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Fraunhofer Institute for Material Flow and Logistics IML

Open Source & Blockchain Technology

A path towards increased Integrity and Trust in Supply Chains and Customs?

WCO Technology Conference & Exhibition 2023 – Session B3: Technology in Support of Integrity in Customs
October 11th 2023 – Hanoi, Vietnam

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Fraunhofer-Gesellschaft

> 30.000
employees

76 institutes
and research institutions

2.9 billion
research volume

Fraunhofer IML, Dortmund

> 400
employees

> 300
graduate students and student assistants

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

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Innovations from the concept up to market maturity

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WHY WE DO WHAT WE DO

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Why Blockchain?

Challenges and Potentials in SCM & Logistics **and Customs**

Challenges

Different parties
lack of confidence

Duty of
documentation

Guarantees
of origin

Manual,
paper-based
processes

Verifiable
authentication

Heterogeneous
IT system landscape

Potentials

Administrable data
access
Secure data exchange

Transparency
across the
entire supply chain

Seamless
traceability

Process automation
through state-oriented
data processing (Smart
Contracts)

Verification through
manipulation-proof,
digital identity

Interoperability
of the blockchain

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WHAT WE DO

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Open Customs Blockchain

Structure of Applications

Open Customs Blockchain

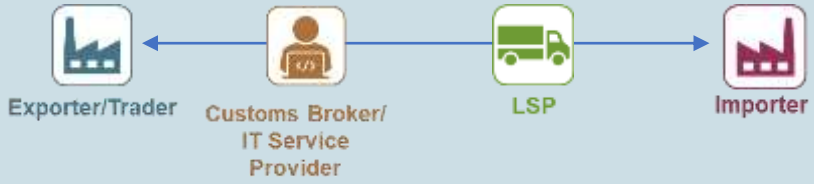
Project/Application

Goods Passport ID = **GPID**

- **Customs Focus**
- Based on:
  Invoice
  Save Key Invoice Data on Blockchain
- Software increment in progress

BORDER = **B**lockchain-based **O**rganization of **R**elevant **D**ata in **E**xternal Trade with **R**egulatory Compliance

- **Supply Chain Focus**
- Based on:
  Export Accompanying Document (EAD)
  as Data Set on Blockchain
- Exemplary Software increment Open Source



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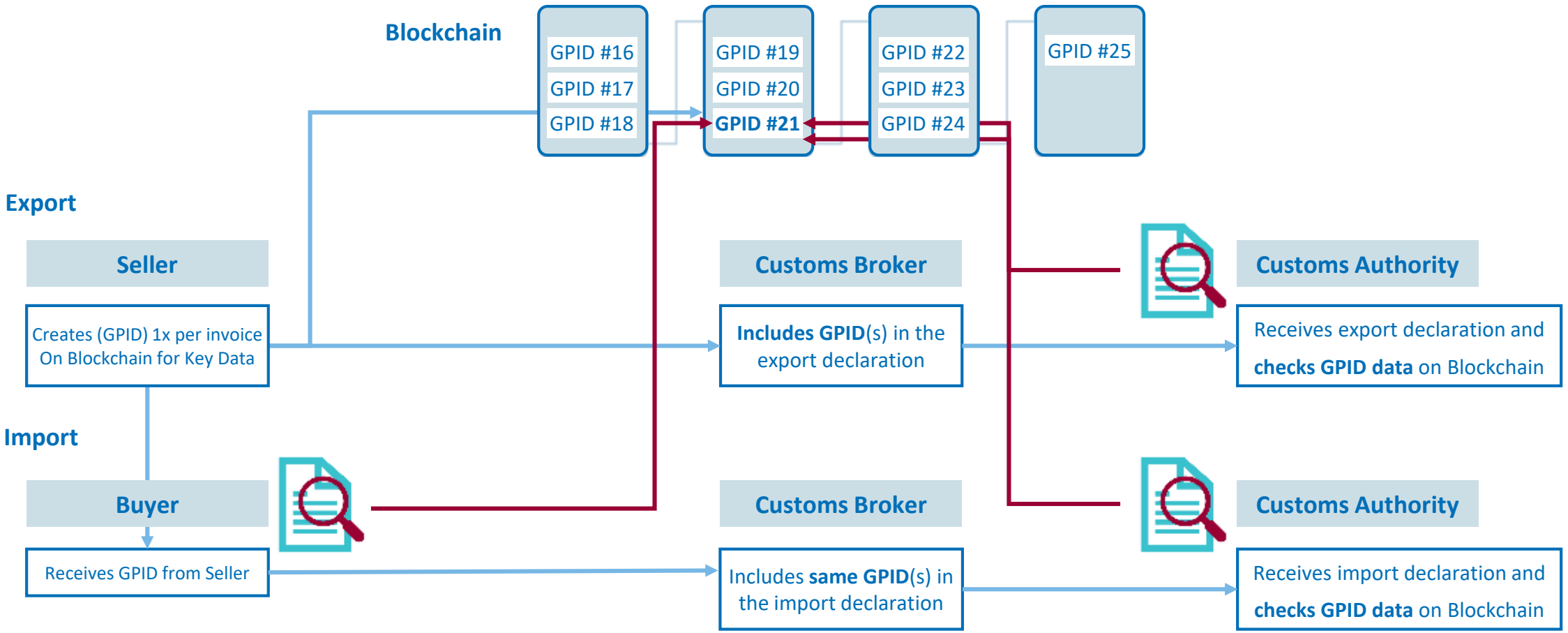
Goods Passport ID

How it works



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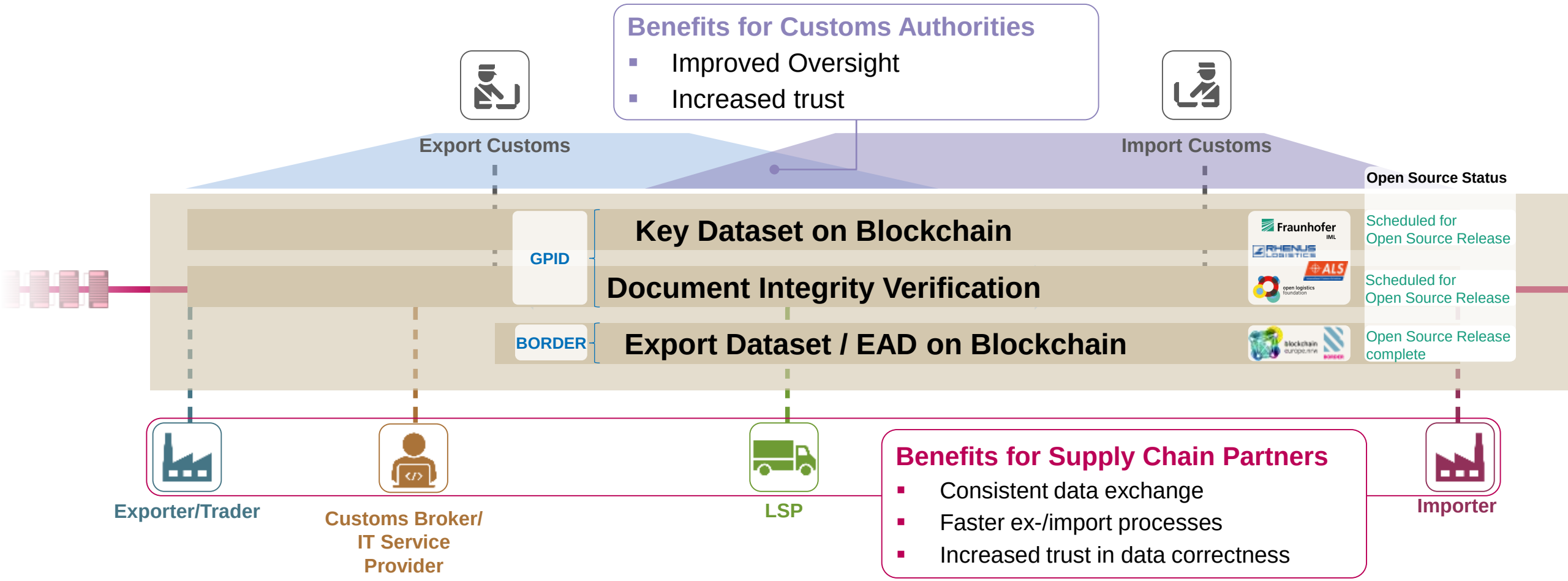
Blockchain & Customs – What does this lead to?

Functionalities and Benefits



What are the benefits?

Export Customs

Main Benefits for Customs Authorities

- Improved Oversight
- Increased Trust in Data correctness

Import Customs

Leads to

- Reduce fraud / increase revenues
- Remove border delays
- Improved data integrity
- Enable easier trade between territories

Exporter/Trader

Benefits for Supply Chain Partners

- Consistent data exchange
- Faster ex-/import processes
- Increased trust in data correctness

Importer

Customs Broker/ IT Service Provider

LSP

Leads to

- Lower Cost for trade
- Data can be trusted
- Simple to use
- Prove Compliance

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HOW WE DO IT

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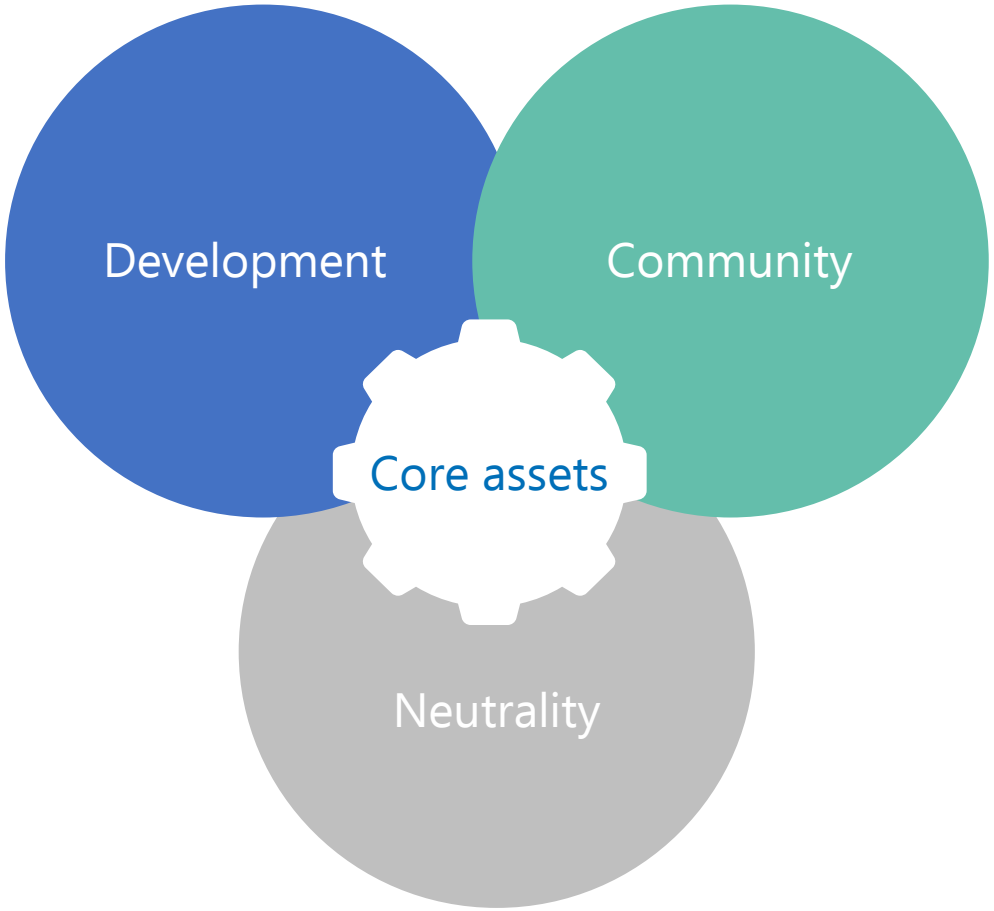
“Coopetition!
Open-source over classic collaboration.
Digitalization can’t be achieved in isolation.”
Stefan Hohm, CDO at Dachser SE
open logistics
foundation

Open Logistics Foundation

A neutral ground for Open Source Development



Joint development of open source solutions and projects.

A diverse and active community working together to establish and maintain open source solutions.

A neutral ground where all parties can freely contribute and access open source software publications.

Learn more: https://openlogisticsfoundation.org/

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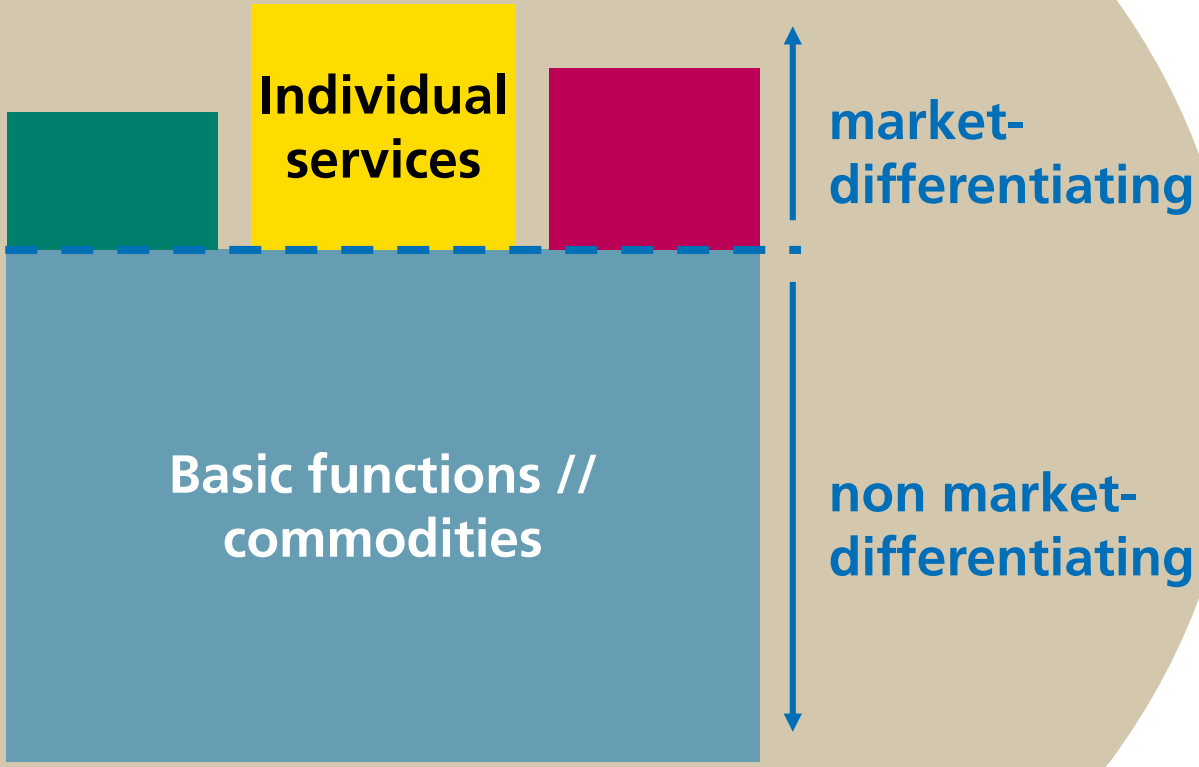
Building Commodities Together



Many developments serve basic or commodity services

- Many developments and innovations currently serve basic functions and commodity services that provide no option to monetise.
- Commodities are non market-differentiating services or basic features that companies offer to their clients.

Development of **commodities collaboratively**.
Focus on **market-differentiating** services **individually**.

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The path to practical application

Open Logistics Foundation – Open Customs Blockchain

Goal: Better integration and interconnection of digital customs procedures and data exchange

Open Customs Blockchain

BORDER – Export Data on Blockchain based on EAD

GPID – Simple dataset to speed up cross-border data exchange

» Open Source Blockchain Components as a key to practical applicaton

Working Group: Open Customs Blockchain

DACHSER Intelligent Logistics · RHENUS LOGISTICS · AEB · DHL · duisport excellence in logistics · LKW WALTER · Customs Solutions · Fraunhofer IML · ALS International Customs Solutions · ...

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How can Customs Authorities participate?

Customs Authorities are invited to join as:

- **Critical Reviewers** of concept, projects and technical status quo
- **Guides** on future technical developments
- **Supervising members** of a practical test / PoC

Required efforts by Customs Authorities for Proof of Concept:

Design and scope to be determined together with the authority

- **2-3 hours per month** for consultation & meetings
- **PoC duration** (including consultation/planning) can be **3 to 6 months** by agreement
- **Monitor** a **real-world shipment** through a **test / Proof of Concept process, track & verify data**
- **Project** is **open source** and **free of charge** → **No monetary investment required**

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