BOOSTLOG

BOOSTing impact generation from research and innovation on integrated freight transport and LOGistics system

LOGISTICS NODES CLOUD REPORT
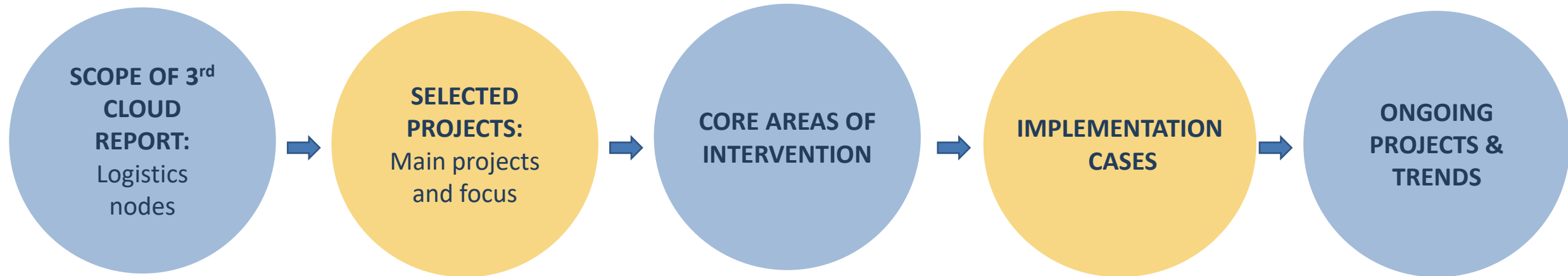
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FUNDACION VALENCIAPORT

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SCOPE OF 3rd CLOUD REPORT: Logistics nodes

SELECTED PROJECTS: Main projects and focus

CORE AREAS OF INTERVENTION

IMPLEMENTATION CASES

ONGOING PROJECTS & TRENDS

Scope of 3rd Cloud report

Logistics Nodes are facilities characterised by their geographical strategic locations and by the infrastructures, assets and activities involved. They usually consist of large areas where both public authorities and business agents cooperate under co-competition schemas to facilitate and optimise transport and logistics operations along the supply chains.

Many R&I projects have enabled improvements of control and performance of various activities necessary for the transport of goods, including services, procedures from planning to performance, thus improving efficiency of not only logistics nodes but overall freight transport.

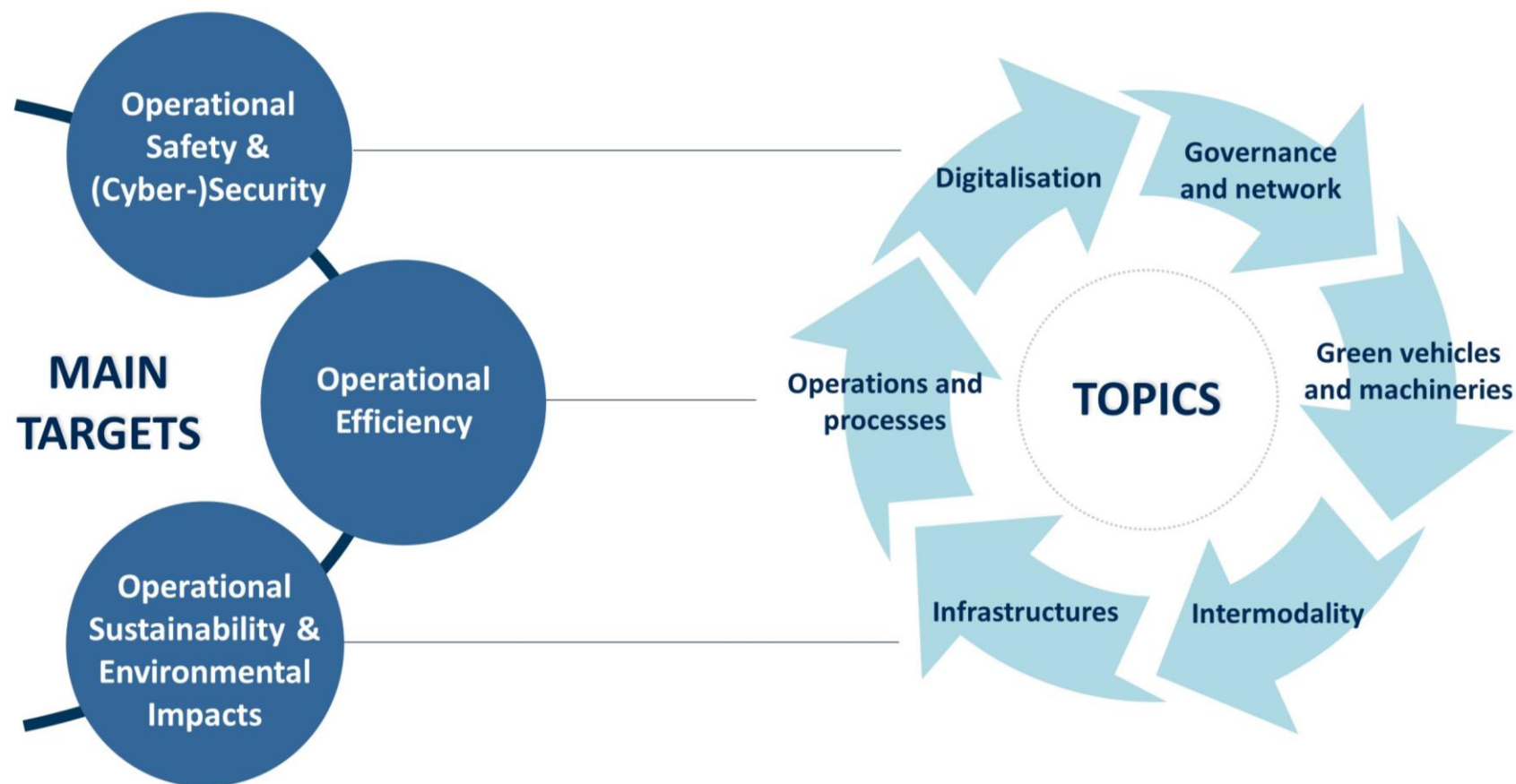| Maritime & River ports	Inland ports & hubs	Container depots	Intermodal terminals	Airports

Selected projects and main focus

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INTERFACE

		SEVENTH FRAMEWORK PROGRAMME	Interreg Mediterranean	INTELLIGENT ENERGY EUROPE	HORIZON 2020
	CHINOS	DOCKINGASSIST	FutureMed	SMARTEST	COFASTRANS / OPTIYARD
		SUPPORT	SMART-PORT		RCMS / DOCKSTHEFUTURE
		SAIL	Inte-Transit		ARC / COREALIS
		EcoHubs			INTERMODEL / PIXEL
		CARGO ANTS			LogiMatic / Clusters 2.0

Safety & Traffic Management	ICTs for optimizing container/intermodal terminal processes and operations	The new generation of Logistics Nodes: governance, collaboration and business models	Transition to more efficient and sustainable vehicles and machineries

Core areas of intervention and topics to be addressed in logistics nodes

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Implementation cases
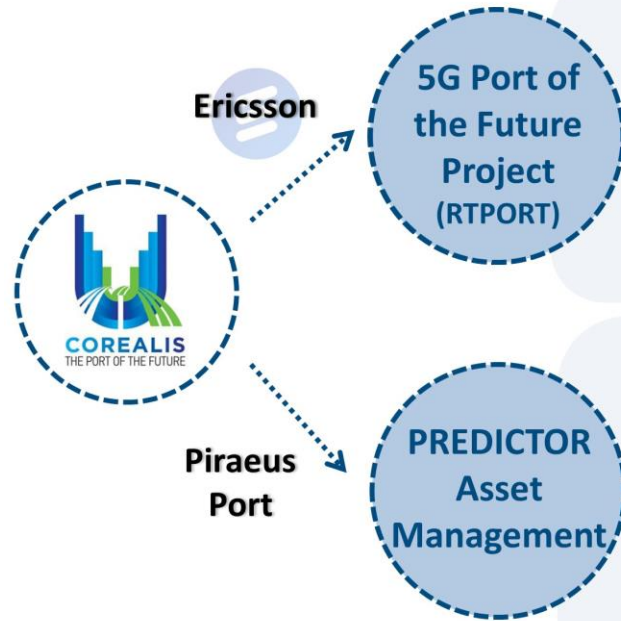
Ericsson

5G Port of the Future Project (RTPORT)

The project developed a Model-Driven Real-Time Control module to coordinate and support port operations in real time in order to improve its competitiveness with a better and faster handling of the general cargo.
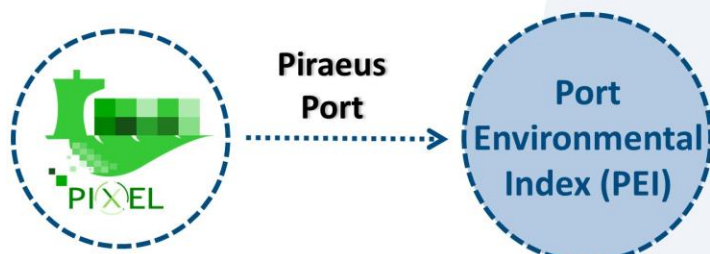
The module was implemented by **Ericsson** in the port of Livorno, Italy.

Currently, Livorno's port still uses the system and Ericsson is still developing the technology to fully develop a commercial product called "5G Port of the Future Project".

Piraeus Port

PREDICTOR Asset Management

In another of the multiple Living Labs of the project, specifically in the Port of Piraeus, the PREDICTOR Asset Management system was implemented.

This Predictive Maintenance (PdM) algorithm aims to predict maintenance for yard trucks in port terminals. Seeking to improve both economic and operational efficiencies, the port is able to minimize the inventory kept and it reduces the maintenance time for the trucks, minimizing breakdowns during operations.

The accuracy was around 85% and provided so many benefits that it is still kept in the **Piraeus Port** today.

Implementation cases

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Piraeus Port → Port Environmental Index (PEI)

Between the efforts made by PIXEL to create a framework of the ports of the future, they focused on reducing the impact on climate change and the environment of port activities.

To that end, the Port Environmental Index (PEI) was developed. This index help to assess and monitor the overall environmental impact of ports. It will enable inter-port comparisons in terms of environmental performance and bring awareness on how different port activities affect the environment.

The sensors for measurements and the index calculations are still used in the **Port of Piraeus**.

Tebets / Circle → Port Rail Shunting Optimization Tool
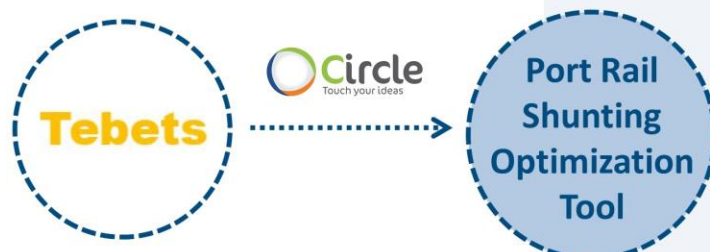
The Italian R&D project TEBETS laid the groundwork to later develop a Decision Support System tool. The objective is to help and support the planning and the management of rail shunting operations within the port area, involving the interaction between the rail stations and the maritime terminals.

Circle enabled the transfer of knowledge and facilitated the subsequent development: a digital platform consisting of a system composed by a Decision Support Systems Tool and a Digital Twin. This tool is composed by a Scheduling and a Re-scheduling model for managing unpredictable events. This tool is being tested in the Port of Genova.

Clusters 2.0 / nallian → Slot Booking App

Some of the efforts made in CLUSTERS 2.0 project culminated in the Slot Booking App. It is a web application that assists the operations of freight delivery and pick-up in airports. Its main impacts are the reduction of waiting and idle times (and therefore its costs), the optimization of personnel planning and the transparency and smoothness given to these processes.

The developer was the IT company **Nallian** and the implementation was made in the Brussels Airport. The implementation is still used via the BRUcloud platform by AirCargoBelgium.
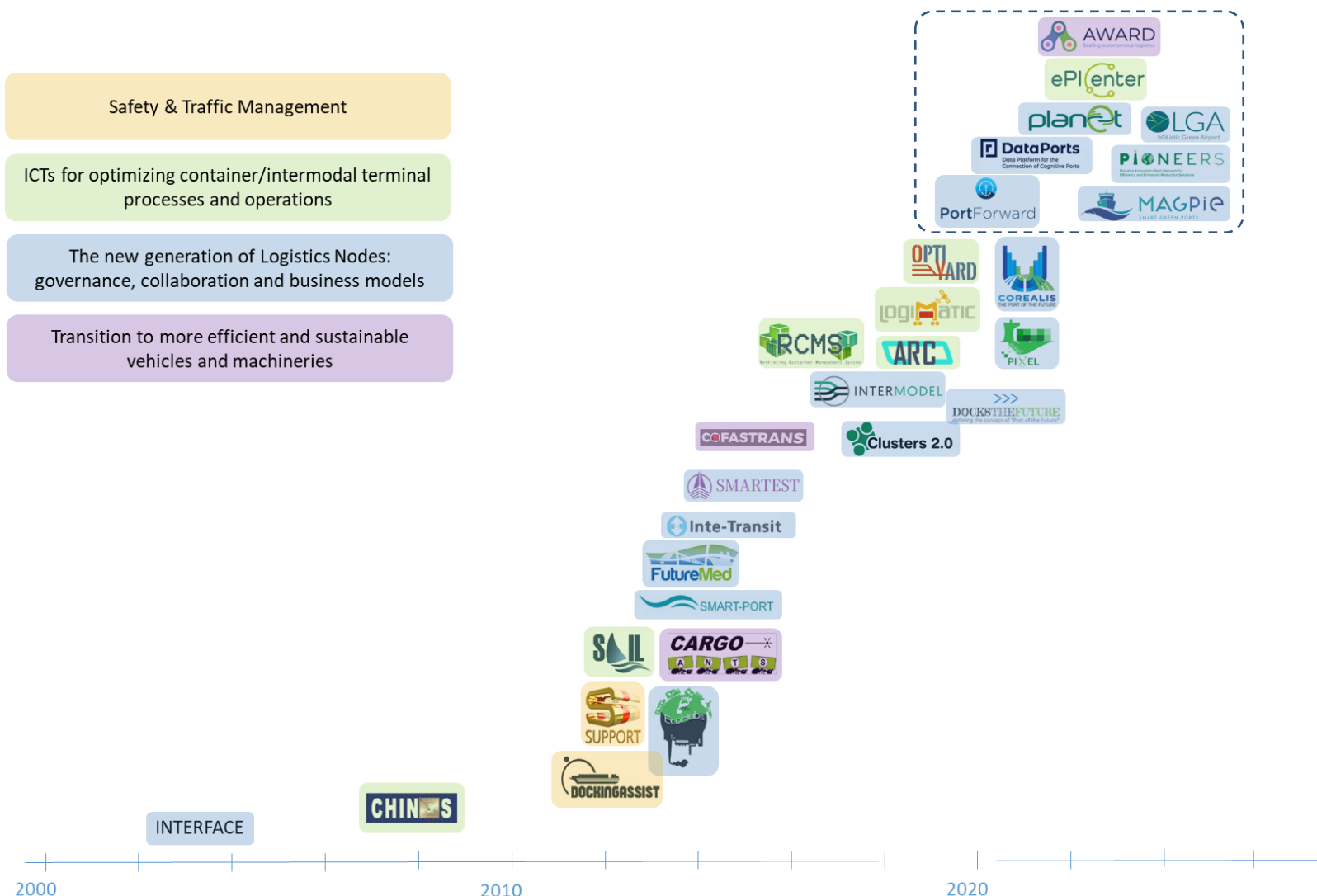
TRENDS AND SOCIETAL DRIVERS

SUSTAINABILITY E-COMMERCE

GEOPOLITICS CONDITIONS RESOURCE SCARCITY AND DEPLETION OPERATIONAL EFFICIENCY

DIGITALIZATION DRIVER SHORTAGE

CIRCULAR ECONOMY

GOVERNANCE OF THE SOLUTIONS CLIMATE CHANGE

RESHORING NON-PREDICTABLE IMPACTS

CROWD-ECONOMY

LEGISLATION

ASPECTS THAT DETERMINE THE PATH AHEAD

- Low level of involvement of the logistics nodes
- Innovation programmes are not alone contributing to the improvement of Logistics Nodes.
- The interest of innovation projects in the Logistic Nodes is considerably recent.
- Ongoing projects.

Ongoing projects

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Safety & Traffic Management

ICTs for optimizing container/intermodal terminal processes and operations

The new generation of Logistics Nodes: governance, collaboration and business models

Transition to more efficient and sustainable vehicles and machineries

Regarding the main categories:

- The number of projects addressing the **New generation of Logistics Nodes** has increased.

- **Safety** has become a secondary focus over time.

- There is a clear correlation between the **cloud of trends** and the side focus of the projects. Currently, ongoing projects dedicate a large part of their efforts to improve digitalization and sustainability.

2000   2010   2020

Thank you!

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🌐 https://www.etp-logistics.eu/boostlog/

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