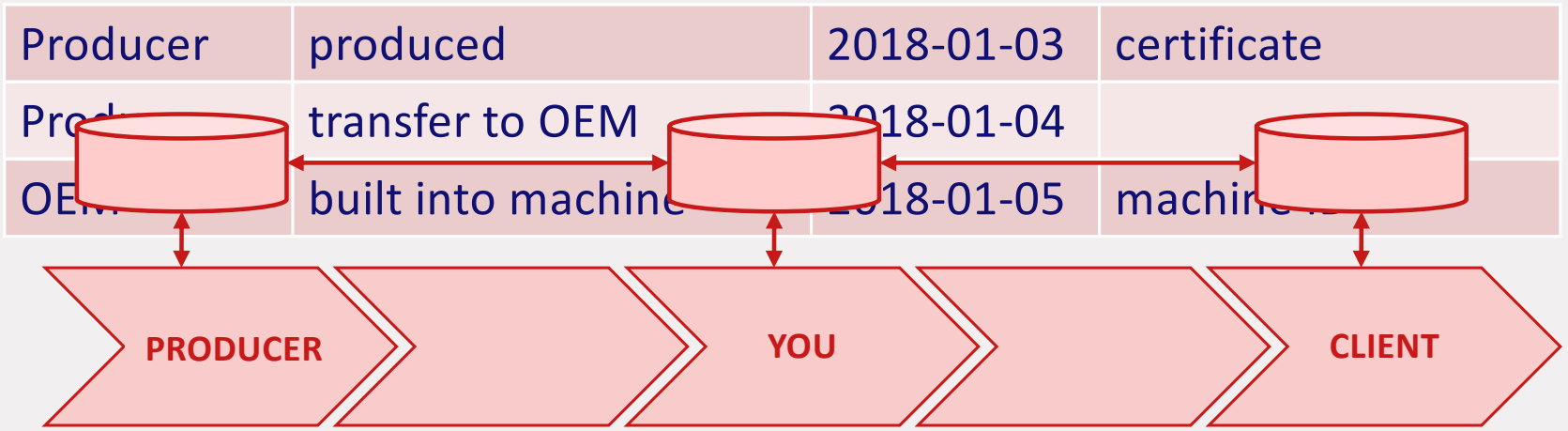
Blockchain

- Data: transaction based ☑
- Rules: enforced trough smart contracts ☑
- Trust: via closed blockchain agreements ☑
- Technology: via blockchain ☑



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Prototype Tool

- Transactions:
  - produce
  - split
  - transfer
  - maintain
  - edit
  - retire
- Contractual rules
- Physical traceability
- Dispute resolution
- ERP interface

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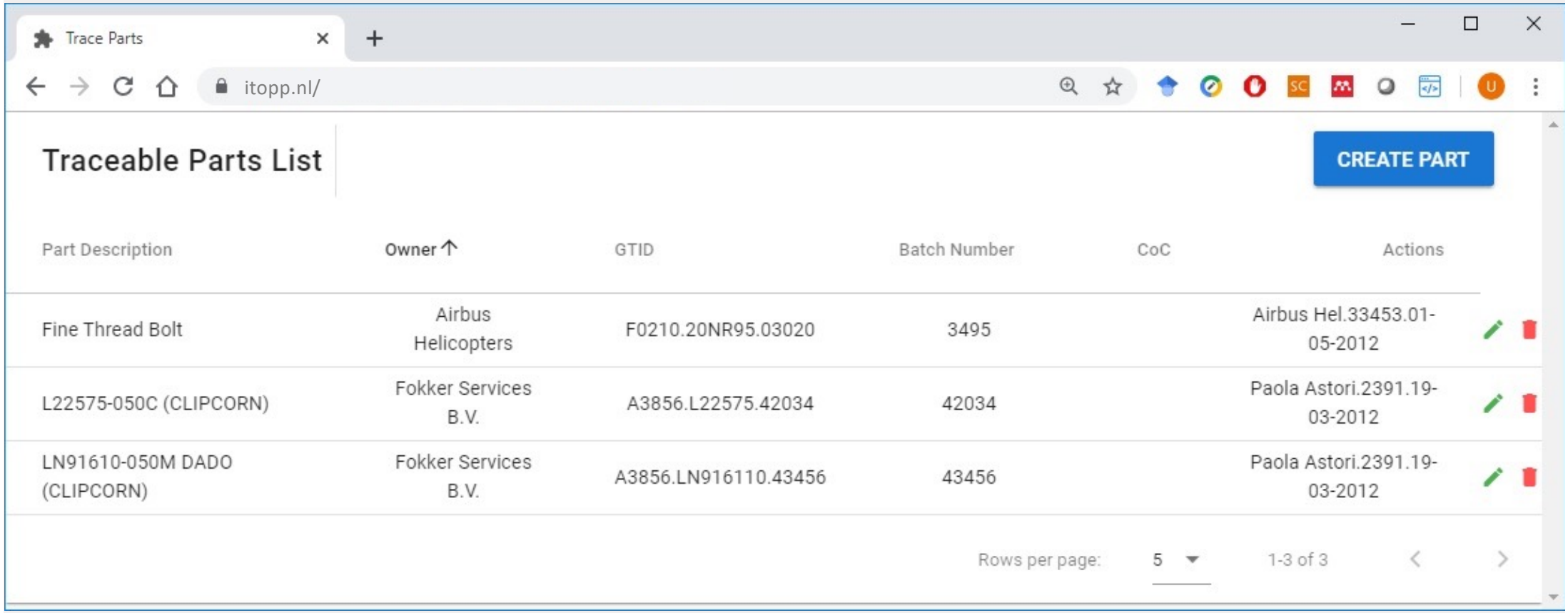
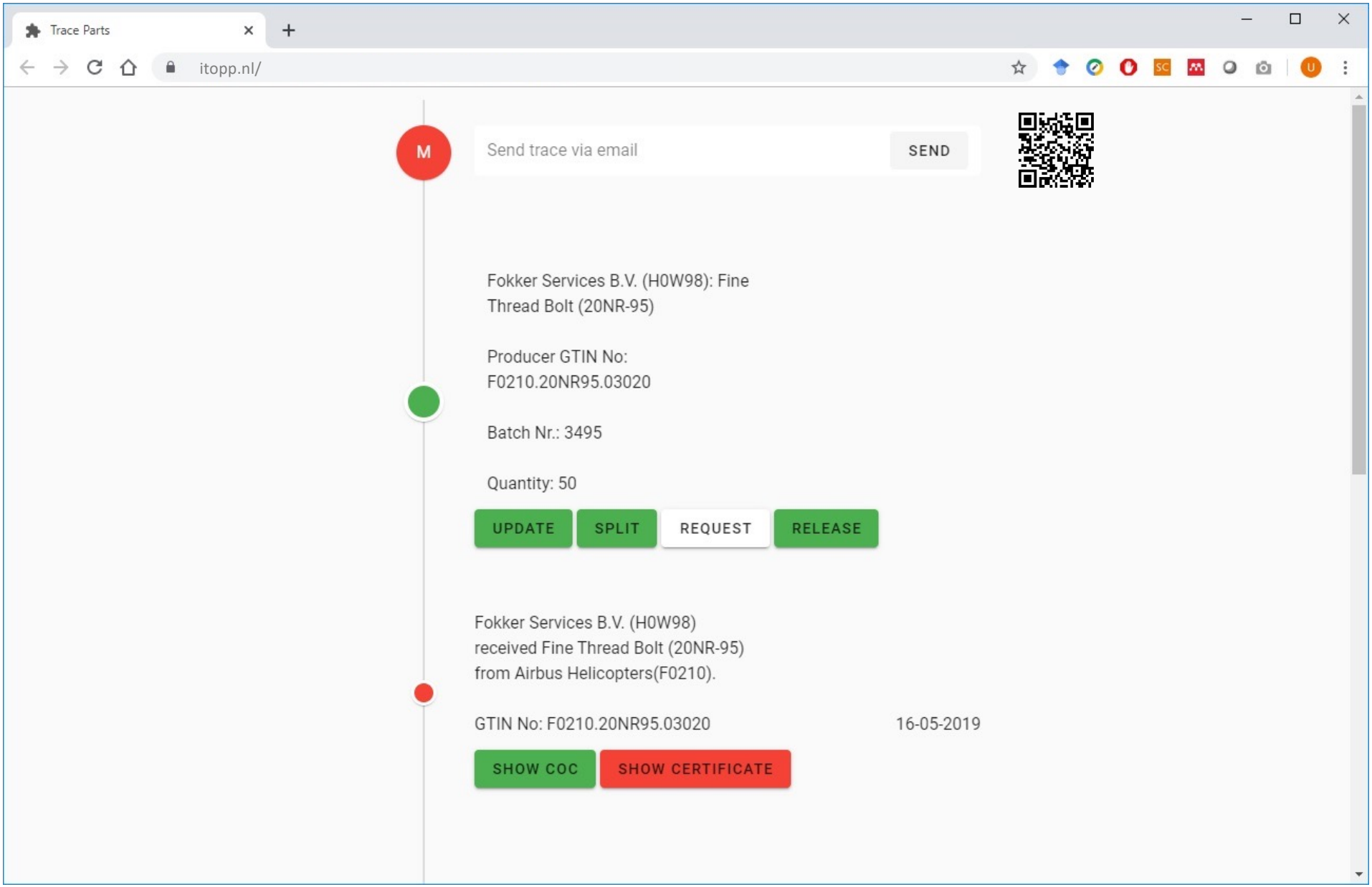
Prototype Tool




Trace Parts
itopp.nl/
M
Send trace via email
SEND
Fokker Services B.V. (H0W98): Fine Thread Bolt (20NR-95)
Producer GTIN No: F0210.20NR95.03020
Batch Nr.: 3495
Quantity: 50
UPDATE
SPLIT
REQUEST
RELEASE
Fokker Services B.V. (H0W98) received Fine Thread Bolt (20NR-95) from Airbus Helicopters(F0210).
GTIN No: F0210.20NR95.03020
16-05-2019
SHOW COC
SHOW CERTIFICATE

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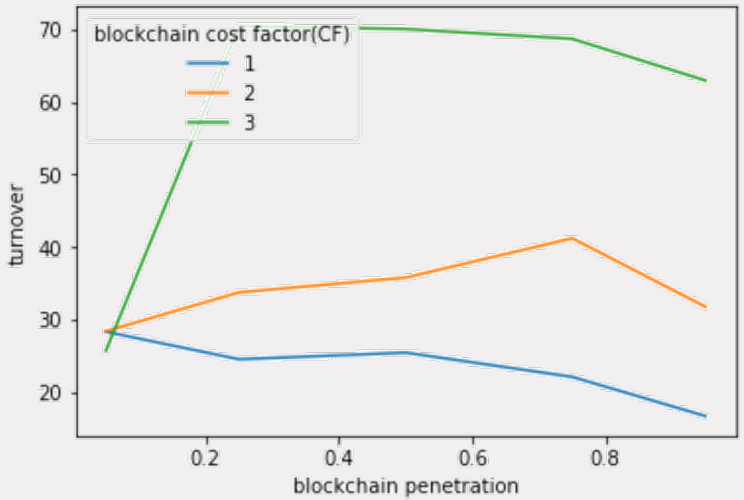
Potential benefits

1. Shared information saves time
2. Smart contracts facilitate enforcement of payment conditions

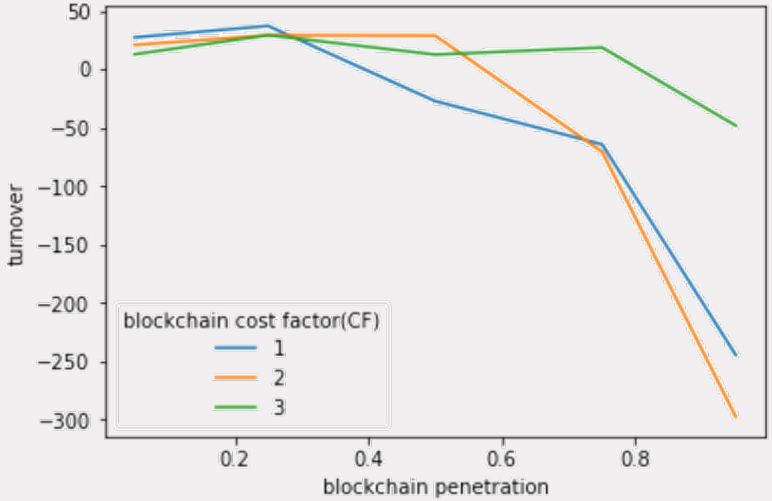
Potential benefits

Shared information saves time

- Buyers are willing to pay more for more information
- Buyers are willing to pay more for more reliable information



Blockchain MRO



Non-blockchain MRO

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Potential benefits

Smart contracts facilitate enforcement of payment conditions:
"Pay 4 weeks after moment of sale."

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