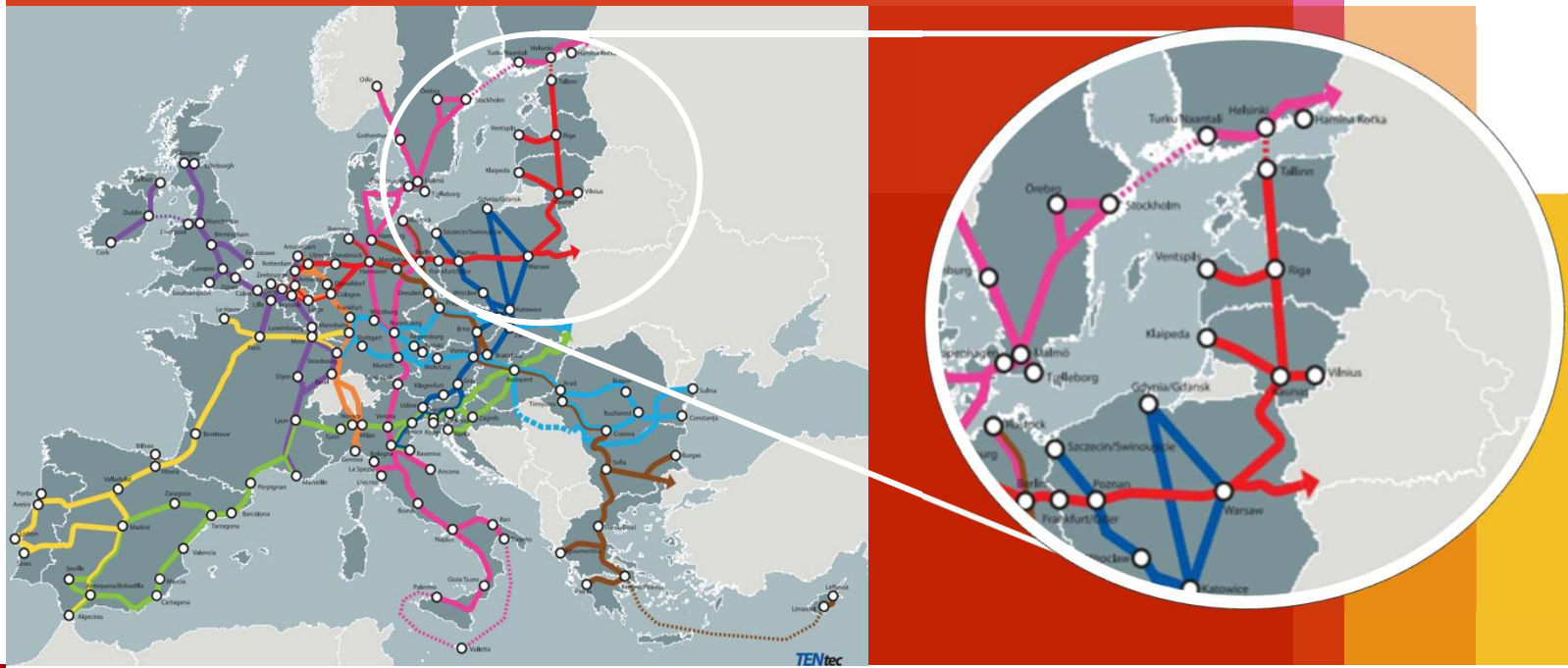


# EU Development of TEN-T corridors and arising challenges

Paolo Guglielminetti

Strictly confidential  
31 May 2018



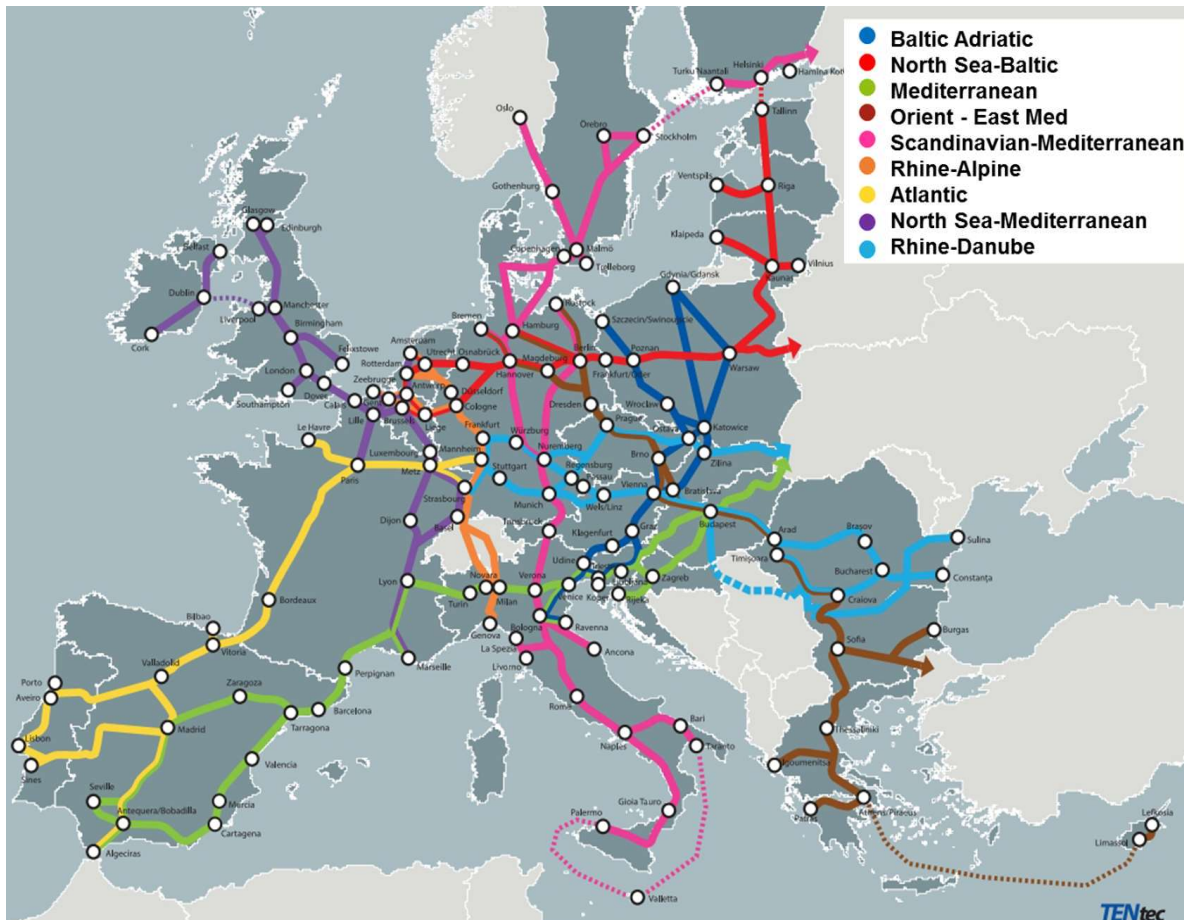
# *Overview of the Core Network Corridor and MoS*

*The key objectives of the TEN-T are achieving smooth functioning of the internal market and the strengthening of economic, social and territorial cohesion*



# Overview of the Core Network Corridor

## The 9 multimodal Core Network Corridors



- **9 multimodal corridors**, interesting the 28 EU MS
- **94 ports** connected with railway and road lines, **38 airports** with railway connection to main cities, **15.000 km of railway** lines converted to **HS**
- **Governance system** based on the stakeholder involvement through *fora*

## *The new challenges of TEN-T Core Network Corridors (CNCs)*

- The Regulation 1315/2013 and 1316/2013 have defined the characteristics and alignment of the TEN-T network, distinguishing Comprehensive and Core Network layers, the latter consisting of those parts of the comprehensive network with **highest strategic importance** for achieving the objectives of the trans-European transport network policy
- In the period 2014 – 2017, the cooperation among Member States and infrastructure manager successfully achieved the definition of the **actions to be implemented for the completion of the Core Network corridor** – with the requested infrastructure characteristics – by 2030
- Such effort has also largely driven the **preparation and evaluation of the applications for funding** of transport projects under key EU financial programs (CEF, Cohesion Fund), although the remaining financial needs are substantial
- **Decarbonisation, safety, security** and transport **efficiency** are key objective of EU transport policy.
- Achievement of Reg. 1315/2013 infrastructure targets will contribute to such objectives, but other actions – defined with a lower level of detail in the Regulation (**alternative fuels availability, digitalization**) or emerged more recently (**military mobility**) – are developing as essential elements of TEN-T development, and will require higher attention, planning, and funding effort in the coming years.

# *Alternative fuels*





## EU policy objectives for TEN-T

### Availability of alternative clean fuels



### Alternative fuels' objectives TEN-T

- availability of alternative clean fuels to be improved over the TEN-T network (IWW, roads, ports, airports)
- availability of alternative clean fuels should be based on demand for those fuels
- there should not be any requirement to provide access to each alternative clean fuel at each fuel station.

Source: Regulation UE 1315/2013

### Alternative fuels

electricity, hydrogen, biofuels (liquids), synthetic fuels, methane (natural gas (CNG and LNG) and biomethane) and liquefied petroleum gas (LPG)



substituting for fossil oil sources



contribute to decarbonisation



enhance environmental performance

### ... but there are some potential obstacles

- Lack of demand analysis for clean fuels consistently carried out for all corridors
- Lack of measurable targets (such as density of clean fuel stations, n. vehicles / ships fuelled by clean fuels)

# Availability of alternative fuels to be ensured at macro-regional level

Example of good practice

*For the future, need of moving from national initiatives and plans to a larger scale coordination [30+ ports & 20 sea carriers involved]*

## GAINN4MOS

- Aims to improve the MoS network in 6 MS
- Retrofitting and prototypes of LNG-fueled vessels (cruise ships, Ro-pax & bunkering barges)
- Construction of LNG bunkering stations at core ports

**Countries involved:** ES/FR/ HR/ IT/ PT/ SI

**Start/End :** 1.2015 – 9.2019

**Funding and cost:** M€  
19.22 CEF funding (M€  
41.37 total cost)

- GHG emissions reduced by 20%
- Sulphur emissions reduced by 80%



Bunkering barge (Valencia)



Ro-pax (Italy)



Cruise ship (Italy)

# Availability of alternative fuels to be ensured at macro-regional level

## Example of good practice

*For the future, need of moving from local initiatives and plans to a larger scale coordination [→ 13 ES & PT port authorities, Iberian facades of ATL & MED corridors]*

### CORE LNGas hive

- Aims to develop a safe and efficient, integrated logistics and supply chain for LNG in the transport industry (small scale and bunkering), particularly for maritime transport of the Iberian Peninsula
- 25 activities: 14 studies and 11 integrated pilots.

**Countries involved:** ES / PT  
**Start/End :** 2014-2020  
**Funding and cost:** M€ 16,65  
2014 CEF funding (50% of M€ 33,3 total cost)







## *Future challenges*



- ✓ Ambitious **targets** on the related **development of LNG** should be defined also in view of the long-term competitiveness of the EU's logistic clusters



- ✓ **Regional or corridor wide programs shall** gradually replace pilot initiatives at local level



- ✓ Alternative clean fuels' projects have **high potential for PPP funding**, i.e. they are eligible for blending that is likely to become standard CEF approach

*Need for action*



# *Corridor digitalisation*



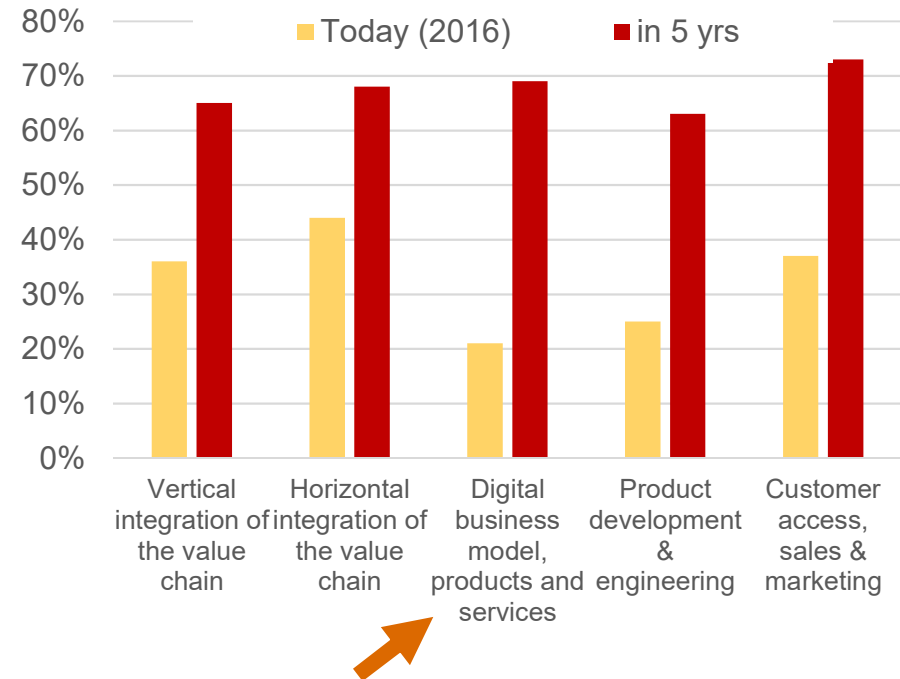
# Corridor digitalisation



Transport & logistics companies do foresee a **strong** development of digitalisation in their sector («high level of digitalisation» expected growing from 28% to 71% in 5 years)



Fonte: PwC, Survey Global Industry 4.0 PwC (2016) – with more than **2.000 participants** from 9 industrial sectors & 26 countries.

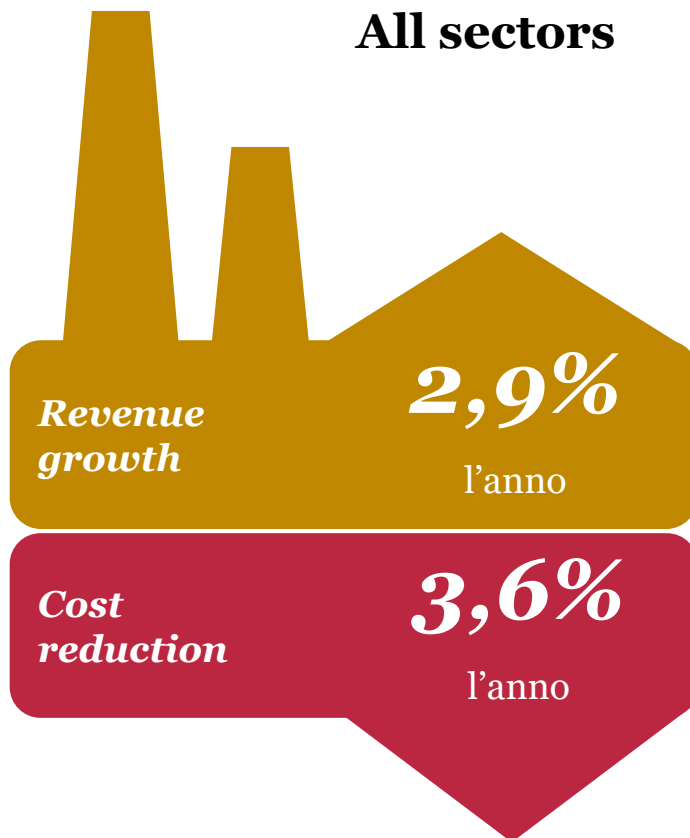


Even if only 1 T&L company out of 5 believes to have already reached high level of digitalisation in the development of business model & digital services ... digital-based model already affect significantly the sector

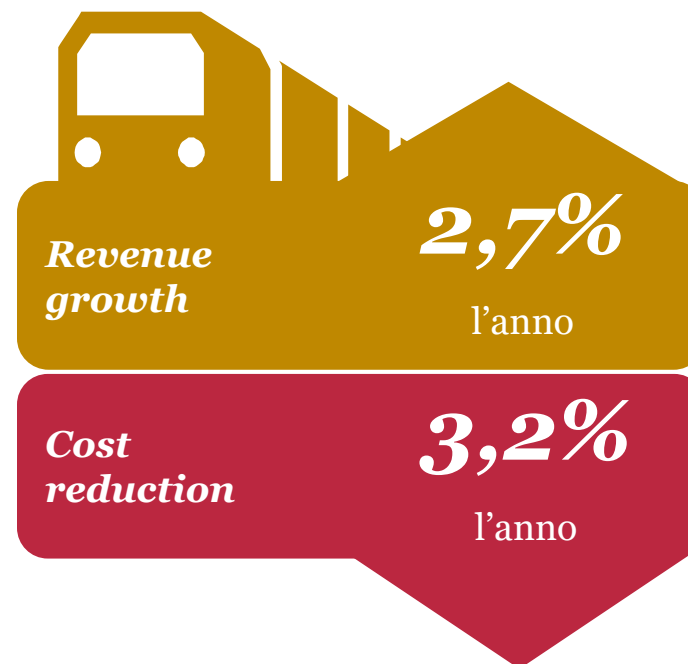
## *High expected impact on the value chain ... even if T&L companies are slightly more cautious*



### All sectors



### Transport & logistics



- ✓ Digitisation of the existing product portfolio
- ✓ Introducing new digital products
- ✓ Big data analytics for external customers
- ✓ Other services for external customers

# Reduction of network inefficiencies is essential to achieve expected benefits



## PORT CONGESTION

**LARGE NORTHERN RANGE PORTS –**  
Time loss before for the shipment to/from the inland

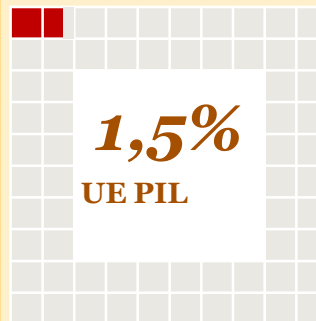


Source: DHL



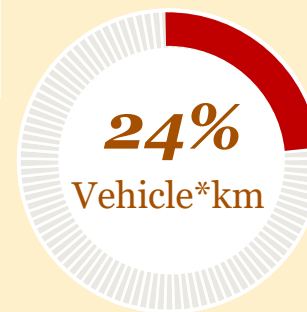
## EU ROAD AXES – congestion & inefficiencies

Source: EU



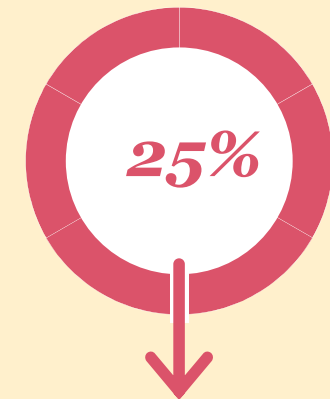
**ECONOMIC IMPACT OF ROAD CONGESTION**

**% EMPTY TRIPS OF HGVS**



## RATSTATT tunnel collapse

Source: UIRR et al.



**TOTAL ACTUAL CAPACITY AVAILABLE ON ALTERNATIVE ROUTES**

- Congestion is an important phenomenon for all EU transport networks, generating significant negative economic impact
- The system also shows a low resilience in case of exceptional events (e.g. Ratstatt)



## *EU policy objectives for TEN-T*

Digitalisation is an integral part of TEN-T development



### Efficiency objective TEN-T

- interconnection and interoperability of transport networks
- optimal integration and interconnection of all modes of transport
- efficient use of the new and existing infrastructure
- effective application of innovative operational and technological concepts

*Source: Regulation UE 1315/2013*

### INTELLIGENT MANAGEMENT OF TRANSPORT SYSTEMS has become an integral part of TEN-T development

**Functions**

- Traffic management
- Communication systems between transport modes
- Payment systems and value-added services
- Safety and environmental protection
- Simplified administrative procedures

**Applications**

**ERTMS** (rail)

**SESAR** (air)

**ITS** (road, multimodal)

**RIS** (inland WW)

**VTMIS & SafeSeaNet** (sea)

#### ... but there are some potential obstacles

- Focus on mono-modal applications
- Genericity of some objectives
- Drainage of resources for infrastructure projects

# Critical factors for corridor digitalisation



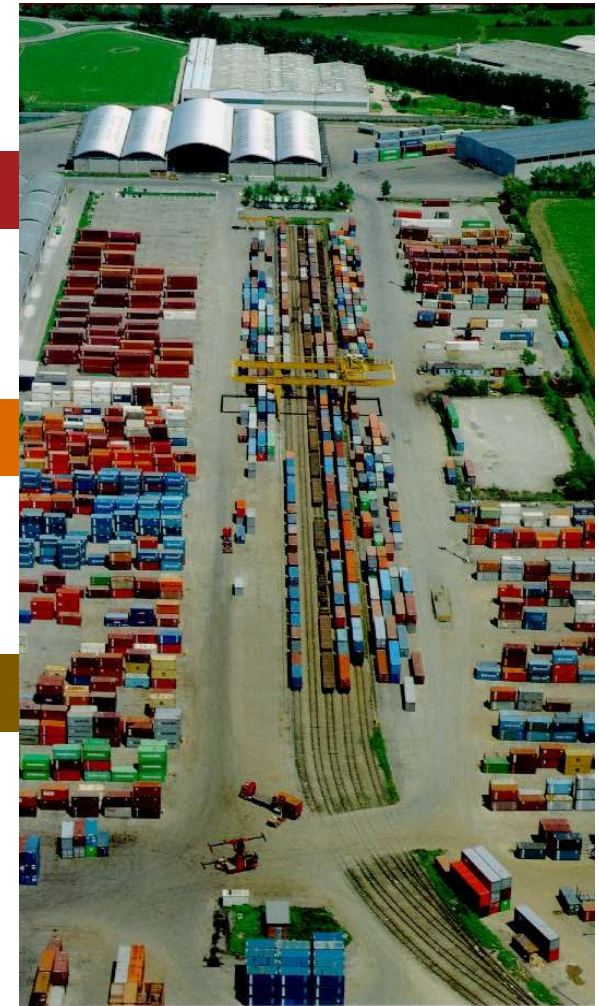
1. Adapted governance and business models



2. Sharing and protection of data



3. Interconnection and standardisation



# Adapted governance & business models

## Existing models

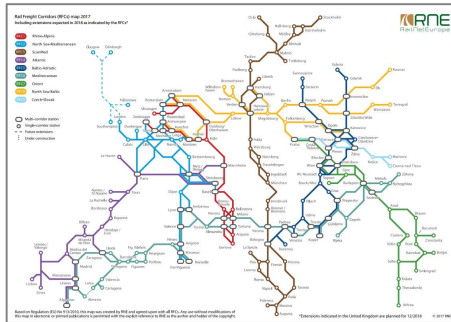


### Opportunities

### Issues

## RAIL FREIGHT CORRIDORS

(Reg. UE 913/2010)

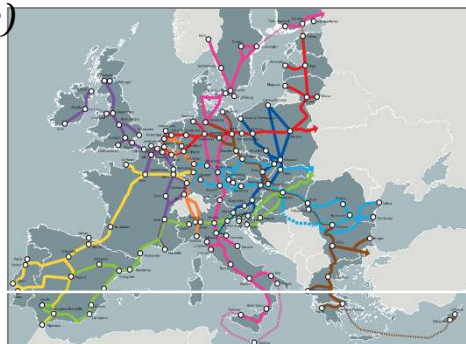


- Structured governance model
- Monitoring of KPI on corridor efficiency (punctuality, capacity)
- Harmonisation effort across RFCs

- Prevailing traditional vision (international path coordination)
- Limited activation of the coordination with terminals
- Resilience in case of disruption not effective yet (e.g. Ratstatt)

## TEN-T CORE NETWORK CORRIDORS

(Reg. UE 1315/2013)



- Multimodal approach
- Node managers present at discussion Fora
- Specific objectives on intermodal connections and development of «intelligent» management systems

- Focused on long term development
- Mainly infrastructure development (hardware)
- Objectives on digitalisation not defined with the same detail as the infrastructure ones

# *Adapted governance & business models*

## Building blocks



From **coordination** to **integration**,  
by creating «trust» and common  
business objectives among the different  
stakeholders (not only compliance)

**HIGHER FOCUS ON  
OPERATIONAL  
MANAGEMENT**  
vs. the as-is approach mainly  
targeting planning

**MULTIMODAL  
GOVERNANCE**  
Integrating intermodal nodes  
in a more structured way

**BUSINESS-ORIENTED  
APPLICATION**  
not only pilot projects that  
are «technology driven»

**CORRIDOR  
PERFORMANCES**  
from ex-post KPI  
measurement to real time  
monitoring

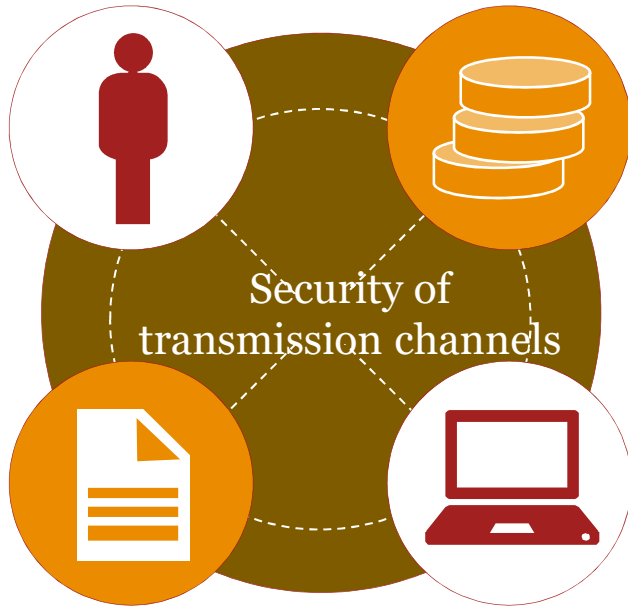
**CERTIFIED  
TRANSACTIONS**  
along the entire multimodal  
value chain

**CHANGE  
MANAGEMENT**  
Development of the  
organisation and  
professional culture

# Sharing and protection of data

Transparent *business rules*  
ensuring **data integrity**

*Business rules*



**Integrity,  
reliability &  
security of data**

**Applications  
enabling “trust”  
among actors**

Identify and treat in a  
specific way the different  
types of data

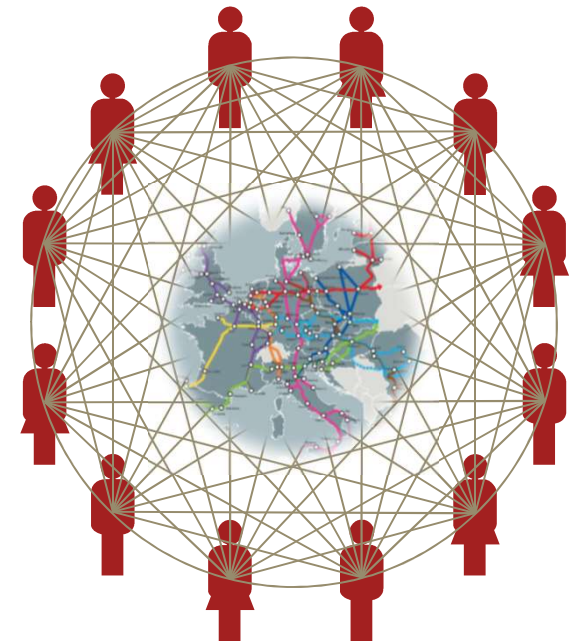
Open data

Secured data

Shared data

«Competitive»  
data

From **single window** to  
**global data-sharing  
platforms**



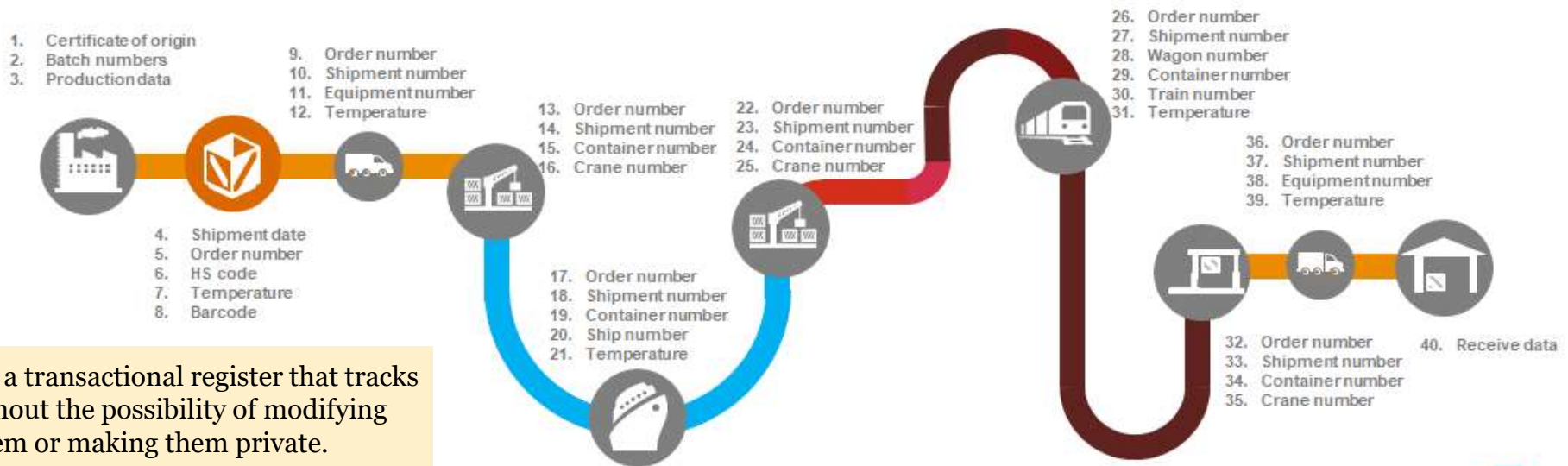
**Eliminate unnecessary  
intermediations and  
elaborations**



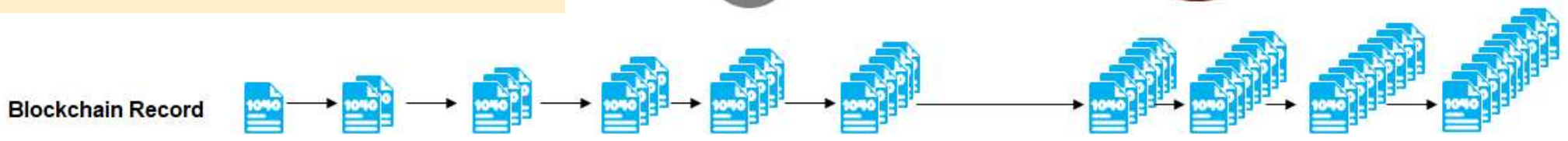
# Sharing and protection of data

## Digitalisation supporting or enabling logistic processes

The blockchain technology allows the management of certified transactions along the entire value chain (eg booking, management, tracking and payment of complex services involving multiple actors) without requiring intermediation of intermediate subjects for the transmission / certification of data

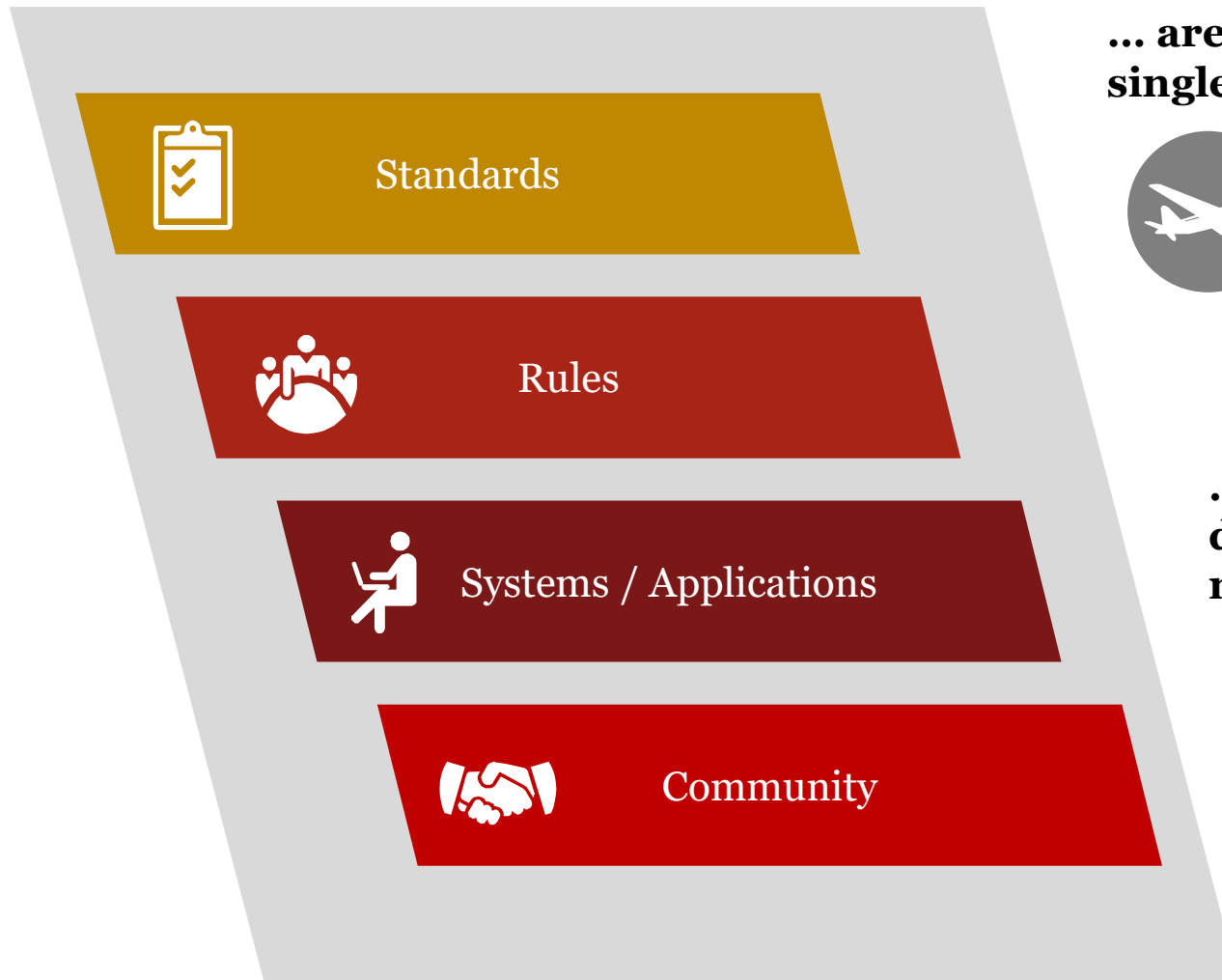


The Blockchain is a transactional register that tracks all operations without the possibility of modifying them, deleting them or making them private.



# *Interconnection and standardisation*

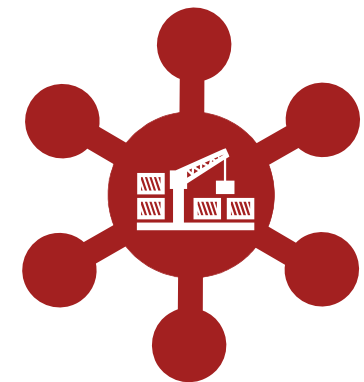
## Go beyond the “mono-modal” approach



**... are typically developed for a single mode of transport**



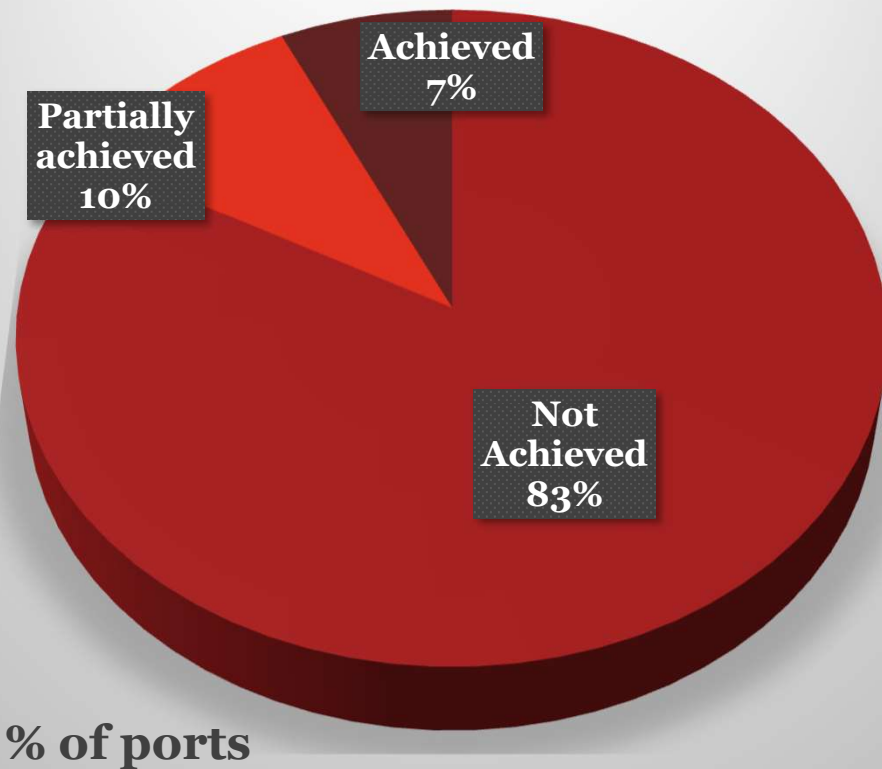
**... or, if integrated, they are deployed on single transport nodes (e.g. PCS)**



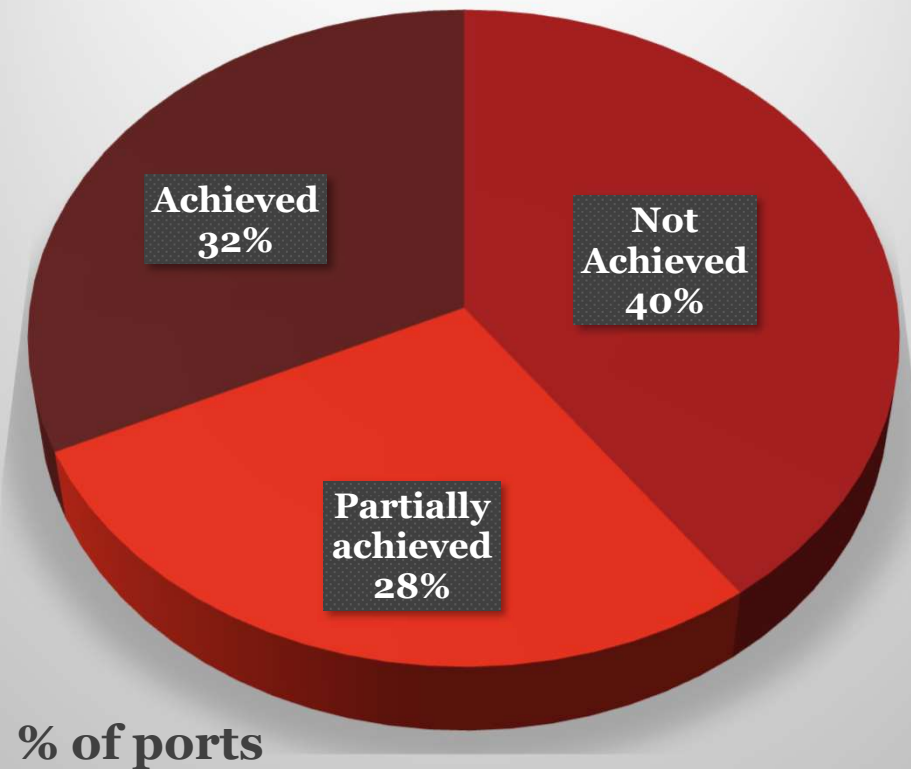
## *Interconnection and standardisation*

Challenge is high even looking at a single mode of transport

### Harmonisation of reporting formalities for ships at national level in UE



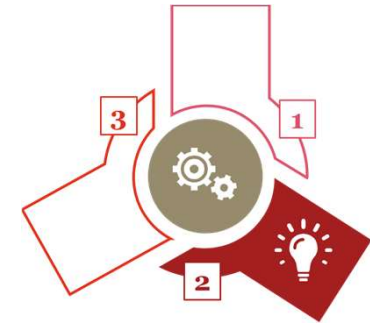
### Digitalisation of reporting formalities for ships in UE



Source: PwC elaboration on Port Benchmark analysis results in Report for EC - Ex-post evaluation of RFD and VTMS (2017)



**Implementation of smart freight mobility solutions in order to provide E2E journey planning**



## **Connecting the MoS with the hinterland: the role of the TEN-T CNC**

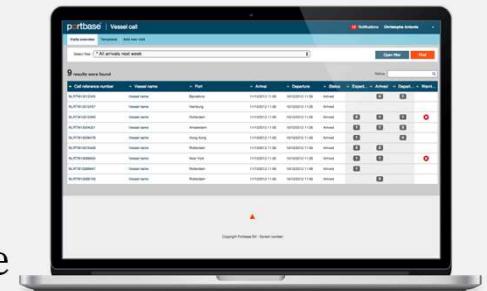
### **Key Drivers – best practice**

**PCS and operators' platforms should be "federated", in order to provide E2E journey planning, but also booking, invoicing, payment of the services, at corridor/network level**

### **PORTBASE**

**Port Community System for digital connection of Dutch ports**

- National coverage
- Available for all port actors / activities
- Easy and efficient exchange information
- Ports' greater efficiency, lower costs, better service provision and transparent planning, more rapid throughput times, optimal re-use of information



- «**extended terminal gate concept**» developed to integrate and control multimodal hinterland flows
- barge + rail share to increase from 43% to 58%

# *Military mobility*





# Military mobility: the new EU policy

Source: EC, Joint Communication to the European Parliament and the Council on the **Action Plan on Military Mobility**, 28.03.2018



## Military requirements



- Developed by EU External Action Service and the EU Military Staff
- Needs of the EU and its Member States, incl. infrastructure for military mobility
- To be validated by the Council by mid-2018

## Transport infrastructure



- Parts of the TEN-T network suitable for military transport
- Necessary upgrades of existing infrastructure

## Priority list of projects

e.g.



- maximum height clearance or weight tolerance of road bridges
- loading gauge of railway lines
- intermodal terminals for dual use civil & military dual use

## Dedicated financial support



**6,5 bn€** earmarked for the period 2021-2027

## Regulatory and procedural issues

- Streamline and simplify customs formalities for military operations
- Aligned rules for (military) transport of dangerous goods
- Cross-border movement permissions



# *Military mobility*

## *The challenges for TEN-T corridors*



### **Additional requirements for the road and rail infrastructure**



**Needs are likely to be higher on the Corridors reaching EU external borders** such as

- North Sea – Baltic
- Orient -East-Med &
- Mediterranean

### **Roads**

- No technical requirement imposed on road network bridges

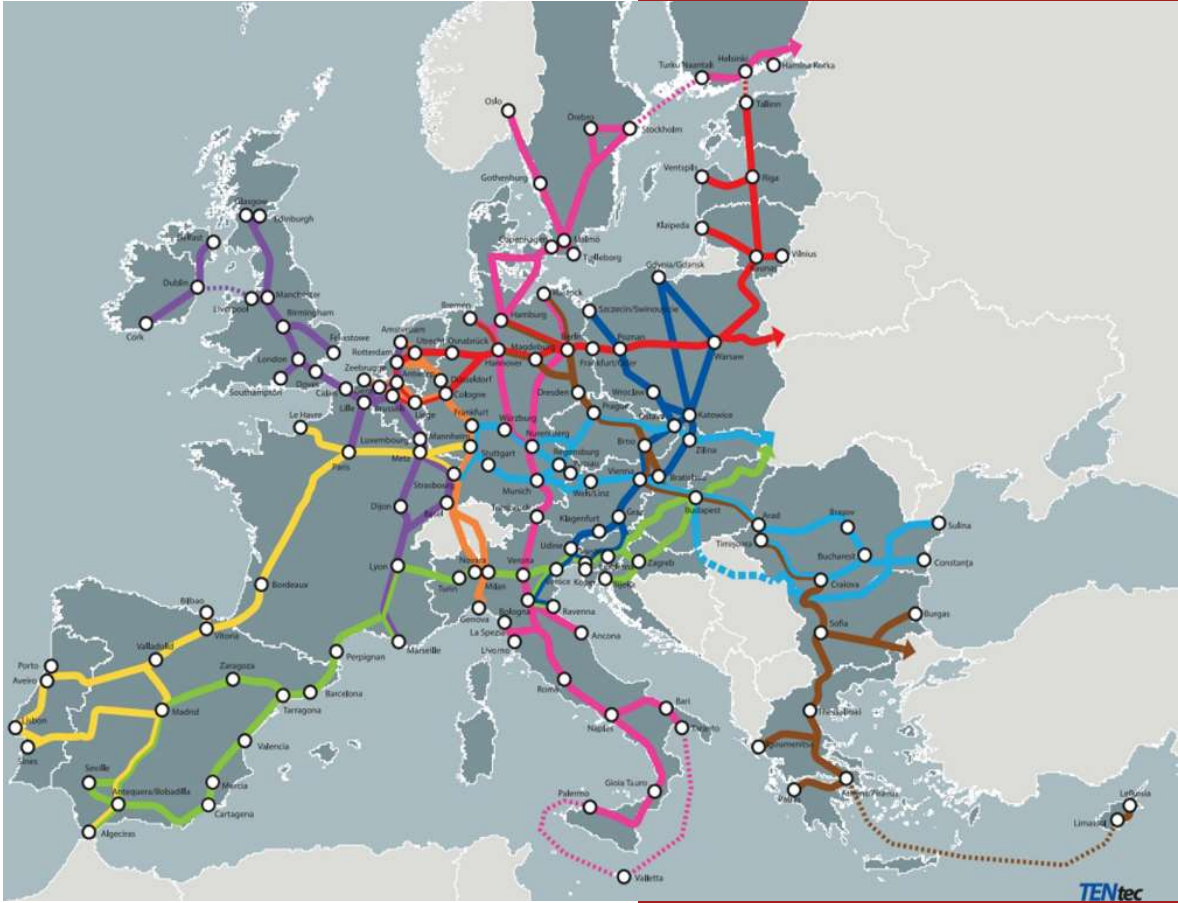
### **Railways**

- Axle load minimum limit (22.5 t) could be not sufficient
- No technical requirement imposed on loading of rail network bridges
- Loading gauge for railway tunnels are not defined by current regulation

### **Ports and intermodal terminals**

- Specifications for dual use may impose additional infrastructure needs

# Conclusions



## *The new challenges of TEN-T Core Network Corridors (CNCs)*

- The Regulation 1315/2013 sets detailed target for CNCs infrastructure, especially for rail and IWW, while objective related to **alternative fuels** and **digitalisation** are defined in a more general way
- Such aspects, together with new funding priorities such as “**military mobility**”, are likely to become increasingly important in the near future, to achieve EU transport priorities such as
  - ❖ **decarbonisation**,
  - ❖ **mitigation of congestion**,
  - ❖ **lower administrative costs**,
  - ❖ **security** and
  - ❖ overall **competitiveness** of the logistic chain
- **Corridor Work Plans and EU funding** will be also driven by such new priorities, and therefore transport planning (even at national level) shall define clear action plans and achievable / measurable targets
- **Innovation, coordination** and **standardisation** are required to achieve substantial results

***Thank you for the attention!***



**Paolo Guglielminetti**  
Global railways & roads leader  
+39 348 4020558  
paolo.guglielminetti@pwc.com

This publication has been prepared for general guidance on matters of interest only, and does not constitute professional advice. You should not act upon the information contained in this publication without obtaining specific professional advice. No representation or warranty (express or implied) is given as to the accuracy or completeness of the information contained in this publication, and, to the extent permitted by law, PricewaterhouseCoopers Advisory SpA, its members, employees and agents do not accept or assume any liability, responsibility or duty of care for any consequences of you or anyone else acting, or refraining to act, in reliance on the information contained in this publication or for any decision based on it.

© 2018 PricewaterhouseCoopers Advisory SpA. All rights reserved. In this document, "PwC" refers to PricewaterhouseCoopers Advisory SpA which is a member firm of PricewaterhouseCoopers International Limited, each member firm of which is a separate legal entity.