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FREIGHTWISE

Management Framework for Intelligent  
Intermodal Transport

Integrated Project (IP)

Sustainable surface transport - Rebalancing and integrating different transport modes

## **Work Package 16 Teaching and Training Material**

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## WP 16 Teaching Material

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# 1 Introduction

## 1.1 Scope of this document

The work in this WP is concentrated on the development of teaching material for MSc students that could be used by universities according to their own schedule and programme. It will be up to them to decide on when, how and if they will integrate this material in their teaching programmes. Within the scope of this WP, training material will also be developed for senior executive officers of the transportation industry and for ICT systems experts.

The teaching and training material will address the main results of the Freightwise project, and mainly the Freightwise Framework (FWF). The content of the material has been structured around this Framework. Topics to be covered include:

- The role of intermodal freight transport
- Background info on ICT and systems architecture on intermodal freight transport
- Overview of FWF: roles, functions, processes, messages
- Implementation through the Business cases, as examples:
  - Integrated supply chain management
  - Tracking and Tracing
  - Business transactions
- Use of FWF to build FWF compliant systems and their relation to existing freight ICT systems
- Benefits and added value of FWF
- Contribution to standardization
- Contribution to policy and decision making

## 1.2 Structure and content of the deliverable

The deliverable includes a state-of-the-art review made on existing teaching materials. The outcome of this effort will be used in the development of the Freightwise teaching material. The structure and content of the material produced in other relevant initiatives will be advised. The state-of-the-art review is presented in the next chapter. A second and more complete version will be soon available.

The third chapter provides the main characteristics and features of the Freightwise teaching and training material. The scope, thematic content and type of this material are described.

Finally, the last chapter includes the next steps and the remaining activities until the finalization of the Freightwise teaching and training material.

## 2 Review on existing teaching material

### 2.1 Objectives

The purpose is to examine how online teaching/training material is organized and structured; and to examine if the content of the reviewed teaching material is possible to make use of when lectures are constructed within the FREIGHTWISE project, i.e., if the content of the reviewed material is related to FREIGHTWISE.

The projects which are reviewed are projects which are known to project participants within FREIGHTWISE, and projects which have been found by reviewing other projects. Moreover, projects funded by the EU have also been searched from Transport Research Knowledge Centre (<http://www.transport-research.info/>), and google.com has been used to search for material concerning intermodal freight transport. For a number of relevant EU projects, no teaching material was found when browsing through the project summaries. Neither was online teaching material found for university courses when browsing the Internet, but some relevant background material was found; see the last section in this document.

The projects providing online teaching material have been described by first bringing up the purpose and background of the reviewed projects, followed by a description of how the teaching and training material is organized. Finally an assessment is made concerning if the content of the teaching material is possible to make use of within FREIGHTWISE.

### 2.2 PORTAL

#### 2.2.1 *Purpose and background*

Portal (Promotion of results in Transport Research and Learning) provides results of transport research from EU financed projects for teaching and studying. Portal mainly focuses on passenger transportation.

The topics which are mostly related to FREIGHTWISE are modelling and data analysis and urban freight transport and city logistics. Other topics are for instance safety and accident reduction, environment, transport and energy and integrated transport chains.

The target group of the teaching material is for instance at educational sites.

#### 2.2.2 *The teaching material*

The teaching material available at the Portal website is structured around 14 topics where the content is organized as:

1. Reports (written material) – extended vs. normal version. References are given to further information. In connection to the reading material there are exercises. Sometimes the reports are presented in different languages.
2. PowerPoint presentations (transparencies or electronic presentations). The PowerPoint presentations match the reports (chapters are mentioned in the presentations which correspond to the content).

3. Distance learning packages for some topics.
4. Glossary of key words.

On the website there is also contact information to potential guest lectures with knowledge of the covered topics. There are also tips on study areas to visit connected to the teaching, such as the public transport system in Zürich. Transport-related pictures to make use of can be found on the website, as well as audio material of interviews and links to other related projects.

The course material has been tested at educational sites, and course information from these occasions is collected at the website.

### 2.2.3 *Assessment of usability of the teaching material in Freightwise*

The content in Portal is mainly aimed towards passenger transportation and transport policies. However, some of the content is connected to FREIGHTWISE.

- Possibly the Modelling and data analysis topic can contribute to topic 6 (ICT) in FREIGHTWISE.
- The topic Urban freight transport and city logistics contains general information concerning logistics.

### 2.2.4 *References*

<http://www.eu-portal.net/start.phtml?sprache=en>

The website was last updated in 2007 and it was created in 2003.

## 2.3 Freight Best Practice

### 2.3.1 *Purpose and background*

“Freight Best Practice is funded by the Department for Transport (DfT) and managed by Faber Maunsell Ltd to promote operational efficiency within freight operations in England.”

The aim is that the teaching material at the website is used at universities to teach students which measures have been taken in the transport industry to improve performance. The project covers topics such as *fuel management programme* and *fuel efficiency*.

### 2.3.2 *The teaching material*

Lecture material in terms of seven PowerPoint presentations is available at the website. Many references to important material are given in the material and case studies are also presented in the lecture material. In the presentations there are notes which describe the slides in more detail instead of reports where more text is available.

Besides the lecture material a number of case studies are also available at the website, as well as video clips from interviews with practitioners in the industry, a tool to easily calculate fuel saving due to different types of measures, checklists, posters, interactive spreadsheets, etc. This material is mainly aimed at truck operators.

### 2.3.3 *Assessment of usability of the teaching material in Freightwise*

The lectures are mainly aimed at measures to improve fuel efficiency of trucks by technology improvement and management. Therefore the content of the project is not in line with the content in FREIGHTWISE, why it is not possible to make use of in FREIGHTWISE.

### 2.3.4 *References*

<http://www.freightbestpractice.org.uk/default.aspx?appid=2423>

Lectures were uploaded in 2007.

## 2.4 COMPETENCE

### 2.4.1 *Purpose and background*

COMPETENCE is a project co-financed by the EU and the project is mainly aimed at design and implementation of training.

Topics which are covered in the project concerns for instance *public transport, vehicle technology and alternative fuels, pricing and parking space management*.

The target group is mainly local management agencies within the transport field such as energy and environmental agencies.

### 2.4.2 *The teaching material*

COMPETENCE provides PowerPoint presentations and corresponding reports. On the website there is also a forum where it is possible to discuss the nine topics.

### 2.4.3 *Assessment of usability of the teaching material in Freightwise*

The main part of the project concerns public transportation which is not within the FREIGHTWISE scope, and the project seems to be targeted towards public authorities. However, the topic *telematics for energy efficient transport* could be possible to make use of in FREIGHTWISE in connection to the freight ICT applications topic (topic 6). Road pricing systems are for instance addressed, as well as route guidance and planning tools aimed at logistics companies.

### 2.4.4 *References*

<http://www.transportlearning.net/>

(via Portal)

The project started in January 2005 and was a 30 month project.

## 2.5 ISIC

### 2.5.1 *Purpose and background*

ISIC is an EU-financed project aimed at Integrated Services in the Intermodal Chain (ISIC). One sub-task in the project is training within the supply chain context. This includes examining what the educational needs are, which current educations that exist within the EU, and finally propose an educational program for people within the industry responsible for modal shift decisions (or people which will be responsible for that in the future). Topics which are addressed are costing and pricing of intermodal services, IT techniques in intermodal transportation, and contracting.

### 2.5.2 *The teaching material*

The rough outline for a training program is outlined, however, so far the program is not yet realised.

### 2.5.3 *Assessment of usability of the teaching material in Freightwise*

It is possible that some ideas from the outline of the training program can be reused in FREIGHTWISE.

### 2.5.4 *References*

Report of subtask concerning training:

[http://ec.europa.eu/transport/logistics/consultations/2006\\_04\\_26/doc/2006\\_03\\_31\\_logistics\\_consultation\\_task\\_e\\_en.pdf](http://ec.europa.eu/transport/logistics/consultations/2006_04_26/doc/2006_03_31_logistics_consultation_task_e_en.pdf)

Final report of ISIC:

<http://www.eia-ngo.com/file/Final%20Overall%20Report%20ISIC.pdf>

The project was finished in 2006.

## 2.6 Other material related to intermodal freight transport

### 2.6.1 *EU projects related to intermodal freight transport*

There are several projects funded by the EU which are related to intermodal freight transportation. The projects were found via the Transport Research Knowledge Centre (<http://www.transport-research.info/>). Some of the projects can also be found via Cordis (<http://cordis.europa.eu/>) where it is possible to access summary project reports for some of the projects. Examples of relevant projects are:

- IQ – Intermodal quality, <http://www.inrets.fr/ur/dest/europe/iq.htm>
- LOGIQ - Intermodal Decision (the decision making-process in intermodal transport), <http://cordis.europa.eu/transport/src/logiq.htm>
- D2D - Demonstration of an integrated management and communication system for door-to-door intermodal freight transport operations, <http://prosjekt.marintek.sintef.no/d2d/>
- COST 339 - Technical and economic conditions for the European wide operation of intermodal transport units (small containers)
- THEMIS - Thematic Network in the Optimal Management of Intermodal Transportation Services, [http://cordis.europa.eu/data/PROJ\\_FP5/ACTIONeqDndSESSIONeq112242005919ndDOCEq2030ndTBLqEN\\_PROJ.htm](http://cordis.europa.eu/data/PROJ_FP5/ACTIONeqDndSESSIONeq112242005919ndDOCEq2030ndTBLqEN_PROJ.htm)
- INTEGRATION - Integration of Sea Land Technologies for an Efficient Intermodal Door to Door Transport, [http://cordis.europa.eu/data/PROJ\\_FP5/ACTIONeqDndSESSIONeq112242005919ndDOCEq1182ndTBLqEN\\_PROJ.htm](http://cordis.europa.eu/data/PROJ_FP5/ACTIONeqDndSESSIONeq112242005919ndDOCEq1182ndTBLqEN_PROJ.htm)
- Worldnet - European Transport Network Model Refinement Regarding Freight and Intermodal Transport to and from the Rest of the World, [http://ec.europa.eu/research/fp6/ssp/worldnet\\_en.htm](http://ec.europa.eu/research/fp6/ssp/worldnet_en.htm)
- BRAVO - Brenner Rail Freight Action Strategy Aimed at Achieving a Sustainable Increase of Intermodal Transport Volume by Enhancing Quality, Efficiency, and System Technologies, <http://www.ist-world.org/ProjectDetails.aspx?ProjectId=1946326840a1453f9540b2bd00d541a6&SourceDatabaseId=e4fcfde0182a45898e8741a1abae3984>
- TRANSTOOLS - Tools for transport forecasting and scenario testing, <http://www.inro.tno.nl/transtools/index.html>

### 2.6.2 Books

Some examples of books which seem to be relevant for the purpose of FREIGHTWISE are:

- Intermodal freight transport, David Lowe, 2005. Aim: “It will provide an introduction to the whole concept of intermodal freighting, including maritime intermodalism.”
- The Future Of Intermodal Freight Transport, Bärthel et al., 2008. Content: Intermodal Transport Operations, Design and Modelling, Implementation and Policy

### 2.6.3 *University courses*

There are many courses at universities concerning intermodal freight transport, and some courses also have online material. However, from the search on the Internet it was not possible to find any public available teaching material.

## **3 Specifications and implementation of the Freightwise material**

### **3.1 Purpose**

The purpose of the Freightwise teaching material is to enhance the knowledge of MSc students of universities about intermodal and co-modal freight transport, and the use of Freightwise Framework (FWF) to build FWF compliant systems. The teaching material addresses a wide spectrum of topics relevant to intermodal freight transport and ICT. Logistics management, business and standardization, EU policies are some of the topics to be addressed.

The aims of the training material is to provide practitioners with basic knowledge about intermodal freight transport and ICT systems that can be developed based on the Freightwise Framework.

### **3.2 Thematic content**

The teaching material will mainly address the following topics:

1. The role of intermodal freight transport
2. Background info on ICT and systems architecture on intermodal freight transport
3. From the traditional to modern logistics management
4. Presentation of FWF
  - a. Reference model
  - b. Roles
  - c. Functions
  - d. Information objects
  - e. Processes
  - f. Repository
5. Implementation of FWF through the Business cases, as examples:
  - a. Integrated supply chain management
  - b. Tracking and Tracing
  - c. Business transactions
  - d. ...
6. Use of FWF to build FWF compliant systems and their relation to existing freight ICT systems
7. Benefits and added value of FWF
8. Deployment and business aspects
9. Contribution to standardization

## 10. Contribution to policy and decision making

A number of lectures are foreseen including parts of the above topics. The following lecture headings have been defined:

- A. 1 lecture on “*Intermodal freight transport and ICT*” [covering topics 1 - 3]
- B. 1 lecture on “*General presentation of FWF*” [covering topic 4]
- C. 2 lectures on “*Detailed presentation of FWF*” [covering topic 4]
- D. 3 lectures on “*Implementation of FWF*” [covering topics 5 - 8]
- E. 1 lecture on “*Standardization, harmonization and policy making*” [covering topics 9 - 10]

The training material will include a 1-day training course for ICT systems experts and another 1 day training course for senior executive officers of the transportation industry. The material will mainly address the following topics:

Training course for ICT systems\_\_\_Introduction to ICT and systems architecture on intermodal freight transport, Presentation of FWF, Use of FWF to build FWF compliant systems and their relation to existing freight ICT systems, Implementation of FWF through selective Business cases.

Training course for senior exec.\_\_\_Compilation of the teaching material to be developed for the MSc students.

Based on the above, the training material will contain the following two lectures:

- F. 1 lecture on “*Presentation of FWF and its use to develop FWF compliant systems*”
- G. 1 lecture on “*Intermodal freight transport and the role of FWF*”

### 3.3 Type

The type of teaching and training material to be produced for each of the above lectures will be:

- tutorial notes
- lecture presentations
- sets of suggestions for coursework (only for the teaching material) and
- exam questions (only for the teaching material).

### 3.4 Implementation provisions

The production of the above lectures and associated material (presentations, coursework and exams questions) will be based on templates that will be developed by the WP16.5 leader for this purpose. The templates will include the structure and organization for each lecture. The review of similar teaching/training material developed in the past by similar R&D and other initiatives will provide significant input for the development of the templates.

The content of the lectures is primarily based on the work (to be) done in Freightwise. However, it is intended to give the target audience a broad picture of intermodal freight transport and the application of ICT in this transport sector. This is mainly reflected in the lectures A, E and G. In this regard, the knowledge, experience and available material of the partners, not only of those participating in WP16.5 but also in the project as a whole, will be used extensively for the production of the lectures. Therefore, the partners according to the content of their lecture(s) may seek for input from the rest project partners too. The following list gives the main sources of information for the lectures defined above:

Lecture	Main source of information
A. "Intermodal freight transport and ICT"	<ul style="list-style-type: none"> <li>• General available material about intermodal freight transport and ICT</li> </ul>
B. "General presentation of FWF"	<ul style="list-style-type: none"> <li>• Freightwise Deliverable D13.2, Release 2 (Freightwise Framework Architecture)</li> <li>• FWF power point presentation</li> </ul>
C. "Detailed presentation of FWF"	<ul style="list-style-type: none"> <li>• Freightwise Deliverable D13.2, Release 2 (Freightwise Framework Architecture)</li> </ul>
D. "Implementation of FWF"	<ul style="list-style-type: none"> <li>• Freightwise Deliverable D21 (Modeling of current operations (Business cases report))</li> <li>• Freightwise Deliverable D22 (Reengineered Business model (Business cases report))</li> <li>• Freightwise Deliverable D17.2 (FWF Validation Report)</li> <li>• Freightwise Deliverable D25 (Evaluation Report)</li> </ul>
E. "Standardization, harmonization and policy making"	<ul style="list-style-type: none"> <li>• Freightwise Deliverable D13.4 (Recommendations for standardization)</li> <li>• Freightwise Deliverable D19.1 (Review of multipliers and policy developments)</li> <li>• Freightwise Deliverable D19.2 (Proposals supporting intermodal policies)</li> <li>• General available material about EU policies on intermodal freight transport and logistics</li> </ul>

Lecture	Main source of information
F. "Presentation of FWF and its use to develop FWF compliant systems"	<ul style="list-style-type: none"> <li>• Freightwise Deliverable D13.2, Release 2 (Freightwise Framework Architecture)</li> <li>• Freightwise Deliverable D21 (Modeling of current operations (Business cases report))</li> <li>• Freightwise Deliverable D22 (Reengineered Business model (Business cases report))</li> <li>• Freightwise Deliverable D17.2 (FWF Validation Report)</li> <li>• Freightwise Deliverable D25 (Evaluation Report)</li> </ul>
G. "Intermodal freight transport and the role of FWF"	<ul style="list-style-type: none"> <li>• General available material about intermodal freight transport and ICT</li> <li>• Freightwise Deliverable D13.2, Release 2 (Freightwise Framework Architecture)</li> </ul>

It must be stressed that the teaching material is addressed to MSc students of universities who may not be familiar with the "language" and terminology of intermodal freight transport. Therefore, the teaching material must be written in simple form understandable to them.

In summary, the detailed activities that will be implemented are the following:

- Literature review of the relevant teaching/training material from other projects and initiatives.
- Production of the templates for the lectures.
- Collection of information and documentation inside and outside Freightwise.
- Further processing of the above information and documentation for the lectures.
- Production of the lectures based on the templates and the processed information and documentation.
- Review and finalization of the lectures.

## **4 Next steps**

The templates for most of the lectures of the teaching and training material have been produced. These templates are provided per lecture. The next step is the completion of the templates for the development of the teaching material. The production of the material has started and some of them are close to their finalization (status of January 2009).

The availability of the Freightwise Framework was a serious prerequisite that affected the time planning and the activities in the production of the teaching and training material. Now that the Freightwise Framework is ready, the production of the teaching material can proceed more intensively. It is expected that the lectures will be available before June 2009.