

VTS (Virtual Transport Services) in FREIGHTWISE

a Management Framework for Intelligent Intermodal Transport

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The project

- ❑ FREIGHTWISE (TREN-06-FP6TR-S07-60148) is an integrated project within the EU's 6th Framework Programme that aims at bringing together three different sectors:
 - Transport Management: shippers, forwarders, operators and agents;
 - Traffic and Infrastructure Management: Rail, Road, Sea, Inland waterways;
 - Administration: Customs, Border Crossing, Hazardous Cargo, Safety and Security
- ❑ FREIGHTWISE will support the co-operation of these sectors in order to develop and demonstrate suitable intermodal transport solutions in a range of business cases.
 - The project shall support the complex service integration into integrated transport chains.
 - The technical expertise in the project will focus on the development of a reference architecture for intermodal transport and the integration of relevant IT systems—including legacy systems—in the business cases.
- ❑ See web site: <http://www.bmt-ts.de/freightwise/index.html>

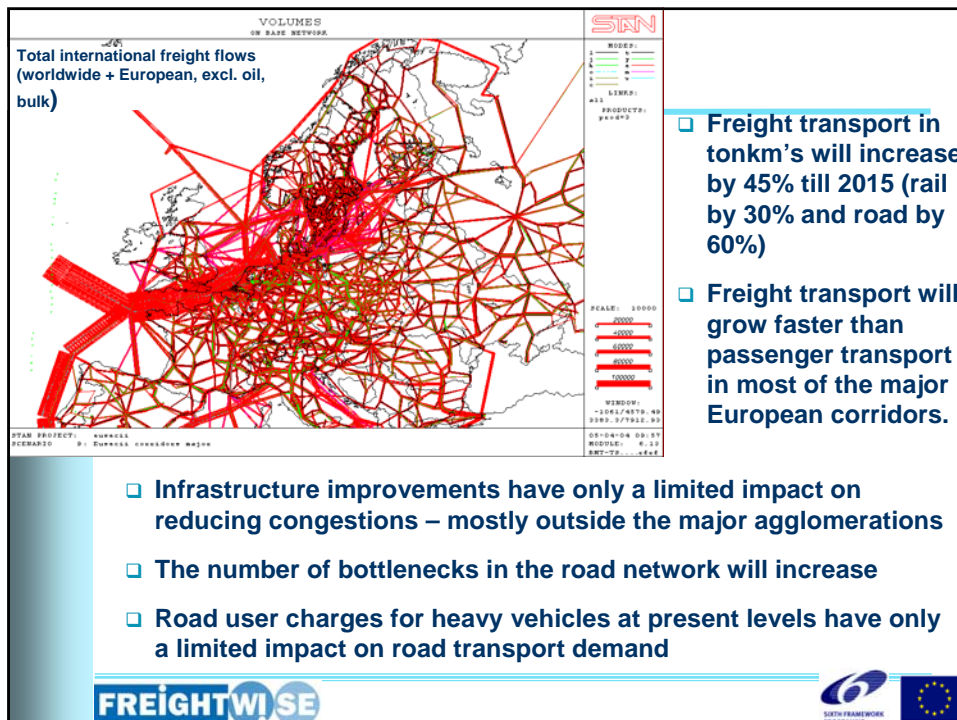
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Main requirements in Freightwise

- ❑ Timely and correct information is a vital part of any logistic solution
- ❑ **Internal** ICT management systems are developing rapidly
- ❑ Advanced Information exchange **between** organisations is still complicated
- ❑ “Standardised” solutions are missing
 - Technology is **not** the major issue
 - Organisational and commercial issues is more of a problem
- ❑ Advancing inter-organisational communication requires some basic “rules of the game” - interaction infrastructure – to support the physical infrastructure.
- ❑ Providers of such interaction infrastructure are/could be:
 - Standardisation bodies
 - European and national initiatives
- ❑ FREIGHTWISE supports Commission initiatives in cooperation with the industry

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- ❑ Freight transport in tonkm’s will increase by 45% till 2015 (rail by 30% and road by 60%)
- ❑ Freight transport will grow faster than passenger transport in most of the major European corridors.

- ❑ Infrastructure improvements have only a limited impact on reducing congestions – mostly outside the major agglomerations
- ❑ The number of bottlenecks in the road network will increase
- ❑ Road user charges for heavy vehicles at present levels have only a limited impact on road transport demand

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A changing market – the example of the port terminals

- ❑ By 2008 the top four **terminal operators** will control over a third of the total world container port capacity (Drewry Shipping Consultants 2003)
- ❑ The six leading operators in Europe handled nearly 70% of the European container throughput in 2002 compared to 53 % in 1998
- ❑ Consolidation contributes to
 - Counterbalancing the power of the carriers
 - Realising economies of scale
 - Optimising the integration into terminal networks

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FREIGHTWISE supports supply chain management

- ❑ SCM is the integration of key business processes from end user through original suppliers, that provides products, services and information that add value for the customer and other stakeholders (Global Supply Chain Forum)

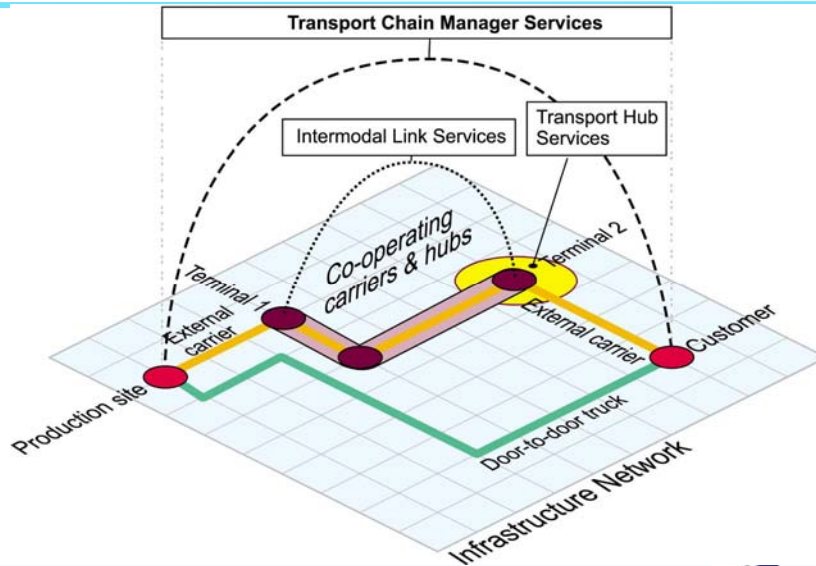
SCM consists of the following elements:

- ❑ The structure - The member firms and their links
- ❑ The business processes - the value adding activities
- ❑ The management components
 - physical and technical
 - managerial and behavioural

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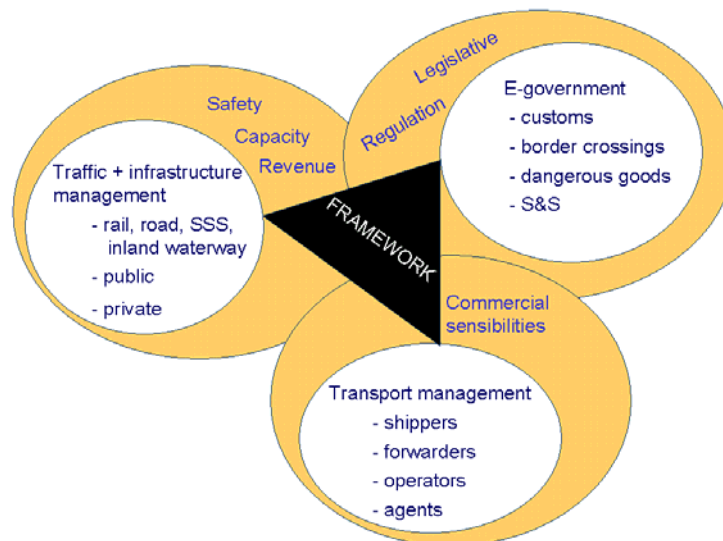
A need for transport chain management



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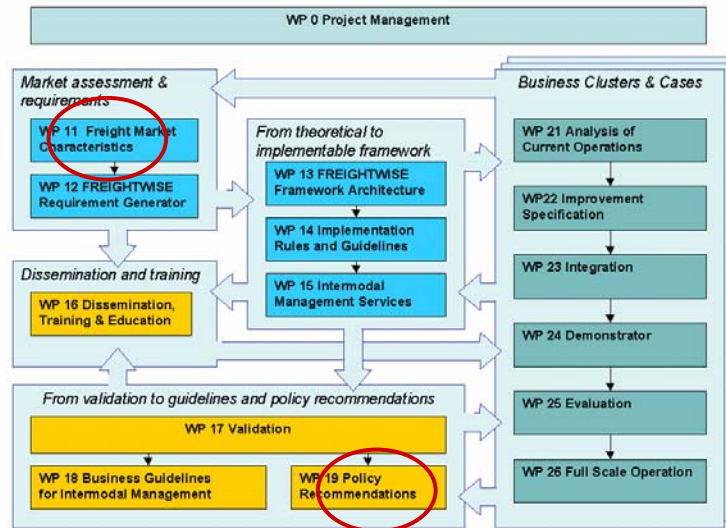
FREIGHTWISE Framework seeks to integrate three domains



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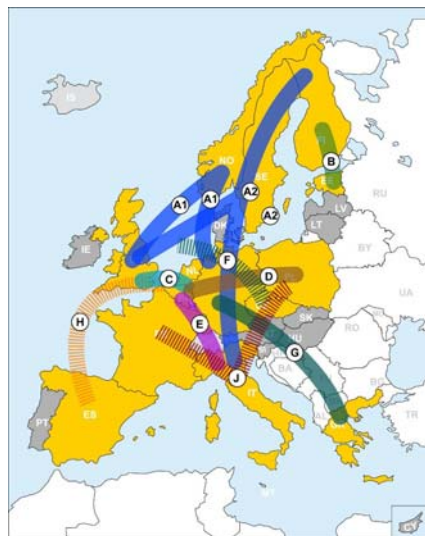
FREIGHTWISE WP – structure



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FREIGHTWISE expected results



- Building on cooperation with public and private stakeholders
- Supporting real life transport chains
- Input to Commission initiatives
 - System architecture
 - Enabling a Virtual Transport Network
 - Stakeholder Framework
- 55 partners in 14 European countries with involvement of 9 business cases.
- Budget is 14 mEUR with a total EU-contribution of 7,9 mEUR.
- BMT is the lead partner

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Introduction to Virtual Transport Services

- ❑ Objective of **virtual transport services**: Support the exchange of information **on** offered transport services in order to enable transport management packages to:
 - Identify services
 - Use them in the transport planning process
 - Book these services
 - Exchange data when using such services
 - Monitor the progress of such services

- ❑ This presentation shows the initial assessment of requirements for such virtual transport services

Basic features: Reference information

- ❑ Locations
- ❑ Companies
- ❑ Transport means type
- ❑ Transport means
- ❑ Service category
- ❑ Cargo type
- ❑ Cargo units used

Basic features: Route for scheduled services

- Route through the series of locations
- Description of the schedules that describe the individual voyages along the route
- Planned arrival and departure times
- Actual times in case the service is already (partly) executed
- Frequency can indicate that a voyage is being repeated at regular intervals

Basic features: Service

- Service category
- Service provider
- Origin and destination of the service
- Load unit type handled by the service
- Cargo type that can be handled
- Transport means type (implying the modality), if applicable
- Duration of the service, or a reference to the route/schedule if the service has a scheduled timetable
- Prices of the service
- Documents exchanged when using the service (selection from the list of Freightwise 'mode independent messages')

Advanced features: Specialisation/generalisation

Example:

- *Local specialisation:* A service from Amsterdam to Brussels can be seen as a specialisation of a service from Netherlands to Belgium
- *Timing specialisation:* A scheduled service with a timetable describing daily departures at 9:00 and arrival that same day at 22:00 can be seen as a specialisation of a service with duration 1 day

Usage:

- ❑ Support selection of corridor based on generic descriptions, followed by selection of specific route within the corridor
- ❑ More generic services published by logistics hubs, SSS promotion centres, etc.
- ❑ More specific services published by operators themselves

Advanced features: Composition

Example:

- Individual services can be composed into a transport chains which is offered as a combined transport service

Usage:

- ❑ Providers offering a combination of services as an end-to-end connection, if the user of such a service wants to know the individual components, e.g. for tracking progress of individual services

Advanced features: Traffic information

Example:

- Timing for a specific transport means: Train A will arrive in Bologna with an ETA of hh:mm

Usage:

- More up-to-date information on the timing of services making use of that train

Advanced features: Estimates

Example:

- A generalized form of service may define the estimated duration or costs of specific type of services

Usage:

- Provisioning of cost information by specialized information providers, when prices are not published

Advanced features: Contract conditions

Example:

- Contract conditions may apply to a service

Usage:

- Description of specific conditions that apply when using a service within the framework of an already agreed on contract

Advanced features: Route specification

Example:

- Description of a train schedule from Rotterdam over the Brenner pas to Italy

Usage:

- All combinations (origin/destination) on the route can be serviced

Advanced features: Available capacities

Example:

- Which capacity is available within the timing limits that are indicated in the service description: E.g. there are still slots for 50 containers in the train that departs tomorrow 9:00

Usage:

- Improved efficiency in the planning and booking process

Advanced features: Grouping

Example:

- Services can be published as individual services, or as a group of services
- A published service might include all services that are offered in a specific logistics centre
- A published service might include all short sea services offered from Antwerp

Usage:

- This supports organisations that build a directory of service descriptions and can exchange larger amounts of service descriptions with other directories

Advanced features: Representation

Example:

- **Provider representation:** In this case is the service is being published by the operator providing that service
- **Agent representation:** The service is being published by agent acting on behalf of the service provider
- **Indirect representation:** The service is being published by another party than the provider of that service (the 'publisher')

Usage:

- Supporting different roles for mediating transport services

Potential use cases

- **Look-up:** Look up via registry. By using the specialisation references, the detailed services can be found
- **Update timing:** Getting an update on the arrival/departure information, e.g. based on traffic conditions
- **Update capacity:** Getting an update on the capacity available on a specified timeslot, e.g. based on fleet planning
- **Empty space:** A push of information from the side of a service provider to indicate which vehicle space he has available
- **Quotation:** Requesting a price quotation of a service (to serve a specific shipment), which may be a spot price or a contract price
- **Booking:** Booking a service (to serve a specific shipment)

Next steps of the task

- ❑ Definition of an XML schema that defines the content of a virtual transport service formally
- ❑ Definition of a web service that defines how such a virtual transport service can be used and interacted with