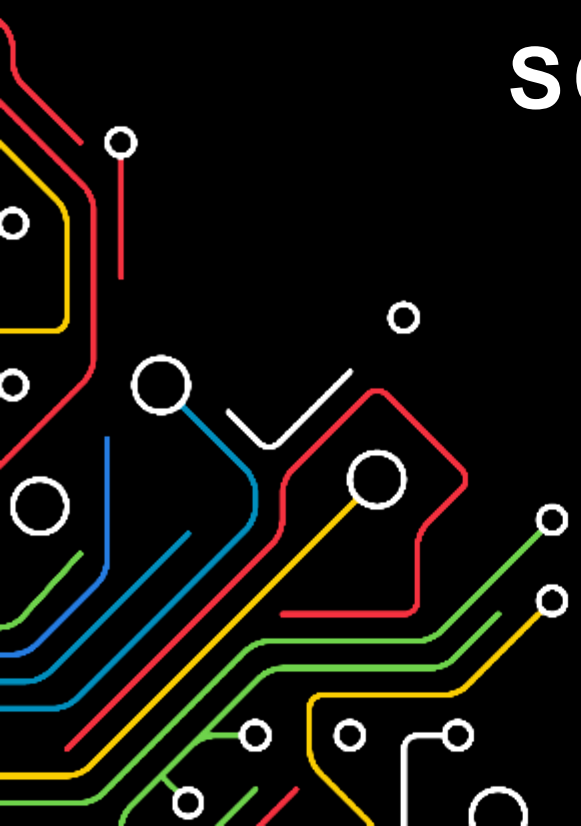
INSTITUTE FOR SYSTEMS
AND COMPUTER ENGINEERING,
TECHNOLOGY AND SCIENCE

INESCTEC | 35 1985 TRINTA E CINCO ANOS 2020

CESE
ENTERPRISE SYSTEMS ENGINEERING

SCOPE AND ACTIVITY FOR 2021

CCI/2021-29 JUNHO



from knowledge
generation to
science-based
innovation

CESE RESEARCH LINES

Manufacturing Systems Design and Management

RL1

Supply Chain and Collaborative Networks Management

RL2

Technology Management in Industry

RL4

CESE research

CESE mission is to advance the scientific knowledge in enterprise systems engineering, resulting in unique expertise in developing innovative systems and services to improve competitiveness, sustainability and resilience of industrial organisations.

RL3

Industrial Information Systems

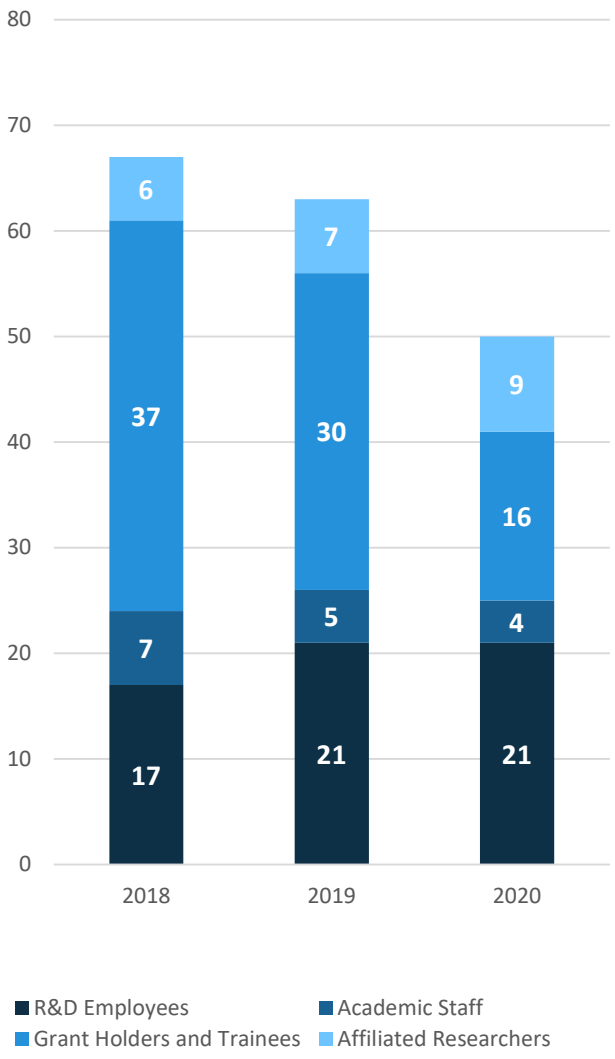
Transportation and Logistics

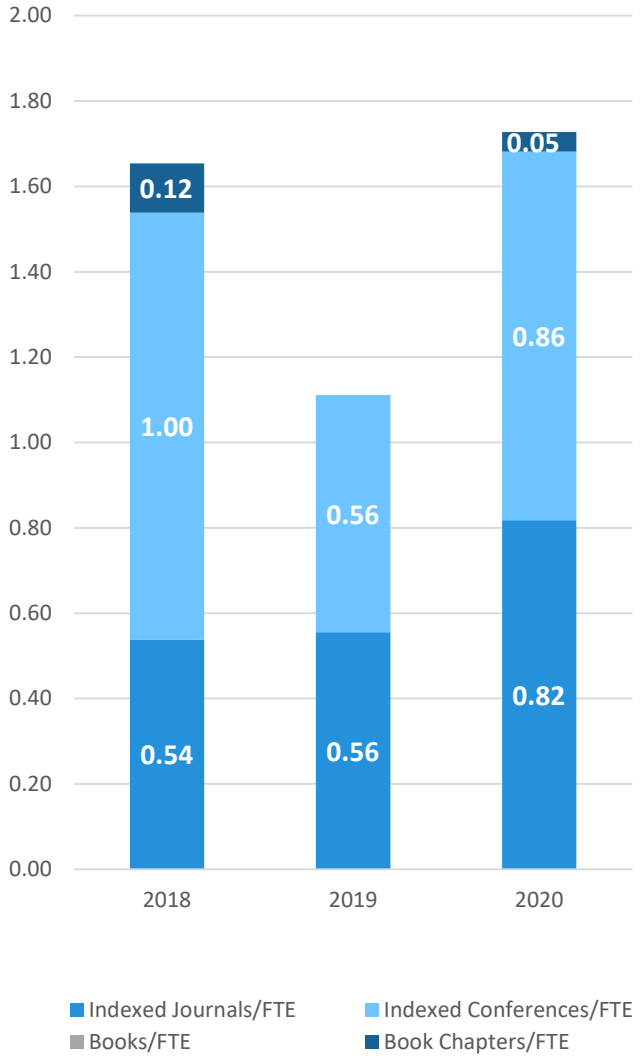
RL5

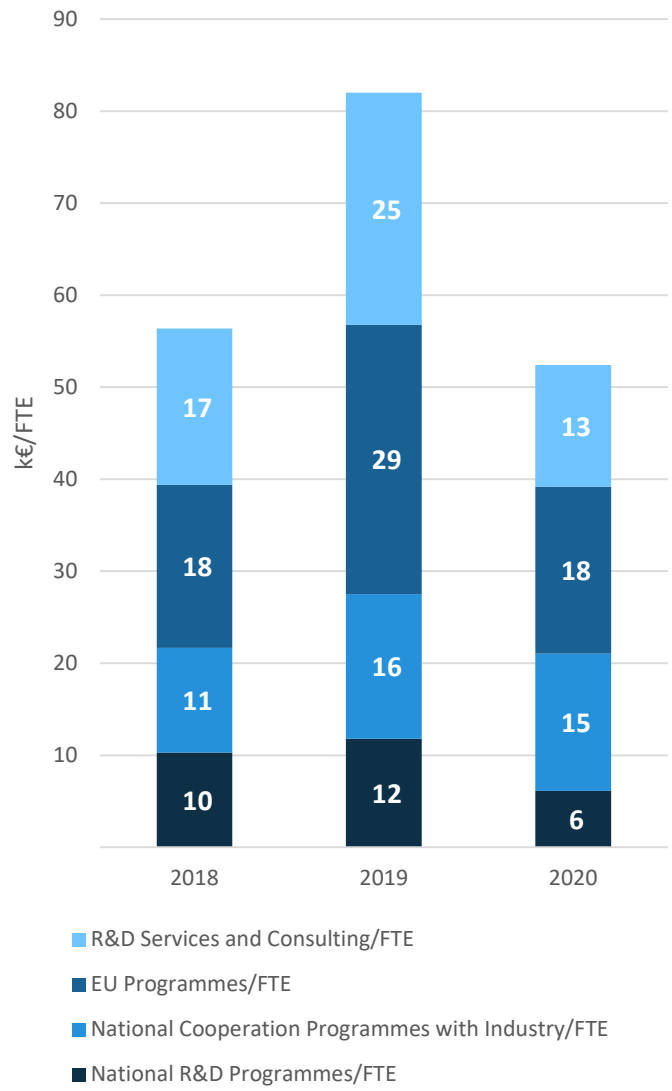
INNOVATION ACTIVITIES/MAIN MARKETS AND APPLICATION AREAS

	TEC4AGRO	TEC4ENERGY	TEC4HEALTH	TEC4 INDUSTRY	TEC4SEA	Other
Design and management of manufacturing systems				X		
Planning and scheduling				X		
Digital transformation and management				X		
Industrial Data Driven Systems and Platforms	X	X				

CESE - TEAM AND ACTIVITY/FTE







OBJECTIVES AND THEIR ACHIEVEMENT IN 2021

RL1

To research **how real-time data can be integrated in optimisation-simulation tools** to provide insights. We also want to study further **how optimisation algorithms can be combined with simulation models** to manage the operations of manufacturing systems when facing unexpected events

RL2

To continue the research on the **interaction between digital technologies and supply chain management**, enabling a new perception on its resulting value-creation capability, and to **characterise the main barriers and drivers to the implementation of digital supply chains** in different contexts

CESE research

RL4

To develop a method to **identify research results in research and innovation projects that can be demonstrated and/or be object of training actions**, aiming to maximise knowledge transfer in advanced manufacturing technologies and systems.

RL3

To develop the concept of **extended (product) Digital-Twin to include the role of data/information architectures aimed at managing data and information in the whole product life cycle**, using and contributing to the IDS RA.

RL5

To develop **a framework and a set of optimisation/simulation tools for intermodal transportation networks** (Intermodal freight operations)

INESCTEC

MAIN ACTIONS AND THEIR ACHIEVEMENT IN 2021

Action	Objective	Expected Outcomes	Calendar	
Global Manufacturing Research Group survey VI	RO1.1 RO1.2	Have access to data collected worldwide to support publications and projects	Dec 2021	0%
Develop a "Digital Enterprise Reference Architecture"	RO3.1 RO3.2	Support to innovation &D activities in digital transformation	Dec 2021	10%
Develop the concept of "Product Digital-Twin as a data/information architectural element"	RO3.1 RO3.2	Support to a new generation of PLM systems	Dec 2021	50%
Extend the Digital Manufacturing System at iiLab	RO1.1 RO1.2 RO3.1 RO3.2	Support to the demonstration service of iiLab	Sept 2021	60%
Develop a data driven federated architecture based on the principles of data sovereignty and following the IDS Reference Architecture	RO1.1 RO1.2 RO3.1 RO3.2	Allow the development of a set of software elements to automate business transactions	Dec 2021	20%
Specification of services in the areas of urban mobility and logistics	RO5.1	Services created to provide new logistic solutions as a way to address the current environmental challenges and to guarantee more efficient, shared-connected and low-emission sustainable operations	Dec 2021	30%
Develop a technology adoption framework, to support companies on the adoption of advanced technologies	IO3	Support to services addressing digital transformation and maturity assessment	Dec 2021	70%

TRANSFORMER 4.0

[2020-2023]

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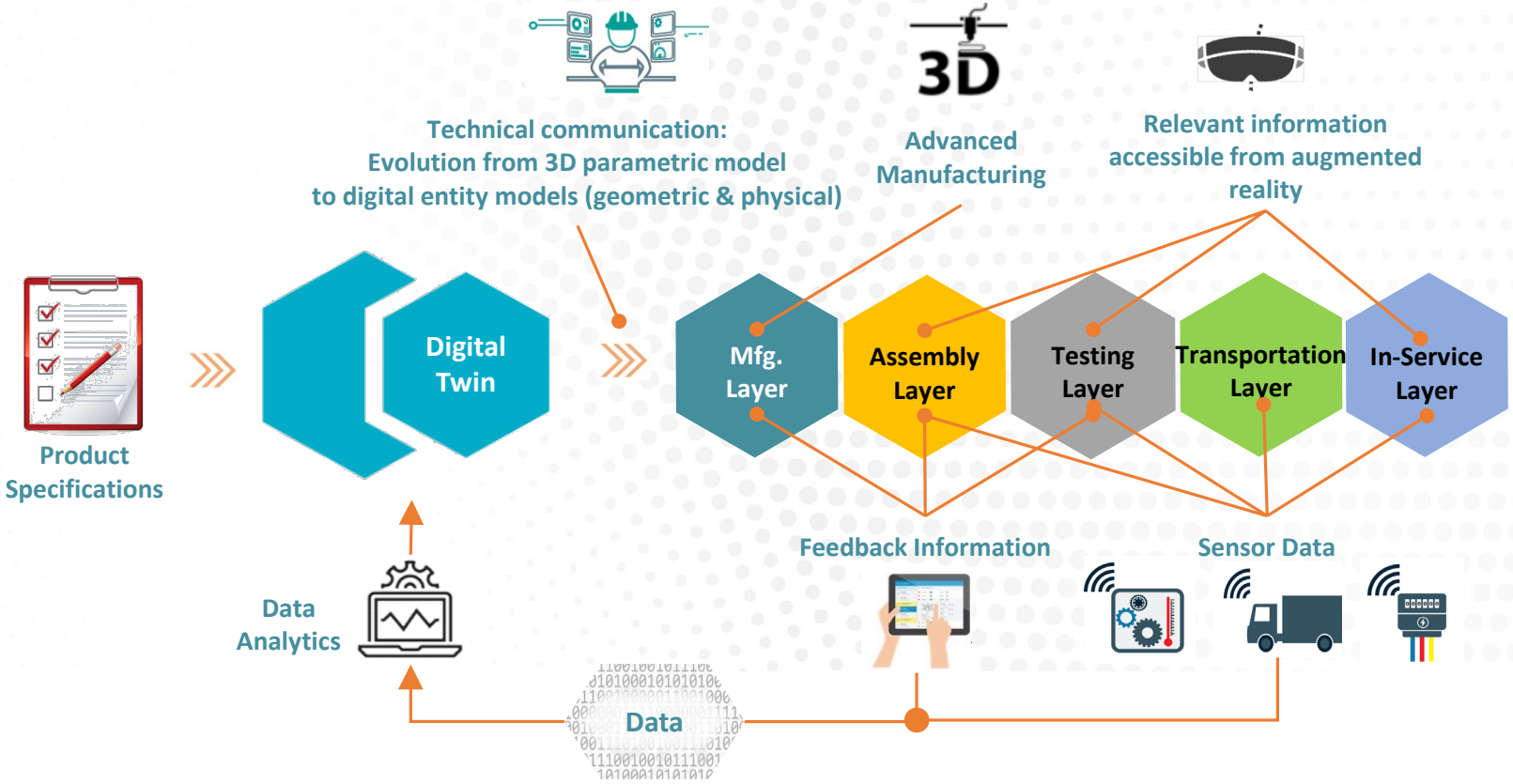

efacec

INESCTEC

inegi

Massachusetts Institute of Technology

In April 2020 the program awarded 4 R&D projects in the areas of **Digital Transformation in Manufacturing** and **Sustainable Cities**. These projects represent societal challenges that will be answered through research excellence and will promote the internationalization and strengthening the Portuguese scientific and technological structure

MIT Portugal

FCT Fundação para a Ciência e a Tecnologia

Cofinanciado por: COMPETE 2020 PORTUGAL 2020 UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional

CircThread

Building the Digital Thread for Circular Economy Product, Resource and Service Mangement

[2021-2025]

HASLAB

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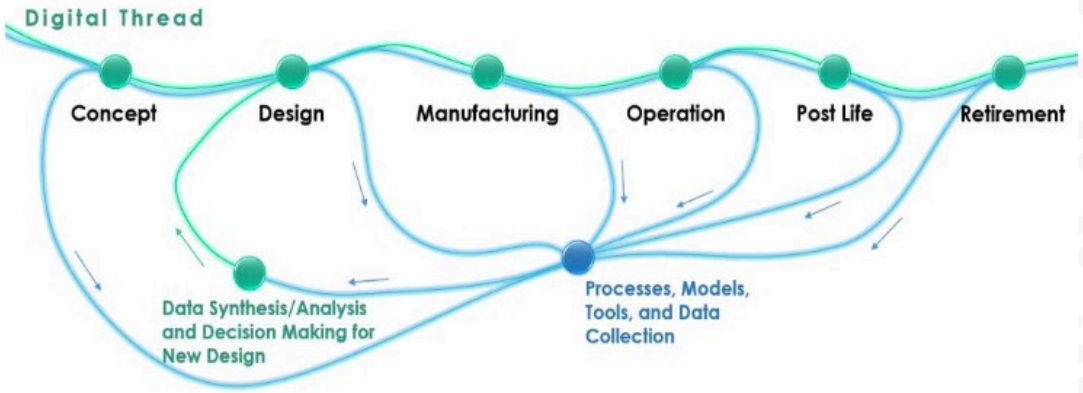
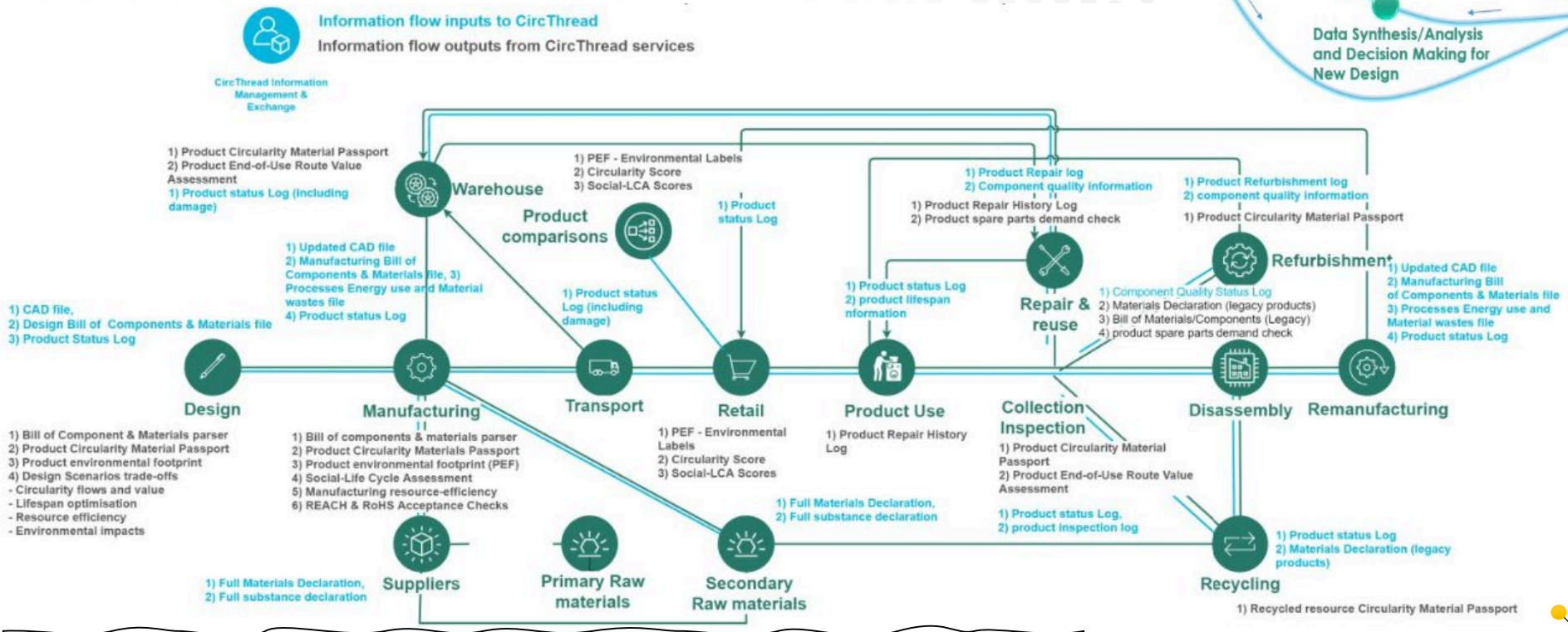
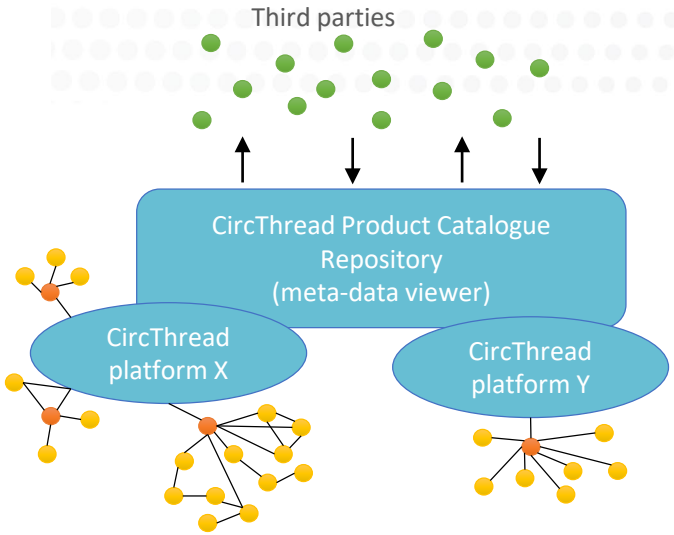




Project coordinator: FUNDACION CARTIF (ES)
Proposal coordinator: EKODENGE (TK)
30 partners
Budget: 7.995M€ (INESCTEC: 328k€)
Effort: 1346 pm (INESCTEC: 45pm)



The **CircThread Platform vision** is to become a data, information and knowledge broker in the product value chains for all related stakeholders.

The main **challenge is facilitating the exchange of data across related actors** along the product life cycle to make better products that last longer with benefits for everyone.

MAGPIE

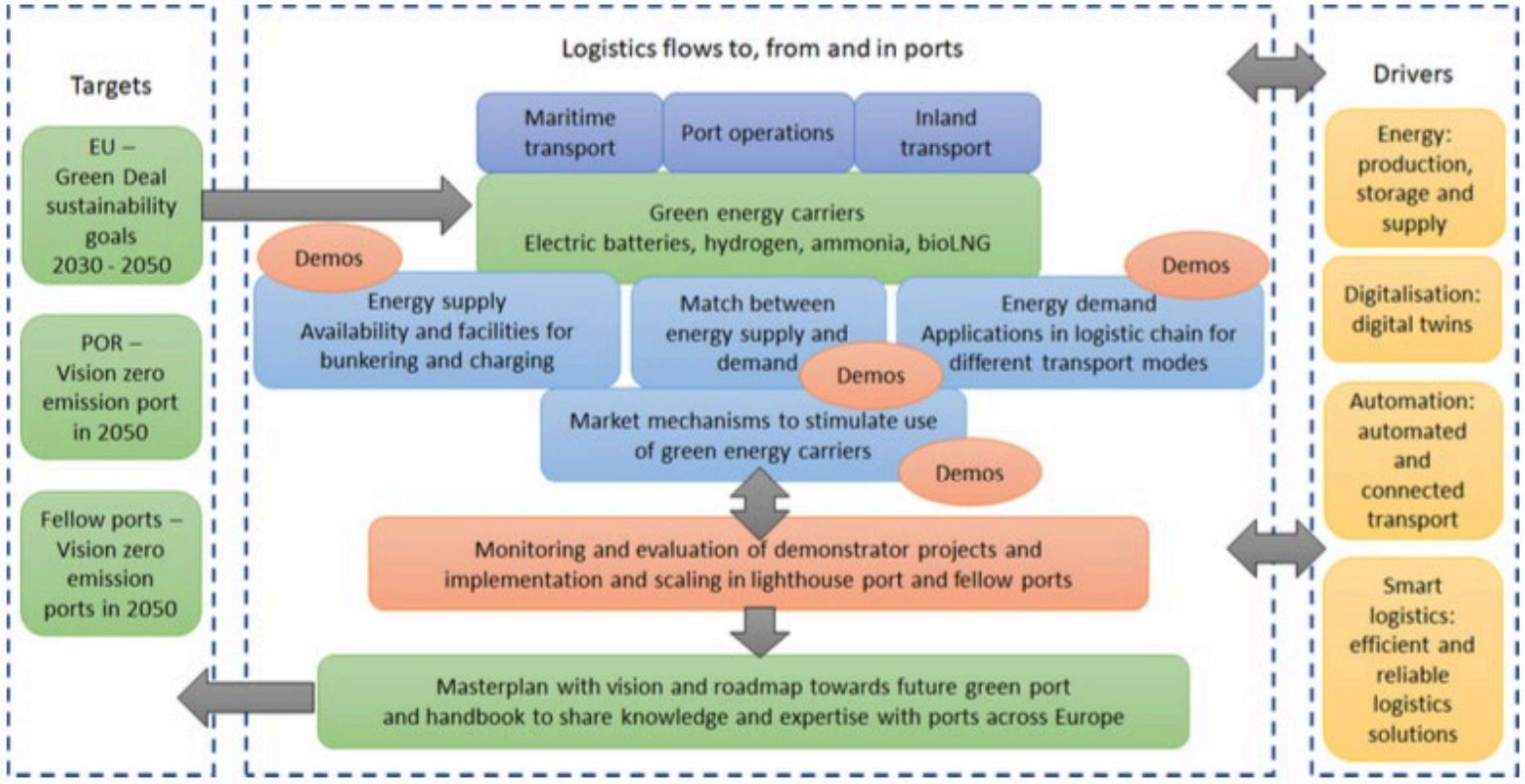
sMArt Green Ports as Integrated Efficient multimodal hubs

[2021-2026]

CPES

CESE

… addressing the missing link between green energy supply and green energy use in port-related transport and the implementation of digitalisation, automation, and autonomy to increase transport efficiency…



Project coordinator: Port of Rotterdam (NL)
45 partners
Budget: 24M€ (INESCTEC: 917k€)
Effort: 2397 pm (INESCTEC: 236 pm)

IILAB - LABORATÓRIO DE INDÚSTRIA E INOVAÇÃO

iilab INDUSTRY & INNOVATION LAB

INESCTEC

MAIN EXTERNAL PARTNERS AND COLLABORATIONS WITH OTHER CENTRES - RESEARCH

SUPSI

LMS Laboratory for Manufacturing Systems & Automation

inegi driving science & innovation

DFKI

POLITECNICO MILANO 1863

TNO innovation for life

SINTEF

aimen TECHNOLOGY CENTRE

Fraunhofer

UNINOVA Instituto de Desenvolvimento de Novas Tecnologias

tecnalia

MAIN EXTERNAL PARTNERS AND COLLABORATIONS WITH OTHER CENTRES - INNOVATION

INESCTEC

Companies

Critical manufacturing
softi9
KYAIA
IKEA
efacec Empowering the future
AMORIM

Technological Institute and Associations

ctcp centro tecnológico do calçado de portugal
citeve
PRODUTECH
MOBINOV :: Cluster Automóvel

Partners EIT

SONAE IMPROVING LIFE
SONAE ARAUCO Taking wood further
POLITECNICO MILANO 1863
INNOWAVE
LMS Laboratory for Manufacturing Systems & Automation
U.PORTO FEUP FACULDADE DE ENGENHARIA UNIVERSIDADE DO PORTO
Cefriel POLITECNICO DI MILANO
AZTI MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
Whirlpool CORPORATION
AI TALENTVM
foodintech by fiq

CESE - TEAM

CESE - TEAM