

# The PI: A new grand challenge for Customs authorities?

Niek Hacquebord  
n.f.hacquebord@gmail.com

Supervised by:  
Dr. N.B. Szirbik

Subsidised by:

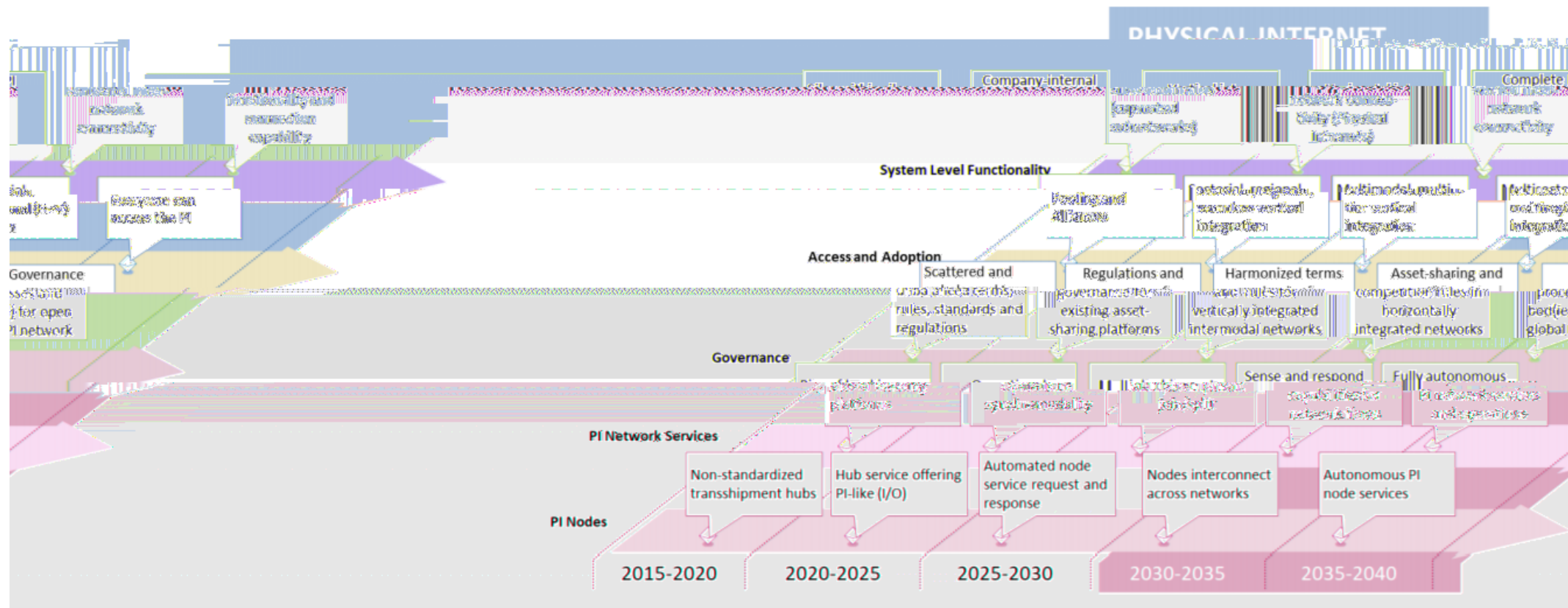
Master's Dissertation project

- MSc Technology Operations Management (RUG)
- MSc Operations & Supply Chain Management (NUBS)

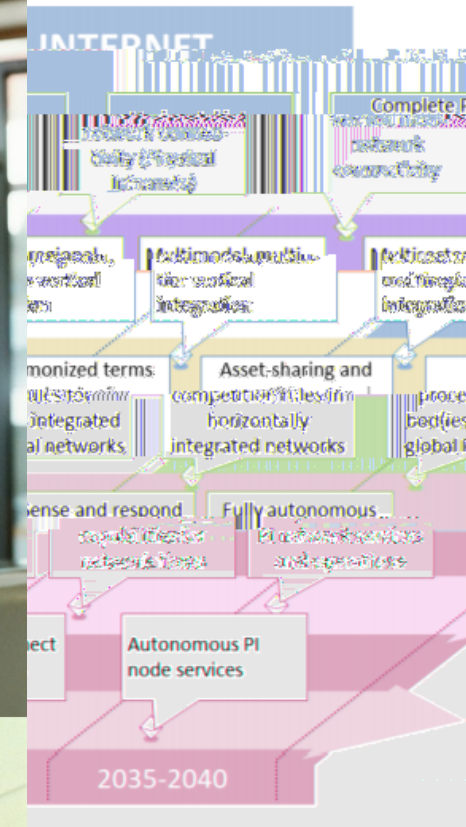
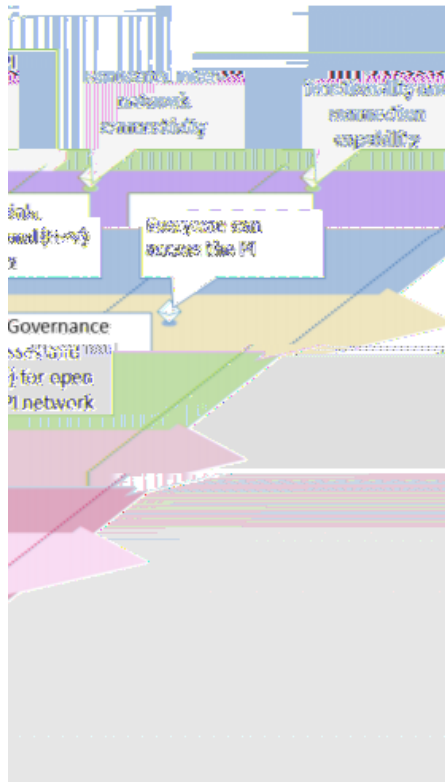
# Agenda

- Why this research?
- Research approach
- Expected impact of the PI on customs authorities
- Conceptual system design
  - Concepts
  - Three stages
- Validation workshops
- Conclusions and recommendations

# Why this research?



# Why this research?

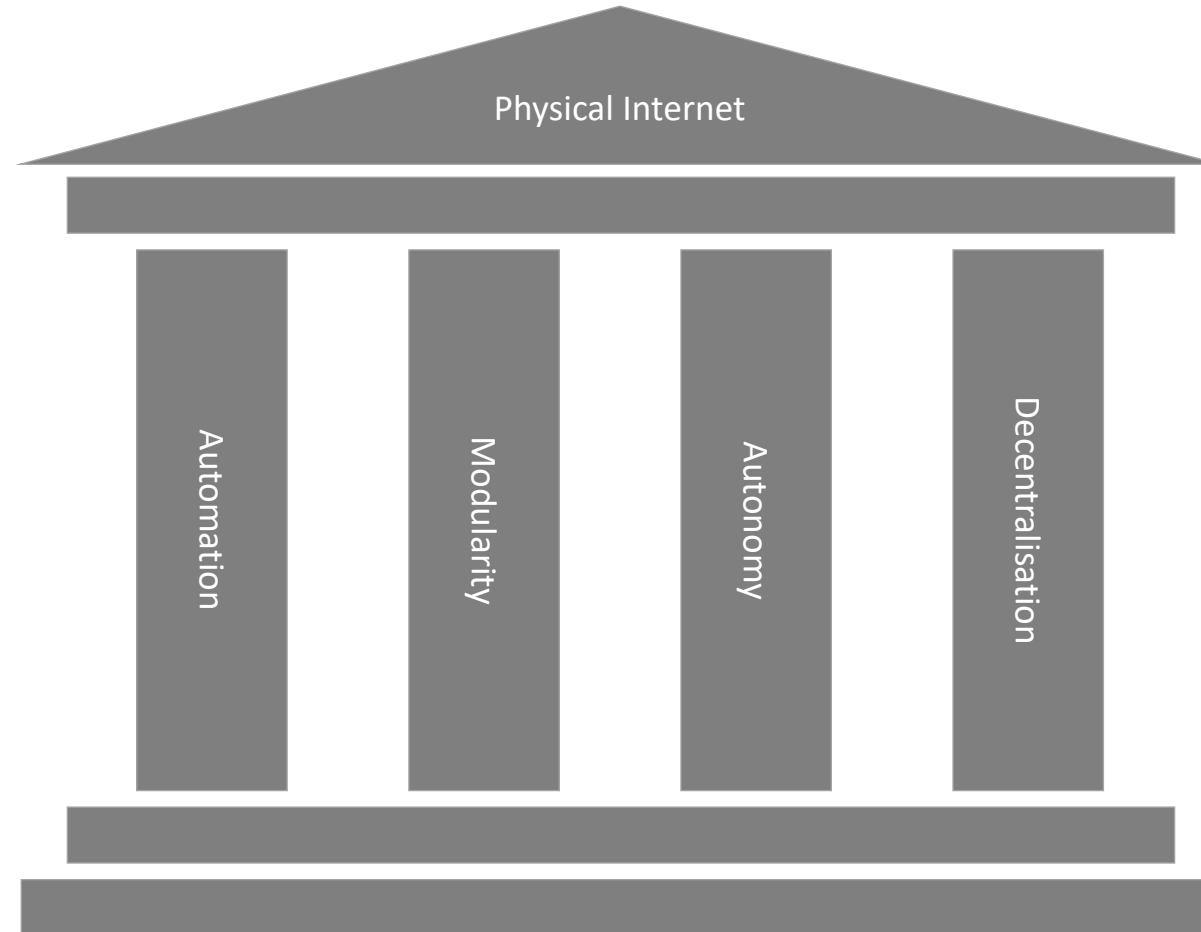


ALICE (2020): 'Physical Internet Roadmap'

# Research approach

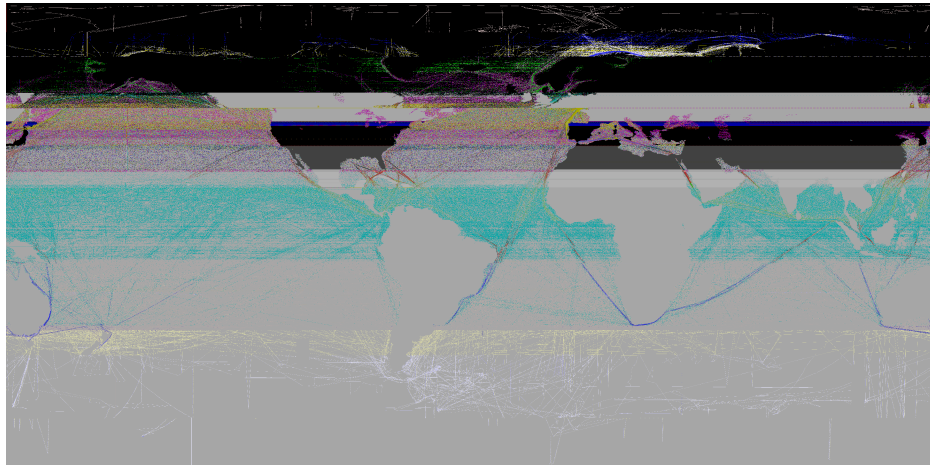
1. Literature review (state-of-the-art in PI research)
2. Reverse-engineer the current state @ Dutch Customs
3. Sketch the (potential) impacts of the PI
4. Propose and validate an improved design
  - a) First design
  - b) Validation workshops

# Expected impact of the PI

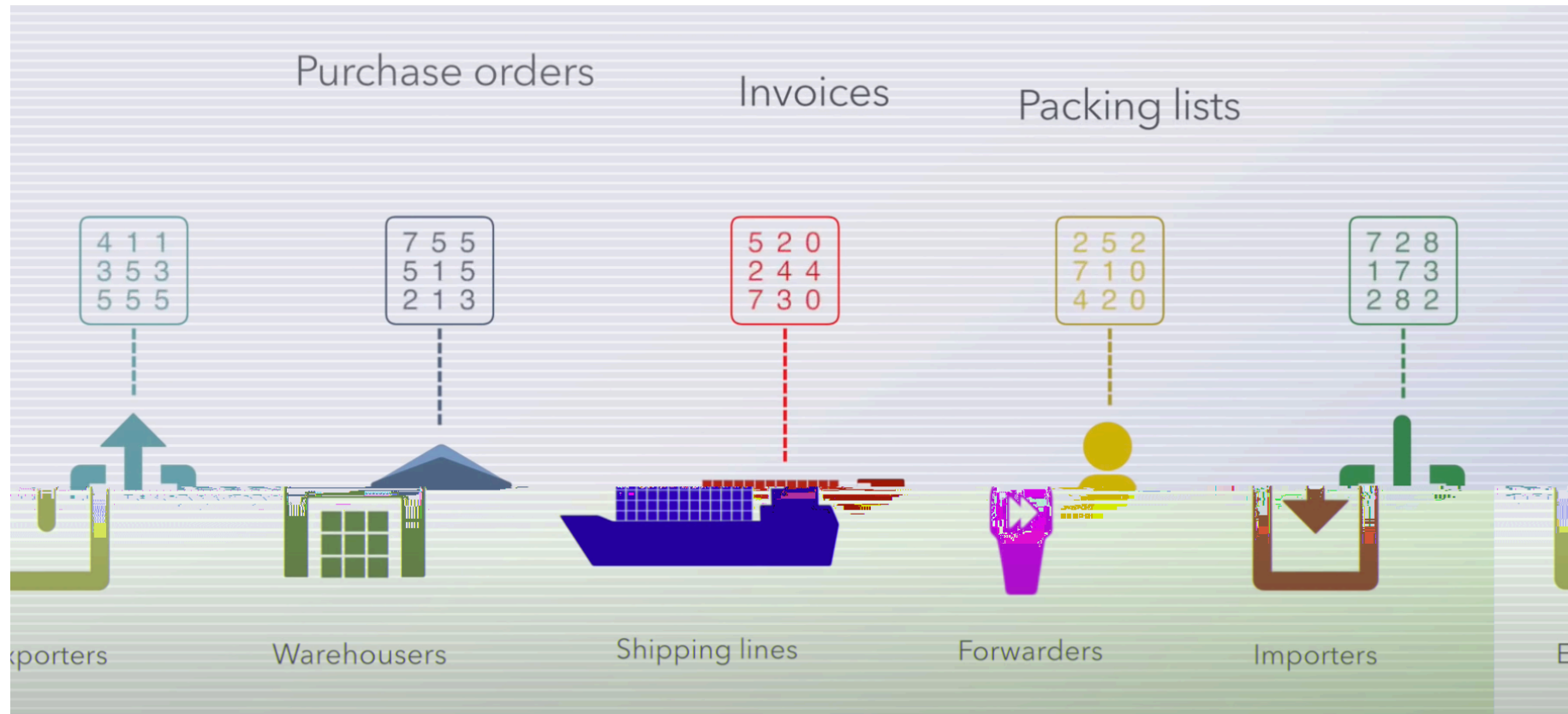




# Expected impact of the PI

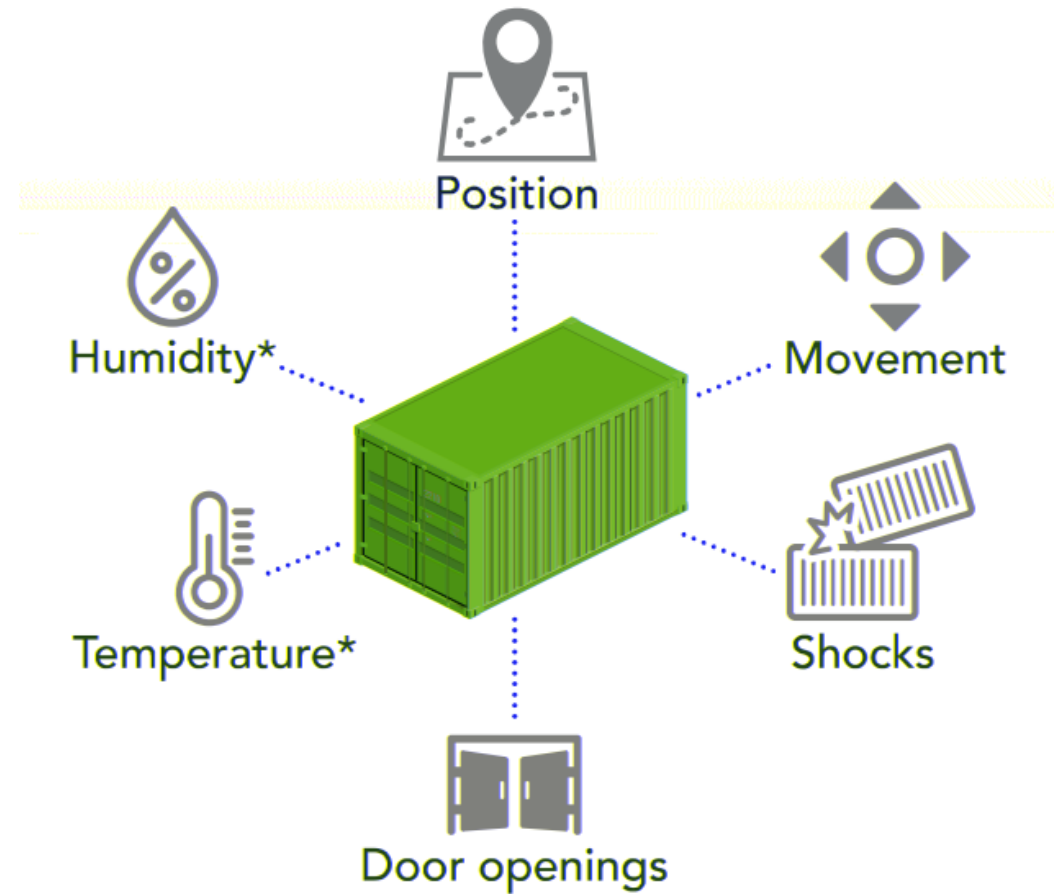


# Conceptual system design – concepts





# Conceptual system design – concepts



# Conceptual system design – three stages

- I. Verifying and validating customs declarations
- II. Compiling customs declarations
- III. Risk assessment built on the data pipeline



university of  
 groningen



Newcastle University | Business School



Port of  
 Rotterdam



GRONINGEN SEAPORTS

# Validation workshops



university of  
 groningen



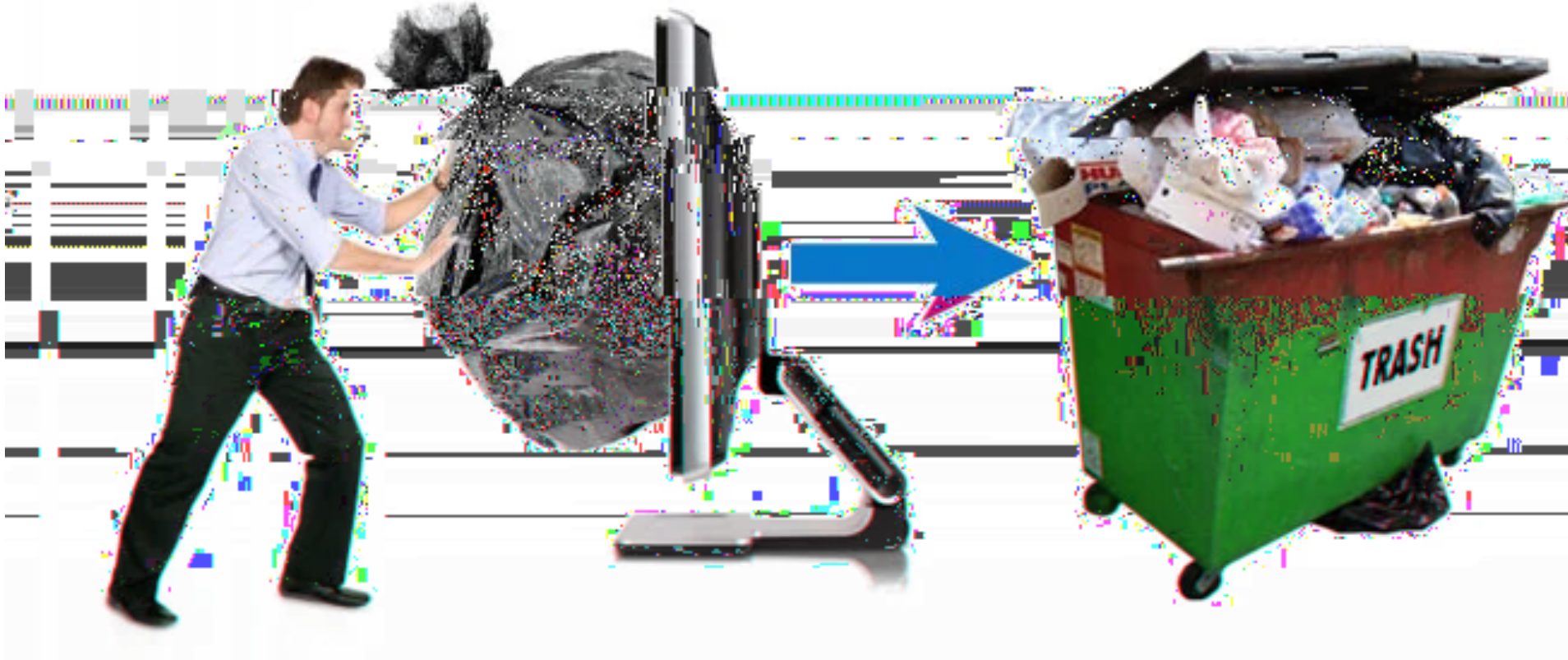
# Validation workshops – outcomes



# Validation workshops – outcomes

- Development must be driven by industry
- Business case for Economic Operators is of key importance

# Validation workshops – outcomes

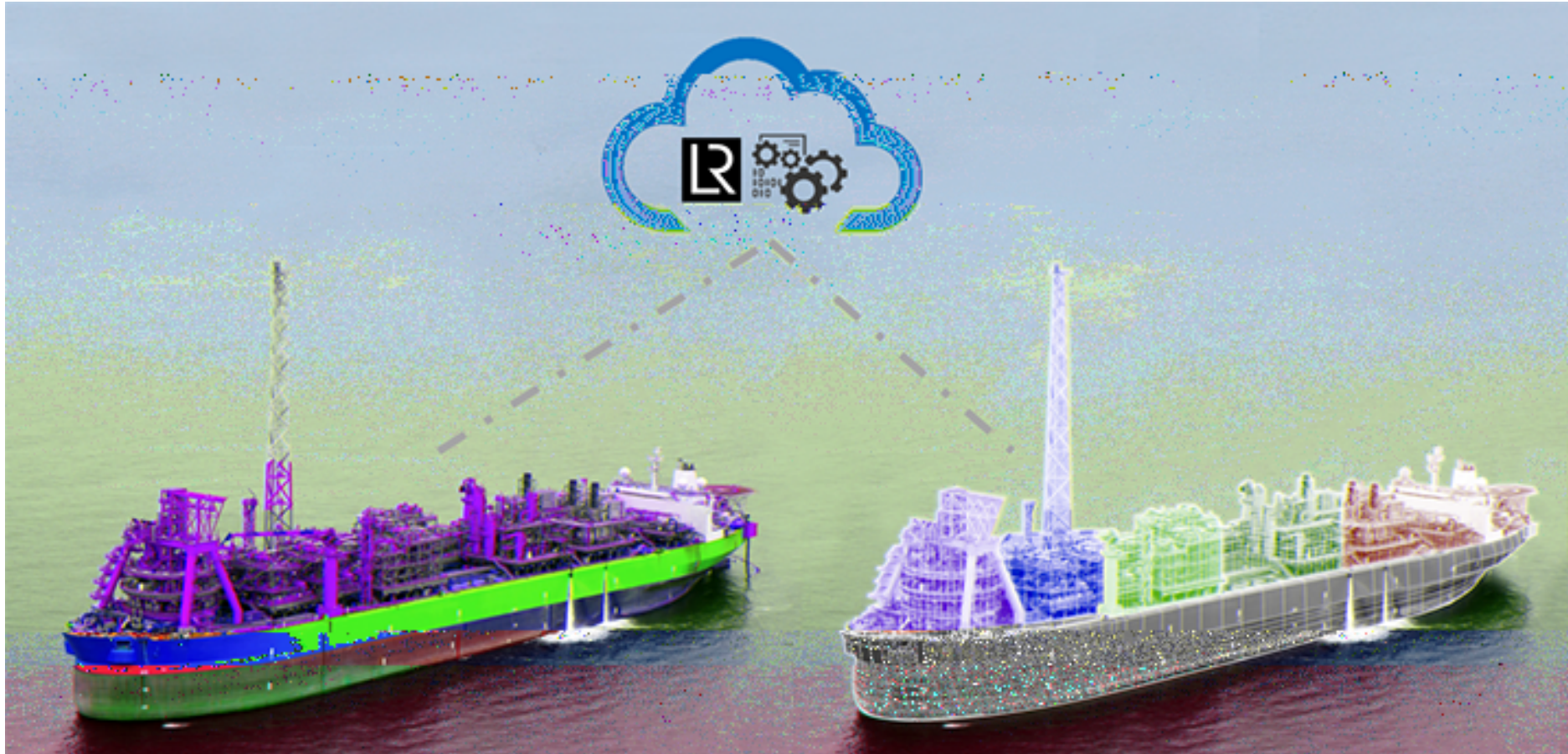




# Validation workshops – outcomes

- Development must be driven by industry
- Business case for Economic Operators is of key importance
- Main weakness is input data: garbage in = garbage out

# Validation workshops – outcomes



# Validation workshops – outcomes

- Development must be driven by industry
- Business case for Economic Operators is of key importance
- Main weakness is input data: garbage in = garbage out
- Is manual data sharing still necessary? > digital twin as audit trail

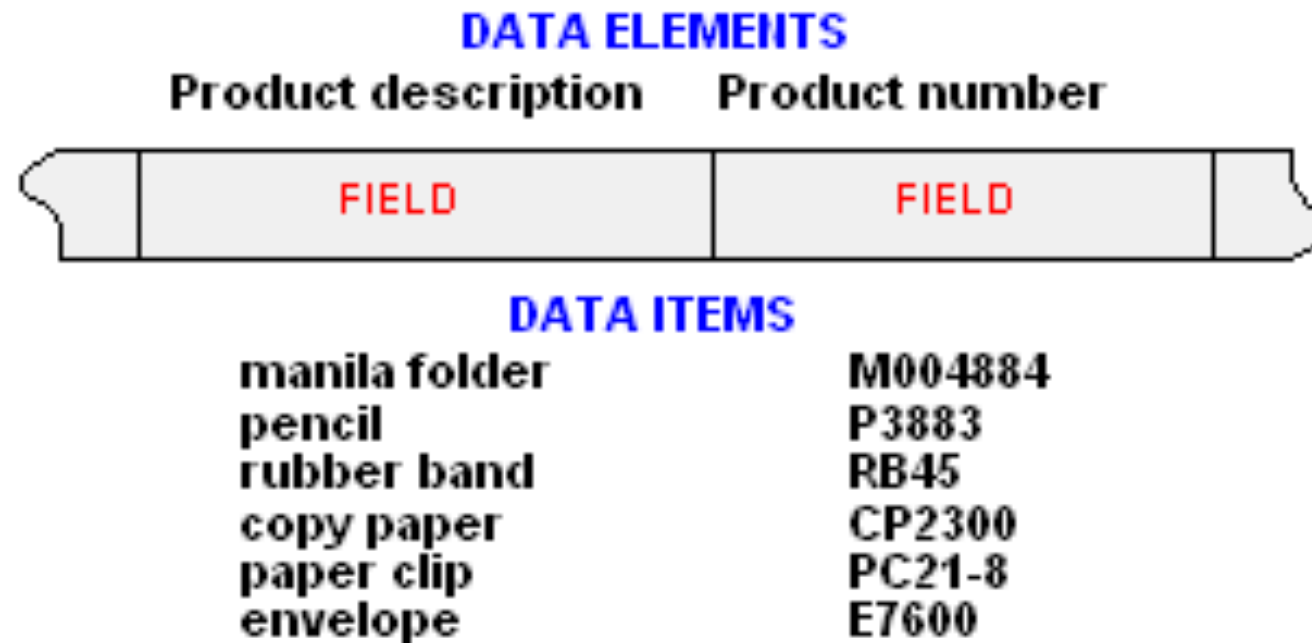
# Conclusions and recommendations



# Conclusions and recommendations

- Stay up-to-date on and involved with developments

# Conclusions and recommendations





# Conclusions and recommendations

- Stay up-to-date on and involved with developments
-

# Conclusions and recommendations



# Conclusions and recommendations

- Stay up-to-date on and involved with developments
- Develop a minimum dataset required for risk assessment
- Is the proposed system a *choice* or the *new standard*?

# Conclusions and recommendations



# Conclusions and recommendations

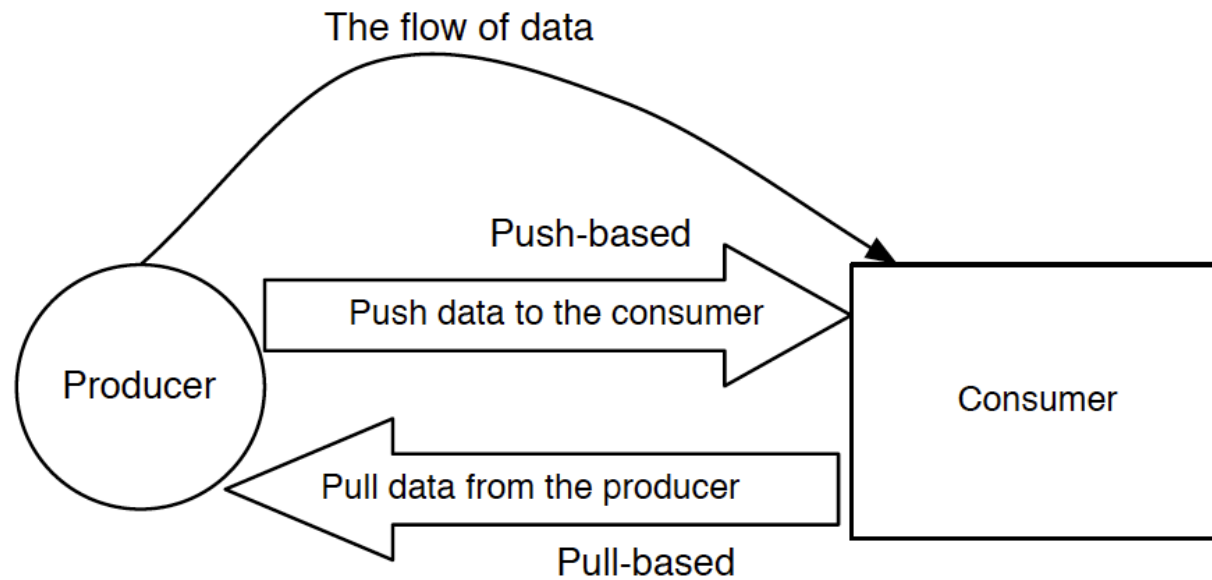
- Stay up-to-date on and involved with developments
- Develop a minimum dataset required for risk assessment
- Is the proposed system a *choice* or the *new standard*?
- When should risk assessment and inspections take place?

# Conclusions and recommendations





# Conclusions and recommendations



# Conclusions and recommendations

- Stay up-to-date on and involved with developments
- Develop a minimum dataset required for risk assessment
- Is the proposed system a *choice* or the *new standard*?
- When should risk assessment and inspections take place?
- Continue the shift in mindset:
  - From data *push* towards data *pull*
  - From *documents* towards *data elements*

# Questions?



The Physical Internet: a new grand  
challenge for customs authorities?

*An exploratory study into the impact of the  
Physical Internet on the Dutch Customs Administration*

Master's dissertation

Presented for:

MSc Technology & Operations Management (University of Groningen)  
MSc Operations & Supply Chain Management (Newcastle University Business School)

Written by:

Niek Florian Hacquebord  
[n.f.hacquebord@gmail.com](mailto:n.f.hacquebord@gmail.com)

S2980614  
B9059558

Lead supervisor: Dr. N.B. Szirbik  
Second supervisor: Dr. R. Casey

 Douane  
Belastingdienst

ber 21<sup>st</sup>, 2020

Date: Decem