

CO³ POSITION PAPER:
***CHALLENGES OF CO-MODALITY IN A
COLLABORATIVE ENVIRONMENT***

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Executive Summary

The aim of this deliverable is to define the state of the art and the managerial complexity of the integration of at least two modes of transport within the freight sector in Europe. The benefits arising from co-modal solutions encompass the economic competitiveness of a region to reduce total logistics costs for supply chains and single firms – in terms of inventory and transport costs. Nevertheless, companies are still reluctant to shift to co-modal solutions because of the perception of reduced service levels in terms of timeliness and availability. In fact, co-modal transport is said to be slower and have a lower reliability.

In order to facilitate the use of more than one mode of transport in the European freight logistics sector, it is essential to understand the complexity of such a shift.

The concept of Co-modality

Many definitions were used to describe this phenomenon, namely intermodality, co-modality, multi-modality and synchro-modality all of which have been used interchangeably in many literatures. It is essential to understand if there are any major differences between them. Each of these contributes to a broader understanding of the phenomenon by stressing a specific focus; all of these factors will offer a comprehensive definition of co-modality.

Co-modality and the logistics/supply chain strategy

A call for freight consolidation has been made in order to reach the scale needed to shift to less polluting modes. However, in the existing literature, the feasible solutions to freight consolidations are limited to two options: firstly the intervention of a carrier consolidating different shippers' logistics flows; secondly, the shipper consolidates their internal operations through logistics centralisation (Eng-Larsson and Kohn, 2012).

This paper extends this call to horizontal collaboration to consolidate flows so that the modal shift becomes an economically viable measure (Crujssen, 2012). However, issues around trust, solidarity, and mutuality arise (Palmer et al., 2012), hence the complexity of inter-firm flow consolidation is even higher due to the resources needed to initiate and maintain the collaboration.

Shipper's perspective: At a single firm level, the benefits of the use of multiple modes for seamless transport are the single company as lower cost and being green, but also those of higher reliability and higher resilience, the modal shift being considered as a mitigating strategy for logistics risks. This is somehow in contrast to common sense, i.e. that co-modality works only for low value, bulky products with a predictable demand. However, the elements of low value, bulky products for long distance were not found to be determinants for the single shipper.

In order to evaluate the impact of a modal shift on costs, Liedtke (2012) refers to the concept of the Total Logistics Costs to define the optimal shipment size (economic order quantity – EOQ) in a co-modal solution (road plus rail vs road). The definition of the economic order quantity in a co-modal solution is therefore dependent on a number of variables, among those the most controversial are the break-even distance and the inventory level.

Logistics service provider's perspective: Among logistics service providers, many feel that co-modality can be a huge advantage when it comes to mitigating transport costs. They feel that usage of rail and sea would also help reduce traffic congestion on roads and reduce CO₂ emissions. However, most of them are worried about the shift from road to rail/sea and feel the process might not happen as quickly as one would hope for. This is especially voiced by the smaller LSPs and companies who have predominantly worked with road freight during their entire business life and have little or no experience of rail/sea freight services.

Collaboration Concepts for Co-modality

Co-modality could lower transport and inventory costs while maintaining logistics performance in terms of order fill rate and timeliness – and reducing the carbon impact of freight transport. However, the complexity of such a shift is high for both shippers and service providers, and it seems to be the barrier that has stopped co-modality from spreading throughout Europe as a viable transport solution.

Technical issues: There are several technical issues related to consolidation for co-modality: network design, scheduling, the location of terminals and hubs, technologies for loading/unloading and transshipment. Although these aspects are not in the scope of the project, the relevant contributions are referenced.

Organisational Issues: The “cost” of coordination and collaboration are explored for a co-modal initiative, due to the need for intermediation to consolidate and manage the logistics critical mass.

The main open questions on coordination and collaboration can be summarised into the following points:

- Need for intermediation and coordination to overcome the power imbalance and to reduce searching and transaction costs, and to avoid moral hazard and opportunism.
- Fair gain sharing: the presence of conflict in co-modal initiatives is also connected to the perception of the unfair share of gain. Fair gain sharing is a proxy for horizontal collaboration.
- Information sharing and visibility: shippers and carriers do not collaborate horizontally because of competition law, fear of losing competitive advantage, and a lack of cross network visibility, among others.
- Risk allocation: The existing literature allocates the risk related to co-modality (unused capacity, disruptions, delays, etc.) to the carrier which is usually in charge of the consolidation of different flows from its clients.

Business Model for Co-modality in a collaborative environment

The CO3 project aims to define a novel business model, able to overcome the barriers and to facilitate the mental, technical and operational shift required to enhance Europe's competitiveness through co-modality.

After describing four existing business models and their limitations in terms of fair gain sharing, visibility, and risk allocation, the report describes an advanced business model for co-modality in a collaborative environment. There are three main points that need attention in order to find a business model able to address both the need for intermediation, and the coordination of the flows to allow the consolidation to reach the “critical mass”. They are: legal issues, fair gain sharing, and the presence of the trustee.

Legal Issues: A significant difference from the existing business model is related to the fact that a co-modal initiative in a horizontal collaboration requires an international contract among multiple parties. While in the existing business models contracts are usually stipulated to be on a one-to-one basis, it is proposed at this point to develop a multilateral contract.

Fair Gain Sharing: A fair gain sharing in a multilateral contract is even more important and it is advisable to use a formula which is easy to understand and guarantees an even sharing of the benefits. The most suitable formula was indicated by Cruijssen (2012) as the Shapley Value.

Trustee: A main source of problems for co-modality is the presence of conflicts, often related to uneven positions of power among actors in the supply chain. Cruijssen (2012) argues there is a need for a specialised entity to set up, manage and develop a collaboration. If such a neutral, transparent and trusted party is not present, there is a severe risk that not all parties will work together efficiently in the long run on a fair, give and take basis.

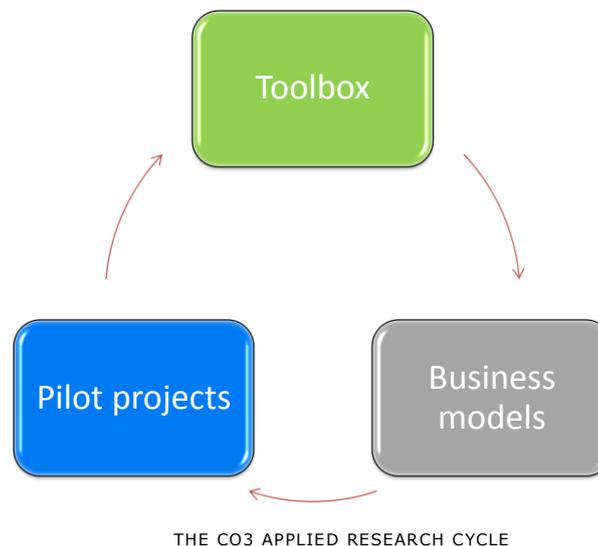
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CO³ Project: Background

The EU-funded project CO3 (Collaboration Concepts for Co-modality) aims to develop, professionalise and disseminate information on the business strategy of logistics collaboration in Europe. The goal of the project is to deliver a concrete contribution to increasing vehicle load factors, reducing empty movements and stimulate co-modality, through collaboration between industry partners, thereby reducing cost and transport externalities such as congestion and greenhouse gas emissions without compromising the service level. The project will coordinate studies and expert group exchanges and build on existing methodologies to develop legal and operational frameworks for collaboration via freight flow bundling in Europe.



Furthermore, the project consortium of knowledge institutes and specialised industry players will develop new business models for logistics collaboration. The developed tools, technologies and business models will be applied and validated in the market via pilot studies. Finally, the CO3 consortium will promote and facilitate matchmaking and knowledge-sharing through conferences and practical workshops to transfer knowledge and increase the market acceptance of collaboration.

The core of the CO3 project is what is referred to as the *applied research cycle*. This cycle has been set up as a continuous learning and feedback loop between the models and tools needed for supporting collaborations, the most suitable business models for groups of companies wanting to collaborate and finally the actual test cases for collaboration. These elements are developed under individual work packages as shown below.

CO³ Project Consortium

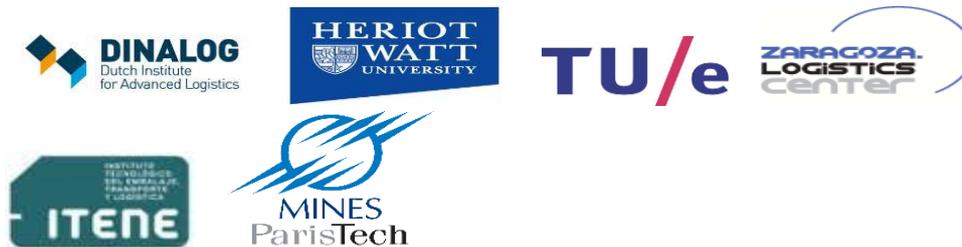
Coordination:



Tools and techniques: Strengthen the operational and legal framework



Identifying appropriate Collaborative business models:



The Logistics Laboratory: Case studies (CO³ Trustee)



Knowledge transfer and networking

