

Waterways serving urban areas thanks to data-driven decision making

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(Multitel)

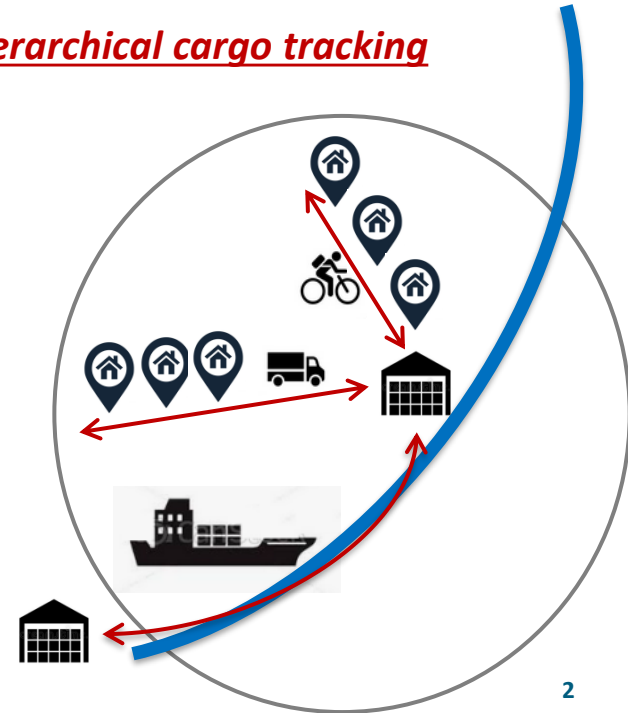
12/10/23

AS1a scenario: transportation of goods into dense urban areas



⇒ Increasing IWT efficiency thanks to reactive data-driven decision making

- based on real-time tracking data availability:
 - with embedded IoT sensors for an end-to-end real-time hierarchical cargo tracking
- enabling to choose the optimal multimodal route
 - optimal planning & allocation of residual capacities
 - using Revenue Management technology
- paving the way for synchro-modality



Scenario stakeholders

⇒ Technical partners implementing IW-Net solutions:

- Hierarchical tracking (EPCIS – IoT): **IT-Optics**, **NGS** & **Multitel**
- Revenue management optimization & data analytics : **UPHF** & **ICCS**
- Block Chain : **Inlecom**

⇒ Logistics partners testing IW-Net solutions:

- **Sogestran** & **Blue Line Logistics** with :
 - Zulu and its on board crane (small barge dedicated to pallets transportation)
 - FlexiMalle, a terrestrial container dedicated to urban logistics
- **Port of Brussels**
 - with its Brussels Consolidation Construction Centre (BCCC), a multimodal urban hub located at the water edge operated by Shipit
 - with Urbike, helping to implement interconnexion between IWT and urban last mile delivery



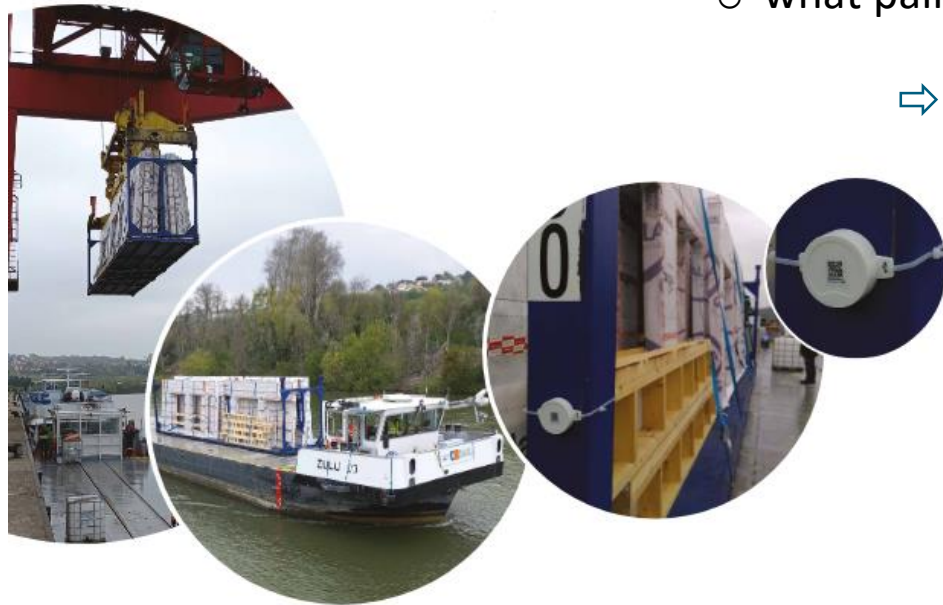
Real-time tracking data availability ...

⇒ linking tracking data from fragmented sources:

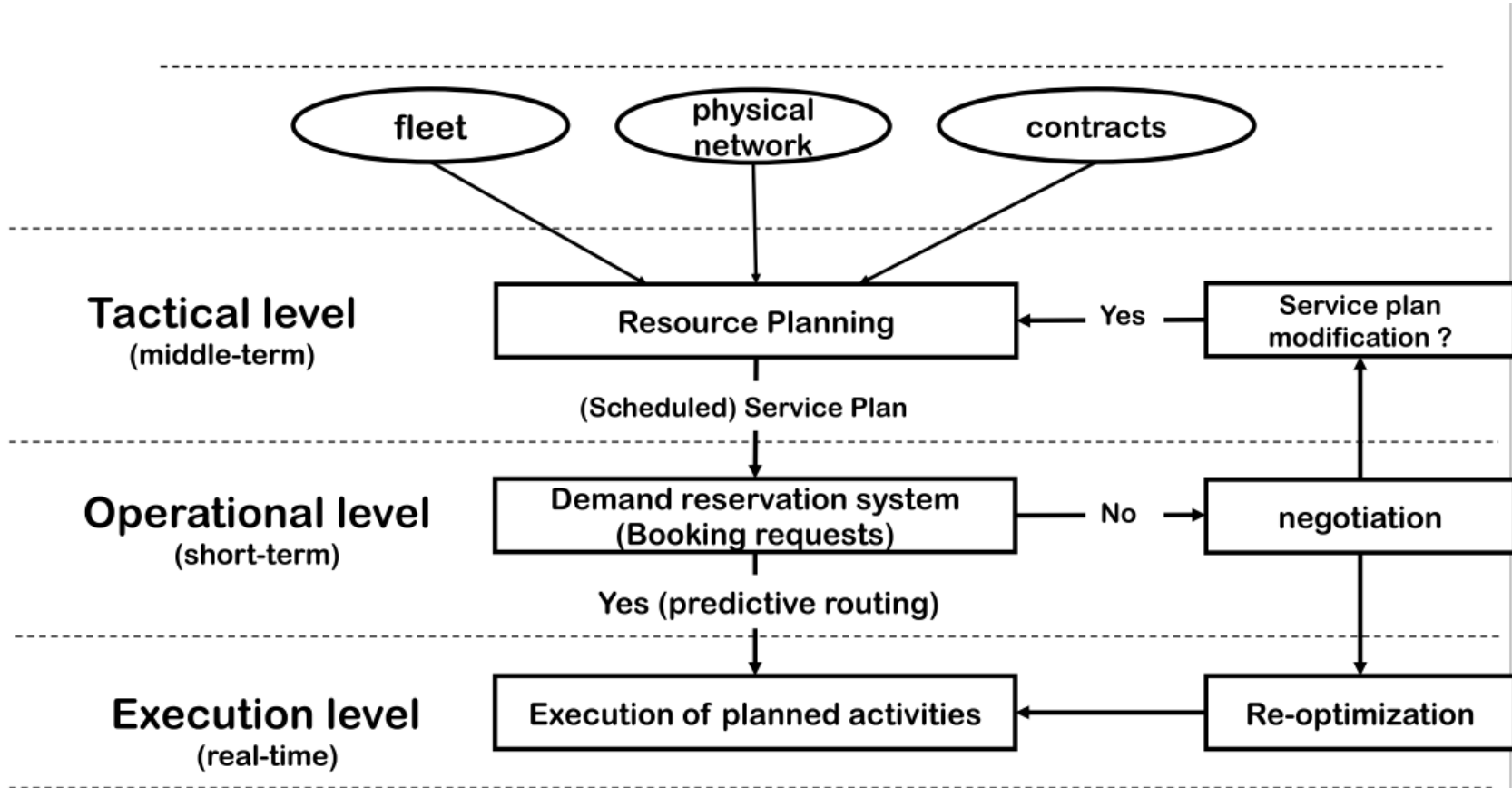
- with embedded IoT sensors
 - last known location of logistics units (pallets ...)
 - hierarchical cargo tracking in multimodal environment:
 - what pallet in what vessel, in what truck?

⇒ proposing real time follow-up of shipment:

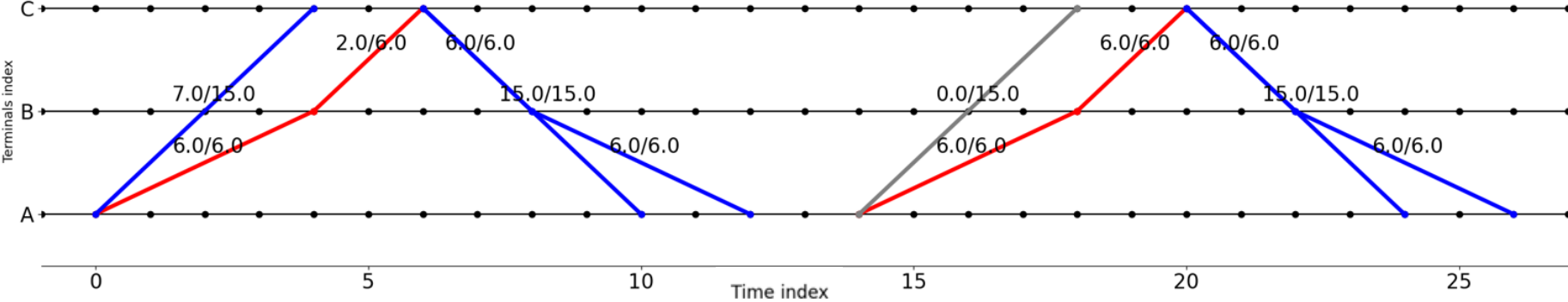
- end to end seamless visibility
- synchronization between IWT & urban logistics actors



... enabling to choose the optimal multimodal route



Revenue Management optimization: initial status



Dates

19/09/2023

24/09/2023

From-To

TDF Le Havre

TDS Evry

Dates

19/09/2023

24/09/2023

From-To

Paris Terminal

TDS Evry

Dates

26/09/2023

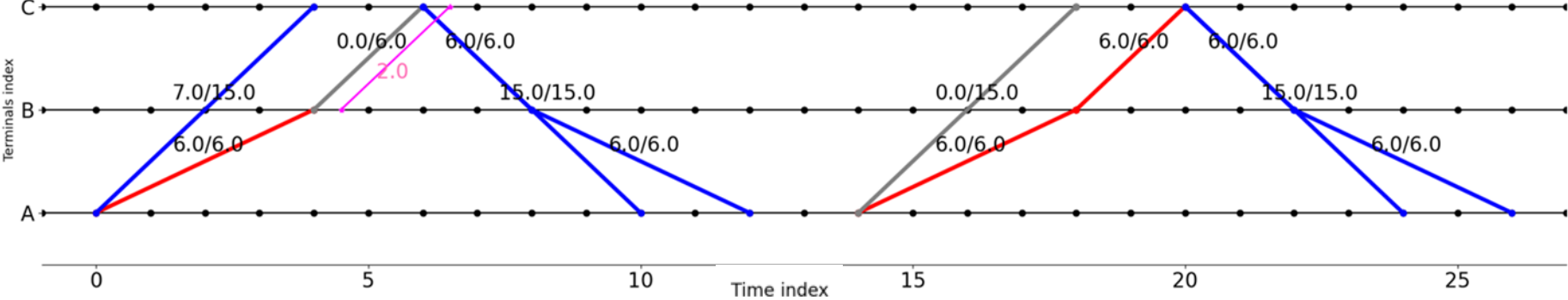
30/09/2023

From-To

TDF Le Havre

TDS Evry

Revenue Management optimization: next status



Dates

19/09/2023

24/09/2023

From-To

TDF Le Havre

TDS Evry

Dates

19/09/2023

24/09/2023

From-To

Paris Terminal

TDS Evry

Dates

26/09/2023

30/09/2023

From-To

TDF Le Havre

TDS Evry



Data harmonization

- Enabling interoperability between **IWT platform** and external information systems
- Data exchanges based on worldwide GS1 standards (EDI XML, EPCIS ...)

From : Bel Orta Mechelsteeweg 120 2860 -Sint-Katelijne-Waver BE Oct 11, 2023, 12:00:00 AM	To : Shipit Avenue du Port 67 1000 -Bruxelles BE Oct 12, 2023, 12:00:00 AM	Status DROP-OFF	Informations Gsin: urn:epcid:gsin:302702018.5410107 Cargo Description: Food Cargo Type: 12 Volume M ³ : 1 Weight Kg: 10 Quantity: 1
--	---	-------------------------------	--

Date Create ↕	Class Content ↕	Status ↕	Blockchain
Oct 9, 2023	TransportStatusNotificationMessageType	DROP-OFF	Check
Oct 9, 2023	TransportStatusNotificationMessageType	DAMAGED	Check
Oct 9, 2023	TransportStatusNotificationMessageType	EN-ROUTE	Check
Oct 9, 2023	TransportStatusNotificationMessageType	DEPARTURE	Check
Oct 9, 2023	TransportStatusNotificationMessageType	PICKUP	Check
Oct 9, 2023	TransportInstructionResponseMessageType	ACCEPTED	Check
Oct 9, 2023	TransportInstructionMessageType	SENT	Check

Data harmonization

- Enabling interoperability between IWT platform and external information systems
- Data exchanges based on worldwide GS1 standards (EDI XML, EPCIS ...)

XEOLIS waterway carrier Waterway Carrier French

Dashboard > Mission EDI > Mission EDI detail

Mission EDI - Freight Forwarder Company GINC: 142501581.1696859733280 GSIN: 302702018.5410107 ✓ Acceptée

FROM::Bel Orta

Mechelsesteenweg 120
Sint-Katelijne-Waver 2860 BE

2023-10-11

edi_um.epc.id.sgin:302702018.000.57

TO::Shipit

Avenue du Port 67
Bruxelles 1000 BE

2023-10-12

edi_um.epc.id.sgin:302702018.000.6

Transport Instruction d'origine

Accepté (voir la mission)

Commentaire de mission

[T1] 2023-10-09 15:55
Cargo type : (12) General cargo - Cargo of a general nature, not otherwise specified.
Descriptif : Food
Volume : 1 MTK
Poids : 10 TNE
Quantité : 1

Date	Type	Flow
2023-10-09	DELIVERY	
2023-10-09	DAMAGED	▲
2023-10-09	EN_ROUTE	
2023-10-09	DEPARTURE	
2023-10-09	PICKUP	
2023-10-09	INSTRUCTION_RESPONSE	○
2023-10-09	TRANSPORT_INSTRUCTION_ADD	➔

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Data security

⇒ Objective:

- Build data exchanges based on trust between stakeholders.

⇒ Thanks to:

- Unforgeable record of all of the transactions across the network,
- Using Block Chain technologies

```

<transportStatusNotification>
  <creationDateTime>2023-10-06T12:50:38.824488400Z</creationDateTime>
  <documentStatusCode>ORIGINAL</documentStatusCode>
  <documentActionCode>ADD</documentActionCode>
  <transportStatusInformationCode>STATUS_AND_MOVEMENT</transportStatusInform
  <transportStatusObjectCode>SHIPMENT</transportStatusObjectCode>
  <transportStatusNotificationShipment>
    <gsin>urn:epc:id:gsin:302702018.5100967</gsin>
    <transportStatus>
      <transportStatusConditionCode>18</transportStatusConditionCode>
      <transportStatusReasonCode>51E</transportStatusReasonCode>
    </transportStatus>
    <transportStatusNotificationTransportMovement>
      <actualWayPoint>
        <logisticLocation>

```

Home Execution (history) Resource planning Demand Booking Rules Parameters

urn:epc:id:gsin:302702018.5100967

DAMAGED

Blockchain [CHECK_SUCCESS]

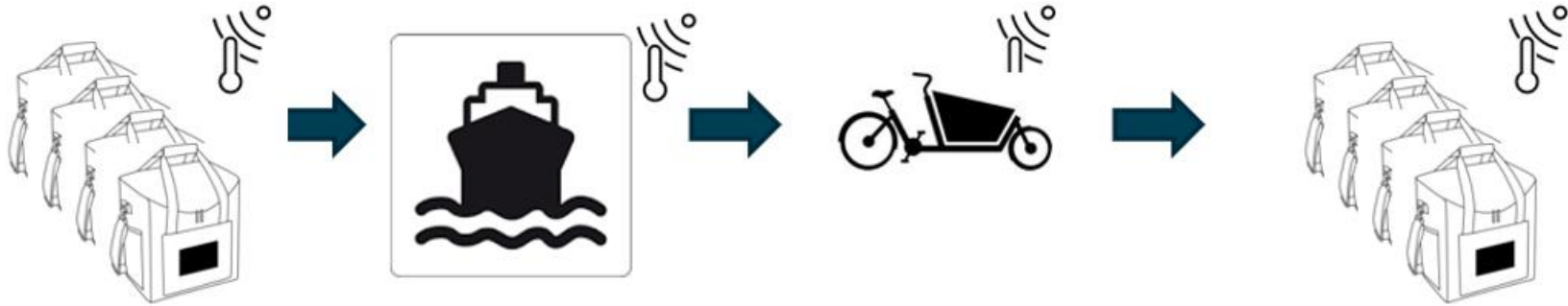
[f6f38e6c4829196a546b2188329984bbb66cc515b1834465f8a4bc93a5a1095e]

```

<individualReturnableAssetIdentification>
  <grai>urn:epc:id:sscc:302702018.00003001</grai>

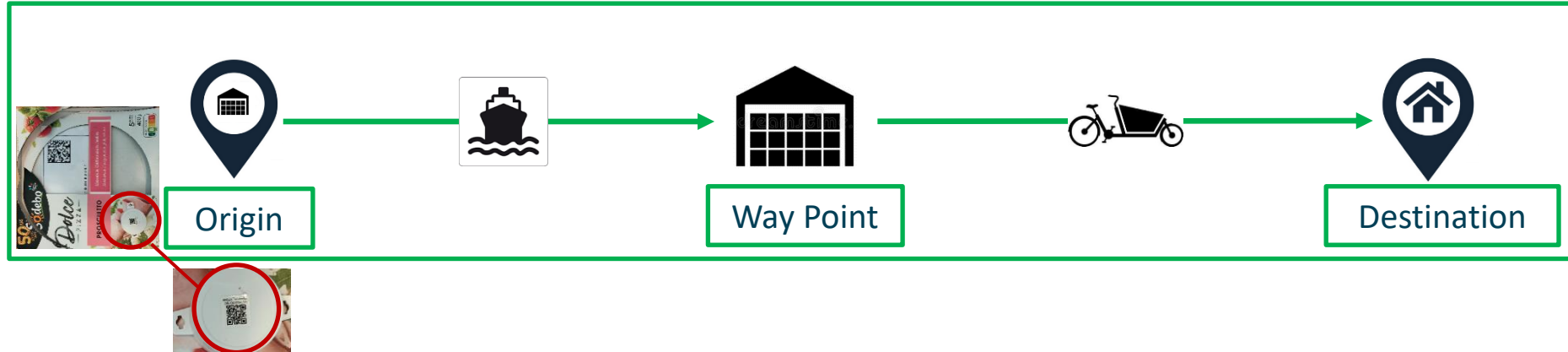
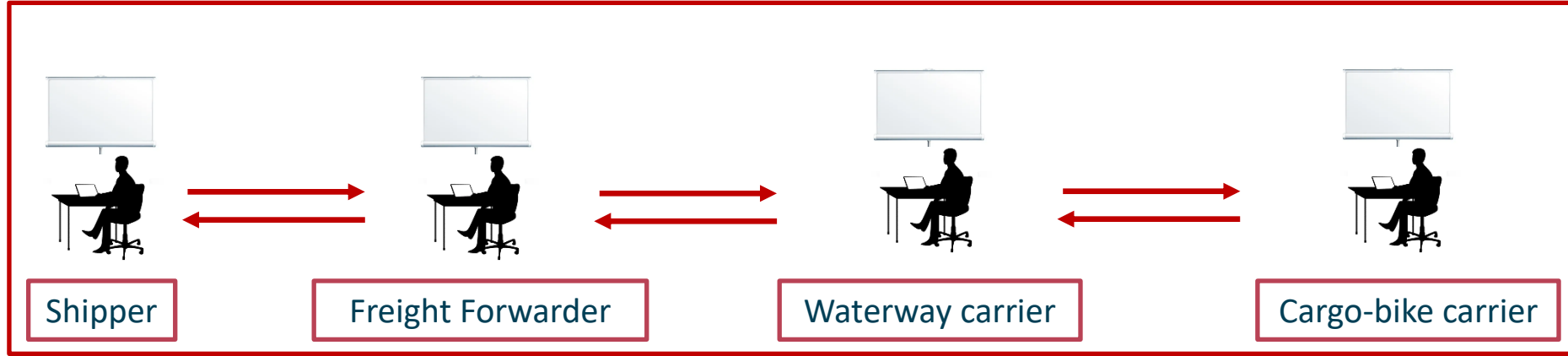
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Scenario outline, played on 31/08 in Brussels



- A shipper sends an end-to-end transport instruction to a freight forwarder (FF)
- The FF organizes this mission in a multimodal way:
 - A first leg by waterway
 - A second leg (last mile) by cargo cycle
- Logistics units are tracked during each leg of this multimodal voyage :
 - Tracking at different hierarchical level (box, container, vehicle)
 - Tracing with alerts (shock or break in the cold chain)

Real-time presentation showing interoperability between modes







Thank you for your attention!