Florence School of Regulation

MORE EFFICIENCY THROUGH DIGITALISATION IN COMBINED TRANSPORT

MOVING FROM DIGITIZATION TO DIGITALIZATION

GLOBAL NETWORK

New Entrants increase logistics footprint
(e.g. amazon)

Customers expect high
reliability & valid information
(e.g. ETA, booking)

Combined Transport

Shippers use advanced software
to perform 3PL's tasks
(e.g. BOSCH Unilever BMW)

Regulators push digitalization
(e.g. TAF – TSI, eFTI, digital
market)

Improved communication &
information richness

(e.g. 5G , INTERNET of THINGS)
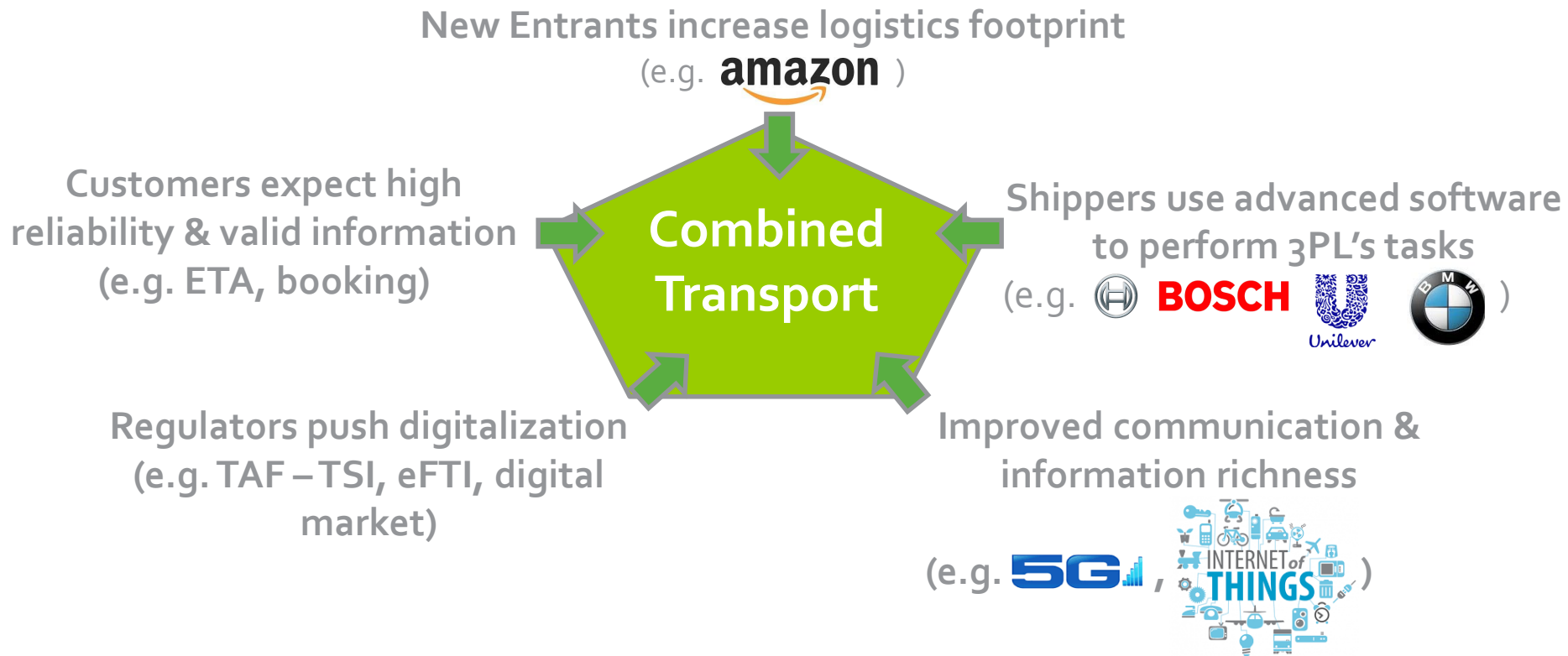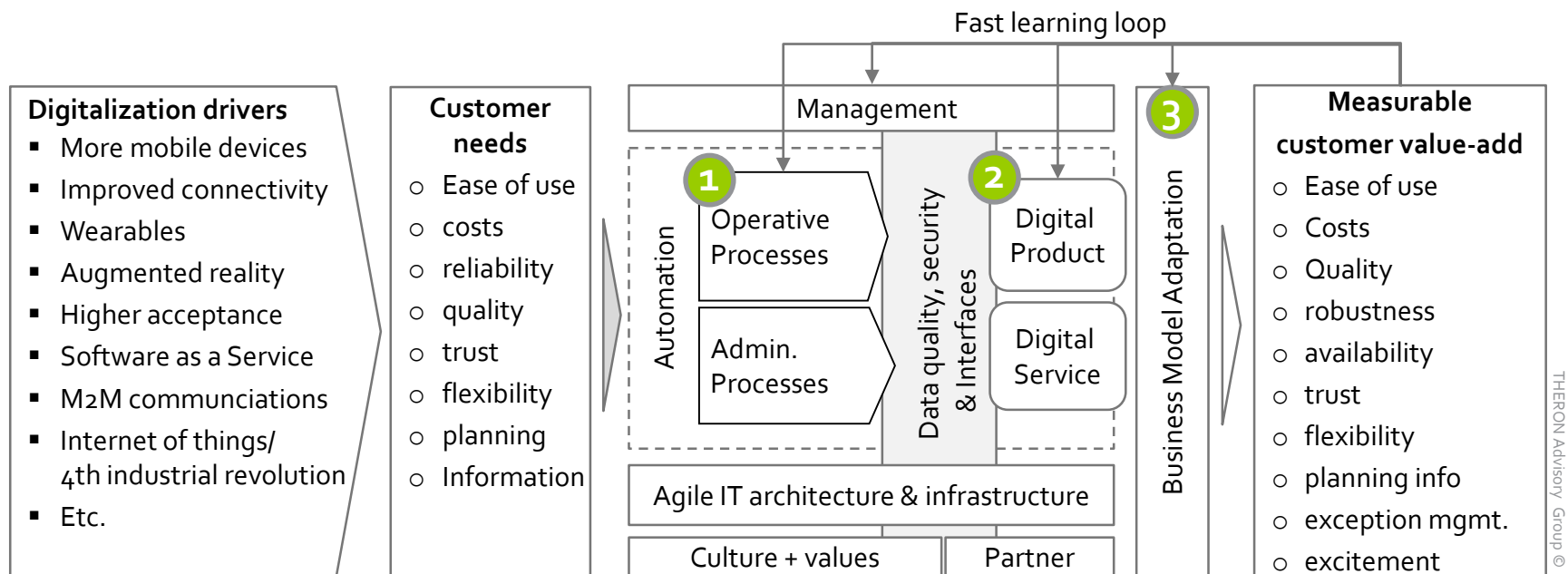
*Role of Digitalization:
Pain or opportunity for combined transport?*

Digitalization is the process of increasing the use of digital technologies and processes to transform the firm and other stakeholders through new value adding activities to achieve better efficiency and higher profitability.

Fast learning loop

Digitalization drivers
- More mobile devices
- Improved connectivity
- Wearables
- Augmented reality
- Higher acceptance
- Software as a Service
- M2M communciations
- Internet of things/ 4th industrial revolution
- Etc.

Customer needs
- Ease of use
- costs
- reliability
- quality
- trust
- flexibility
- planning
- Information

Management

Automation

1 Operative Processes

Admin. Processes

Data quality, security & Interfaces

2 Digital Product

Digital Service

Agile IT architecture & infrastructure

Culture + values

Partner

3 Business Model Adaptation

Measurable customer value-add
- Ease of use
- Costs
- Quality
- robustness
- availability
- trust
- flexibility
- planning info
- exception mgmt.
- excitement

THERON Advisory Group ©

Digitalization can affect all parts of a company. Mostly automation of processes, digital output and business model innovation are in focus. A wider view encompasses the whole system of interdependencies (incl. mindset, culture, standards and partners).

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Shippers increasingly steer their logistics operations directly or via 4PLs to increase transparency, control and reduce costs and transit time.

kraft foods · **Mondelēz** International · **Shipper Supply Chain Control Service Centre** · BOSCH · Unilever · BMW
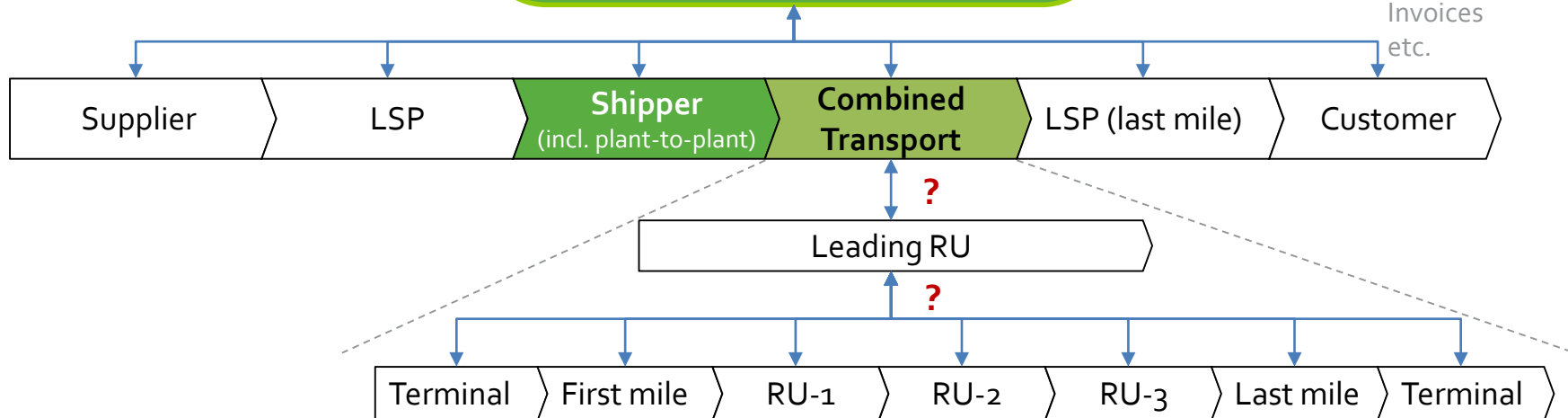
Strategic Network Planning

Predictive Transport Optimisation

Dynamic Transportation Management

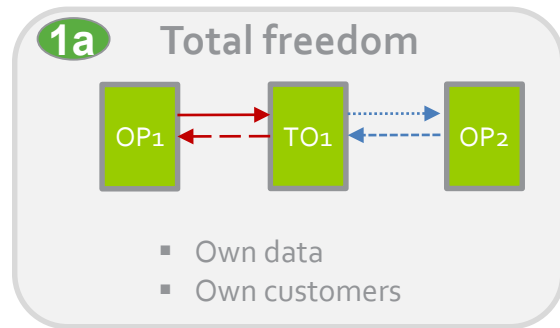**Transportation Management**

Software as a Service Solutions

Increasing automation requires accurate information in real time

Orders
Timestamps (e.g. ETA)
Documents
Invoices
etc.

| Supplier | LSP | Shipper (incl. plant-to-plant) | Combined Transport | LSP (last mile) | Customer |

?

Leading RU

?

| Terminal | First mile | RU-1 | RU-2 | RU-3 | Last mile | Terminal |

1a — Total freedom

OP₁ → TO₁ → OP₂

- Own data
- Own customers

No concerted action with maximum freedom

1b — Common standard

OP₁ → TO₁ → OP₂

- Own data
- Own customers
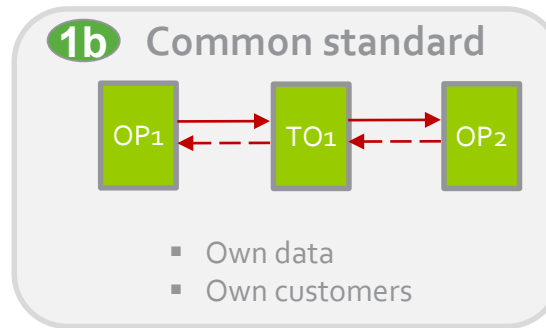
Definition of standards and lose coupling for each actor

2 — Common Platform

Shared Process + IT

OP₁   TO₁   OP₂

- Own data
- Own customers
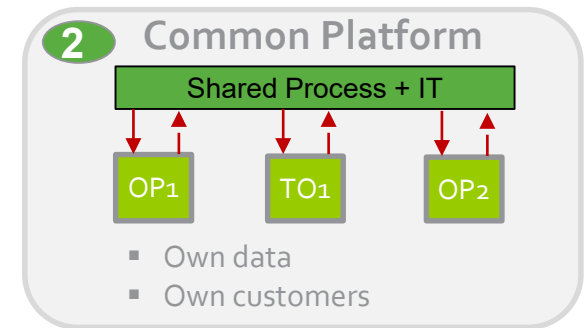
Platform approach for central tasks

	1a Total freedom	1b Common standard	2 Common Platform
Pros	▪ No advanced alignment with other partners required ▪ Competition in all dimensions	▪ Lower costs (standardization of data) ▪ Common understanding ▪ Clarity of data for customers ▪ Regulatory support and funds accessible	▪ Lowest amount of interfaces (1:n) & costs ▪ Cost efficient standardized processes ▪ Common understanding (data + processes) ▪ Clarity of data and process for customers ▪ Regulatory support and funds accessible
Cons	▪ No group scale effects and competitive advantage ▪ Maximum effort for individualized interfaces for each partner (n:m) ▪ Highest costs base per interface	▪ Maximum standard interfaces for each partner (n:m)	▪ Governance and ownership controlled ▪ Initial coordination required
Examples	▪ Tracking information exchange w/o standardization (status/interfaces) ▪ Individualized booking processes	▪ Harmonized ILU code, EDIGES ▪ ETA initiative ▪ IATA (e-AWB), IRU (e-CMR) ▪ Standard of registers (e.g. terminal and unit master data)	▪ Cesar (only partially open & only terminal-to-terminal **not** door-to-door logistics) ▪ Hacon LEIDIS (Germany) ▪ RNE TIS

Legend: TO = Terminal Operator; OP = CT Operator

UNIQUE ID FOR LOADING UNIT: ILU-CODE
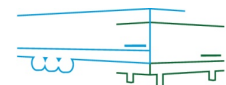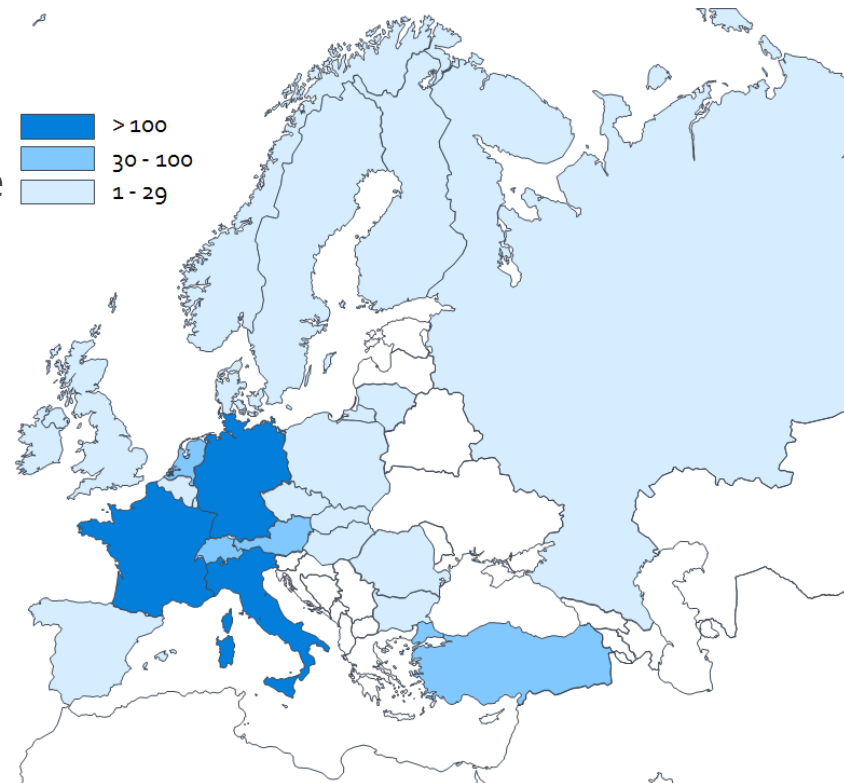
- **Mandate**

  - EN13044 appointed UIRR to be the Administrator

- **Marking**

  - UIRR members reported a +98% ILU- or BIC-Code compliance of the units they handled in 2016

- **Obligatory**

  - Modernised EU Customs Code makes it mandatory for all UCT

  - Revised Directive 92/106 will make it mandatory for all intra-EU UCT

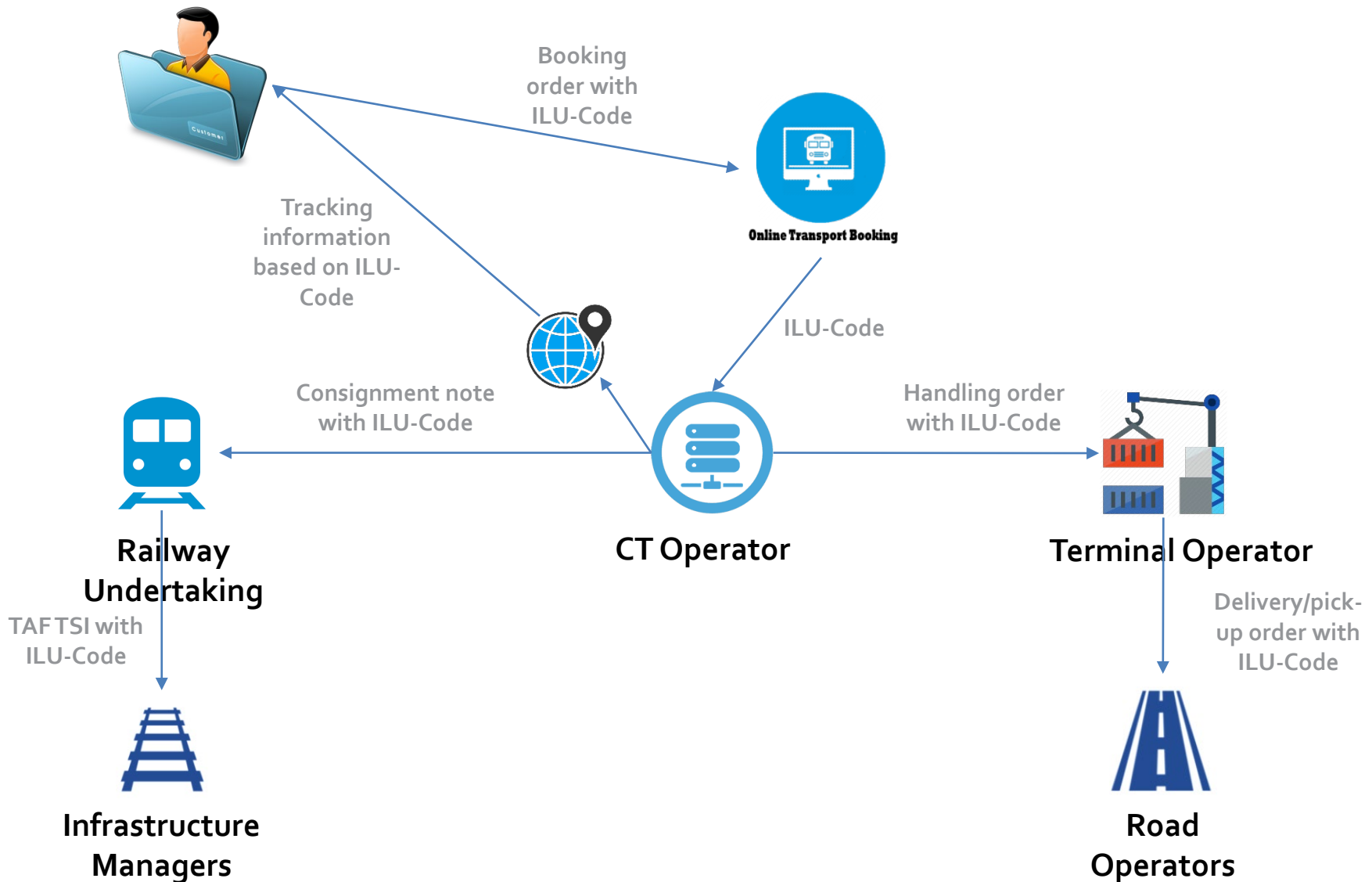 - TAF TSI requirements - Tracking & tracing, booking, consignment note

> 100
30 - 100
1 - 29

ILU-Code
identification of Intermodal Loading Units in Europe

UIRR Administrator of the **ILU-Code**

Booking order with ILU-Code

Online Transport Booking

Tracking information based on ILU-Code

ILU-Code

Consignment note with ILU-Code

Handling order with ILU-Code

Railway Undertaking

CT Operator

Terminal Operator

TAF TSI with ILU-Code

Delivery/pick-up order with ILU-Code

Infrastructure Managers

Road Operators

Directive 2012/34 + Implementing Regulation 2017/2177 on access to service facilities and use of rail-related services	**Regulation 913/2010 on** Rail Freight Corridor

Directive 2012/34: obliges Infrastructure Managers and Service Facility Managers to publish

- information concerning the capabilities of their facilities,
- the conditions of access,
- any temporary capacity restrictions,
- available capacity,
- new services and
- unused capacities/facilities (available for lease).

Regulation 913/2010: obliges (Rail Freight) Corridor Management Entities to

- compile and make available information – including available capacities – on freight terminals and junctions through the Corridor Information Document
- In addition the information is published in the Customer Information Platform (CIP)

Static messages

Service Facility Description

- Physical parameters
- Services: basic, additional and ancillary
- Opening hours
- Contact details
- Access conditions, including prices and discount schemes
- Access application, conflict resolution and complaint procedures

+ General Terms and Conditions (outside the information required by the Implementing Regulation)

Dynamic messages

- Force Majeure (limitation to access)
- Planned maintenance (limitation to access)
- Capacity Availability (traffic-light indicator)
- New capacity and new service announcements (optional)
- Facility closure advertisement

Search panel

Priority dynamic info tracker

RAIL FACILITIES PORTAL

Find Facilities

Search facilities

Select a filter to find facilities.

Facility type

Area type

Services

Postal code search

Location on Rail Freight Corridor

Facility operation status

Facility opening days

Equipment

Public accessibility

Infrastructure access

Loading unit acceptance

Cargo type

Available capacity

☑ Show advanced filters

Map legend icons

▢ Information provided according Reg. (EU) 2177/2017

▢ Facility located in port area

▢ Out of operation

▢ Planned

Passenger Station

Intermodal Terminal

Multifunctional Rail Terminal

Public Siding

Private Siding

Marshalling Yard

Storage siding

Maintenance facility

Other Technical Facility

Relief Facility

Refuelling facility

Mobile Service

Location on Rail Freight Corridor

☐ Not located on RFCs
☐ Located on RFC 1
☐ Located on RFC 2
☐ Located on RFC 3
☐ Located on RFC 4
☐ Located on RFC 5
☑ Located on RFC 6
☐ Located on RFC 7
☐ Located on RFC 8
☐ Located on RFC 9
☐ Located on RFC 10
☐ Located on RFC 11

Facility operation status

Facility opening days

Equipment

Public accessibility

☐ Open for all market bodies
☐ Public access with conditions
☐ Access limited to owner/operator

- **Real-time information about trains, wagons, goods and loading units are a key success factor.** It was found that real-time information is
    - already available for trains
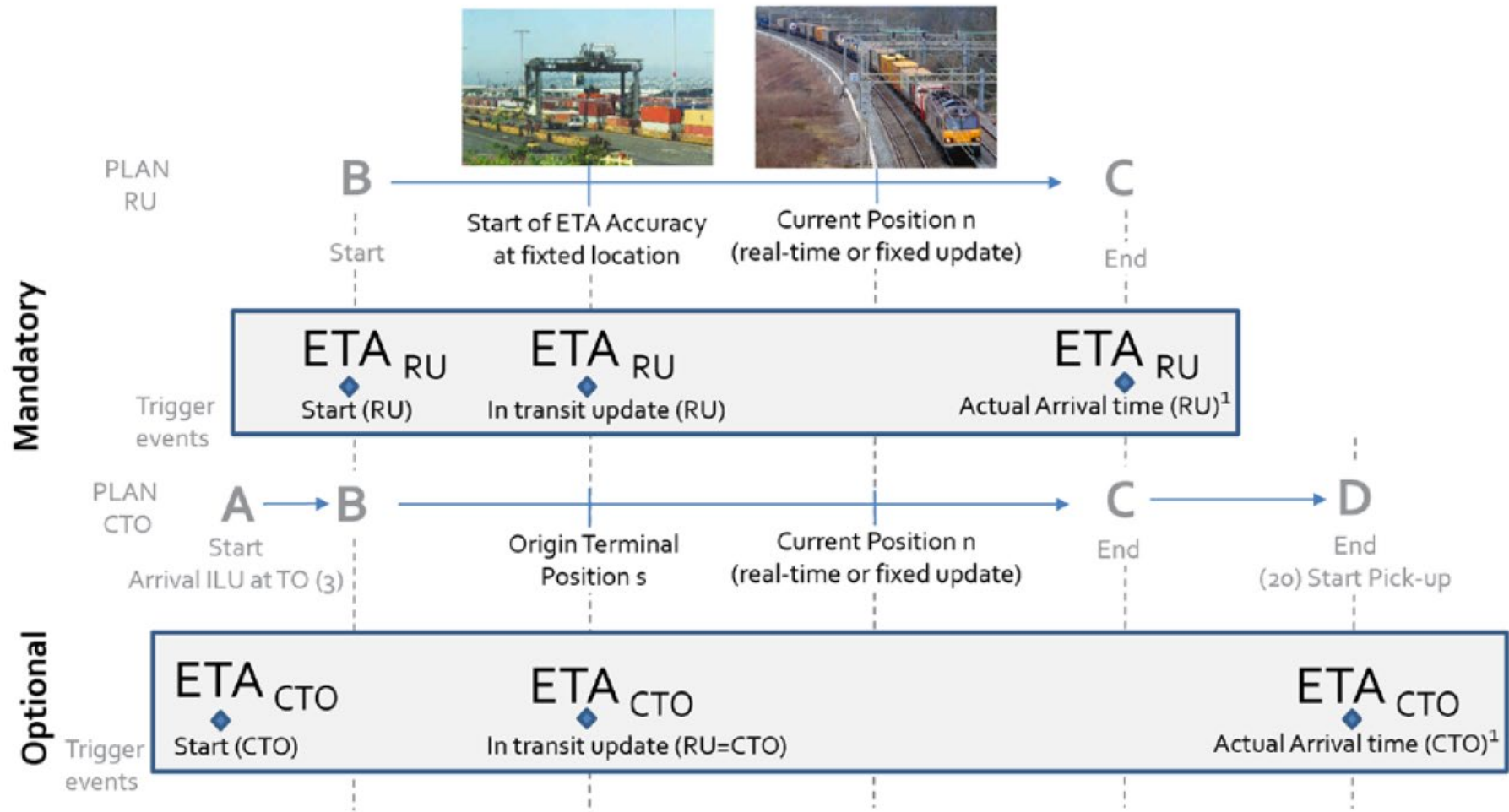   - but legal and administrative barriers are sometimes hindering it
    - some freight forwarders use GPS-like systems for track/trace; it is expensive but provides a service which is otherwise not provided

- **Real-time information about trains should be accessible to all involved partners**. The following needs were detected:
    - information should be available to IMs/RUs/Terminals/Shippers/Forwarders/Wagon Keepers/Intermodal/Combined Transport Operators etc.
    - mileage information, based on the real train run, would be needed
    - link to wagons and/or loading units would be required
    - long-term aim shall be a better ETAs (estimated time of arrival)

Barriers to opening real-time information to all involved partners should be removed. In addition mileage information and a link to wagons and/or loading units will be developed.

Objective

(Enhanced) ETA's for terminals and for RU's at hand-over points

Approach

Intermodal operators in leading role; IM's, RU's and RNE actively involved

Implementation

Selection of two service providers for smart ETA calculations (based on various data sources)

Possible ETA calculation methodologies

A ——————— Origin Terminal Position s ——————— Current Position n (real-time or fixed update) ——————→ B

1) Real-time predictive: based on real-time data updates

$$ETA_1 = position_n + t_{n\,to\,B}$$

2) History-based stochastic predictions

$$ETA_2 = position_s\ t_{actual} + t_{s\,to\,B} + \Delta t_{historic}$$

3) Machine Learning based prediction:

Supervised learning algorithm integrating multiple sources, e.g.

1) Based on past data
2) Based on timetables
3) Based on real-time updates
4) Based on current influencing factors from external sources (congestion, weather, terminal waiting time, etc.)

$$ETA_3 = position_n + multiple\text{-}source\ t_{n\,to\,B}$$

CESAR system overview
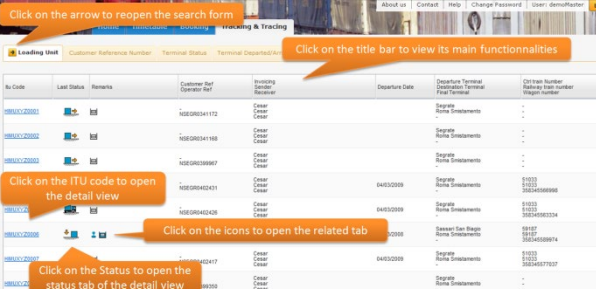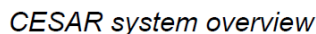
Available status information:
- booked
- delivered in departure terminal
- loaded on wagon
- departed from departure terminal
- foreseen arrival at destination terminal
- ready for pick-up in arrival terminal
- pick-up completed in arrival terminal
- arrived for gateway in intermediate terminal

Need ETA information

Customers (LSPs, freight forwarders)

CT Terminals

CESAR users

- Shipment booking

- Shipment booking

- Terminal / Unit status

- Train status IN/OUT

- Unit status
- Train irregularities

CT Operator

- Consignment notes

RU's

European Platform for Tracking & Tracing intermodal traffic

- Train transit , Train ETA, ETP

- Maritime shipment booking

- TIS System

- Unit status IN/OUT

EDI TAF TSI

Ports

IM's
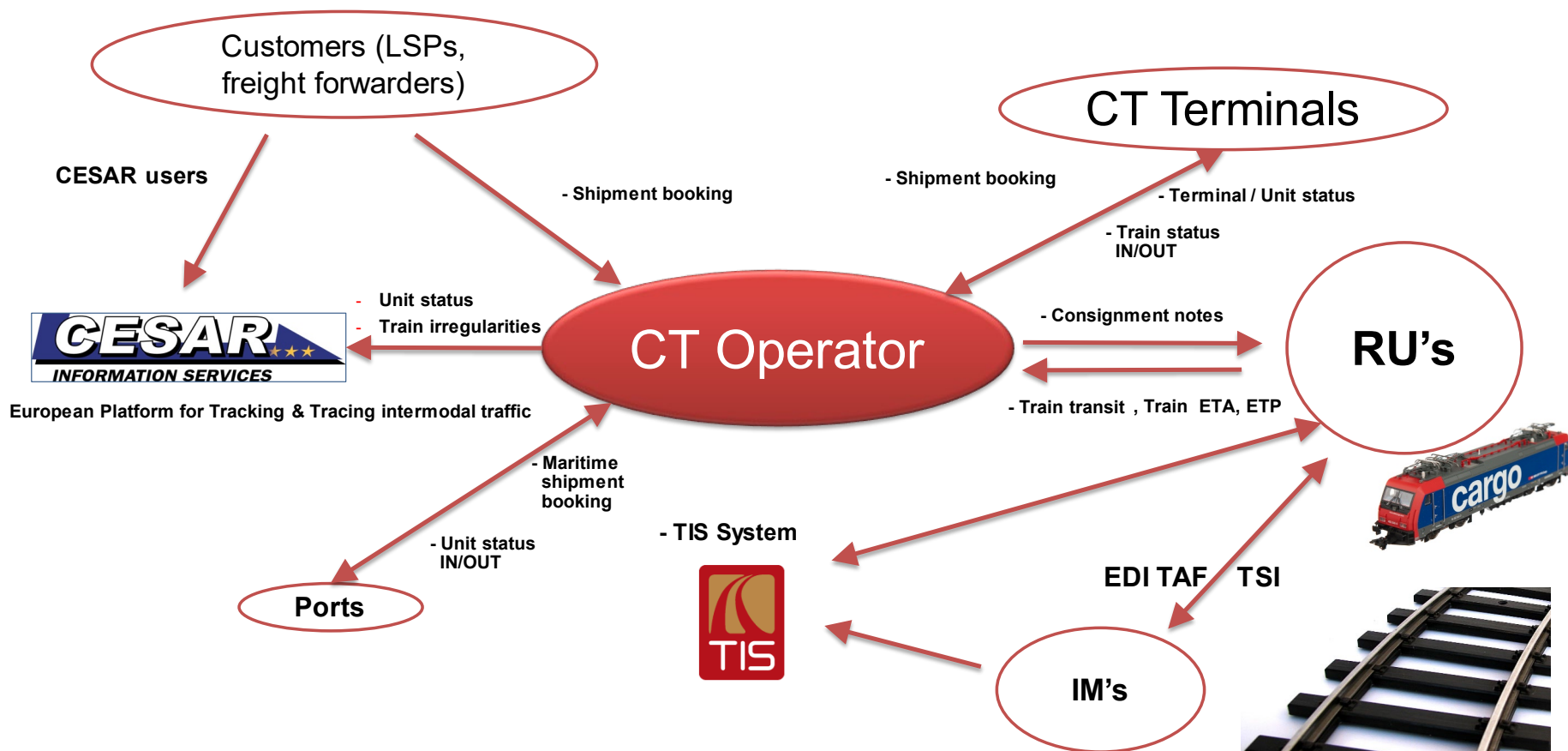
- Digitalisation means a **mental and cultural shift** ('out of the box' thinking)

- **Data democracy** (data sharing) – real-time data available for all involved freight players, free of charge and without restrictions/filtering

- Implementation of **interoperable systems and standards** to integrate all freight players in the logistics chain (e.g. EDIGES)

- Access to European-wide **reference files** (loading units, wagons, infrastructure data, location codes), e.g. ILU-Code, rail facilities portal

- Customer information: **focus on ETA (pick-up time)** and smooth B2B integration (e.g. ELETA project)

THANK YOU FOR YOUR ATTENTION

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