RESEARCH

ZLC **TALENT HUB FOR SUPPLY CHAIN**
*Zaragoza Logistics Center*

# INTERNATIONAL RESEARCH PARTNER

MIT | MIT GLOBAL SCALE NETWORK

# ZLC

# TALENT HUB FOR SUPPLY CHAIN

## ZLC International Research Partner

Zaragoza Logistics Center, ZLC is a research and education center affiliated to the MIT (Massachusetts Institute of Technology). ZLC's research programs are aligned to ZLC's mission of focusing on enhancing economic growth and competitiveness through innovation.

Aragon's regional university and government, and industry partners, serve as an exclusive model of closer cooperation between industry, public administration and academia in funding research and using the knowledge transfer accumulated to rapidly reap commercial rewards.

ZLC promoted the European Technology Platform in Logistics ALICE that provides support to the European Commission for the implementation of the EU program for research (Horizon 2020).

ZLC has representation in the Steering Group and collaboration in four different Working Groups.

**alice** | Alliance for Logistics Innovation through Collaboration in Europe

## Key Figures

| | |
|---|---|
| Entity in number of European research projects on logistics in Spain | **1ST** |
| R&D collaborative projects | **150+** |
| European Union-funded projects | **25+** |

| | |
|---|---|
| **350+** | Partners in research projects |
| **100+** | Referred publications and books (or chapters) |

*"We have been partnering with ZLC for a few years now on different projects and capacities exchanging knowledge and challenges for mutual benefit. The signing of our Collaboration Agreement is built on the recognition of an already fruitful relationship and is meant to facilitate an even closer cooperation in the future".*

Sergio Barbarino
**Research Fellow, Supply Network Innovation Center at Procter & Gamble**

*Vice-Chair, ALICE ETP on Logistics*

# Core Research Areas

- ADVANCED INVENTORY MANAGEMENT
- MANUFACTURING & LOGISTICS ANALYTICS
- HEALTHCARE OPERATIONS
- RESILIENCE, SC SECURITY & RISK MANAGEMENT
- TRANSPORT NETWORKS & URBAN MOBILITY
- SUPPLY CHAIN & FINANCE
- SUPPLY CHAIN DIGITALIZATION
- SUSTAINABLE NETWORKS

# RESEARCH AREAS

## ADVANCED INVENTORY MANAGEMENT

Developing inventory management strategies and models to increase supply chain value, particularly using stochastic inventory models where randomness could originate from either demand or supply.

### • MAIN ACHIEVEMENTS:

**CLARIANT**

*Research project: Inventory Optimization as a Business Advantage,* sponsored by the global chemical company Clariant, on how the implementation of dynamic inventory policies can contribute to free up valuable working capital.

**INSPIRE**

*INSPIRE project: Towards growth for business by flexible processing in customer-driven value chains,* on developing innovative business models to increase the competitiveness of European manufacturing and thus promote more local production in Europe.

**nextnet**

*NEXTNET project: Mapping a path to future supply chains,* on identifying future industrial scenarios based on the analysis of trends and their impact on supply chains, and developing an European Strategic Research Agenda and action plan for the Supply Chains in 2030.

## MANUFACTURING & LOGISTICS ANALYTICS

Addressing operational decision-making problems focused on examining shop floor control management technologies to improve operational performance.

### • MAIN ACHIEVEMENTS:

Applying quantitative tools in production environments to bridge the gap between issues in using information technology in the supply chain, through **real-time data management,** thus improving the performance of pull, push, and hybrid production systems.

## HEALTHCARE OPERATIONS

New ways to develop healthcare operational efficiency, cut costs and improve patients care and safety. Hospital Processes Reengineering, Demand management, pharmaceutical supply chain network optimization; and innovative approaches to support humanitarian recovery.

### • MAIN ACHIEVEMENTS:

Development of a model that takes a novel approach to the **rebuilding of storm-ravaged neighborhoods** by framing the process **as a supply chain challenge.**

**MEDECINS SANS FRONTIERES**    **UNHCR** The UN Refugee Agency

**HELP**    **IIS Aragón** Instituto de Investigación Sanitaria Aragón

*HELP project: Healthcare Logistics Education and Learning Pathway.*
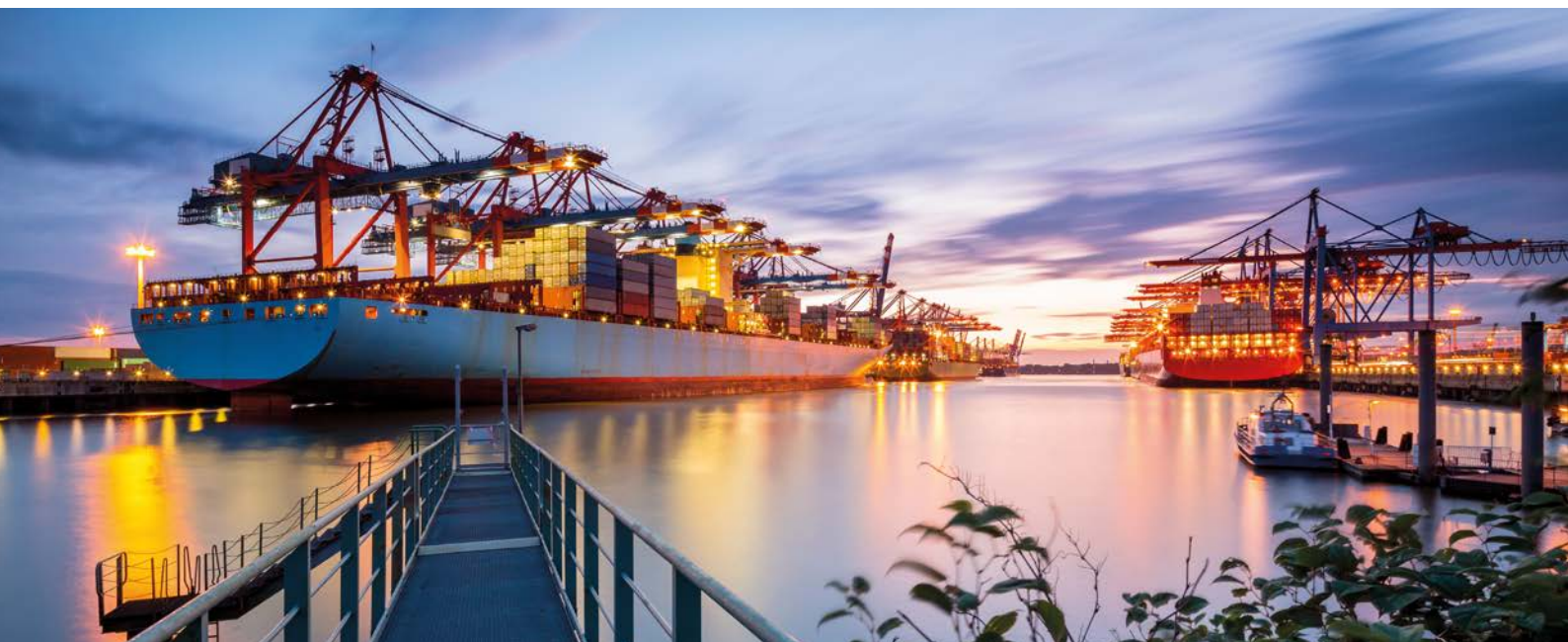
# ZLC research tackles global circular supply chains

## RESILIENCE, SC SECURITY & RISK MANAGEMENT

Methodologies for risk management; Risk based approach to SCM; supply chain models integrating risks and security controls; supply chain disruptions and resilience.

### • MAIN ACHIEVEMENTS:

*CORE project: Consistently Optimized Resilient Secure Global Supply-Chains,* demonstrating how an ecosystem integrating interoperability, security, resilience and real-time optimization can produce cost effective, fast and robust solutions, all implemented on several business demonstrators. ZLC is coordinating three of these demonstrators together with leading companies in manufacturing and distribution: BSH, DHL and Procter & Gamble.

B/S/H/    DHL    P&G

The goals of these demonstrators are several: 1) improve ETAs forecasts in intercontinental shipments, 2) facilitate customs transit declarations, 3) show how reduced lead time uncertainty can lead to overall improvement of inventory policies, 4) improve security in inland transport and 5) improve cold chain transport by means of innovative chilling technologies.

*SAFEPOST project: Re-use and development of Security Knowledge assets for International Postal Supply Chains,* raising the level of postal security by integrating screening solutions with operational processes and customs intelligence work. A tool was developed in order to assess the feasibility of additional security in postal chains. The tool is currently being used in risk management courses, in order to raise awareness of the impact of security countermeasures on supply chain performance.

CASSANDRA

*CASSANDRA project: Common assessment and analysis of risk in global supply,* reducing costs and improving security through risk assessment and data-sharing. The project is aimed at defining and developing a data pipeline in order to enhance both B2B and B2G information sharing. The data pipeline is expected to improve supply chain security, by improving monitoring, customs risk management, supply chain risk management as well as system based auditing procedures.

# ZLC research tackles global circular supply chains

## TRANSPORT NETWORKS & URBAN MOBILITY

Promoting multimodality, the creation of transport networks and the improvement of logistics parks as fundamental nodes for the development of the supply chain. Developing new business models for urban mobility and SUMP's.

● MAIN ACHIEVEMENTS:

### Clusters 2.0

**CLUSTERS 2.0 project:** Open network of hyper connected logistics clusters towards Physical Internet, on reaching the EU objective on modal shift and strengthening competitiveness of local industries, by developing a network of hyper-connected logistics multimodal clusters and their influence areas.

### Sprout

**SPROUT project: Sustainable Policy Response to Urban mobility Transition project,** a new city-led innovative and data driven policy response to address the impacts of the emerging mobility patterns, digitally-enabled operating & business models, and transport users' needs.

### CORREOS

**CORREOS project: Microscopic analysis and evaluation of the last mile distribution network,** taking into account not only service levels and operating costs, but also the environmental impact.

## SUPPLY CHAIN & FINANCE

Studying operational decision-making problems in the presence of financial frictions; investigating the trade-off between operational and financial flexibility; evaluating the impact of supply chain finance schemes in SME performance.

### • MAIN ACHIEVEMENTS:

***Rolling tires, Inc. game:*** Development of a simulation game that reflects the **impact of operational decisions on a firm's working capital.** The game addresses the challenges faced by a firm that is in the process of expansion and modernization. Teams are asked to select among different operational actions which may increase the firm's profitability, but also affect its working capital. Each team's goal is to make the appropriate decisions to improve the performance of the firm, as measured by three KPIs in its scorecard, namely: (1) Sales Growth; (2) Net Margin; and (3) Fill Rate.

## SUPPLY CHAIN DIGITALIZATION

How digitalization will enable organizations to transform their existing supply chain structures into more flexible, open, agile, and collaborative digital models, saving time, money and resources.

### • MAIN ACHIEVEMENTS:

**SELiiS**

***SELIS project: Towards a Shared European Logistics Intelligent Information Space,*** proposing a network of logistic communities' spaces termed SELIS Community Nodes (SCN), providing a 'lightweight ICT structure' to enable information sharing for collaborative sustainable logistics for all at strategic and operational levels. ZLC is working on the development and implementation in selected Living Labs of tools related to improvement of **green logistics, supply chain optimization and supply chain finance.**

**SONAE**   **DHL**

## SUSTAINABLE NETWORKS

How environmental concerns could be integrated into operational decision making throughout the supply chain.

### • MAIN ACHIEVEMENTS:

**AGROinLOG**

***AGROinLOG project: Demonstration of innovative integrated biomass logistics centers for the Agro-industry sector in Europe,*** enhancing the accuracy of the business models and contributing towards seasonality avoidance, rural development and bio-economy goals.

**I.C.L.E.I**
Local
Governments
for Sustainability

***ECOLOGISTICS project: Low carbon freight for sustainable cities,*** on promoting low carbon urban freight policies and practices contributing to climate change mitigation in project countries Argentina, Colombia and India.

**LEARN**

***LEARN project: Logistics Emission Accounting and Reduction Network,*** establishing coordinated networks of industry, government and civil society stakeholders to drive consistent and transparent emissions measurement and reporting across the global supply chain.

# Do you want to become a research partner?

Contact Carolina Ciprés. Director of Research

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