Electronic Logistics Marketplaces:
A Vision For Wales
Acknowledgements
We would like to thank all of the individuals and companies that have participated in the research undertaken to produce this booklet.

This research has been partially funded by the Welsh Assembly Government through a Knowledge Exchange Fund grant (no. HE 07 KEP 3003).

All information is correct as at April 2008
© Cardiff University Innovative Manufacturing Research Centre
Introduction

The growth in e-Business over recent years has resulted in the increased use of electronic marketplaces for business-to-business transactions. This booklet focuses upon the application of these marketplaces within logistics. Often such marketplaces are associated auction sites for backloads. However, marketplaces that enable collaboration also exist, and these form the basis for the information in this guide.

So what does this have to do with Wales? The draft Wales Freight Strategy published at the end of 2007 focuses on further improving the sustainability of freight transport. One way to achieve this is through efficiency improvements, and here an ELM can contribute in enabling this. In addition, through the Department for Economy & Transport, steps are being taken to consider the potential to create a logistics marketplace for Wales. Again, this connects with the draft Wales Freight Strategy, which is looking to develop a ‘Freight Direct’ information service for Wales.

The purpose of this guide is to highlight some of the key research undertaken relating to electronic logistics marketplaces. In particular, we look at the types of marketplace, their functions and supply chain impacts. In addition, more details on the pan-Wales ELM concept are provided

Yingli Wang  
Andrew Potter  
Mohamed Naim  
Cardiff University  
Innovative Manufacturing Research Centre  

Steve Patterson  
Welsh Assembly Government
What is an Electronic Logistics Marketplace?

Electronic Logistics Marketplaces (ELMs) are one of a range of collaborative approaches to managing the movement of freight in a more efficient way. Broadly speaking these approaches concern either logistics facilities that physically handle freight or technology based collaboration.

ELMs provide a low cost means to improve the flow of information between the parties involved through the use of information technology (IT).

An overview of ELM operations

Membership is only available to those who are invited to collaborate. Often, contracts already exist between the shipper and carrier. Customers are usually long-term and actively involved in the logistics process.
The 4 types of electronic marketplaces in logistics

**Open Marketplace**
An open system can be accessed by any shipper or carrier. Frequently, these are used to offer spot-hire loads and back-loading opportunities, and often prices are determined by an auction.

**Private Marketplace**
This marketplace is created by a single shipper for communication with their hauliers only. The shipper remains responsible for the operation and decides the operating characteristics. Prices with hauliers are determined through a tendering process rather than an auction.

**Shared Marketplace**
These are similar to private marketplaces. However, the opportunity exists for information to pass between marketplaces. While shippers would not be able to see other shippers’ information, carriers may be able to see their loads from various shippers in one location.

**Collaborative Marketplace**
These are established by a consortium of businesses. Together, they look to identify similarities in the flows within their individual distribution networks. The marketplace is then used to control all of these networks through a central hub in order to optimise the network.

Our research focuses particularly on private, shared and collaborative marketplaces, which we term closed Electronic Logistics Marketplaces.
Fourth Party Logistics

Fourth party logistics providers (4PLs) carry out most of the managerial and administrative responsibilities associated with distribution and in turn contract out the physical activities to other third party service providers.

4PLs act as a single interface between the client and multiple logistics service providers, and all aspects of the client’s supply chain are managed by the 4PL. It is possible for 3PLs to form 4PLs from within their existing structure.

Key to the operation of 4PLs is their use of IT and the Internet. In doing this, many 4PLs effectively create an ELM.

How a 4PL can streamline information flows

![Diagram showing the flow of information between a shipper, haulier, and 4PL.]
Functions of an ELM

ELMs can be used throughout the distribution process, from strategic network planning through to reporting after a delivery has occurred. Each ELM will provide a different range of functions.

The functions found within an ELM

- **Strategic Planning**
  - What-if scenario simulation
  - Network synergy analysis
    - Joint deliveries
    - Backhaul opportunities
    - Multi-lane links

- **Operational Planning**
  - Purchase order generation
  - Shipment order notification
  - Shipment consolidation
  - Shipment planning
  - Carrier communications

- **Delivery Execution**
  - Track and trace
  - Import and export
  - Proof of Delivery control

- **Reporting**
  - Financial settlement
  - Performance reporting

---

Strategic Planning

[Diagram showing strategic planning steps]

Delivery Execution

[Diagram showing delivery execution steps]

Operational Planning

[Diagram showing operational planning steps]

Reporting
Impact on the supply chain

In summary the benefits of an ELM are

- Greater visibility of the distribution network either within one company or between companies. This makes it easier to identify back-loading opportunities, improve routing and scheduling resulting, and manage capacity more effectively.
- Carriers can obtain better fleet utilisation from improved scheduling. There may also be an increased volume of loads as closed ELMs are only available to invited members.
- Scheduling can also smooth demand at warehouses to improve resource allocation.
- Tracking and tracing provides more accurate and improved delivery performance.
- Delays can be managed proactively because they are known about earlier.
- Delivery errors and disputes are reduced through improved information accuracy. This can also eliminate errors in payments to transport providers as details on loads are more accurate.
- Customers may see an improvement in service as disruptions can be managed more effectively and deliveries occur as planned.
- Communication and transaction efficiency is improved due to increased process automation.
- Better management of all contracted transport providers via a single interface, saving administration work.
A vision for Wales

The road network in Wales has large areas that are running at or even over full capacity. Congestion is seen as a real problem that has an economic and social impact, which is why Strategies such as “Sustainable Development” and the “Welsh Freight Strategy” have been published. There will be limited investment in additional road infrastructure so more sustainable routes to improved freight efficiency have to be explored.

Within Wales, the fragmentation of logistics operations with a high number of SMEs does not help the situation. There has been a lack of a systematic approach in supporting horizontal collaboration between shippers, and/or between carriers for network optimisation.

The Department for Economy & Transport is investigating the potential for creating a pan-Wales ELM that would encourage collaboration, reduce empty running and increase vehicle fill. As well as the research presented in this booklet, DE&T is also assisting some initial audits by 4PLs to determine more accurately the opportunities for businesses within Wales.

After the completion of these initial investigations, it is anticipated that the concept can be rolled out more widely throughout Wales, enabling more businesses to benefit from the technology and meeting the Welsh Assembly Government’s transport policy objectives.
A Future pan-Wales ELM

Research suggests that there are mixed views towards a pan-Wales ELM. Overall, opinion favours the idea, with the driving forces being:

- cost reductions and service improvement
- existing inefficiencies in logistics networks
- pressure to improve competitiveness
- pressure to reduce the environmental impact of logistics

There are also a number of barriers, of which the biggest is related to collaboration. This includes the fear of information sharing and conflicts of interests. Technological and knowledge capabilities of potential users are also a potential limitation. Finally, the structure and geography of distribution networks in Wales may reduce efficiency opportunities.

In terms of scope, the marketplace must look beyond Wales and consider UK, European and Global logistics operations. As such, this should embrace multi-modal logistics. It may also be appropriate to include physical consolidation with the ELM coordinating movements. This could further increase efficiency.

As supply chains are often fragmented and companies often work in isolation, the pan-Wales concept needs good leadership to promote the initiative throughout industry. A logistics network composing of government, education and industrial bodies may be able to fill the gap. They can share knowledge, provide a pool of expertise and help to improve the regional logistics competitiveness from both shippers’ and carriers’ perspectives.
More Information

More information on the research into Electronic Logistics Marketplaces undertaken at Cardiff University Innovative Manufacturing Research Centre can be found on the website, www.cuimrc.cf.ac.uk.

A guide to ELMs has also been produced on behalf of the FreightBestPractice programme. The research report can be found at www.freightbestpractice.org.uk.