X-MODALL

The Optimisation of Modular Intermodal Freight Systems for Europe 2000+

**Funding:** European (4th RTD Framework Programme)

**Duration:** Jun 1997 - Jul 1999

**Status:** Complete with results

**Background & policy context:**

Throughout Europe, intermodal transport currently suffers from poor performance when it comes to timeliness, reliability and costs. Neither the infrastructure conditions nor the current organisational and regulatory frameworks satisfy the perceived requirements to establish truly Integrated Transport Chains (ITC). Contrary to policy statements promoting intermodal transport, a significant crisis is looming for freight transportation generally within the current infrastructure and operating environment. The current modus operandi is just not sustainable in the longer term. Thus there is an urgent need to establish a new framework for Europe, that is capable of delivering fully integrated and optimised freight flows for the future needs of the European Union.

**Objectives:**

The research study aimed to offer a fully integrated, practical, low cost and low resource solution to improve freight flows radically, in terms of time, reliability, performance and cost, with respect to multi-modal integration.

The main objectives of X-MODALL were to:

- provide the strategy and framework for integrated and high performance European freight networking;
- facilitate an open systems operating environment with prime emphasis on the shipper;
- specify the necessary technology strategy and interfacing protocols;
- develop the software components of the strategy, within a framework of fully integrated, multi-modal and networked services, offering open systems access to all authorised parties and user groups;
- enable both public and private investment to be applied to specific elements;
- assist in further developing EC regional policy and infrastructure.

**Parent Programmes:**

[FP4-TRANSPORT - Specific research, technological development and demonstration programme in the field of transport, 1994-1998](#)

**Institute type:** Public institution

**Institute name:** European Commission; Directorate-General for Energy and Transport (DG TREN; formerly DG VII)

**Funding type:** Public (EU)

**Partners:**

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Key Results: 

X-MODALL has: 

- Proposed an integrated information system (X-CRS) that manages transport demand (shipper requirements), the supply side, the optimal use of infrastructure and all of the networked assets used.  
- Outlined a hierarchical trunk sector networking structure made up of dedicated components for interconnected nodes and terminals (X-NodeNet), new modular load units (Xpak), a flexible HomeBase/AwayBase model for road freight (X-Road), and new modular configurations for freight trains encompassing modular wagon groups (X-Rail).  
- Identified possible savings in the range of 10-15% of current costs for intra-European surface freight transport, once the full set of procedures is introduced (not including further savings resulting from fully integrated logistics and manufacturing activities, which cannot be reliably quantified at this time).  
- Evaluated the potential of integrating the demand side (the supply chain - B2B, B2C, etc.) with the supply side, together with the technical and organisational changes necessary to benefit all of the parties involved, i.e. industry, consumers, manufacturers, suppliers, environmental interests, planners and government.  
- Proposed a timeline for gradual implementation of market-driven changes for the short-term (next 18 months), mid-term (12 to 42 months) and long-term (36 to 66 months), that would include software developments, organisational measures, and the gradual introduction of improved hardware into the road and rail sectors. These time scales are possible only if all parties constructively assist and endorse the changes necessary. At the same time, manufacturing and logistics will need progressively to assimilate these enhancements to freight transportation and react accordingly, so that the transportation linking distributed manufacturing activities becomes fully integrated within the supply chain itself. 

Policy implications 

From the results of the X-MODALL research study, it is obvious that transport policy and the particular regulations derived from it will need to be adapted and revised, to allow for improved conformity of multi-modal transport procedures, and significantly better performance across the length and breadth of Europe. Furthermore, the X-MODALL approach will help support EC policy development in terms of cohesion and improved integration of the Accession countries, whilst taking account of desired regional developments and subsidiarity. 

Related Projects: 

Related Transport RTD projects  
- FREIA - Towards the networking of European freight villages.  
- IMPULSE - Interoperable modular pilot plants underlying logistic system in Europe.  
- IQ - Intermodal quality.  
- MINIMISE - Managing interoperability by improvements in transport system organisation in Europe.  
- SCENARIOS - Scenarios for trans-European networks.  
- STEMM - Strategic European multi-modal modelling.  
- STREAMS 11-12 - Strategic transport research for European Member States. 

Documents:  
- xmodall.pdf (Final report) 

STRIA Roadmaps: Network and traffic management systems
**Transport sectors:** Freight transport

**Transport policies:** Decarbonisation, Societal/Economic issues