MODAIR: Measure and development of interMODality at AIRport

INO WORKSHOP
EEC, December 6th 2005
What is intermodality?

“The use of **different** and **coordinated** modes of transports for one trip”

- High Speed train
  - Alternative to short-haul flights
- Local trains
  - Airport
  - Local access
- Public buses
  - Airport
  - Local access
- Airport
  - Central multimodal interchange node
- Airlines

Scope of the study
Why intermodality?

- Airside Congestion
- Landside Congestion
- Environment
- Profit Perspectives
- Airports (resp. Airlines) Competition
- Intermodality
CARE-INO intermodality studies

2004

“The Airport of the future: Central link of intermodal transports?”
- Qualitative analysis of intermodality potential (scenarios)
- Case studies: France & Portugal

2005

“MODAIR: Measure and development of interMODality at AIRport” (WP1, WP2, WP5)
- Airport intermodality indicators
- Actors’ expectations with regards intermodality development (interviews)
- Illustration (development of a tool)

2006

“MODAIR: Measure and development of interMODality at AIRport” (WP3, WP4, WP6)
- Economic instruments, political and administrative measures for intermodality development
- Analysis of the impact on airports’ catchment’s areas
- Illustration (refinement of the tool)
MODAIR 2005 Work Packages

WP1: Intermodality indicators
  - Airport local access
  - Airport integration in the regional or national network of other transport modes

WP2: Actors’ point of view
  - Actors expectations
  - Driving forces
  - Risks and issues.

WP5: MODAIR tool, version 1
  - Graphical visualisation of intermodality indicators at airports
MODAIR team

**M3 Systems:**
- management and coordination of the project,
- expertise in air transport economics

**ANA:**
- good knowledge of Portuguese transport network,
- deep expertise in airport management and air transport

**ENAC-LEEA:**
- good knowledge of French transport network,
- deep expertise in air transport economics

**GISMEDIA:**
- Software developer
Intermodality indicators (1/4)

Two levels of analysis:

- Macro-level, providing the broad picture of intermodality
- Micro-level, providing the detailed analysis, useful for benchmarking purposes

Four categories:

- Intermodal infrastructure
- Intermodal operators
- Intermodal service
- Demand for intermodality
## Intermodality indicators (2/4)

<table>
<thead>
<tr>
<th>Supply</th>
<th>Intermodal infrastructure</th>
<th>Demand for intermodality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existence of rail infrastructure in the airport area</td>
<td>Number of intermodal passengers transported</td>
</tr>
<tr>
<td></td>
<td>Access time between the infrastructure and the terminal</td>
<td>Number of multimodal passengers transported</td>
</tr>
<tr>
<td></td>
<td>Rail capacity</td>
<td>Potential intermodal demand with current service levels</td>
</tr>
<tr>
<td></td>
<td>Interest of intermodal infrastructure for airport users</td>
<td>Potential intermodal demand on existing network</td>
</tr>
<tr>
<td></td>
<td>Number of intermodal operators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market Share</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Existence of intermodal agreements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specificities of intermodal agreements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intermodal air supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intermodal rail supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competition between air and rail</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

### Intermodality indicators

- **Low**
- **Medium**
- **High**
Intermodality indicators (3/4)

Example: Airport integration into the railway (inter)national network

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Heathrow</th>
<th>CDG</th>
<th>Frankfurt</th>
<th>Schiphol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermodal infrastructure</td>
<td>Number of rail infrastructure connected to the airport</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Intermodal operators</td>
<td>Yearly ASKs of airlines having intermodal agreements, over the total number of yearly ASKs at the airport</td>
<td>N/A</td>
<td>60%</td>
<td>88%</td>
<td>59%</td>
</tr>
<tr>
<td>Intermodal service</td>
<td>Number of intermodal destinations by air relative to the total number of destinations</td>
<td>N/A</td>
<td>56%</td>
<td>76%</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>Number of intermodal rail destinations</td>
<td>N/A</td>
<td>16</td>
<td>~ 6000</td>
<td>~ 6000</td>
</tr>
<tr>
<td>Demand</td>
<td>Demand for intermodality</td>
<td>N/A</td>
<td>5%</td>
<td>13%</td>
<td>?</td>
</tr>
</tbody>
</table>
## Intermodality indicators (4/4)

**Example: Airport local rail access**

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Heathrow</th>
<th>CDG</th>
<th>Frankfurt</th>
<th>Schiphol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intermodal infrastructure</strong></td>
<td>Number of rail infrastructure connected to the airport</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Intermodal operators</strong></td>
<td>Yearly ASKs of airlines having intermodal agreements, over the total number of yearly ASKs at the airport</td>
<td>55%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Intermodal service</strong></td>
<td>Number of intermodal destinations by air relative to the total number of destinations</td>
<td>84%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Average daily frequencies of the airport rail access</td>
<td>70</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Demand</strong></td>
<td>Demand for intermodality</td>
<td>32%</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>
Intermodal actors

- European Commission & States;
- Private investors;
- Passengers;
- Airports;
  (ANA Management Board, Lisbon, NAER (New Lisbon Airport), Frankfurt, Lyon)
- Airlines;
  (Lufthansa)
- Railway Infrastructure companies;
  (RFF – France, REFER – Portugal)
- Rail Operators;
  (Thalys, RAVE)
<table>
<thead>
<tr>
<th>EC &amp; Member States</th>
<th>Passengers</th>
<th>Airports</th>
<th>Airlines</th>
<th>Railway Infra companies</th>
<th>Rail Operators</th>
<th>Infra Private Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of sustainable mobility (transport of PAX &amp; goods)</td>
<td>Cost of the intermodal trip vs. non intermodal one</td>
<td>Increase of the catchment area</td>
<td>Substitution of air to rail because of airside congestion</td>
<td>Development &amp; expansion of the railway infra</td>
<td>Attract PAX usually accessing the airport by road</td>
<td>Profitability of the project (quick returns on investments)</td>
</tr>
<tr>
<td>Decrease of congestion</td>
<td>Travel time: rail travel times, connecting rail-air times, rail-air schedules’ compatibility</td>
<td>Increase of the PAX number in spite of the airside’s congestion</td>
<td>Cut costs on feeder flights in order to increase profitability</td>
<td>Optimal use of the infra</td>
<td>Attract PAX by concluding agreements with as many airlines as possible</td>
<td></td>
</tr>
<tr>
<td>Mitigation of ENV impact of transport</td>
<td>Quality of service: Timing reliability, luggage transportation, integrated ticketing, on-board comfort &amp; services, safeguards against unexpected events (e.g. delays, strike)</td>
<td>Mitigation of the ENV impact of air transport</td>
<td>Improvement of the rail market’s share</td>
<td>Increase of the capturing market</td>
<td>Increase of the rail operators’ market share</td>
<td></td>
</tr>
<tr>
<td>Promotion of regional economic development (states)</td>
<td>Integration of the airport into the transportation network</td>
<td>Increase of the attractiveness of airlines’ hub</td>
<td></td>
<td></td>
<td>Promotion of the image of high speed rail</td>
<td></td>
</tr>
</tbody>
</table>
## Actors’ issues and concerns

<table>
<thead>
<tr>
<th>EC &amp; Member States</th>
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<th>Airports</th>
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<th>Rail Operators</th>
<th>Infra Private Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflicting choice investments</td>
<td>Competition reduction (impact on costs &amp; services, …)</td>
<td>Overlap of airports’ catchment’s areas</td>
<td>Loss of control on their feeder routes</td>
<td>High costs of intermodal projects (especially the building of the infrastructure)</td>
<td>Intermodality is to the airlines’ advantage: e.g. improvement of the access to the airport</td>
<td>Fear of excessive time lag between investments &amp; first incomes</td>
</tr>
<tr>
<td></td>
<td>Car parking revenues losses</td>
<td>Potential loss of retail revenues in result of less time spent at airports by intermodal passengers</td>
<td>Intermodality is to the competitors’ advantage: e.g. intermodal agreements on competing short-haul routes</td>
<td>Remaining air / rail competition</td>
<td>Conflicting interests: e.g. long distance vs. short distance rail</td>
<td>Unreliability of cost estimations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Intermodality’s complexity and costs are not in accordance with the low cost model</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Required investments, financial issues:

- Airport railway terminal station;
- Railway network (i.e. tracks);
- Intermodal facilities (luggage, ticketing distribution, staffing costs).

Intermodal actors’ co-ordination:

- Air / Rail schedules;
- Information, advertising, booking issues;
- Quality of service.

Passengers’ perception regarding intermodal transport:

- Passengers’ image of rail transport;
- Passengers’ concerns regarding the use of two different transport modes
Intermodality issues (2/2): Geographical specificities

At the “borders” of Europe (e.g. Portugal, Eastern European countries)

Rail mode:
A complement to air

- Distances to centre Europe are important, making HST competitiveness more difficult to reach

→ Air will continue to assure the connection with the “exterior”

At the “core” of Europe (e.g. Bénélux, France, Germany)

Rail mode:
An alternative to air

- Distances between the centres generator of traffic are short & air traffic is congested, making HST an interesting alternative to air

→ Commitment to alternative rail modes (substitution of short-haul flights)
Intermodal high level solutions

Solutions to the funding issue:

- Subsidies
- Exclusivity

Solution to the co-ordination problem:

- Intermodal agreement (formalisation of the actors’ co-ordination)
Global objectives of the tool:

- Illustrate several levels of intermodality of airports using numerical and graphical formats (charts);
- Perform benchmarking between airports.

Main features:

- Two levels of indicators are presented: macro and micro level indicators;
- An integrated geographic perspective of the European territory is given, with the infrastructures such as railways, roads, highways, etc);
- Users are guided through the editing process: through a graphical user interface, with indicators organised in groups and types;
- Users may define various possible scenarios (for different airports and/or for a same airport): all these scenarios can be saved in a database, for later analysis/comparison;
- Users have a benchmarking functionality: all the results might be compared via tables/graphs that show the values for different selected airports (external comparison) and/or for different scenarios for a same airport (internal comparison);
- Description of all the indicators is available while using the functionalities of the tool (e.g. while inserting / reviewing data and/or while comparing scenarios).
Overview of the tool:

The tool has a graphical user interface, with the map of Europe, showing airports, and all other relevant infrastructure elements. It is organised around 3 main areas:

- **“Guided tour”**: through the indicator groups and through each indicator: description of all the indicators (and of the data that is needed to compute the indicators) to the user.

- **“Data collection”**: input of new data, editing of existing data, creation of scenarios from “scratch”, editing of existing scenarios (already defined in the tool’s database) by changing some of the values, etc.

- **“Benchmarking”**: through the selection of different scenarios, results (indicators) can be compared via the output of charts / graphs and tables.
MODAIR 2006 Proposed WPs

WP3: Measures that promote development of intermodality at airports

- Identification of the economical measures (e.g. kerosene tax, slot attribution policies, etc.)
- Consequences, impacts of the measures

WP4: Impact of airport intermodality development on airport catchments area

- Catchment area concept review
- Identify the factors with impact on an airport catchment area
- Impact of intermodality

WP6: MODAIR tool, version 2
WP3: Economical measures

- Identification of the economical measures having an impact on the development of intermodality:
  - Kerosene tax or other tax (pollution, third world…);
  - Slots attribution;
  - Airport deregulation;
  - Rail deregulation;
  - Public or European financing programs.

- Consequences, impacts of these measures

- Impact of intermodality on:
  - Competition between airports & modes of transport
  - The actors of the market (better coverage, reduction of congestion, diversification of the services offered, pollution, etc.)
One of the most important aspects stated by airports regarding intermodality is the possibility of increasing demand by means of enlargement of their catchment area.

The objective of WP4 is to analyse how the development of intermodality can impact on airport catchment area, by:

- Catchment area concept review;
- Considering the “business attractiveness” of the airport, comprising a “local catchment area” and a “hub catchment area”;
- Identify the factors with impact on airport catchment area;
- Study the potential impact of intermodality;
- Considering examples of catchment area developments related with intermodality.
Global objectives of MODAIR tool v2:

- represent the airport catchment’s areas in the form of access time ranges from a given airport location;
- estimate the impacts on the catchment’s areas due to intermodality development (i.e. due to modifications of the intermodality indicators);
- show the results on a map display (evolution of the catchment’s areas);
- refine the functionalities already developed in 2005: interface of the tool (interactivity), etc.
MODAIR tool

INO Workshop - Brétigny, December 6th 2005