PROJECT OVERVIEW

LOGISTAR - Enhanced data management techniques for real time logistics planning and scheduling

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About LOGISTAR

Consortium of **15 partners**, coordinated by the University of Deusto (Spain)

- Budget: **4.997.548,75 €**
- Duration: **36 months** (Started June 2018)

Project managed by INEA agency - Innovation and Networks Executive Agency (European Commission)

Project funded by H2020:

- Work programme: **Smart, green and integrated transport**
- Call: MG-5.2-2017: **Innovative ICT solutions for future logistics operations**

LOGISTAR overall concept

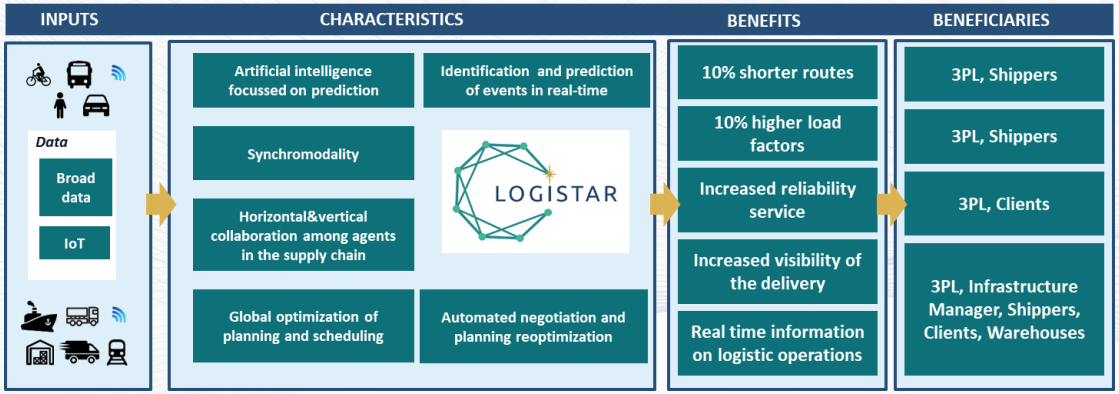
LOGISTAR aims to: allow **effective planning and optimization of transport operations**

- By taking advantage of **horizontal collaboration** and relying on the increasingly **real time available data** gathered

Development of a **real-time decision making tool** and a **real-time visualization tool** of freight transport

- With the **purpose of delivering information and services** to the various agents involved in the supply chain

LOGISTAR overall concept



- ✓ **Increasing by 10% the load factors of freight vehicles:** optimization techniques
- ✓ **Shortening by 10% the delivery routes** by relying on synchromodality
- ✓ **Increasing the reliability and efficiency of services:** predicting events and incidents.
- ✓ **Facilitating the management of logistic operations:** providing dashboards and showing alerts or recommendations.
- ✓ **Increasing the visibility of the delivery** derived from the use of sensors to monitor the goods shipped and boosting data sharing

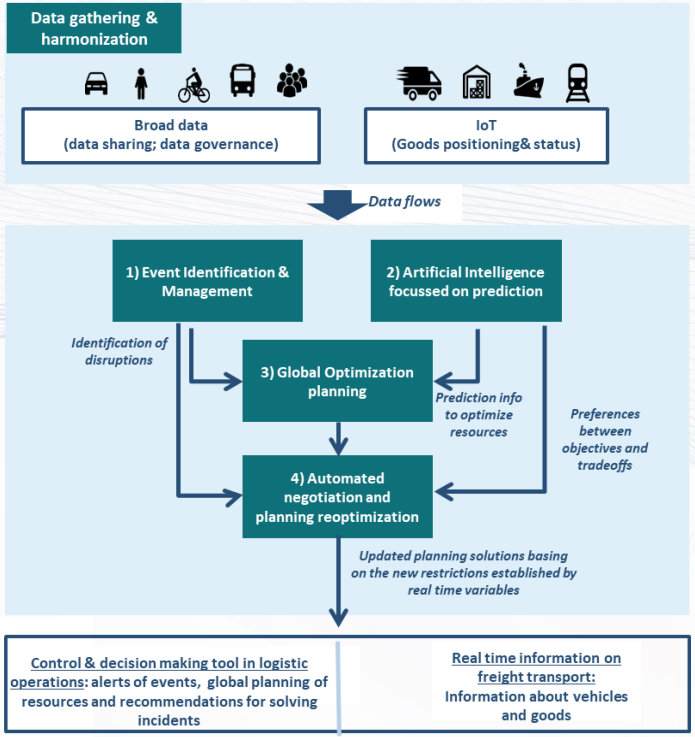
LOGISTAR overall concept

Specific objectives

- Identify **logistic open data sources** and **harmonize** this with the closed sources
- **Increase accuracy planning of operations** by applying **artificial intelligence:**
  - Timing predictions
  - Learning preferences of logistic chain participants
- Identify potential **disrupting events** and take relevant actions with **machine learning**
- Make the **best use of resources**
  - Provide possibilities for horizontal collaboration
  - Provide **optimization methods to transhipment planning and scheduling** in hubs and freight transport networks
- **Allow the negotiation among different agents** involved in the supply chain **considering any constraints arisen in real-time**

LOGISTAR overall concept

- To **leverage the available data**, to process it and **to deliver services**
  - Data will be retrieved and harmonized
  - Sensors will be connected to a cloud IoT platform
- Information used by **smart algorithms for**
  - Predictions
  - Learning the preferences
  - Optimization of the planning of operations
  - Automated negotiation and re-optimization
- **Real-time dashboards** which will provide an overview to managers of what is happening



Key innovation aspects

- **Artificial Intelligence focused on prediction**
  - Inference based on event detection and probabilistic programming frameworks
- **Global optimization planning**
  - Realistic optimization models based on Robust and Multi-Objective Optimization.
  - Hybrid metaheuristics based on paradigms of parallel computing
- **Automated negotiation** and **planning re-optimization**
  - Constraint satisfaction problem solving techniques
- **Event Identification Rules**
  - A new application domain for the processing of complex events and their aggregation
- **Service layer – Decision making tool**
  - Increased data gathering, cleansing and structuring
- **Data gathering techniques**
  - ETL tools for Linked Data. Scraping and transforming

Services

CONTROL AND DECISION-MAKING TOOL

- Integral visibility and planning of resources
- Planning of dynamic routing

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- Optimized planning of resources
- Optimal routes for deliveries
- Identification of events
- Dynamic planning reconfiguration
- Horizontal/vertical collaboration
- Synchromodality management

REAL-TIME INFORMATION ON FREIGHT TRANSPORT

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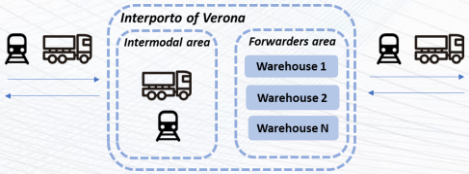
- KPIs of real time logistics
- *Position of goods*
- *Operational status*
- *Working conditions*
- *Arrival times*
- *Environmental conditions*

Living labs

Backhauling and Co-loading

To improve backhauling management

Overall overview of the status of the operations



Synchromodality

Real time re-planning due to disrupting events

Planning of synchromodal routes

Dynamic assignation of freight transport networks

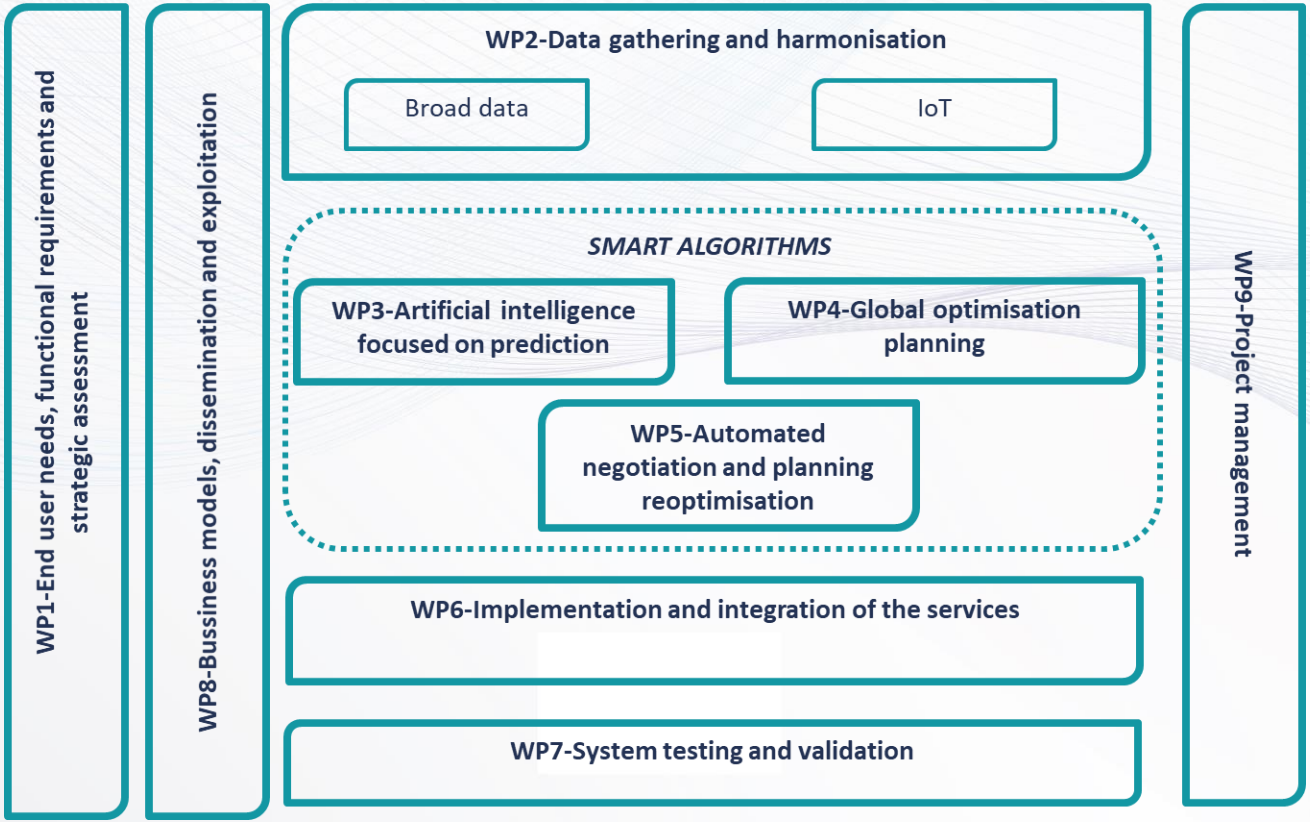
Real time monitoring

Reduction of empty kms

Real-time optimization of the transport network

Improve trips combinations

Work packages structure



LOGISTAR

Partners and roles

Deusto, DeustoTech Mobility	Project Coordinator Global optimization planning techniques	dbh Logistics IT AG	Implementation and integration of services
Insight, UCC University College Cork, Ireland	Artificial Intelligence techniques focused on prediction	GENEGIS GI Geographical Intelligence	Geo-special oriented software solutions
CSIC, IIIA Institut d'Investigació en Intel·ligència Artificial	Automated negotiation algorithms	ahlers	Testing and validation – Real time logistics in chemical industries use case
DUNAV NET	Cloud IoT data	Consorzio ZAILOG	Testing and validation – Synchromodality use case Dissemination activities
SEMANTIC WEB COMPANY	Data gathering and harmonization	Nestlé	Testing and validation – Backhauling and co-loading use case
PS PRESTONSOLUTIONS LTD	End-users engagement	pladis	Testing and validation – Backhauling and co-loading use case
MDS Transmodal	New and emerging business models assessment	CODOGNOTTO	Testing and validation – Synchromodality use case
software AG	Predictive analysis and processing of real-time data		

Contact details

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