ASSITERMINAL
Associazione Italiana Port & Terminal Operators

Circle Group

Innovazione e Digitalizzazione 4.0 nella Supply Chain: evoluzioni di mercato, nuove sfide e opportunità

Naples

February 11, 2020

Circle Group

ASSITERMINAL
Associazione Italiana Port & Terminal Operators

organizza

11 febbraio 2020

Centro Congressi
Stazione Marittima Napoli,
Molo Angioino

Legge Finanziaria, innovazione e portualità

14:00 - 15:15 *Studio Tributario e Societario Deloitte*
Gli impatti della Finanziaria sul fare impresa portuale:
Ires, appalti e incentivi

15:15 - 16:30 *Circle Group*
Innovazione e Digitalizzazione 4.0 nella Supply Chain:
evoluzioni di mercato, nuove sfide ed opportunità

16:30 - 17:45 *Maresca & Partners Studio Legale*
Le concessioni portuali tra demanio e servizi

Per la partecipazione info@assiterminal.it

IN COLLABORAZIONE CON

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Agenda

Actual Scenario

- *Maritime & Shipping Vs Inland & Last Mile*
- *Digitalisation & automation as solution: Terminal Operating System*
- *Federated Services*

Evolutions, challenges and opportunities

1. *Digitalisation of railway procedures among the Supply Chain*
2. *Interoperability & information flows: the Port Community System*
3. *Inland & Rail last mile procedures: modular solutions*
4. *International Fast & Secure Trade Lane approach: integration with IoT*
5. *New technologies applied to the logistic sector: Blockchain, Smart contract & Notarisation*
6. *Customs 2025 and Gate Automation, Port Tracking, Fast Corridor*
7. *Complexity, Real time Optimisation & Artificial Intelligence*

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Actual Scenario: Maritime & Shipping vs. Inland & Last Mile

Maritime & Shipping

Terminal

Inland & Last Mile

Players Alliance
Volumes & Call

Multipurpose

Carrier/Merchant

Intermodal
Rail last mile

Dwell time
Rotation

Anticipation Info
Gate Appointment
System

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Digitalisation & Automation as solution: Extended Terminal Operating System + Value Added Services

A **Terminal Operating System (TOS)** is a key part of a supply chain and primarily aims to control the movement and storage of various types of cargo in and around a container or multipurpose terminal. It allows operators to **digitalize and automate** operative, administrative and customs procedures, also thanks to **IoT technologies** and **automation** solution natively integrated

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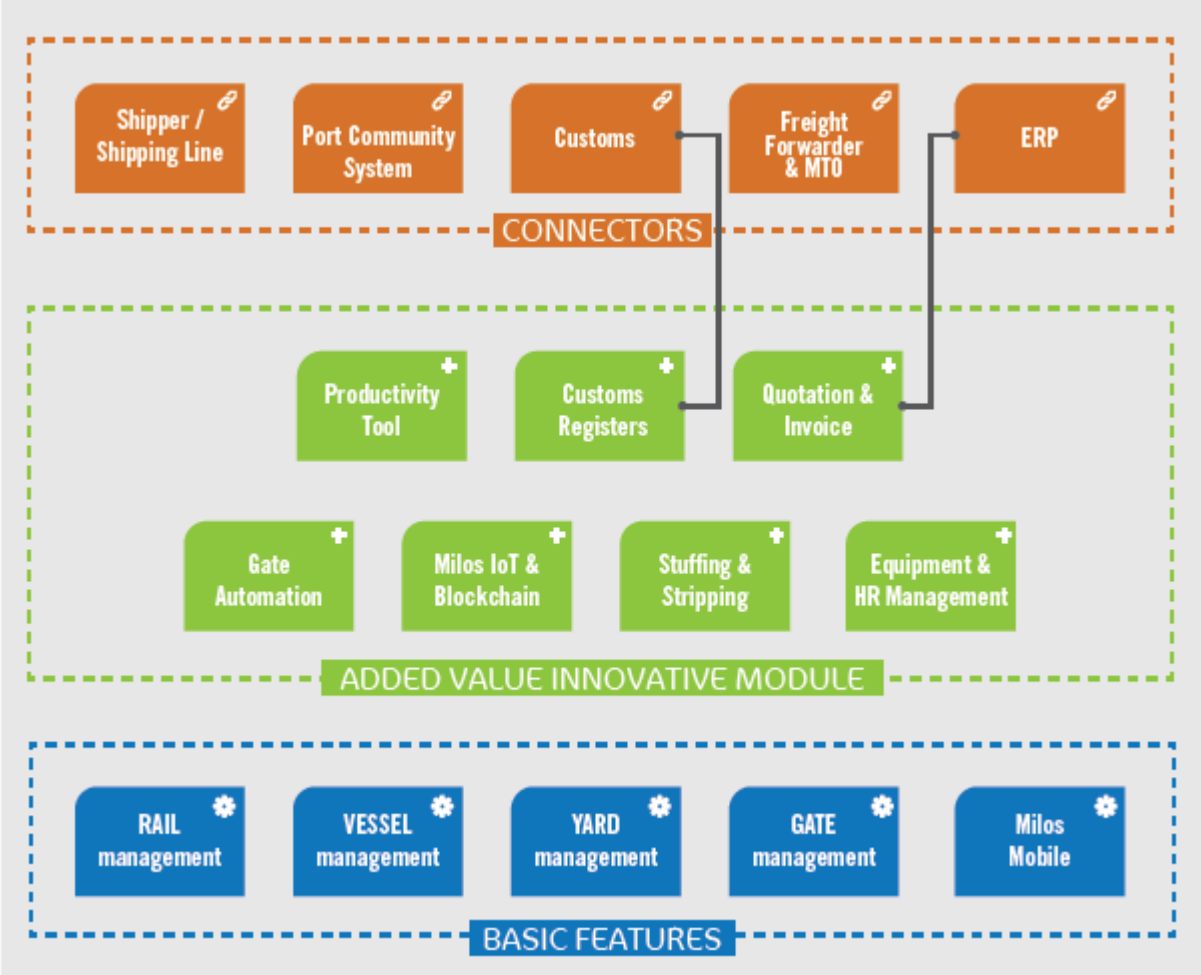
TOS - Solution and interconnected systems



Specific connectors allows **TOS Suite** to be integrated with the proprietary **ERP system** and to dialogue with supply chain players' IT systems (e.g. PCS, Shippers, Freight Forwarders, Customs Agencies, etc.) in order to deliver value added services in terms of innovation, access to information, total digitalization.

In addition to TOS basic features, a series of modules with high added value can be offered: they allow to **manage customs, administrative and commercial activities**, to automate and optimize the gate and the **equipment and HR management** and to monitor the performance of the terminal through productivity tool module.

TOS Suite allows to digitalize and automate the **main terminal operations** relating *Rail, Vessel, Yard* and *Gate* activities of a multipurpose logistic terminal also thanks to the *Mobile App.* The solution enables to manage different type of cargo handled (cars, containers, general and rolling cargo, machinery, yachts and boats, project cargo, etc.)

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Cooperation, Interoperability and Federated Services

TOS is able to digitally share **reliable information** with a plurality of actors and IT systems:

- **Shipping agencies**, with the exchange of information about shipping and booking information;
- **Shipping Companies**, with the exchange stowage plans, cargo documents and reports;

- **Port Community System**, with the share of information relating Port Securities and Port Processes managed

- **Customs IT Systems**, with the exchange of Cargo Manifests (in Italy Aida for MMA and MMP, TC dialogues, Fast Corridor dialogues and info, simplified and evoluted procedures – soon Port Tracking via PCS);

- **Transport companies / Freight forworders / MTO**, for arrival / departure forecast, booking, gate appointment

- **Customers/Shippers**, with the possibility to exchange reliable information relating stock reports, damage reports and delivery information (proof of delivery)

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1

Digitalisation of railway procedures among the Supply Chain

A global view of the railway process

FRAMEWORK

RAIL SUITE FRAMEWORK

SUITE MTO

OPTIMISATION

PCS

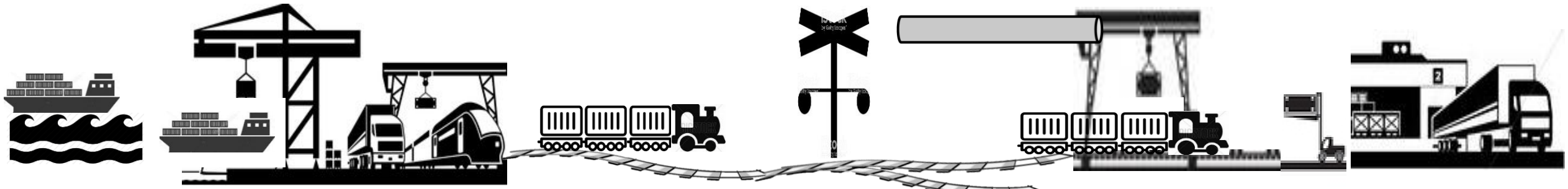
SUITE TOS

SUITE TOS

GATE AUTOMATION

GATE AUTOMATION

Ship Connectors | **Port TOS Connectors** | **Rail Connectors** | **Inland TOS Connectors** | **Road Connectors**



Vessel | **Port Terminal** | **Shunting** | **Rail Station** | **National Railway** | **Inland Terminal** | **Road**

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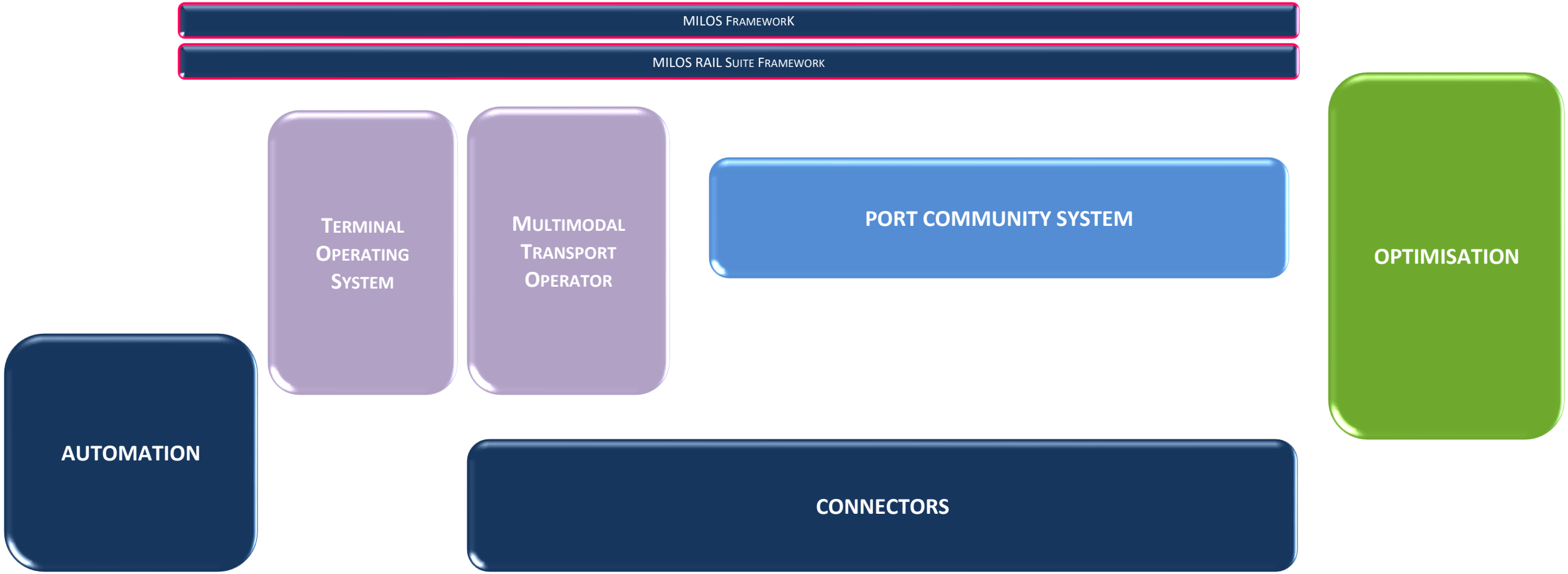
Modular & federated solutions for a compound process



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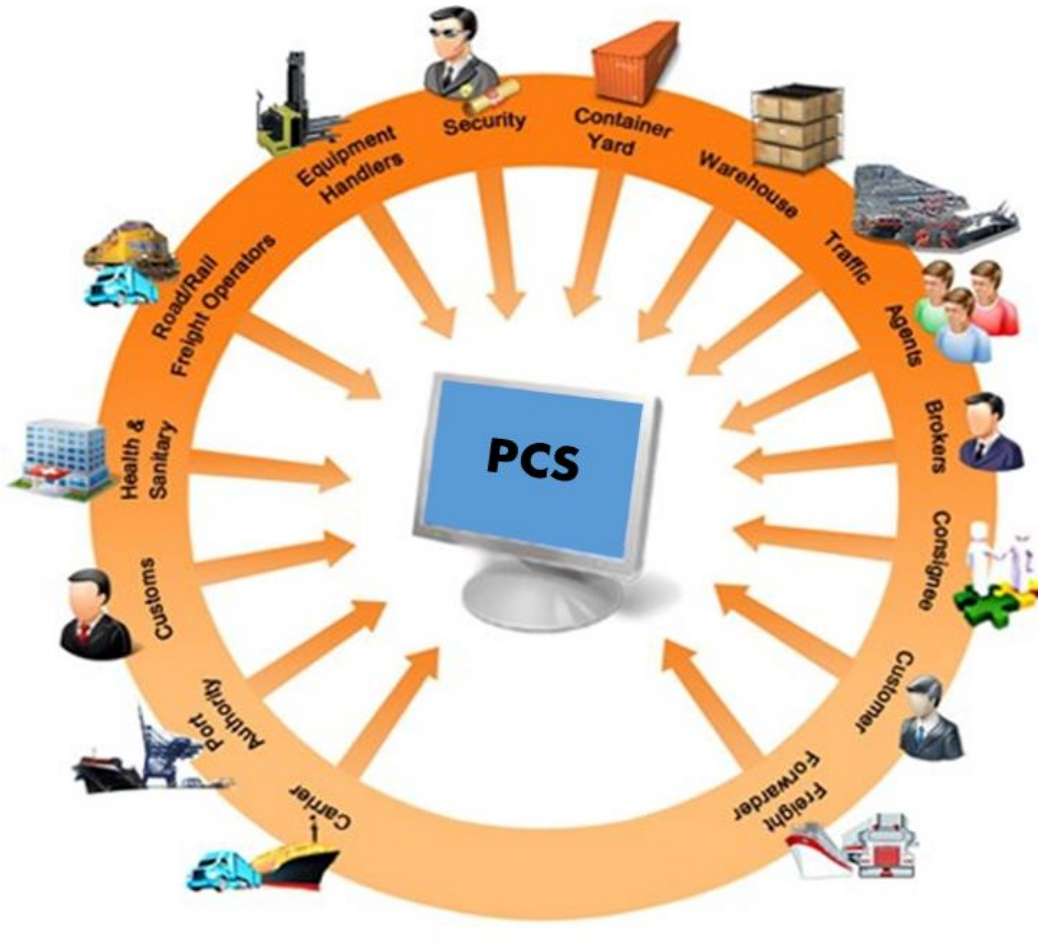
Port Community System connectors

Interoperability & information flows: the Port Community System



Port Community System (PCS) connectors helps transport and logistics operators to interoperate with **IT systems** of freight forwarder, Port Authorities, etc.. in order to access at their service platforms.

The **PCS connector** allows transport and logistics operators interacting with **PCS services and functionalities**. It is set up with «general Web Service» in order to access to specific functionalities provided by Port Authorities, such as operative (operational readiness of freight, estimated/actual time of arrival of ships at port, gate in/out port security gate, etc.) and customs information.

PCS Connector has to have a native integration with the related **PCS**, a complete framework of solution for **managing port activities** within port Administrations.

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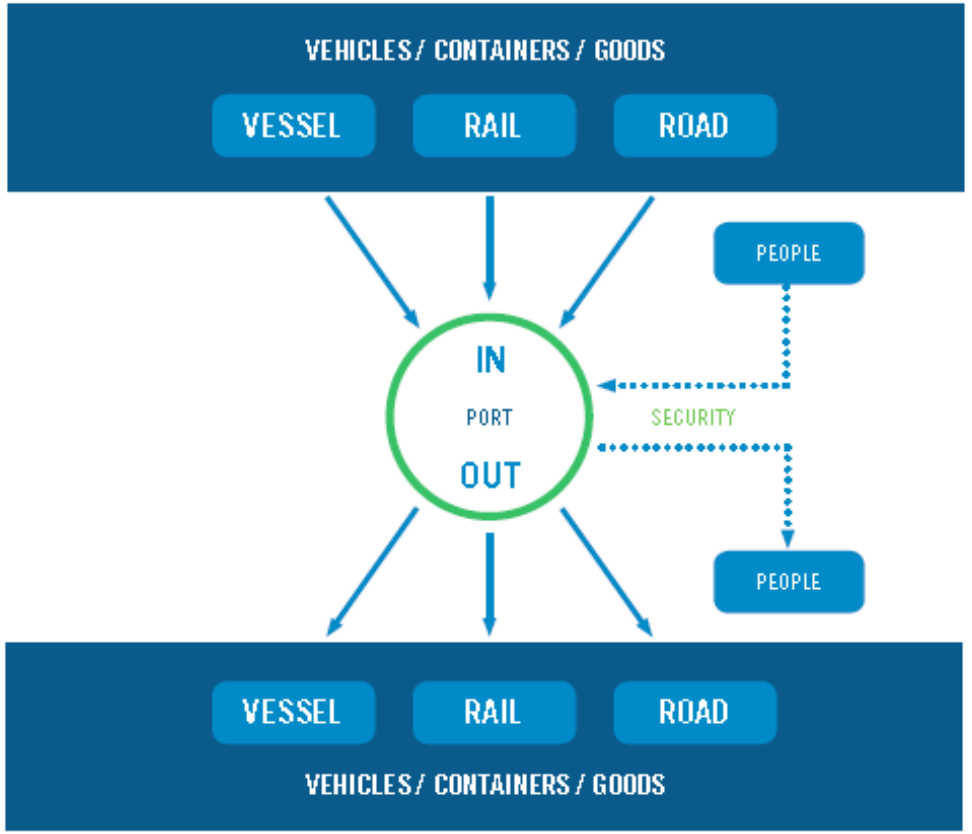
Interconnection with PCS / Security and Gates

- Early check of entry and exit permits
- Consequent reduction of waiting times
- Management of arrival notice (direct on PCS or mediated through Logistic Platforms)
- Automatic checks with terminals for early verification of the availability of goods
- Gate Appointment interoperability



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Inland & Rail last mile procedures: modular solutions

Contesto scali merci: i progetti di RFI sull'ultimo miglio (2017)

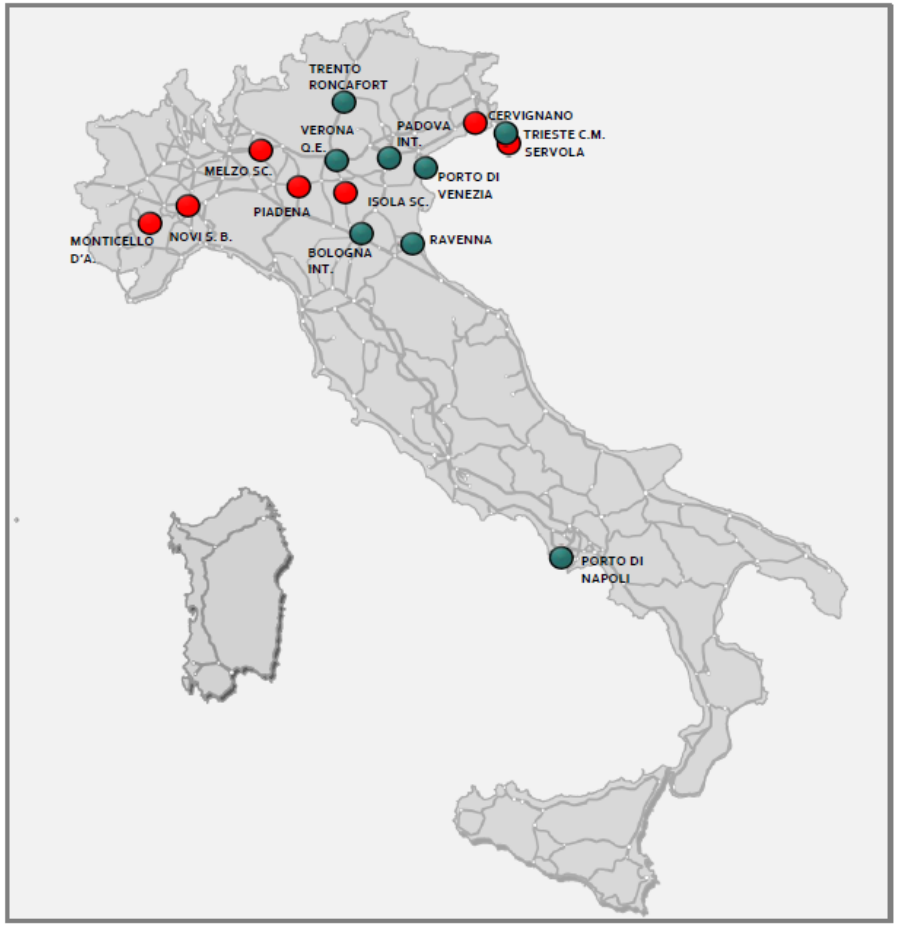
- In aggiunta agli investimenti previsti dal Contratto di Programma, RFI ha avviato nel 2017 una serie di **tavoli tecnici con i terminalisti** per individuare le **azioni infrastrutturali da mettere in campo per potenziare l'offerta merci**.
- Il processo prevede la **sottoscrizione di un protocollo d'intesa** tra le parti per definire gli impegni del gruppo di lavoro che, individuate le necessità, proporrà una soluzione infrastrutturale e tecnologica adeguata.

Impianti oggetto di Protocollo d'Intesa

- ✓ Porto di Venezia
- ✓ Bologna interporto
- ✓ Padova interporto
- ✓ Verona Quadrante Europa
- ✓ Trieste Campo Marzio
- ✓ Trento Roncafort
- ✓ Porto di Ravenna
- ✓ Porto di Napoli

Interventi in fase di studio/progettazione

- ✓ Melzo Scalo
- ✓ Novi San Bovo
- ✓ Cervignano
- ✓ Servola-Trieste
- ✓ Piadena
- ✓ Monticello D'Alba
- ✓ Isola della Scala



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RFI RETE FERROVIARIA ITALIANA
GRUPPO FERROVIE DELLO STATO ITALIANE

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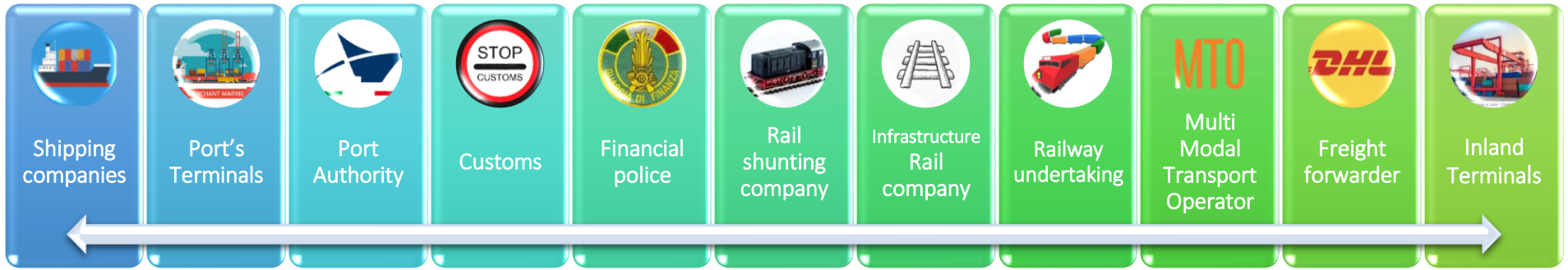
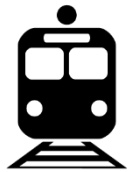
RAIL LAST MILE MANAGEMENT – WHAT IS?



Informatics and informative **interoperability model** among the subjects involved in the optimal **Rail Last Mile management**, considering as last mile the way between **port's and inland terminals.**

Port Terminal Infrastructure

Port Rail Infrastructure



Rail National Infrastructure

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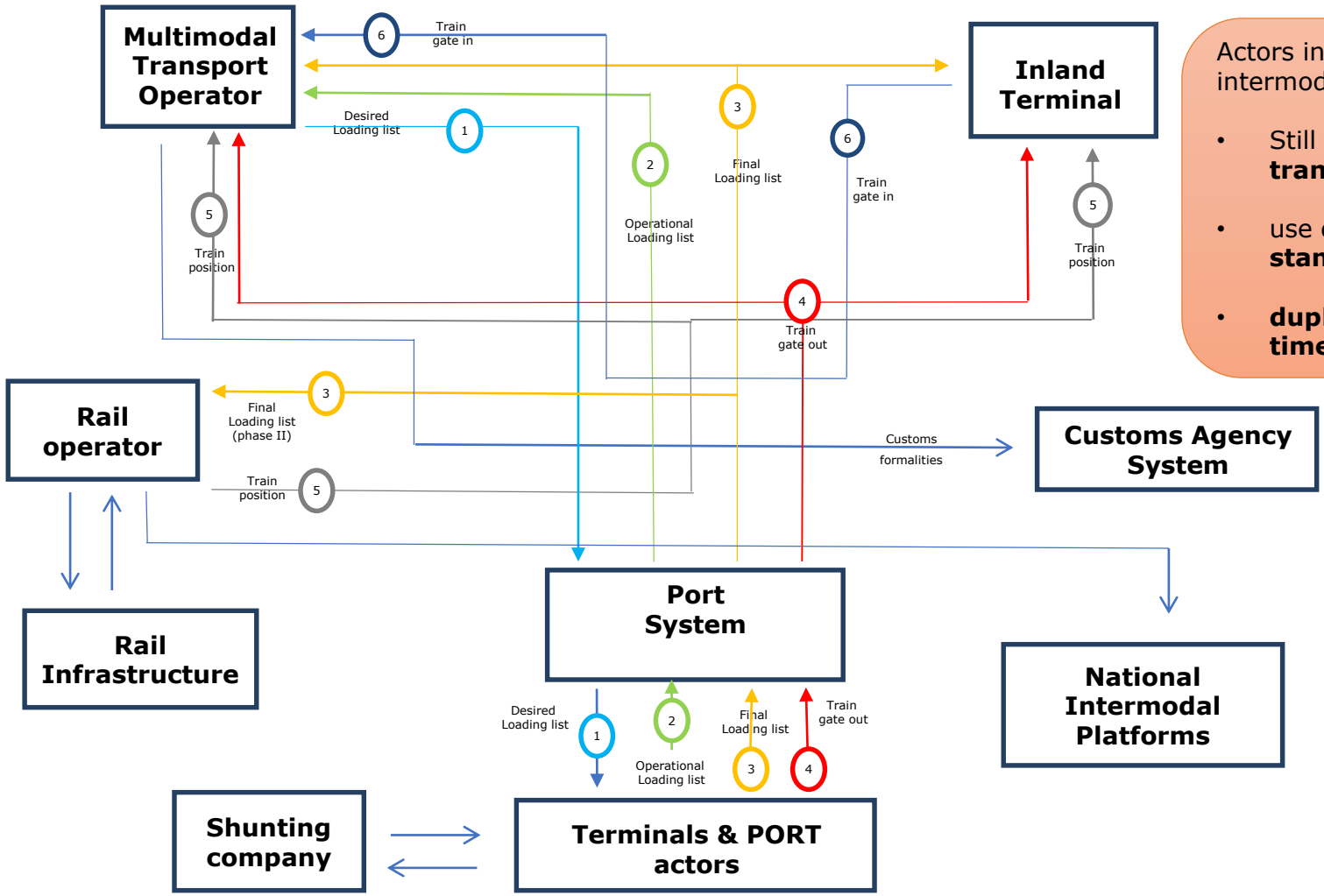
RAIL LAST MILE - EXAMPLE OF INFORMATION FLOW COMPLEXITY



Actors involved in the intermodal transport process:

- Still use **Paper transport documents;**
- use **different standards**;
- **duplicate** and share **not timely information.**

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RAIL LAST MILE MANAGEMENT – GENERAL OVERVIEW

1. OPERATIVE LEVEL — Definition of the **processes in detail**

2. ACTUAL SCENARIO — Analysis of the **critical open points in actual scenario**

3. DIGITALIZATION AND AUTOMATION — **Digitalization and automation** of information flow

4. OPTIMIZATION — Implementation of **Optimization Tool**

Port Terminal Infrastructure

Port Rail Infrastructure

Rail National Infrastructure

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RAIL LAST MILE MANAGEMENT – 1. OPERATIVE LEVEL

Focus on the main **rail operation** involved in the Rail Last Mile inside the port area

Rail Handling operation inside port terminal → Primary and secondary Shunting operation → Train gate in/out in port area

Port Terminal Infrastructure

Port Rail Infrastructure

Rail National Infrastructure

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RAIL LAST MILE MANAGEMENT – 2. ACTUAL SCENARIO

Shipping companies | Port's Terminals | Port Authority | Customs | Financial police | Rail shunting company | Infrastructure Rail company | Railway undertaking | Multi Modal Transport Operator | Freight forwarder | Inland Terminals

OR

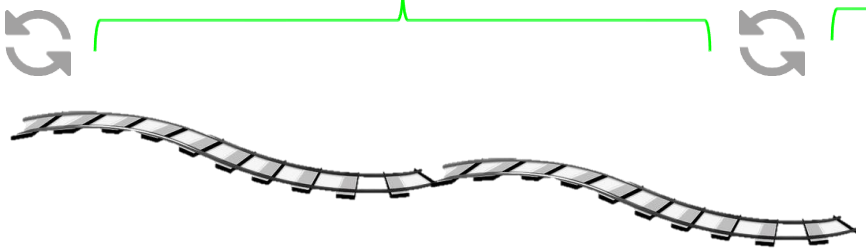
Port Community System

- Did **not digitalize** all information flows
- Using **different standards**;
- Sharing **not timely information.**

TOS ***Port Terminal***

SW ***Shunting Company***

SW ***Rail Infrastructure***



Port Terminal Infrastructure

Port Rail Infrastructure

Rail National Infrastructure

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Rail Last Mile Management – 3. Digitalization & Automation

Digitalization & Automation

Port Terminal Infrastructure

Port Rail Infrastructure

Rail National Infrastructure

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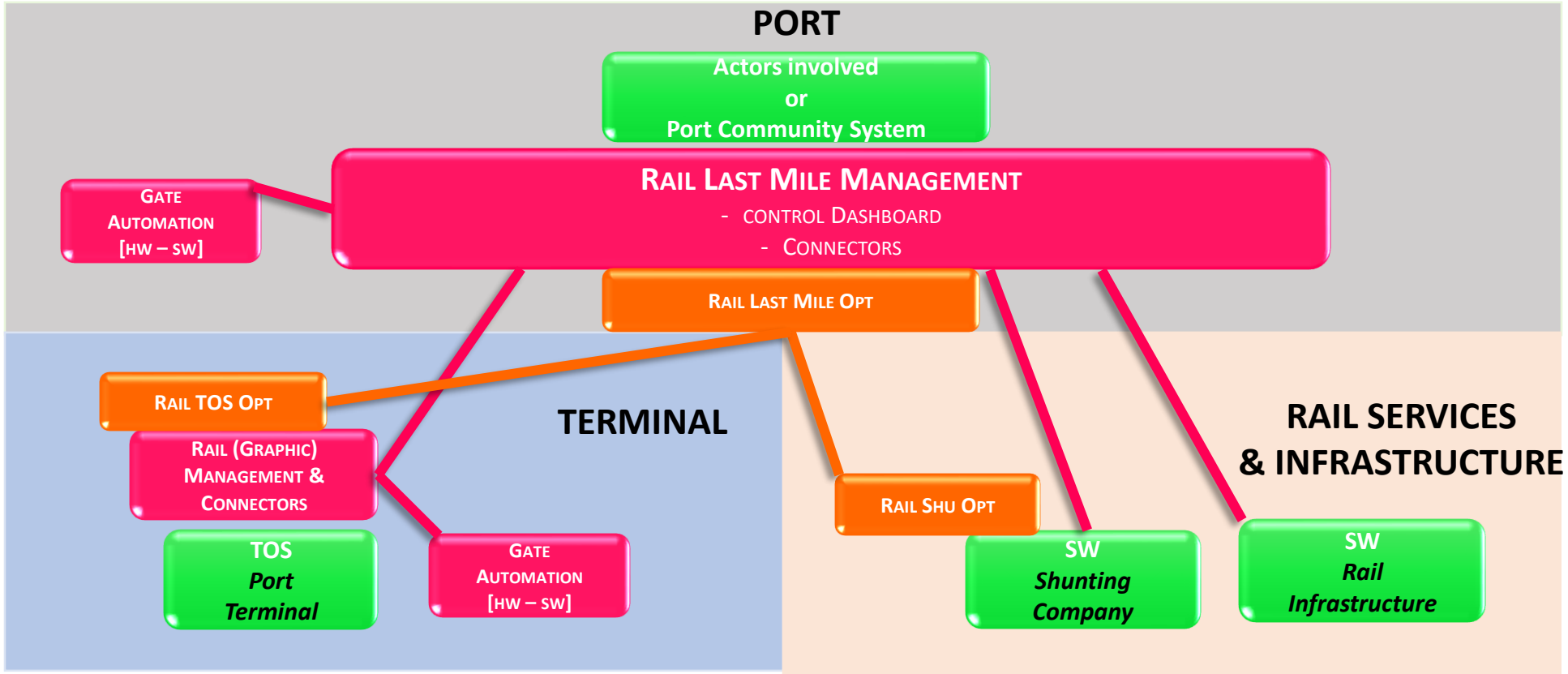
3A. OVERVIEW



Legenda:

- SW present in the AS-IS Scenario
- Digitalised modules ONGOING
- Optimisation tools

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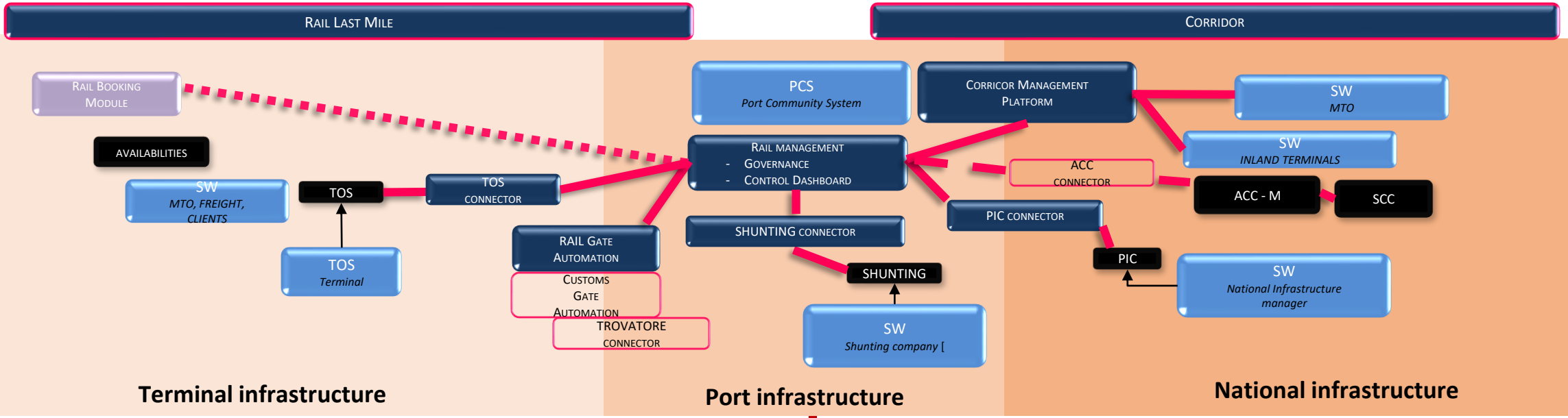
Rail Last Mile integrated solution (port or inland node) & Optimization



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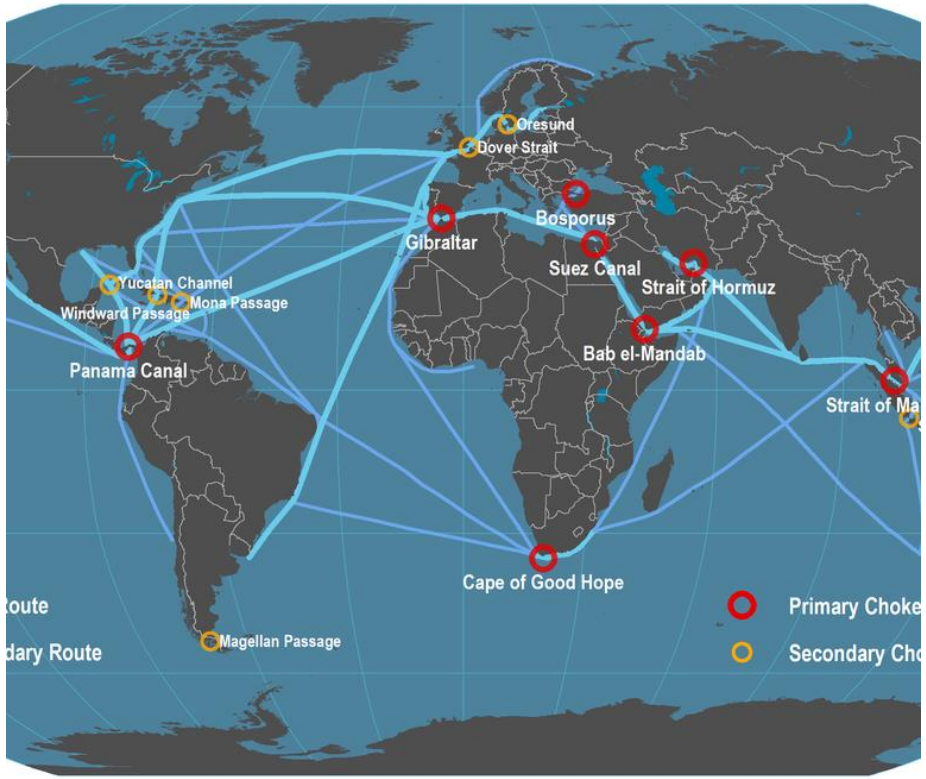
International Fast & Secure Trade Lane approach:

integration with IoT

Maritime evolution & complexity

The era of digitization is changing the supply chain globally. For this reason, the concept of International Fast & Secure Trade Lane was designed, which starts from a logic mainly aimed at **shippers** and **freight forwarders** and extends to all those involved in the logistics chain



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Maritime evolution & International Fast & Secure Trade Lane

The key words of the International Fast Secure Trade Lane are:

1. International
2. Fast
3. Secure
4. Trade Lane

This concept is extended to the entire logistics chain in order to create door to door chains that involve all the actors, manage by anticipating the flows of documents and information provided by the various stakeholders, using the Corridor Management Platform.

Integration with:

- Internet of Things (IoT)
- Track & Trace + Federative approach and Platform interoperability

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International Fast & Secure Trade Lane flows

- Digitization of European documents flow
- Digitization of international documents flow through direct dialogue between countries, European – Not European Customs, Importer and Exporter

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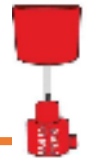
Example of a cycle that uses IoT tools and tags in the IFSTL

1) Shipper/Stuffing area warehouse

Baptism in compliance with the most common passive RFID eSeals



Passive RFID eSeals for container

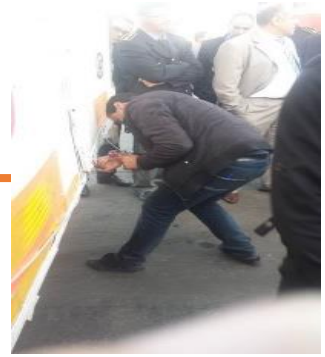
* *The Data collected by IoT device can by stored inside* ***Blockchain Platform***

2) Gate Terminal

Automatic Gate-in at the terminal thanks to RFID antennas

International Fast Secure Trade Lane CMP + IoT

3) Port Terminal of departure



Digital check of loading operation with handheld + eManifest data integration

4) eManifest sent to Port of destination

5) Port Terminal of Destination

Digital check of discharging operation with handheld

Automatic Gate-out at the terminal thanks to RFID antennas

6) Final destination

Proof of delivery

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5

New technologies applied to the logistic sector: ,

OCR, Blockchain, Smart contract & Notarisation

OCR and automation

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Blockchain initiatives and concrete experiences

- Pilot Maersk / IBM Tradelens

TradeLens is a multinode private blockchain solution for maritime supply-chain logistics. It is based on IBM's implementation of Hyperledger Fabric (PaaS). The containerized microservice platform is horizontally scalable and delivers its functionalities to the project participants through a publicly available API layer.

- Participation of Bill of Lading Pilot

A decentralized application deployed on the Ethereum blockchain. Its main purpose is to handle and certify data interchange between users through a set of Smart Contracts and to provide document immutability by using IPFS as a secure and unbiased storage service.

- IPCSA digital Bill of Lading Pilot

A private blockchain solution developed with Hyperledger Fabric on Azure Cloud. The distributed application is designed to leverage high data throughputs and heterogeneous formats by instantiating a Smart Contract for each Bill of Lading.

- Preliminary IFSTL IoT Pilot

Distributed notarization service for document and data interchange based on client-server-signer interaction model. The system has been designed to generate a verifiable signature by using blockchain's metadata as proof of existence medium.

- Notarization Pilot

Blockchain service for document management that is built upon Ethereum Smart Contracts and decentralized storage systems. It's goal is to certify the documents by creating a provable timestamp and storing the resulting authenticity reference data on the blockchain.

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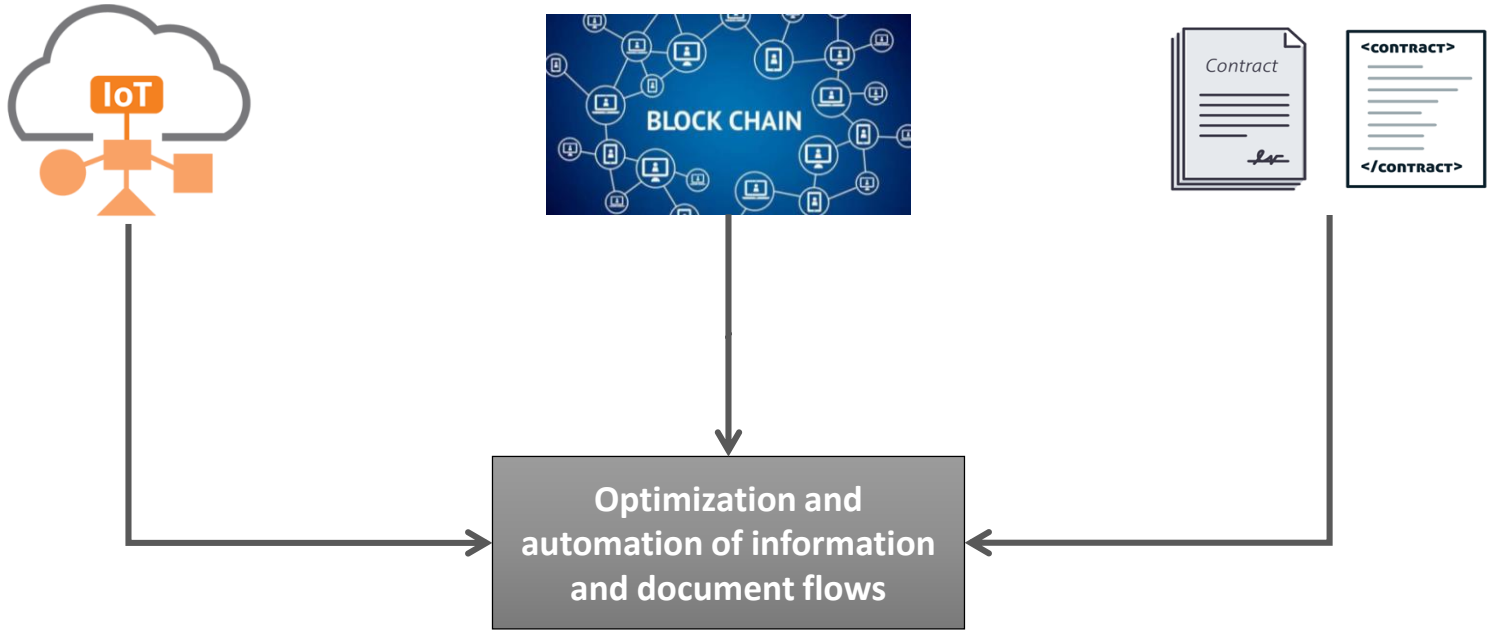
Integration of Blockchain, IoT and Smart Contract

The combined use of smart devices **IoT** and digital tools such as **Blockchain Platforms** and **Smart Contracts** has the purpose to dematerialize the transport procedures and relative contracts leaving traces of all operations and events occurring within the Logistics Chain.



IoT & Blockchain is designed to integrate these innovative solutions

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Notarisation: the case on Customs 2020-25 evolutive procedures

The objective of the ongoing project is to support the **process of "validation and certification**" of documents with a **customs & security value**, throughout the entire process, with a **complete management of documentary flows** in ONCE logic for the subsequent phases of customs verification, using the **notarization*** and **new technologies** based on distributed registers.

This solution is **integrated** within the **Global Supply Chain Visibility** which allows the **entire handling process** to be coordinated between private individuals and along the international chains, maritime, port and intermodal logistics.

* *Notarization (or "legalization") means the procedure by which originality is attested (the document in question corresponds perfectly to the original) and existence at a certain date and time ("timestamp") of the document itself . After notarization, confirmation of the immutability of this document (inherent in the notarization properties) is confirmed*.

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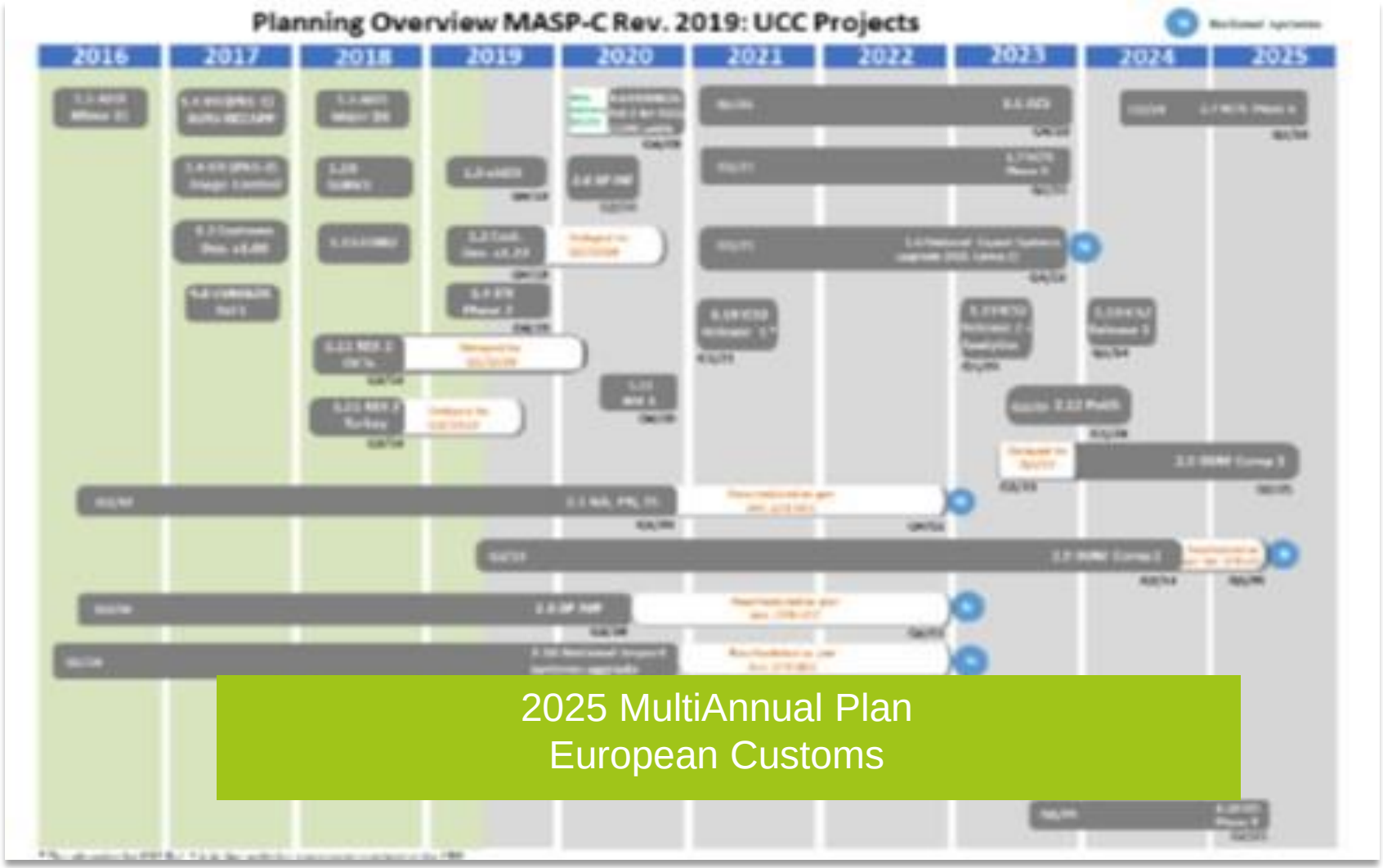
Custom gate automation, Port Tracking, Fast corridor, Customs

MultiAnnual Plan European Customs 2025



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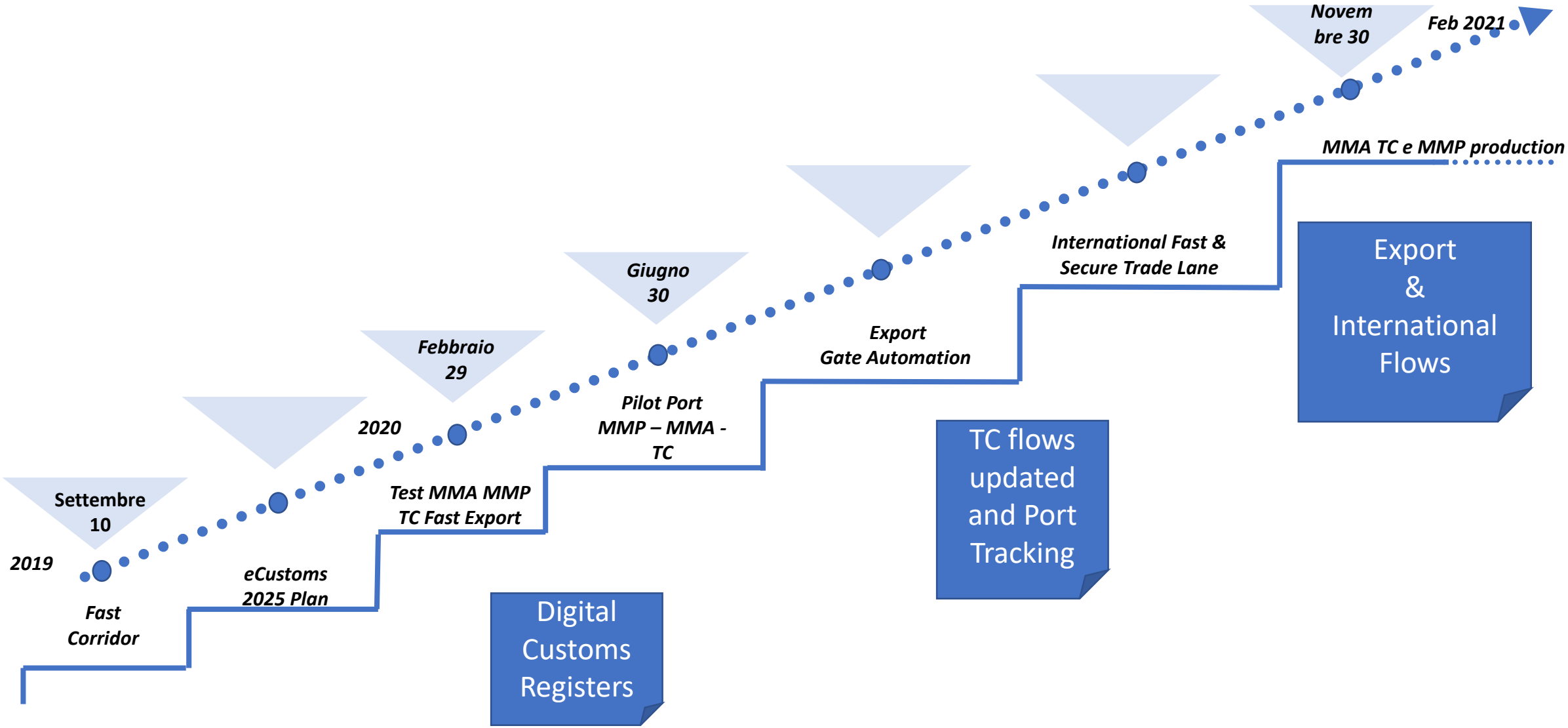
2020 (inside 2025) Customs Roadmap



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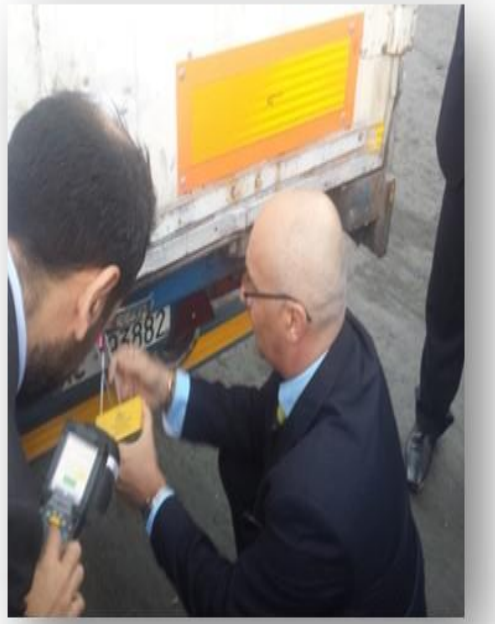
IoT| EU MED pilot projects ongoing

IoT eSeals +
IoT platform



EU ongoing pilots
(Morocco, Turkey, Egypt)

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Complexity and Real time

Optimisation & Artificial Intelligence

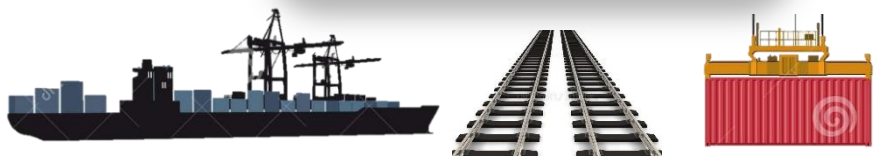
Rail, Terminal, Last Mile, Corridor Optimization

Rail Last Mile

Optimization for Shunting

Optimization for Terminal

Optimization for Last Mile



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Some main problems about optimisation

Rail Shunting Last Mile Optimization

Optimization problems

(complete last mile)

Multimodal Transport Operator

Terminal Optimization

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8

Roadmap for the Future

Roadmap for the Future

- 2020 opportunities
- 2020 ongoing activities and projects
- 2023-25 focal points
- Possibile EU projects or Tech 4.0 project with «AssiTerminal» stakeholdership
- Call for interest during february-april about these topics.

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9

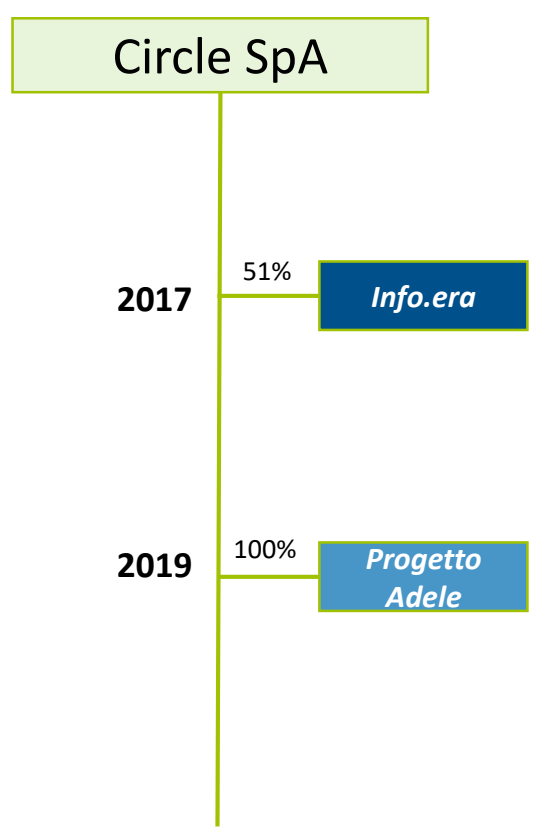
Circle Group

About

Circle Group is an international player which operates in the context of **process** and **management consulting services**, and in providing **innovative technological solutions** for **automation** and **digitalisation** of the entire supply chain.

The Group is led by **Circle SpA**, a company with distinctive vertical skills in the port sector and intermodal logistics and listed on AIM Italia since October 2018. Thanks to the deep experience of its management not only in ICT field, but also in **EU-funded projects**, Circle SpA assists indeed Public actors and Private companies in developing new businesses through specific instruments of **Project Anticipation** and **EU Branding**.

At the end of 2017 Circle SpA acquired 51% of **Info.era**, and in July 2019 acquired 100% of **Progetto Adele**.



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Geographical Presence

OFFICES

- **Italy** (Genoa, Milan and Trieste)
- **Belgium** (Bruxelles – also with ADS Insight)
- **Portugal** (Porto - with Magellan)
- **Romania**
- **Bulgaria**
- **Turkey** (Istanbul, Ankara and Mersin)
- **Spain** (Barcelona)

MAIN NETWORK PARTNERS

- **Log@Sea (with Aitek and IB)**
- **Alice**
- **Innovazione Energia Ambiente e Sviluppo Sostenibile**
- **Distretto Ligure delle Tecnologie Marine**
- **TRANSIT**
- **Competence Center Industry 4.0**

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Target, solutions & services

Freight Forwarder,
Customs Agency, Logistic Operator

Shipper

Shipping Agency

Mutimodal Transport & Rail Operator

Port & Inland Terminal

Ports

Connecting EU

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Thank you

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