

# IT INNOVATION FOR CUSTOMS; BLOCKCHAIN AND DATA ANALYTICS

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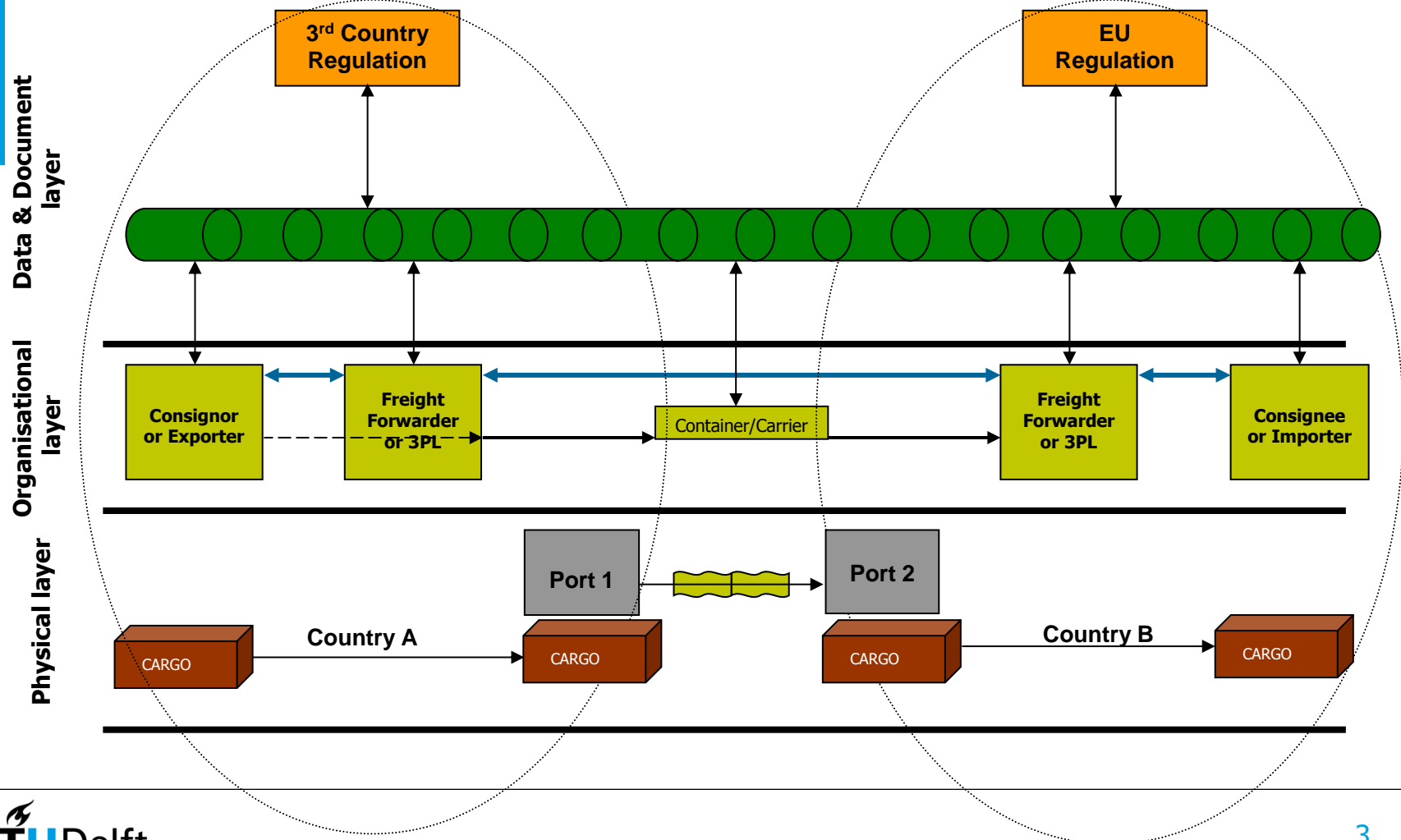
Scientific Coordinator EU projects PROFILE, CORE, CASSANDRA, ITAIDE

# Why IT innovation is important NOW

- Brexit leads to increase of customs declarations 20%/year
- E-Commerce leads to increase of customs declarations 20%/year
- total declaration volume increase 500% till 2025!!
  - Dutch declaration system AGS is tested for 1 Billion declarations/year
- Impossible to process this with current number of customs officers in the EU
  - Even when they hire extra officers
    - like 1000 extra officers in the Netherlands
- Only way out; Controls smarter with IT innovation

# Data Pipeline (Frank Heijmann, David Hesketh)

“Internet for Logistics” developed in EU research projects e.g. CORE, CASSANDRA, INTEGRITY, ITAIDE

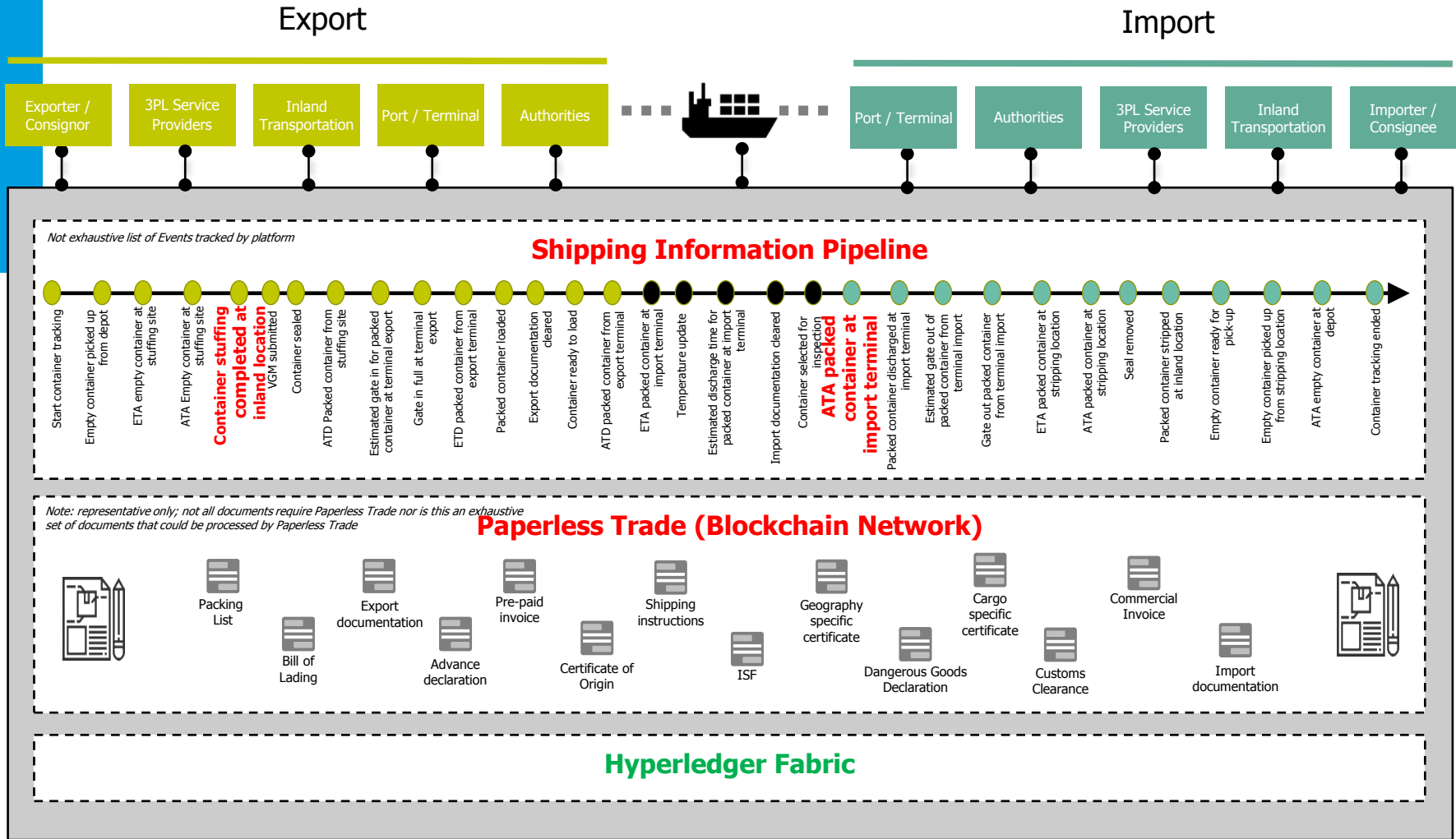


# Customs IT innovation

- **“Get Data from the Source”**; Customs should use more trade data to cross-validate accuracy of import/export declarations
  - Examples: invoice, purchase order, packing list
- Companies are **willing** and **able** to share their trade data via IT platforms with customs
  - Most companies use enterprise information systems (e.g. ERP)
  - Willing if it provides trade facilitation
- Trade data is available in **IT systems of companies**
  - Can be accessed by customs via IT platforms;
    - Government; e.g. port community systems, single windows
    - Trade: e.g. INTTRA, Descartes, GT-Nexus, SAP, IBM
- Examples of **next generation IT innovations** for customs
  - **Blockchain**
  - **Data analytics**

# TRADELENS Blockchain IT platform

## Prototype developed by MAERSK and IBM in EU project CORE



# TRADELENS: Shipping Information Pipeline

John Smith  
Country authority
▼

Tracking ID

Container no.

From ▼

To ▼

Search

MRKU3761183 ▼

PO12345

Shoes

40ft High Cube Dry

VGM: 22531 lbs

570763381

Rotterdam

EToD 2016-10-22

09:12

●

●

●

●

●

●

●

●

●

India Depot  
ATD 2016-09-21 18:17

Kattupali  
ATA 2016-09-22 04:52  
ATD 2016-09-27 04:39

Colombo  
ATA 2016-09-30 03:22  
ATD 2016-09-30 16:39

Colombo (DC)  
ATA 2016-09-30 16:58  
ATD 2016-09-30 20:21

Colombo  
ATA 2016-10-02 16:15  
ATD 2016-10-04 13:01

●

Rotterdam  
ATA 2016-10-21 15:43  
EToD 2016-10-21 18:02

Terminal  
ETA 2016-10-21 18:35  
ETD 2016-10-22 09:12

Rotterdam (DC)  
ETA 2016-10-23 15:44  
ETD 2016-10-23 19:53

Netherlands Depot  
ETA 2016-10-24 12:00

Start container tracking 2016-09-01 06:08+03	ATD from port 2016-10-21 15:43	Temperature read 2016-10-21 20:20	Temperature read 2016-10-21 20:25	Temperature read 2016-10-21 20:30	ETA at port 2016-10-21 14:23	ATA at port 2016-10-22 09:56	Full container discharged 2016-10-22 14:42	Container pre-cleared 2016-10-22 15:34	Estimated gate out 2016-10-22 15:56	ETA full container at DC 2016-10-22 16:52
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Previous events

● Netherlands
▲

● Rotterdam (NLRTM)
▲

2016-10-22 16:52	ETA full container at DC	2016-10-23 15:44	📍	By Trucker
2016-10-22 15:56	Estimated gate out	2016-10-23 08:00	📍	By Carrier
2016-10-22 15:34	Container pre-cleared		📍	By Country authorities
2016-10-22	Full container discharged		📍	By Terminal

# TRADELENS: Paperless Trade (Blockchain)



- Packing List
- Commercial Invoice
- Certificate of Origin ✔ ✔
- Phytosanitary Certificate ✔
- Export License**
- Bill of Lading

**BLOCKCHAIN**

- ID: 92148fb - Certificate of Origin approved by KEPHIS on 12/4/2016, 8:13:56 AM
- ID: dxjc7l - Phytosanitary Certificate approved by KEPHIS on 12/4/2016, 8:13:55 AM
- ID: bvztnhf - Certificate of Origin approved by KRA on 12/4/2016, 8:13:44 AM
- ID: zmdagvi - Bill of Lading uploaded by Kenyan Growers Co. on 12/4/2016, 8:13:36 AM
- ID: 8trkh0m - Export License uploaded by Kenyan Growers Co. on 12/4/2016, 8:13:36 AM
- ID: ug2gw99 - Phytosanitary Certificate uploaded by Kenyan Growers Co. on 12/4/2016, 8:13:35 AM
- ID: 9rlxae - Certificate of Origin uploaded by Kenyan Growers Co. on 12/4/2016, 8:13:35

### HCDA's View

Order # 57cf4adbbf2e10ba61d981e5 Customer Kenyan Growers Co.

#### Export License

Document Status: ✔ **Verified**  
Document has not been modified

Signatures required:  
HCDA  
Awaiting Signature

Document ID: 57cf4bc8bf2e10ba61d981ea  
[export-license.pdf](#)

Approve Invoice, COO & Export License

Q Zoom

# Large Volume of Containers and Data

- **TRADELENS global roll-out**

- Many global companies participate
- Large number of container (> **1,6 million!**)
- Large number of container event data and documents (> **350 million!**)
- Active piloting of Dutch Customs (and various other Customs!)
- Dutch Customs built *Customs Real-Time Information* (CRIS) system to connect to data pipelines such as Tradelens
  - will be integrated in new version of Dutch customs declarations system AGS

- **TRADELENS currently connected to**

- Container Carrier systems (e.g. MAERSK, Hamburg Sud)
- Various container terminals (e.g. APMT Rotterdam, Houston, Singapore, Lima)
- Various Ports/Port Community Systems (e.g. Portbase of Port of Rotterdam, PortNet Singapore)
- Pilots with many other customs administrations: Australia, Canada, Peru, Saudi Arabia. Turkey etc.



# Benefits of Blockchain for Customs

- Blockchain platform is very suitable for sharing logistic events and documents among all parties in supply chains
  - Immutable: data cannot be changed
  - Secure: data cannot be read by competitors without authorization, but always accessible for customs
- Customs can use blockchain platform as **data pipeline** solution to collect extra business documents to detect fraud with customs declarations; examples: Pro-forma invoice, Packing list, Certificates (e.g. origin, phytosanitary, veterinarian)
- Tradelens is now piloted with various customs all over the world
  - E.G. pilot the new **Customs Real-time Information System** (CRIS) of Dutch Customs
- TAXUD is doing pilots with EMCS and eATO
  - See <https://youtu.be/qsmo7VOqATI>

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# PROFILE



## GOAL

Develop modern data analytics and leverage Big Data and open data sources for customs risk management



## PARTNERS

15 partners (5 Customs)



## BUDGET

5 million EUR

### Customs Administrations

- Belgium
- Estonia
- Netherlands
- Norway
- Sweden

### Other Partners

- Cross-border Research Association(Coordinator)
- Netherlands Organisation for Applied Scientific Research
- The Swedish Defence Research Agency
- The Norwegian Defence Research Establishment
- IBM
- INLECOM
- BMT
- Joint Research Centre
- TU DELFT
- University of Lausanne



## DURATION

36 months



## START

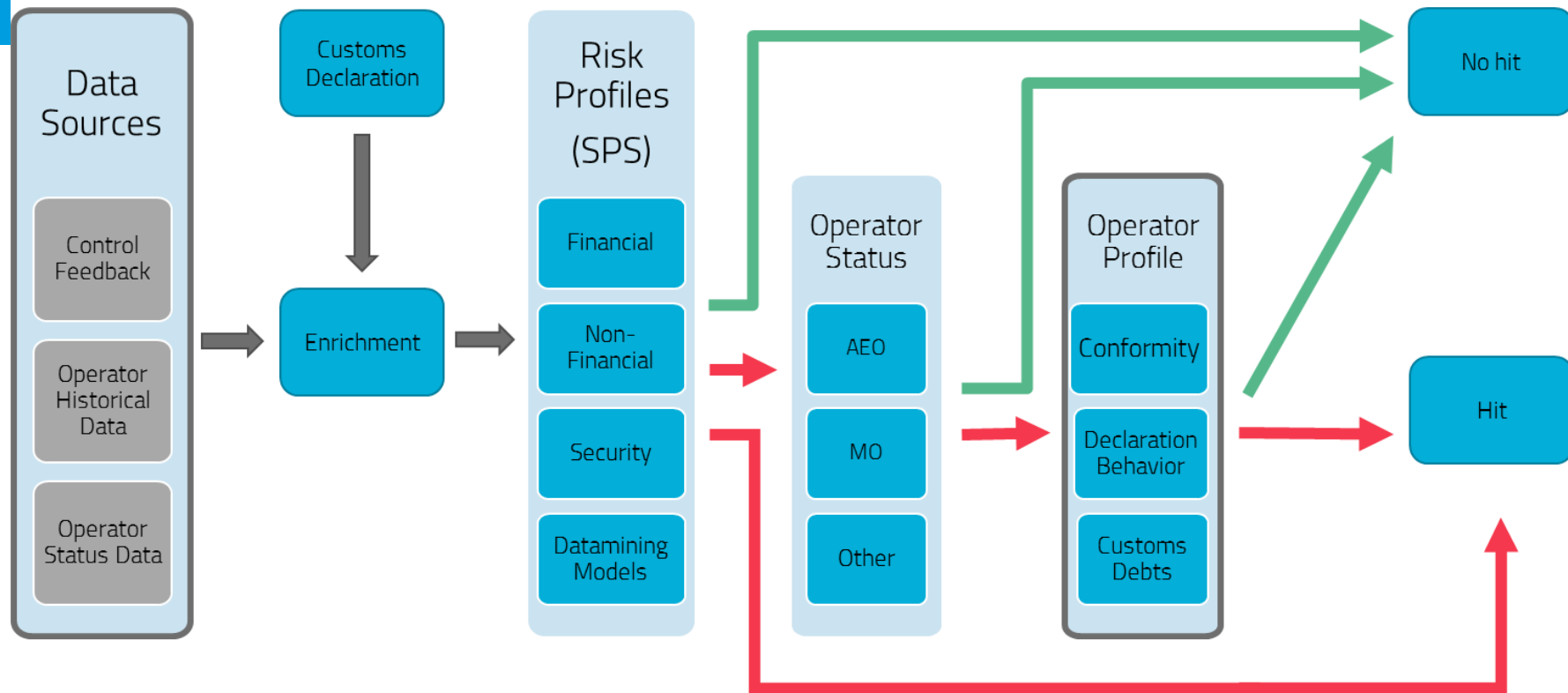
1 August 2018

# Benefits of Data Analytics for Customs

- NL Pilot: Check price on import declaration of e-commerce goods
  - by automated search of price of goods on e-commerce web sites (thousands!)
- **Data Analytics** to do **automated search** of e-commerce web sites
  - Compute average price from these web sites
  - Support tool for customs targeting officer to cross-validate stated value in customs declaration
  - Developed in EU research project PROFILE
- This data analytics will be piloted in the new **Customs Real-time Information System** (CRIS) of Dutch Customs

# Belgian Customs Operator Profiling

## SEDA 2.0 selection engine



# Potential IT innovations for Brexit:

## “Pushing Controls Out of the Border”

