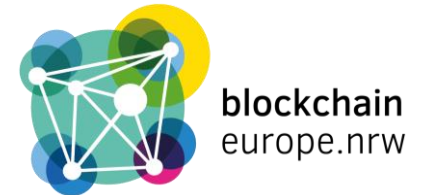




Fraunhofer Institute for Material Flow
and Logistics



February 21st 2023

Blockchain-based customs processing

„Blockchain Europe“ and the BORDER project

Meet: BORDER

February 21st 2023



1

Introduction to
**Blockchain Europe and
Open Source** for
logistics

2

Blockchain based
customs processing in
the **BORDER** project

3

#Participate –
Cooperation and
further development



blockchain
europe.nrw



blockchain
europe.nrw

Fraunhofer-Gesellschaft

more than 30.000
employees

76 institutes
and research institutions

2.9 billion
research volume

Main locations
Branches



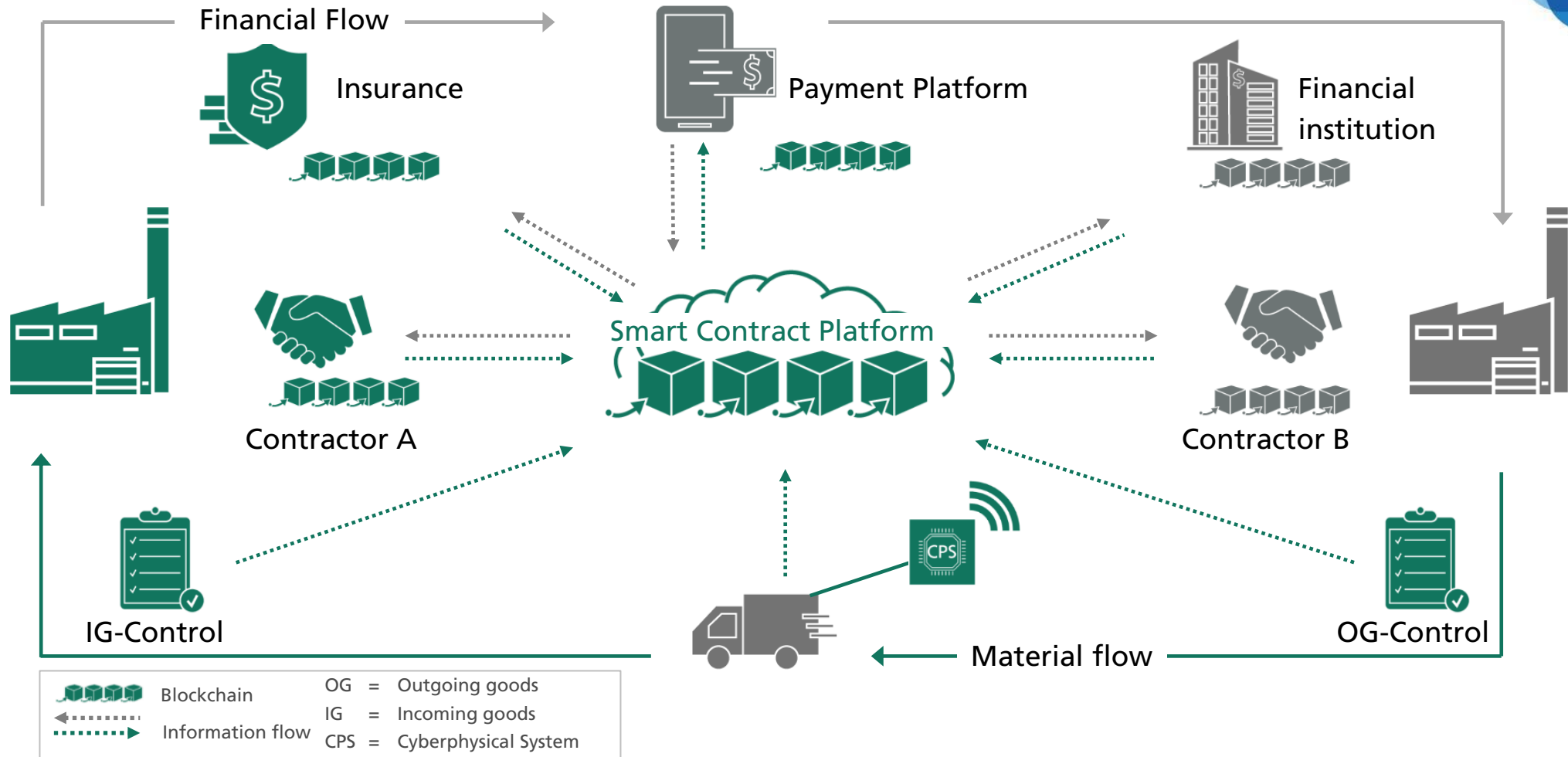
Fraunhofer IML, Dortmund

> 400
employees

> 300
graduate students and
student assistants

> 50 million
turnover, 30% of which is made
with industrial partners

Why exactly blockchain and logistics?



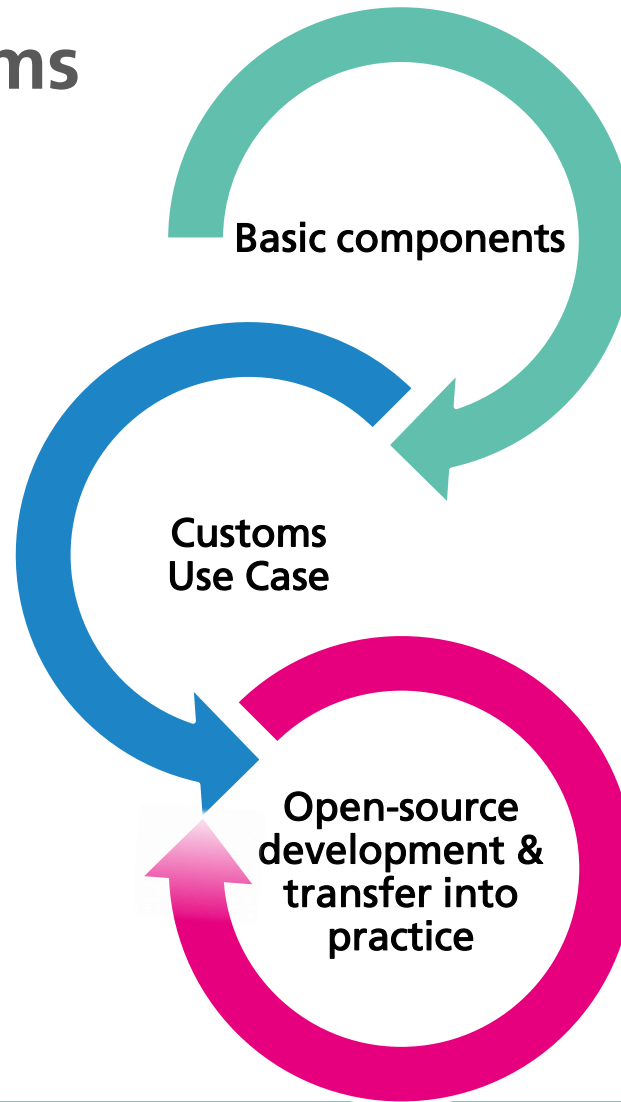
Development path

Blockchain & Customs



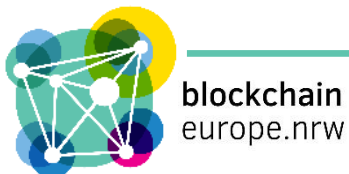
BORDER

- Implementation of basic components in the **customs use case**
- Publicly funded development and **open-source code**
- **Technology testing & reference implementation**

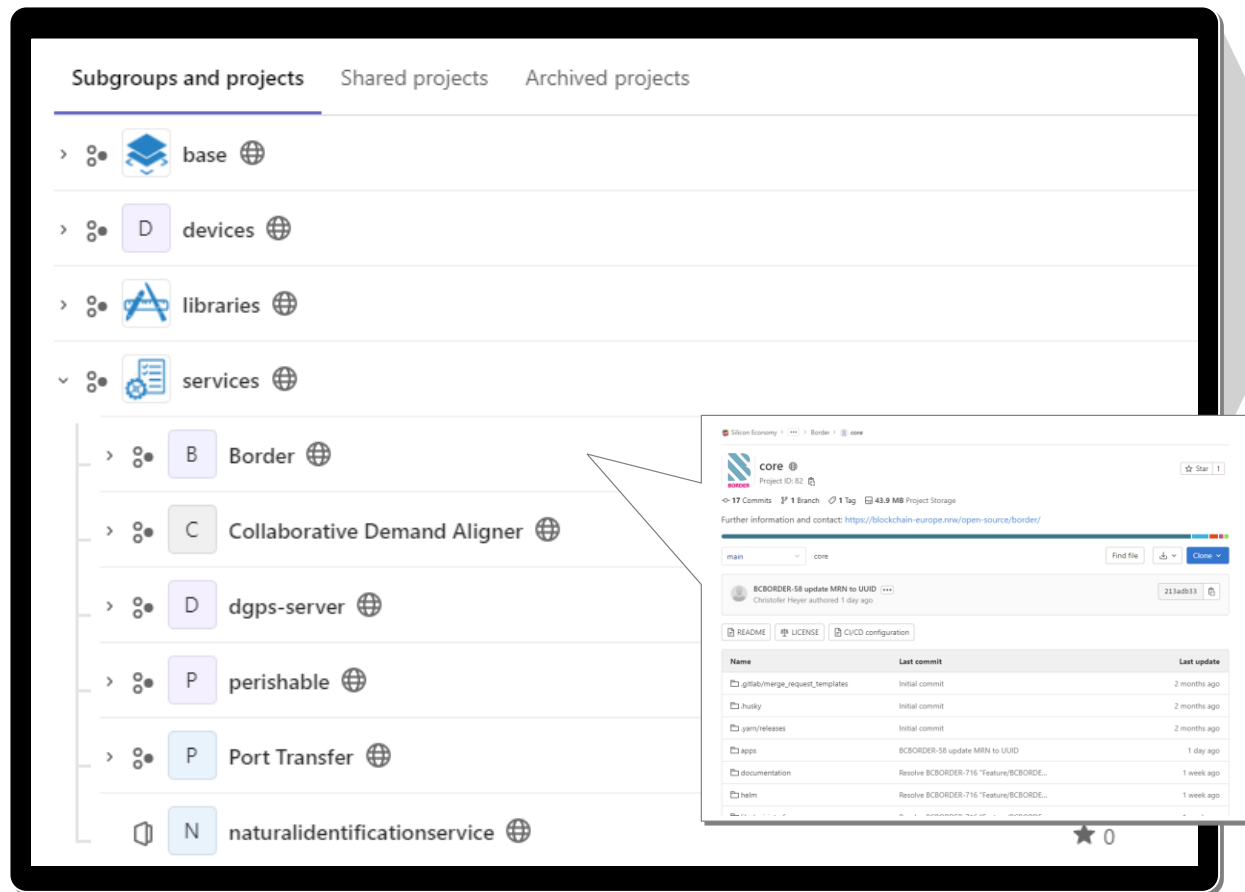


- Development of **basic blockchain components** (independent of the application domain).
- **Publicly funded** research project *Blockchain Europe*
- Free use of the software under **open-source license**

- Transfer of components to **new areas of application**
- **Further development** of the reference implementation
- **Expansion of cooperations** to establish a user consortium



BORDER – Open Source



Find the Open-Source-Repository from BORDER here:
<https://git.openlogisticsfoundation.org/silicon-economy/services/border/core>

www.blockchain-europe.nrw

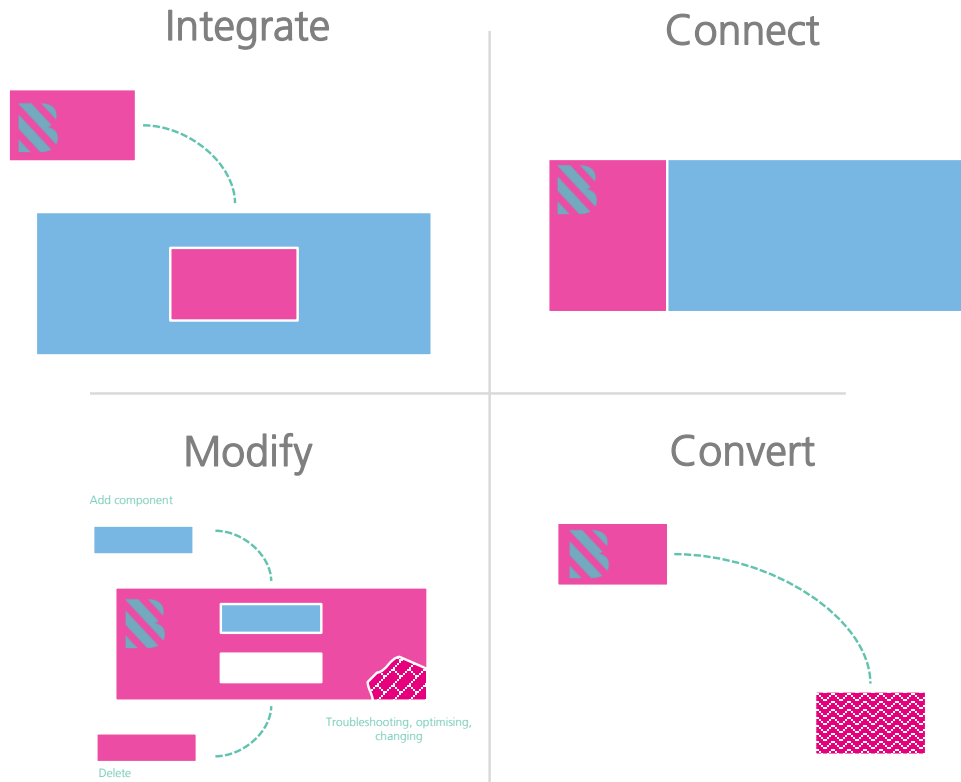
- ❖ Experience, understand and further develop blockchain technology
- ❖ Collaborative innovation via open source
- ❖ Unites science and business in a dynamic ecosystem

Funded by:
Ministry of Economic Affairs,
Industry, Climate Action and Energy
of the State of North Rhine-Westphalia



Open Source

Usage of the software– Open Logistics License



Permitted usage ✓

- € Commercial use
- ⚙️ Modify
- 👥 Distribute
- 👤 Sublicense

Conditions for usage !

- © Include Copyright
- 📄 Include License

Not Possible ✗

- ™ Use Trademark

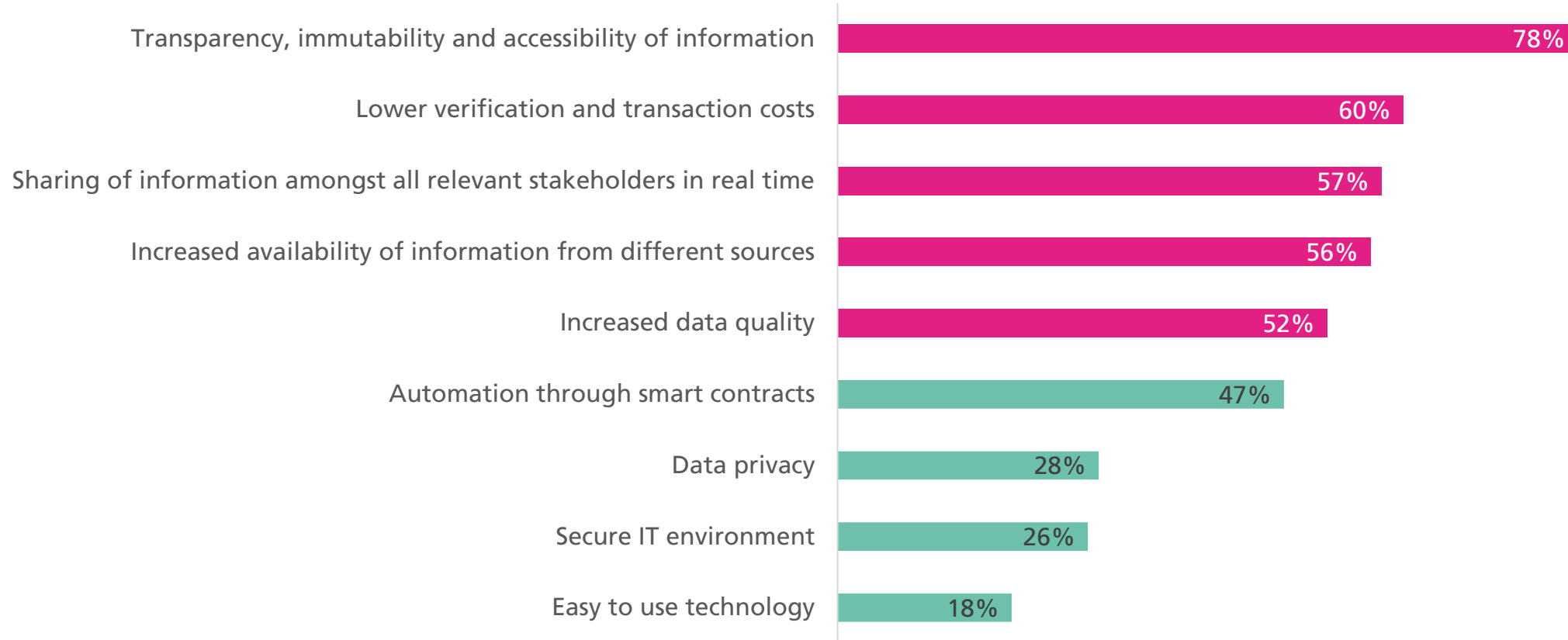


BORDER

* Blockchain-based organisation of relevant data in external trade
with regulatory compliance

Technology Testing &
Reference Implementation

Blockchain and Customs Potentials



n = 87

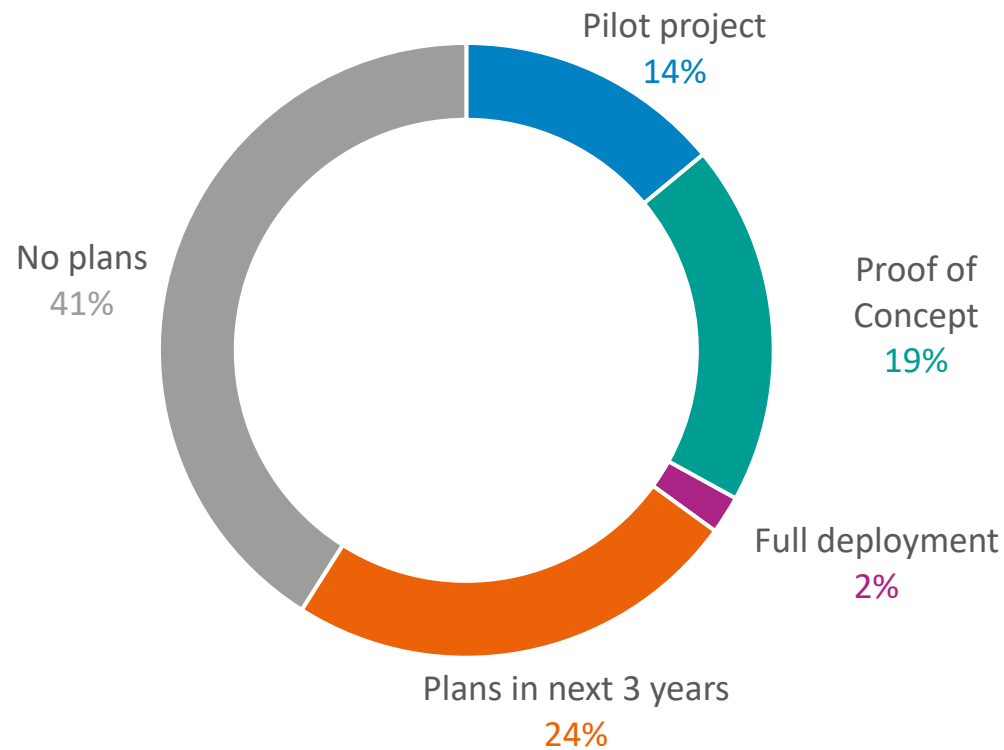


Blockchain and Customs

Implementation by customs authorities



Stage of implementation:

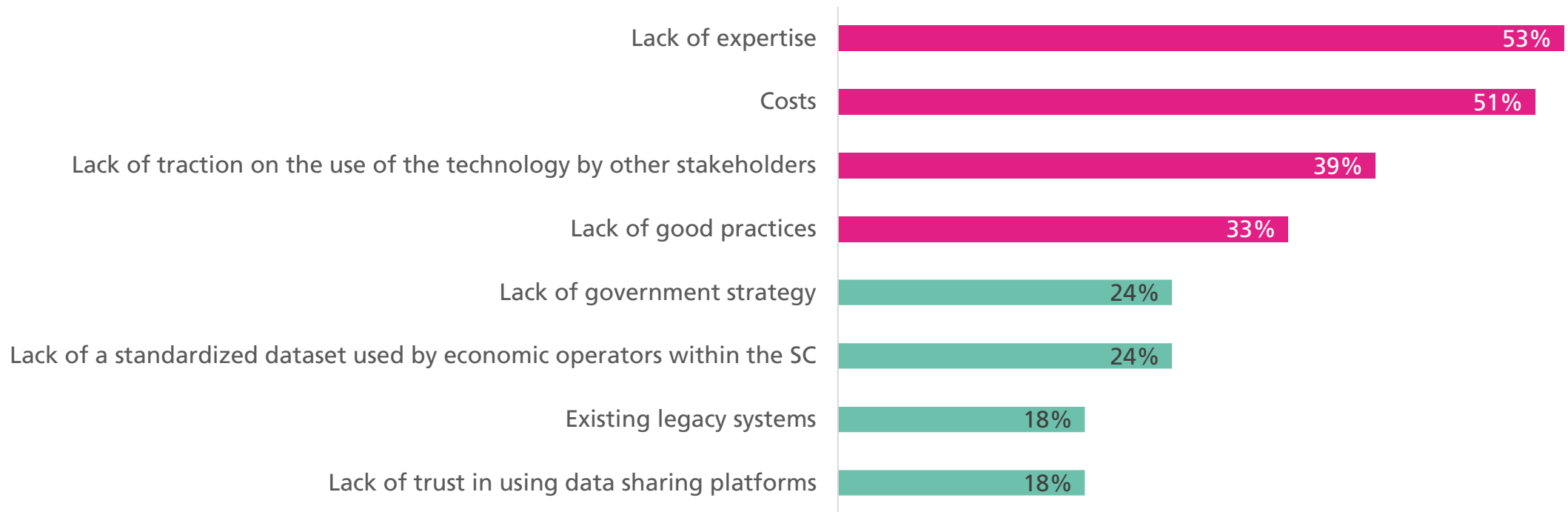


n = 110



Blockchain and Customs

Barriers to implementation



n = 95



Blockchain and Customs

Use cases for the future



Customs
declarations

Post-clearance
audits

Payment of
duties and taxes

Automated
customs value
determination

Automated
invoicing and
payment

Information
exchange
between
authorities

Identity-
management

Electronic
Certification &
Verification

Compliance
Management

Optimised
Logistics Service
Provider
communication

Exchange of
information
between
economic
operators

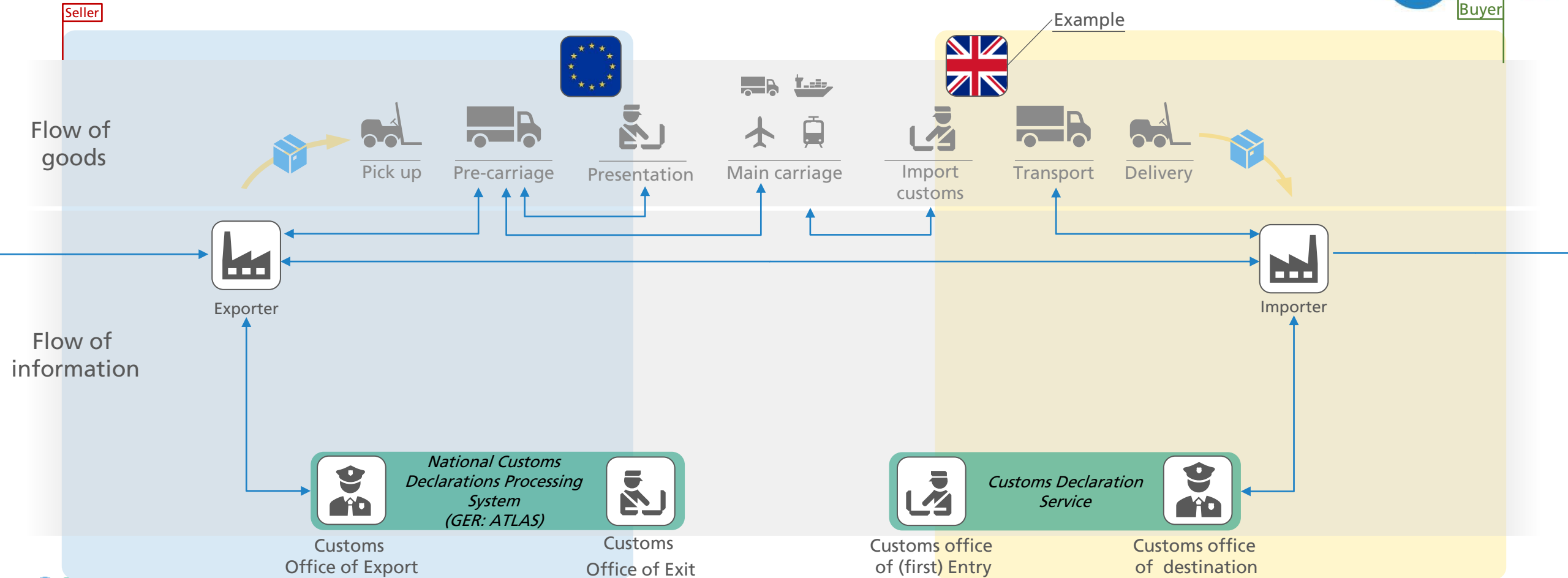
Authorities

Corporate

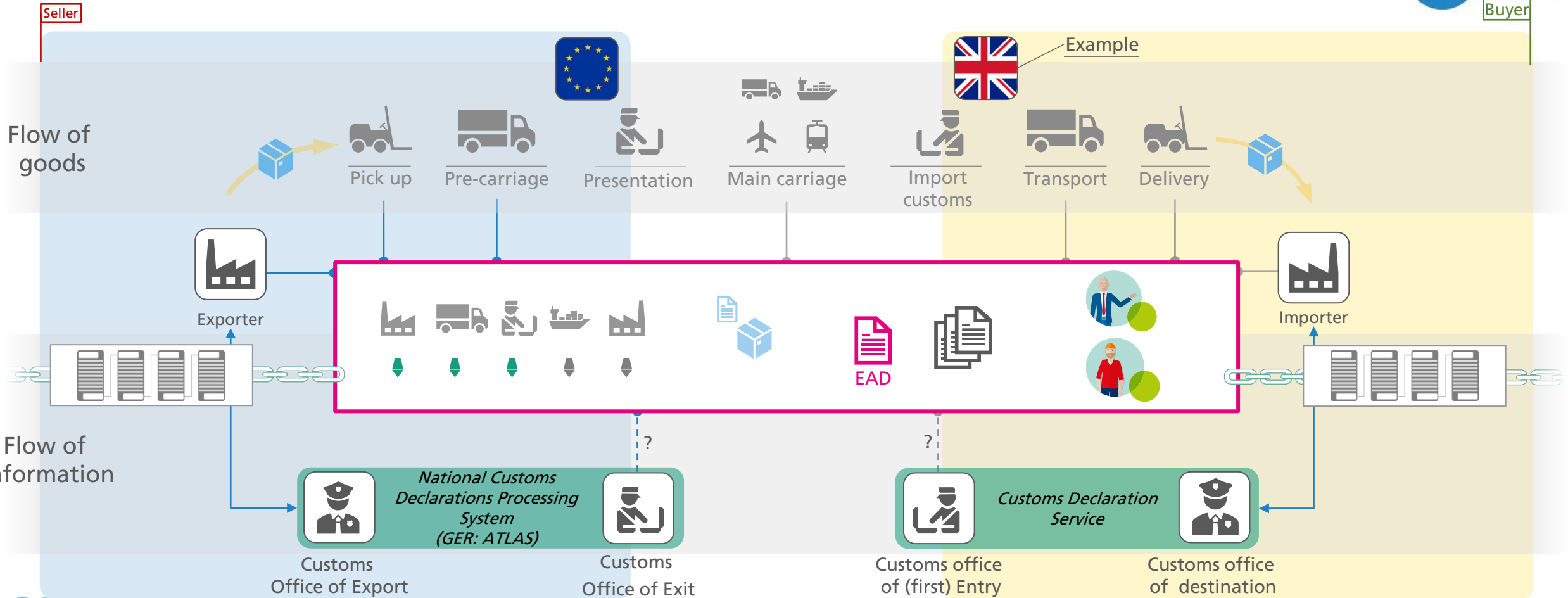


BORDER

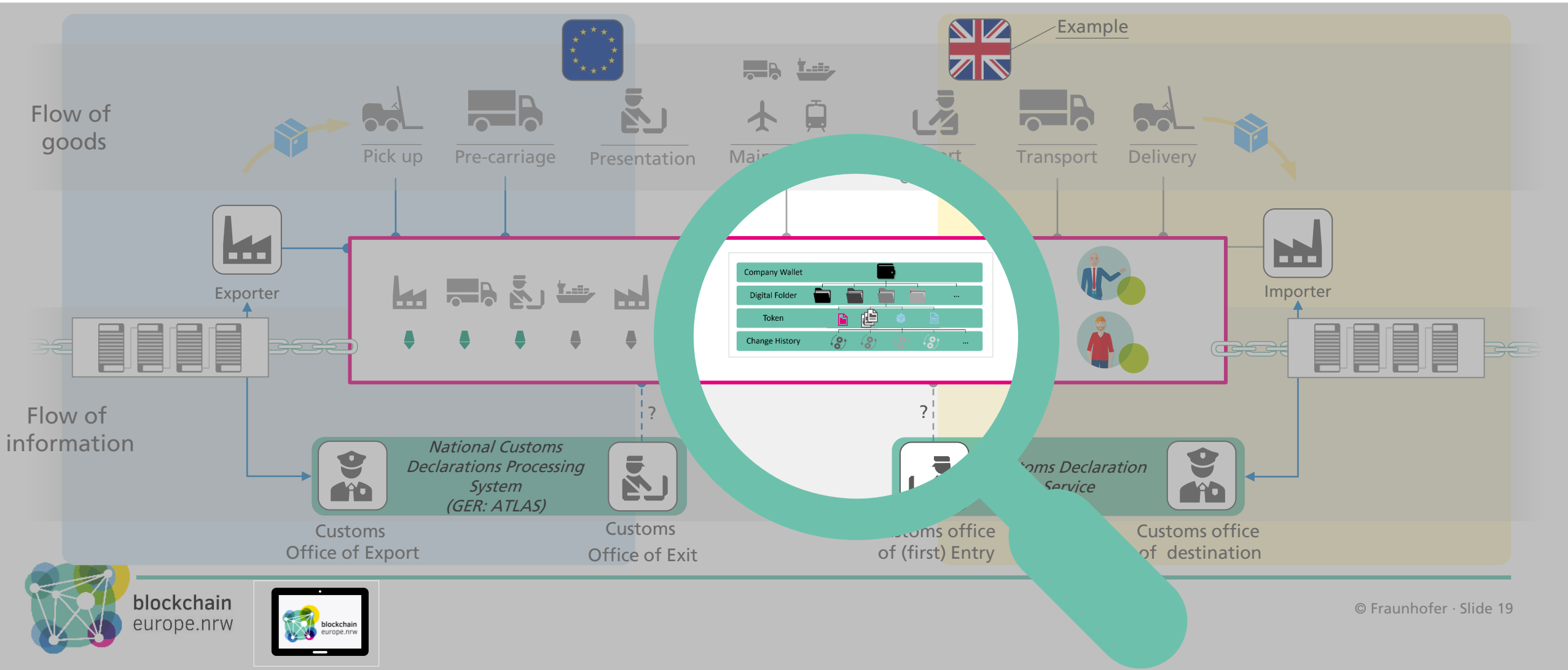
Logistics and customs processes



BORDER Goal



BORDER Goal



Digital Folder

Structural design

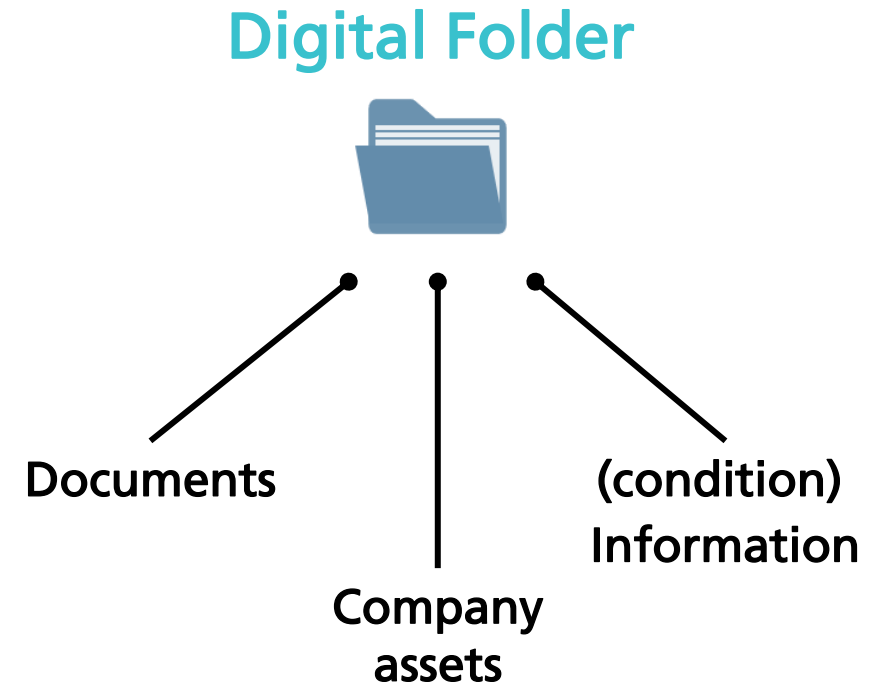


Digital Folder

Establish and use relationships



- The **Internet of Values** requires the coupling of material, information and financial flows.
- The **Digital Folder** makes it possible to map information, documents and assets on the blockchain using tokens.
- The **tokens** can be related to each other.
- Changes along the material flow are documented **persistently and traceably**



BORDER

Insight into the software



blockchain europe / BORDER

Erik Export
Exporteur*in

Dashboard
Detailsansicht
ABD Upload
QR-Code generieren
Archiv

Logout

blockchain europe.nrw

Suchen Filter

21DE650140014833E4	21DE650140014833E4	21DE650140014833E4	21DE650140014833E4
Status: Shipping Zielland: US Ausgangsort: Dortmund Flughafen Fortschritt: 4 / 8	Status: Shipping Zielland: US Ausgangsort: Dortmund Flughafen Fortschritt: 4 / 8	Status: Shipping Zielland: US Ausgangsort: Dortmund Flughafen Fortschritt: 4 / 8	Status: Shipping Zielland: US Ausgangsort: Dortmund Flughafen Fortschritt: 4 / 8
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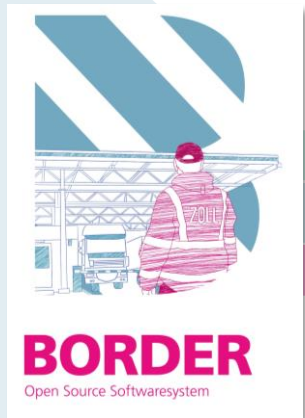


Blockchain and Customs

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BORDER

Development paths and goals



Feedback on existing functions and input for the expansion of the scope of functions



Adoption of components in **own applications and solutions** (in communities)

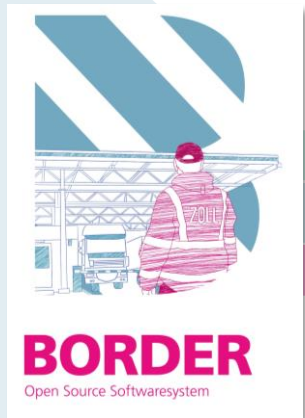


Testing and further development



BORDER

Development paths and goals



Feedback on existing functions and input for the **expansion** of the scope of functions



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Testing and further development

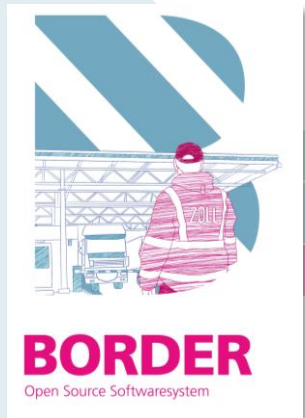
BORDER 1.x

- Practical **validation** of the existing **functionalities**
- Identification of **future functional components**



BORDER

Development paths and goals



Feedback on existing functions and input for the **expansion** of the scope of functions



Adoption of components in **own applications and solutions** (in communities)



Testing and further development

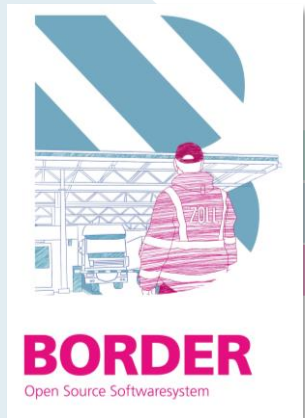
Transfer

- **Adaptation** of specialized **open-source components** in new products
- **Transfer** to address **further challenges**
- **Integration** into commercial and non-commercial solutions



BORDER

Development paths and goals



Feedback on existing functions and input for the **expansion** of the scope of functions



Adoption of components in **own applications and solutions** (in communities)



Testing and further development

Technology

- **Testing blockchain networks**
- **Comparison of different frameworks**
- **Business models and operator models**
- **Further development of blockchain functions**



#PARTICIPATE



Contact



Roman Koller, M.Sc.

Product Owner BORDER
Procurement & Finance
in SCM

+49 (0) 231 / 97 43-390
roman.koller@iml.fraunhofer.de



Lorenz Kiebler, M. Sc.

Deputy Product Owner
Supply Chain Engineering

+49 (0) 231 / 97 43-198
lorenz.kiebler@iml.fraunhofer.de

Further Information

<https://s.fhg.de/BORDER-project-info-en>



Software Download

<https://s.fhg.de/BORDER-OLF-GitLab>



blockchain
europe.nrw

<https://blockchain-europe.nrw/open-source/border/>
<https://blockchain-europe.nrw/en/border-en/>