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## Port Community Learning Needs: Analysis and Design

Edward Sweeney

*Technological University Dublin, [edward.sweeney@tudublin.ie](mailto:edward.sweeney@tudublin.ie)*

Pietro Evangelista

*Istituto di Ricerche sulle Attività Terziarie (IRAT)*

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**Edward Sweeney**, Director of Learning National Institute for Transport and Logistics (NITL), Dublin Institute of Technology (DIT)

17 Herbert Street, Dublin 2, Ireland

**Pietro Evangelista**, Responsabile Gruppo di Ricerca “Logistica e Trasporto Merci” Istituto di Ricerche sulle Attività Terziarie (IRAT)

Consiglio Nazionale delle Ricerche (CNR)

Via M. Schipa, 115 - 80122 Napoli, Italia

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## Port Community Learning Needs: Analysis and Design

### Summary

The port industry is facing a dramatic wave of changes that have transformed the structure of the industry. Modern seaports are increasingly shifting from a “hardware-based” approach towards “know-how intensive” configuration. In this context knowledge resources, learning processes and training initiatives increasingly represent key elements to guarantee the quality of service supplied and hence the competitiveness of modern seaport communities. This paper describes the learning needs analysis conducted amongst key port community actors in three ports in the south east of Ireland during 2005 in the context of the I-Sea.Net project. It goes on to describe the learning requirements report and the training design carried out based on this analysis.

**Keywords:** Evolving role of ports, Supply chain integration, Information and communication technology (ICT), Training need analysis, South east of Ireland

### 1. Introduction

The rapid development in international trade, the widespread adoption of the supply chain management (SCM) concept by shippers and the pervasiveness of technological innovation have fuelled a radical transformation in maritime and port industry. This process has resulted in an altered role of seaports. Modern seaports are becoming critical nodes in complex supply chains. Their role is fast moving from traditional interface point with the ship to an even more complex logistics platform that is able to carry out a variety of activities on a geographic scale that extend beyond the traditional boundaries of ports. In this new model of port as logistics hub, port operations impact on larger landside area providing a wider range of value added logistics service to meet more effectively the supply chain needs of customers.

As a result of these changes, the role of ports is shifting from a largely labour intensive orientation to a more knowledge intensive one. In this context advanced information and communications technology (ICT) tools are required to integrate processes both inside and outside the port area. ICT is playing an increasing important role in port community. Such technologies are able to connect different ports and each single port operator allowing to trace cargo in each phase, check transit time of goods in real time. Furthermore, ICT facilitate the integration between different port community members through the use of Cargo Community System (CCS).

These trends have resulted in port communities re-evaluating their role in the wider supply chain context. Port communities typically involve a wide variety of constituent companies and have traditionally operated in a quite fragmented manner. This has profound implications for learning needs for all port community members. Learning and training initiatives are of critical importance to guarantee the quality of service supplied and hence the competitiveness of modern seaports.

Traditionally constituent companies and organisations in the port industry have devoted little efforts to update professional skill and in human resource management. Several of the sectors typically represented in port communities have not traditionally had a strong culture of training and education. This situation needs to be addressed to insure that port communities, and their constituent companies and organisations, will be able to deploy and develop their true competitive potential in the coming years.

The Isea.Net project is an EU supported initiative<sup>1</sup> which aims to raise the skills of the maritime community in three ports in the south-east of Ireland and three ports in south Wales<sup>2</sup> (<http://www.i-sea.net>). This will be achieved through:

The identification of training needs and the delivery of appropriate training in basic SCM and ICT upskilling;

Delivery of an awareness programme of the specific benefits to the sector of ICT; and,

The design and development of a Maritime Community Portal to deliver training services and supports. It will also bring about an awareness of how practical business benefits can be achieved through an Electronic Community Information Service.

This paper describes the learning needs analysis which was carried out in three Irish port communities during 2005 in the context of the I-Sea.Net project. This analysis resulted in the development of a training requirements report and a structured vocational education programme for key decision makers in port community companies. Following this introduction, in section 2 the paper outlines the recent evolution of ports and the role of ICT as integration tool in port environment. Section 3 describes the learning needs analysis in detail. Based on this, an overview of the key training requirements and learning programme design is presented. Section 4 proposes a dis-

<sup>1</sup> ISEA-NET is supported by the EU under the INTERREG IIIA programme.

<sup>2</sup> Rosslare Europort, Waterford and New Ross in Ireland; Pembroke, Fishguard and Milford Haven in Wales.

cussion of a number of pertinent issues, while concluding comments and observations are reported in section 5.

## **2. The Port Community in transition**

### **2.1. SCM and Port Community**

In the last ten years, SCM has become an increasingly important success factor as companies face the challenges of product proliferation on a global scale, rapidly changing technologies, the need for improved integration of functions across enterprises, and battle for market share while improving shareholder value. SCM has the potential to create value beyond simply lowering transportation costs or improving labour or distribution productivity enhancing companies' capital efficiency (i.e. through reducing inventory and facilities investment) and integrating supply chain processes.

Adoption of the SCM approach by shippers has many implications. First, restructuring logistical systems and integration of supply chains require the re-engineering of physical and material flows with considerable consequences for logistics and transportation operations management (McKinnon, 1999). Second, for shippers, the delivery system has become integral to the value of the product supplied to the point that transportation and logistics receive the same evaluation as the product itself (Kleinsorge et al., 1991). Third, wide adoption of the supply chain view has resulted in changes in relationships among supply chain participants. The growing outsourcing of logistics activities is also consistent with the trend to reduce the number of suppliers and establish a closer, long-term relationship with them for providing "tailor-made" logistics and transportation services.

Port industry is no exception in this scenario. Undoubtedly, the port industry has markedly changed in recent years (Meersman et. al., 2005) In the last decade, deregulation and the increased competition between major seaports together with the huge capital investment in terminals and equipment, are all factors that have had important effects on the sector (Notteboom, Winkelmanns, 2001; Huybrechts, M., et al., 2002). As in other sector, developments associated to logistics and SCM are major driving forces influencing port industry and are having a significant impact on the industry.

Ports have also not been immune to the winds of change. Due to the fact that they have to serve their hinterland, inland transport and their communities, ports are widening their role and approach, moving from a traditional interface with the ship to a more logistical orientation of their activities. In such a perspective, the movement of containers represents a door-to-door function which is a consequence of supply chain management of customers' requirements. Thus, while operations - and the efficiency with which business is conducted - used to focus only on the port area, now the landside impact on port operations has to be considered. The implication is that port operations

relies upon into a wider environment. The conservative nature of the industry and the fragmentation of the business processes has led to a situation characterised by poor cooperation between port community member. The dissemination of the SCM logic has increased the need of a better supply chain integration between port community members. Consequently port communities are forcing to reassess their service provision models with a strong focus on the enhancement of value adding capability. This process has lead to a substantial growth of port operators on a global scale. A similar process has affected dedicated terminals. In broad terms, the traditional model is being replaced by a model which focuses on higher value and more knowledge intensive activities.

Summarising the above, it appears that the developments in the field of logistics and SCM are shifting port industry from being “hardware-based” service suppliers towards “know-how intensive” providers. This emphasises the role of learning and training initiatives to continue to provide new customised logistics solutions based on service innovation and differentiation.

The Isea.Net project provides tools to facilitate an higher levels of integration within and between the port communities of three ports in south east Ireland and three in south Wales. Figure 1 shows the key beneficiaries of the project and the main companies who will make use of the portal which is being developed as part of the project.

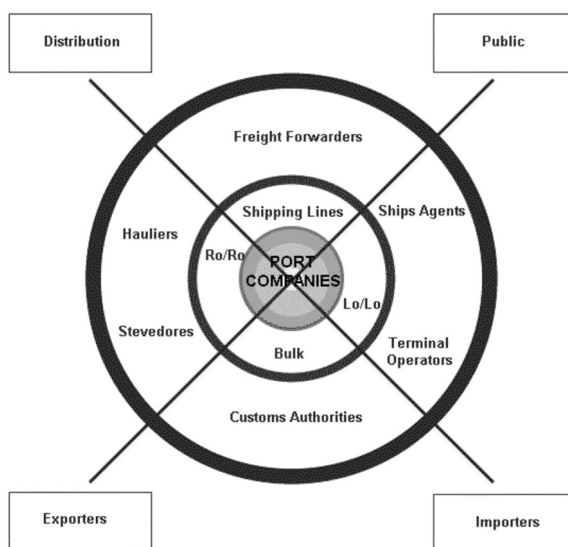


Figure 1 – Typical Port Community Participants (<http://www.i-sea.net>)

The figure indicates that port community members (including shipping lines, terminal operators and stevedores) must interact with a wide range of organisations in the wider supply chain.

In the authors' view, this type of configuration highlights the need for integration at three levels:

Within individual companies that comprise port communities (internal integration);

Between companies that comprise port communities (port community integration); and

Between the port community and external organisations (external integration).

Recent developments in ICT have facilitated these integration processes. Indeed, ICT can be considered an essential enabler of integration at all three levels.

## **2.2. Information technology developments and trends in port community**

Port information systems have been used for some time and are now quite familiar. They are able to send information between the various agents in the port chain (for instance, ports of Felixstowe in UK, Bremen and Hamburg in Germany, Le Havre in France, and Singapore) and are useful for facilitating customs clearance. Their fields of action appear to have grown geographically and operationally with the setting up of many projects in Europe, partly due to the virtues of EDI. Growing communication requirements and the constant improvement of transmission systems (RNIS, X400, VAN, Internet) are leading to changes in port information systems, which instead of merely meeting internal requirements are now opening up to customers.

In a port location, monitoring goods and ships, from arrival until departure, involves many operators: freight forwarders, shipping agents, consignees, handling agents, brokers, authorities, and customs who have to exchange information with liner shipping companies. With the success of containerisation and hence that of intermodal transport, nodal points must be able to integrate their operation with other trading partners operating in more complex and wider supply chain. Ports are increasingly seen as element in larger supply chain, contributing value to shippers and competing as one element of the in the supply chain management system. In this perspective, ICT and information management represent a primary condition to adapt the port strategy to the new logistics and SCM customer requirements (Kuipers, 2005).

The information system and architecture adopted in the port industry is generally called Cargo Community Systems (CCS). Some of these systems are able to offers connections to external partners involving all actors of the chain. This is the case of Singapore with Portnet. This CCS allows connection with insurance companies, banks, shippers and also with American customs. The port of Hamburg with its CCS Dakosy offers connection with shippers (Khoa Tran Dac, 1996).

Many projects for opening up port information systems have been created throughout the world, and particularly in Europe, often with the support of the European Union. These projects vary greatly and have not always produced the expected results. The goals are the same, but the implementation, and the political and economic contexts,

are very different, as are the results. COST 330 project focused on ICT issues in ports: the EU thought that attracting cargoes by improving the competitive edge through the use of ICT could improve the trade balance of Europe in general. Data were obtained on the type of links (in an ICT sense) and forms of information interchanges (commercial, administrative and legal) between commercial ports.

Like port authorities and stevedore/port operators, shipping companies use relatively high levels of ICT, according to results of the COST 330 project. Shipping agents/shipping companies in 20% of the sampled port communities use EDI for cargo manifests, stowage plans and cargo bookings. The shipping agents and stevedore companies, used EDI before Edifact was adopted, which explains why only 19% have implemented the Edifact format message. The major shipping lines use Business-to-Business approach with their trading partners such as agents, stevedores, and authorities.

In the context of port communities, ICT has become a key enabler of both internal and external integration. Its importance is reflected in the significant investment which has been made in technology platforms within port communities in recent years. A good example is Hutchison Port Holdings's e-commerce platform 'portsnportals', which offers a full range of Internet-enabled business-to-business (B2B) services through its arrangement with Arena, a leading supplier of software for SCM solutions (Evangelista, 2005). In the port of Antwerp, for example, Seagha has become a major player in the supply chain largely as a result of its ability to better integrate port community companies through appropriate ICT (<http://www.seagha.com>). The diversity of companies within port communities makes the achievement of the desired levels of integration difficult.

Specifically in relation to the drive towards integration in a port community environment, Table 1 indicates the types of ICT which enable higher levels of integration at the three levels identified earlier. This is not intended to be an exhaustive list but rather is indicative of the types of technology used primarily at each level.

<b><u>Integration Level</u></b>	<b><u>Technology</u></b>
<b>Internal</b>	<b>Local Area Networks (LANs)</b> <b>Intranets</b>
<b>Port Community</b>	<b>Enterprise Resource Planning (ERP)</b> <b>Electronic Data Interchange (EDI)</b> <b>Internet</b>
<b>External</b>	<b>Extended Enterprise Solutions (XES)</b> <b>Electronic Data Interchange (EDI)</b> <b>Internet</b>

*Table 1 – ICT as an Enabler of Integration*

Learning needs within port communities are evolving as the strategic role of ports themselves evolve. These changes require a change in the way in which new knowledge and skills are developed by staff in companies of all kinds within port communities. Traditional models need to be re-evaluated to reflect the increasing importance of knowledge and skills acquisition, particularly in relation to the SCM concept and the evolving role of ICT in improving supply chain capability. In this regard, the effective adoption of the supply chain learning paradigm (Bessant et al., 2003) and the development of learning supply chains (Sweeney, 2003) have significant potential.

### **3. Port Community Learning Needs Analysis**

#### **3.1. Background**

Learning needs analysis<sup>3</sup> is concerned with designing training and education programmes, and scheduling staff attendance at such programmes, to ensure that the investment in training achieves both individual and business objectives. It should also be concerned with defining objective measures on which the success of the education and training can be assessed.

In essence, the analysis is a systematic exploration of the current and the desired state of organisational affairs, with specific reference to human resources. The benefit of any human resource development (HRD) intervention needs to be considered before investment is committed. Key questions include:

What learning will be accomplished?

What changes in behaviour and performance are expected?

How will we achieve them?

What are the expected economic costs and benefits of any projected solutions?

Such an analysis has been carried amongst relevant companies in the Rosslare, Waterford and New Ross port communities that will inform the design of learning programmes which aim to:

Ensure the needs of the business are addressed;

Match individuals to the right training programmes;

Develop course modules tailored to specific business needs;

Allocate individuals to appropriate course groups; and

Provide objective measures for post-training assessment of effectiveness.

This analysis resulted in a training requirements report which subsequently formed the basis of the design of a learning programme aimed at providing key port community decision makers with the required knowledge and skills.

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<sup>3</sup> Learning needs analysis is still often described by its earlier nomenclature – training needs analysis (TNA)



## 3.2. Methodology

The approach adopted was based on a process developed specifically for the identification of learning needs in the logistics and SCM area (Sweeney, 1999). This process involves the collection and analysis of information concerning the knowledge and skills requirements of companies in the port communities. The primary tool used in this process was a questionnaire, which formed the basis of interviews conducted with appropriate staff from port community companies during 2005.

The methodology employed comprised the following stages:

Research into port community role, activities and structures;

Preliminary design of questionnaire;

Testing of questionnaire;

Final design of questionnaire;

Sample identification;

Implementation of survey;

Collation and analysis of data; and

Development of Training Requirements Report.

Each of these stages is described in more detail in the following sections.

### 3.2.1. Research into port community role, activities and structures

This secondary research studied three issues:

the evolving role of ports in the context of SCM and ICT developments;

the nature and role of different port community members; and

statistics and data on overall throughputs and other key performance indices of the three port communities under investigation.

The issues arising from (i) are summarised in section 2 of this paper. The research in part (ii) resulted in the identification of the key categories of companies which form typical port communities. This provided the basis of the sample identification. The key organisation categories are:

Port authorities;

Shipping lines;

Shipping agents;

Logistics service providers (LSPs);

Customs clearance;

Haulage contractors;

Freight forwarders; and

Stevedores.

These were the categories of organisation that were interviewed during the project. The research carried out in part (iii) provided a profile of the three ports, based largely on data from the annual reports of the port authorities. This was predominantly designed to provide a context and background to the project work, as well as proving some indications of general trends in each of the ports.

### *3.2.2. Preliminary design of questionnaire*

The preliminary design was based on the information gathered during stage 1 of the project and on the authors' experience of the subject. It comprised approximately 50 questions divided into 10 sections. The questionnaire design was carried out in line with documented good practice in this area. In particular, the flow of questions involved starting with general questions on organisation profile and moved on subsequently to the more detailed subjects of specific interest in the research. In essence, the questionnaire was designed to facilitate a structured approach to conducting the interviews. Both "leading" and "loaded" questions were avoided, and a balance between open and multi-option response questions was incorporated.

### *3.2.3. Testing of questionnaire*

Questionnaire testing was carried out using two mechanisms. Firstly, a focus group comprising research staff at NITL<sup>4</sup> was formed and evaluated the questionnaire on a section by section basis. This resulted in the removal, rewording and addition of a number of questions, as well as some minor restructuring. Secondly, five port community companies were interviewed using the modified questionnaire. This comprised one company from each of the following categories: freight forwarding; shipping agents; haulage contractors; customs clearance; and, stevedores. This part of the testing resulted in further significant changes being incorporated into the questionnaire, mainly in relation to the wording of questions relating specifically to SCM and ICT adoption.

### *3.2.4. Final design of questionnaire*

The testing resulted in a final questionnaire which comprised 43 questions divided into 8 sections. The 8 sections related to: organisational profile; overall performance; ICT profile; future strategy and plans; SCM awareness; training and development strategy; and, training requirements (both in relation to logistics/SCM and ICT). Furthermore, the questionnaire structure and content was discussed with the Welsh partners who were embarked on a similar study in the port communities in the three ports in south Wales. This was to ensure consistency between the two countries in terms of the overall approach being adopted.

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4 National Institute for Transport for Transport and Logistics, Ireland

### 3.2.5. *Sample identification*

The sample was selected based on the population profile identified during stage 1. Three points are worth highlighting. Firstly, it was decided that all three port authorities would be interviewed. The pivotal role played by these organisations in the ports, as well as their role in the implementation of the project, made this an imperative. Secondly, the number of companies selected in each of the other categories was loosely based on the total number of companies operating in the three ports in each of the categories. This was to ensure that the sample was as representative as possible. Thirdly, the sample size was based on a requirement to base the analysis on completed responses from between 20 and 30 companies, as well as on documented evidence of response rates – between 20 and 50% - in port surveys of this nature previously carried out in other countries. The final sample contained 62 organisations, including the three port authorities. The breakdown of companies to be approached was as follows:

- Shipping Agents 9;
- Logistics Service Provision 4;
- Haulage Contractors 15;
- Custom Clearance 8;
- Freight Forwarders 12;
- Stevedores 6; and
- Shipping Lines 5.

The specific companies to be approached was determined using:

- NITL's database of companies in these categories operating in the three ports;
- The NITL/Freightfox Logistics Services Directory 2004; and
- Personal contacts within each of the port communities.

The latter was considered important in maximizing the response rate.

### 3.2.6. *Implementation of survey*

The survey was implemented by approaching the 62 organisations identified in stage 5 during 2005. In all, 21 organisations agreed to participate. This represents a response rate of approximately 34%. A small number of usable responses were received from companies who declined to be interviewed but agreed to complete and return the questionnaire (three in total – two by fax and one by email). This is not ideal as the questionnaire had been design to facilitate an interview process rather than be completed in the absence of an interviewer. The remaining respondents (i.e. 18 organisations) were interviewed.

### 3.2.7. *Collation and analysis of data*

The information gathered from the 21 participating organisations was collated and analysed. A small number of companies were re-contacted where apparent anomalies were identified in the data during the collation process.

Qualitative, and where possible quantitative, analysis was carried out on the responses to the 43 questions. The highlights in relation to the 8 sections of the questionnaire are outlined in the following sections.

Organisation profile. Responses were received from companies as follows:

Shipping Agents 3;

Logistics Service Provision 3;

Haulage Contractors 3;

Custom Clearance 3;

Freight Forwarders 4;

Stevedores 1;

Shipping Lines 1; and

Port Authorities 3 (i.e. all 3).

In terms of ownership 71% are “independent” organisations, 5% are subsidiaries of Irish organisations and 19% are public sector organisations. In terms of size, most organisations are small with 80% having less than 20 employees.

Overall performance. In relation to perceived performance all companies felt that they performed about the same or better than their competitors, with 17% “clearly outperforming competitors”. The biggest challenges identified by companies related to cost, with fuel costs being singled out by the majority of companies for whom this is an issue. Other broader competitiveness issues were highlighted by a number of companies. Finally, infrastructure related issues were raised by a number of companies. Interestingly, information management and ICT issues were not raised by any respondent.

ICT. A wide range of different ICT systems are in use. However, one third of respondents indicated that there was no ICT system in use. Of the others, few were making use of relatively sophisticated systems indicating that there is significant room for improvement. The quantitative analysis shows that levels of integration, both internally and externally, are relatively low. However, most companies recognise that the use of EDI and E-Business is increasing in their sectors.

Future strategy and plans. In terms of critical success factors, the cost and infrastructure challenges reflected earlier in the questionnaire are again to the fore. Nonetheless, a range of other issues are also highlighted with service and HR aspects mentioned by many respondents. Interestingly, ICT issues were specifically raised by just one company. A similar pattern emerges in relation to obstacles to success. In relation to goals and initiatives, cost issues are again highlighted by most respondents, with ICT and supply chain issues cited by a very small number.

SCM awareness. Of those who responded to the question, “What do you understand by the term Supply Chain Management?”, a high proportion either did not know or provided a very limited definition based largely on the movement of goods. The answers provided to the questions on supply chain activities, responsibilities and performance reflects a similar trend. In short, the results indicate that whilst pockets of excellence undoubtedly exist in relation to SCM understanding and practice there

is significant room for improvement. This is in line with other research recently carried out in relation to SCM adoption across all sectors on the island of Ireland (NITL, 2005). Finally, and perhaps not surprisingly the more SCM-oriented organisations tend to be the bigger ones.

**Training and development strategy.** The responses in this area reveal that most companies have carried out relevant training during the last three years. However, this training was in many cases very limited (e.g. lorry loading or ICT system-specific training) and generally not externally accredited or validated. These findings are generally in line with experiences in port communities in other countries where research of this kind has been conducted. It generally reveals a weak culture in relation to formal learning.

**Training requirements (logistics/SCM and ICT).** A significant number of companies (defined as more than 30% of respondents) identified needs in the following areas: customer relationship management, demand forecasting, transport planning, warehousing, operational control and logistics information management. Despite this, only 21% of companies have plans for any logistics/SCM training in the coming year and, of those that do the approach is quite limited with very little external input planned in terms of delivery or accreditation. A similar approach is evident in relation to ICT training.

### *3.2.8. Development of training requirements report*

Based on the survey, training requirements have been identified in three broad areas:

- ICT-specific knowledge and skills;
- SCM/logistics awareness;
- SCM/logistics specific skills.

From the survey, a number of specific issues where skill and knowledge enhancement is required have been identified as follows:

- ICT: technology elements and terminology
- Basic ICT configuration options

Generic ICT options available (i.e. what is available in terms of both “point” and “enterprise” solutions

- The role of ICT in logistics and SCM
- Principles of ICT specification, planning and implementation
- ICT costs and financial appraisal
- ICT management and maintenance
- Integration and the role of ICT

In relation to SCM/logistics awareness, it is clear that (as pointed out above) whilst pockets of excellence undoubtedly exist in relation to SCM understanding and practice there is significant room for improvement. Any SCM development needs to focus on:

- Defining the fundamentals of SCM
- Understanding how SCM improves performance
- Explaining the relationship between SCM and logistics
- Exploring the evolving role of ports in the broader supply chain
- Developing an understanding of the role of ICT in improving SCM/logistics capability (linking with the ICT-specific issues mentioned above)

It is also envisaged that any SCM learning which is developed be used as a mechanism to improve teamwork and communication within the port community. SCM, with its focus on integration and communication, provides an ideal platform for such an initiative. In relation to SCM/logistics specific skills, the key areas which have been identified from the survey are customer relationship management, demand forecasting, transport planning, warehousing, operational control and logistics information management.

## **4. Discussion**

### **4.1. Local Port Community Issues**

The training and education programmes, based on the training requirements report outlined above, is scheduled to be implemented in the second quarter of 2006. These programmes will use a “blended” learning approach with a mix of conventional face-to-face and web-based training. This is to make the programmes as accessible and flexible as possible for participants. Local issues concerning appropriate venues convenient to staff from the three ports and optimum timing of training delivery have had to be addressed in finalising the learning implementation.

One other issue of importance in the implementation of the programmes concerns the role of the Welsh port communities. A similar learning needs analysis to that described in this paper was carried out by consultants based in Wales. This work was carried out separately but with close consultation with the Irish study. Very similar training requirements were identified and training will be implemented for the Welsh port communities using a similar methodology to that described in section 3 (above). In retrospect, it probably would have been more efficient and effective if a truly cross-border approach had been used in terms of learning needs analysis, training design and implementation. In this way a genuine trans-national multi-port community could have been fostered more effectively. This is a lesson future projects in this area need to be cognisant of.

## 4.2. SCM in Action: Hard and Soft Wiring of Port Communities

As pointed out above, the learning needs analysis described in this paper is part of a wider project known as I-Sea.Net. This project aims to enhance the attractiveness of the Irish Southern Sea Corridor between Ireland and south Wales by developing the port communities across six ports. It does this using two main mechanisms. Firstly, the skill and knowledge level of key decision makers in the overall port community will be developed using the training and education programmes which have been designed based on the learning needs analysis. Secondly, a port community portal is being developed which links the ports, and which brings awareness of the practical business benefits that can be achieved through an electronic community information service, is being developed. Overall the project represents an attempt to apply SCM principles to a transnational port community, using appropriate ICT tools to facilitate greater levels of integration.

It has been argued that practical SCM implementation is dependent on two distinct types of integration – known as “hard” and “soft” wiring (Descheres, 2004). In the context of Isea.Net the portal represents a major part of the former (i.e. the “hard” wiring), enabling the electronic transfer of information between port community actors. The training and education, based on the learning needs analysis, aims to improve the latter (i.e. the “soft” wiring). The authors’ experience in this project mirrors their experience in other SCM initiatives in that the maximum benefits of the hard wiring can not be realized unless the soft wiring is in place (Sweeney et. al., 2005). It recognizes the need for mutual understanding between supply chain partner companies – in this case port community members – as a key facilitator of enhanced integration.

## 4.3. Policy Implications

As barriers to the movement of capital, goods, services and people across international borders continue to reduce, so international trade continues to increase. In this environment, supply chain architectures have become more international and, in many cases, global. This has sharpened the focus on the need for increasing levels of supply chain integration across international borders. As ports play a pivotal role in these international supply chains it is inevitable that initiatives will be developed aimed at facilitating cross-border co-operation and co-ordination between port communities. Isea.Net represents an attempt to do just this in the Irish Sea Southern Corridor. The central elements of the project could form the basis of other similar initiatives in different parts of Europe and more widely. Just as the EU’s financial support facilitated this project there is scope for governments worldwide to promote and support similar projects as a means of improving mutual understanding and integration. Given the international nature of shipping co-operation between the governments of nation states is necessary to make this a reality.

## 5. Conclusion

Supply chains have become more global as a direct result of structural changes in the world economy. In addition, they have become more virtual as companies outsource key supply chain functions. These two factors have resulted in SCM becoming a more important determinant of competitive advantage than ever before. Ireland will be particularly affected by this trend due to the open nature of the economy and the high proportion of imports and exports as a percentage of GDP. Logistics and SCM will become less about the physical movement of material on to and off of the island. In this context, there is a need to think of SCM in a radically different way. In short, SCM will need to move up the value-adding hierarchy. SCM will become less concerned with the physical movement of material and more with the management of information and knowledge. ICT is a key enabler in this process.

These changes have profound implications for the knowledge and skill base of managers at all levels. It also has implications in terms of ICT and communications infrastructure. Nowhere is this more evident than within ports and port communities. There is a serious and urgent need to assess the SCM learning requirements within port communities in a logical and systematic manner. Many approaches to this have been developed in recent years and it is important to recognise that such methodologies need to be tailored to suit the specific emerging dynamics of the logistics and SCM area. More particularly, the increased knowledge orientation required within port communities, which is a direct consequence of their evolving role in the wider supply chain, has sharpened the focus on the need for more robust learning needs identification and analysis processes. Furthermore, any lessons learned from these processes in terms of learning programme and module design and development need to be highlighted.

The approach to addressing supply chain learning needs outlined in this paper has the potential to significantly enhance the value adding potential of ports in this evolving environment. The learning programme, based on three key constituent modules, which has been designed and developed based on this approach needs to be assessed for relevance to the evolving requirements of the various key decision makers within port communities. Ensuring that such programmes and modules are flexible and accessible are important considerations in this context. Current work is assessing the tangible added value of such development programmes. If port communities are to realise their full potential in the coming years this is likely to be a critical success factor.



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Sweeney Edward  
Evangelista Pietro

## Potrebe za usavršavanjem u lučkoj zajednici: analiza i projekt

### Sažetak

Lučka djelatnost se suočava sa dramatičnim valom promjena koje su izmijenile strukturu te djelatnosti. Suvremene morske luke sve više napuštaju pristup koji se temelji na 'hardware' i prelaze na intenzivnu 'know-how' konfiguraciju. U tome kontekstu izvori znanja, procesi učenja i inicijative za usavršavanje sve više predstavljaju ključne elemente koji jamče kakvoću pružanih usluga, što modernim morskim lukama omogućuje konkurentnost. U ovom je radu opisana analiza potreba za učenjem koja je provedena među ključnim subjektima lučke zajednice u tri luke na jugoistoku Irske tijekom 2005. u kontekstu I-Sea.Net projekta. U njemu je nadalje opisano izvješće o zahtjevima za učenjem te projekt usavršavanja izveden na temelju te analize.

**Ključne riječi:** Razvojna uloga luka, Integracija dobavljačkog lanca, Informatička i komunikacijska tehnologija (ICT), Analiza potrebe za usavršavanjem, Jugoistok Irske

## Acquisizione di conoscenze, necessità del mondo portuale: analisi e progetto

### Sommario

Un'ondata di drammatici cambiamenti sta investendo l'industria portuale trasformandone la struttura. Gli odierni scali marittimi stanno in modo crescente modificando l'approccio basato sul "hardware" per puntare in modo intensivo sul "know-how". In questo contesto le fonti di conoscenza, i processi cognitivi e le iniziative formative diventano sempre più elementi chiave per garantire la qualità dei servizi ed accrescere la competitività nel mondo portuale odierno. Il lavoro descrive l'analisi condotta nel corso del 2005 tra i protagonisti chiave dell'ambito portuale in tre porti irlandesi del sud-est del paese nel contesto del progetto I-Sea.Net project. Segue una relazione sull'esigenza di acquisizione di nuove cognizioni e traccia un progetto di educazione formativa concepito in base all'analisi.

**Parole chiave:** ruolo evolutivo degli scali, tecnologia dell'informazione e comunicazione, analisi delle esigenze di formazione, Irlanda sud-orientale

