INTERMODAL BRINGS CONSUMER GOODS TO PEOPLE

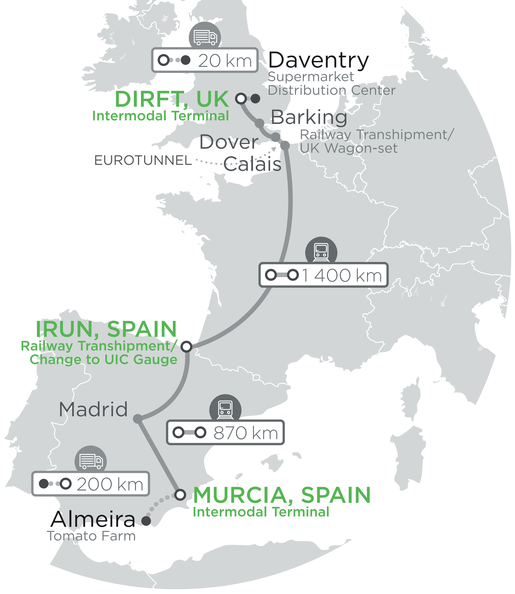
EU COMPARISON US

STEP 01

06:00 DAY 1

ALMEIRA, SPAIN

TOMATO FARM



10 000 kg of freshly picked tomatoes – in crates stacked on 33 pallets – are ready for shipment to supermarket customers in the United Kingdom.

The 45-foot refrigerated container, which is to hold the cargo, is on site. The pallets are loaded into the container.

Once loading is finished, the truck to carry the cargo is ready to depart at 7:00 for Murcia Terminal.

SUMMARY DATA

220 km BY ROAD

2 270 km BY RAIL

STEP 01

06:00 DAY 1

PORT OF LOS ANGELES

MARINE CONTAINER TERMINAL

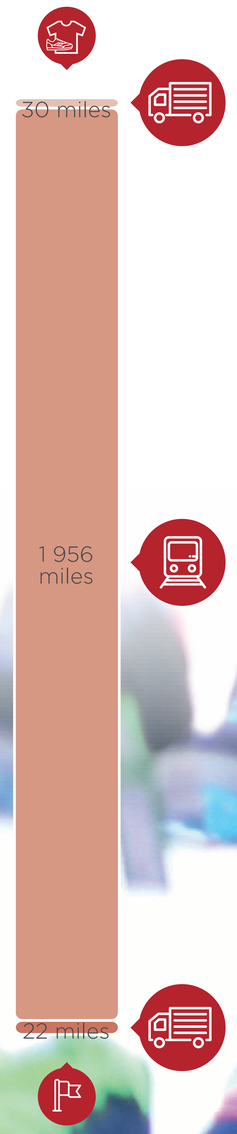
Trans-Pacific container vessel docks, ready to begin offloading its cargo, including three 40-foot ISO containers holding athletic apparel and footwear.

Containers are discharged from vessel and offloaded by longshoremen at the Marine Container Terminal.

Motor carrier to transport 40-foot containers from Marine Container Terminal to a 3PL cross-dock warehouse where cargo is re-packaged by expert staff for domestic journey.

The contents of the three 40-foot container are transloaded into two domestic 53-foot high cube containers. These domestic containers are prepared for departure to a Los Angeles Intermodal Rail Terminal by 18:00 Day 2.

SUMMARY DATA



55 miles BY ROAD

1 956 miles BY RAIL

THE INTERMODAL LOADING UNIT

EU COMPARISON US

ISO CONTAINER
"PALLET-WIDE"
EN CONTAINER
(CRANEABLE)
SEMI-TRAILER
SWAP BODY

ILU-Code
die Identifizierung europäischer intermodaler Ladeeinheiten

ISO CONTAINER
"HIGH CUBE"
US DOMESTIC
CONTAINER
(CRANEABLE)
INTERMODAL TRAILER

SCAC®
Directory of Standard Carrier Alpha Codes

International trade is carried in 20- and 40-foot long ISO containers.

Continental (domestic) relations are served by a diverse range of specialised loading units custom tailored to the local standards and peculiarities.

20' STANDARD	10 standard pallets 1.2 x 1.0 m	
	11 standard pallets 1.2 x 0.8 m	
40' STANDARD	21 standard pallets 1.2 x 1.0 m	
	25 standard pallets 1.2 x 0.8 m	
40' PALLETWIDE	24 standard pallets 1.2 x 1.0 m	
	30 standard pallets 1.2 x 0.8 m	
45' STANDARD	24 standard pallets 1.2 x 1.0 m	
	27 standard pallets 1.2 x 0.8 m	
45' PALLETWIDE	26 standard pallets 1.2 x 1.0 m	
	33 standard pallets 1.2 x 0.8 m	

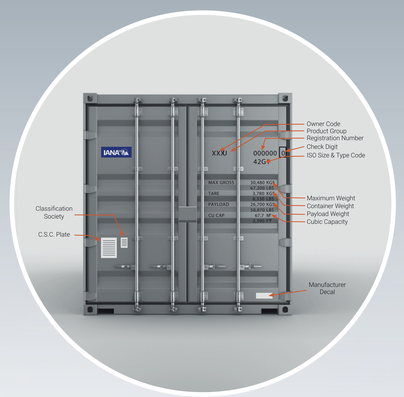
Refrigerated container – it is used to transport temperature or climate sensitive cargo like meat, fruit, vegetables, dairy products, chemicals or pharmaceuticals. Reefer can also refer to a refrigerated trailer

Flat Rack – flat rack containers are used to transport items too large to fit inside a box.

Tank Container – an intermodal container specifically designed to transport liquids, gases or powders.

Pup – a smaller 28 or 28.5-foot trailer that may have two units joined and towed by a single truck.

Chassis – a chassis is a rectangular trailer with twist-locks that provides the framework on which a shipping container is attached for road transport. Chassis come in a variety of sizes and configurations depending on the weight and length of the container. They are owned by leasing companies, motor carriers, railroads, shippers and some steamship lines.



"pallet-wide" EU container: typically 45-foot-long: enables the optimal fitting of a maximum number of europallets

"high cube" US domestic container: typically 53-foot-long: 30 cm higher and 15 cm wider than ISO containers

(craneable) semi-trailer: 13.60 meter long (only)

swap body: light weight, highly specialised loading units that are typically non-stackable and feature folding legs in length variations from 20 to 45 feet in length – used on European continental relations

tank container: a loading unit to carry liquids, powdered goods or gases

(craneable) intermodal trailer: 48 or 53 feet (14.63 and 16.15 meter) long versions

EU

CTO

COMBINED TRANSPORT OPERATOR

The European organiser of combined transport

IMC

US

INTERMODAL MARKETING COMPANY

The American organiser of intermodal transport

PROFESSIONAL RELATIONSHIPS OF A CTO/IMC

TASKS AND RESPONSIBILITIES OF A CTO/IMC

- plans and organises trains to respond to market needs
- provides wagons (rented or own)
- contracts rail traction and terminal services
- truck transportation in case of door-to-door services
- offers slots on trains to shippers as standalone product
- customer support and reporting
- tracking and tracing information

CTOs and IMCs are found using a high variety of business models from asset-light to asset-heavy operations, and with simple agency-type services to offering an extensive range of value-added services.

In both Europe and the USA there are about 50-70 entities that qualify as CTO/IMC – employing a few thousand of expert staff on each side of the Atlantic Ocean.

FIRST MILE/LAST MILE BY TRUCK

EU COMPARISON US

STEP **02**

07:00 DAY 1

ALMEIRA, SPAIN

TOMATO FARM

10:00 DAY 1

MURCIA, SPAIN

INTERMODAL TERMINAL

200 km by truck to the nearest suitable intermodal terminal

FIRST/LAST MILE ROAD TRANSPORT FOR INTERMODAL

- road carriage for intermodal requires less power than long-distance trucking
- enables the use of advanced environmentally friendly propulsion technologies: LNG, CNG, electric
- day-trucking translates to humane work-assignments for drivers
- less monotonous / more interesting and more local jobs

ALTERNATIVE PROPULSIONS **30-100%** LESS CO_2 EMISSIONS ON ROAD

STEP **02**

18:00 DAY 2

PORT OF LOS ANGELES

WAREHOUSE

19:00 DAY 2

LOS ANGELES

INTERMODAL RAIL TERMINAL

30 miles by truck to the intermodal terminal that offers the required train connection

STEP

03

INTERMODAL TERMINAL

EU COMPARISON US

STEP

03

10:00 DAY 1

MURCIA, SPAIN

TERMINAL

15:00 DAY 1

MURCIA, SPAIN

TERMINAL

THE PROCESSING OF UNITS - CONNECTION OF MODES

The shipment is received, administration processes and the 45-foot reefer unit is inspected.

Load planning of the train is done with consideration to the size and weight of the loading unit and then comparing it to the wagon type and the profile gauge of the railway lines to be travelled on.

Transhipment is carried out from truck ideally directly to the railway wagon, which has already been unloaded.

Once loading of the train is completed, the train is inspected. The line locomotive is connected to the wagons and a brake-test is conducted.

The documentation is handed over by the CTO to the railway undertaking.

The train is ready to depart.

The two 53-foot domestic containers are received, inspected and administration carried out.

The 53-foot domestic containers are recieved via the in-gate lane. If the terminal is equipped with an autonomous gate system (AGS) the driver checks-in and reports any known defects. Equipment is inspected via optical character recognition (OCR) for visible damage.

Driver receives a gate receipt which instructs the assigned parking space for the equipment. A yard-truck will relocate the container from the stall to a position alongside the track where the outbound train is being built.

The containers will be loaded into well-cars by yard equipment (RTG, Top-Pick/Side Loader, Reach Stacker). A second row of containers will also be loaded and secured using Inter-Box-Connector (IBC) twistlocks.

The train is ready for departure.

19:00 DAY 2

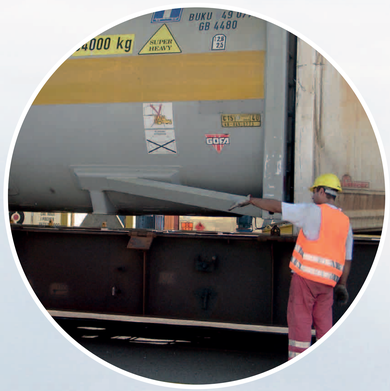
LOS ANGELES

INTERMODAL RAIL TERMINAL

23:00 DAY 2

LOS ANGELES

INTERMODAL RAIL TERMINAL



RAILWAY PROFILE GAUGES IN EUROPE

THE RAIL JOURNEY

STEP

04

15:00 DAY 1

MURCIA, SPAIN
TERMINAL

17:00 DAY 3

DIRFT, UK
TERMINAL

The 2 270 km train journey takes 50 hours to complete.

Along the railway journey there are three technical stops:

- at **Irún** terminal to tranship the intermodal units from the wide-gauge Spanish wagon-set to UIC gauge wagons pulled by a French locomotive,
- in **Calais** for a safety and security inspection prior to entering the Eurotunnel for crossing the English Channel, and
- in **Barking**, where the French locomotive is replaced by a UK locomotive.

A total of three railway undertakings – a Spanish, a French and a UK – must collaborate to forward the train from origin to destination.

EU

US

TRAIN LENGTH

1 or maximum 2 locomotive drivers handle a train carrying 50 truckloads on the European side (equalling to a 750-meter train length). In the US, the typical train length is 2 000 metres, there is no regulatory limit on how long a freight train can be. Occasionally trains longer than 3 000 meters are also constructed.

Moreover, due to a lack of profile gauge limitations and electrification, the double stacking of containers is possible in the USA, which means that in theory nearly 300 truckloads can fit on a single train.

UP TO **750 M** TRAIN LENGTH

UP TO **50 truckloads** PER TRAIN

UP TO **3 000 M** TRAIN LENGTH

UP TO **300 truckloads** PER TRAIN

STEP

04

23:00 DAY 2

LOS ANGELES
INTERMODAL RAIL TERMINAL

02:00 DAY 6

MEMPHIS REGION
INTERMODAL RAIL TERMINAL

Covering 1 956 miles takes 75 hours, or about 3 days.

In case the containers were to travel between two points not falling on the network of the same railroad company, a transhipment would also be required also entailing a switching of locomotives.

The intermodal rail journey between Los Angeles and Memphis can be completed using a single railroad.

THE ROLE OF INTERMODAL WITHIN RAIL FREIGHT

COMPARISON

EU

NETWORK: **218 000 KM**

INTERMODAL TERMINALS: **~750**

RAIL FREIGHT PERFORMANCE: **417 BILLION TKM**

SHARE OF INTERMODAL: **~45%**

POPULATION: **510 MILLION**

GDP: **€14 700 BILLION**

FOREIGN TRADE (EXPORT+IMPORT): **€3 500 BILLION**

US

NETWORK: **203 000 KM**

INTERMODAL TERMINALS: **~1 000**

RAIL FREIGHT PERFORMANCE: **2 700 BILLION TKM**

SHARE OF INTERMODAL: **~50%**

POPULATION: **321 MILLION**

GDP: **€16 300 BILLION**

FOREIGN TRADE (EXPORT+IMPORT): **€3 400 BILLION**

EU		US
• Owner/Shareholder • Buyer of (public service) passenger transport • Regulator	**Role of government(s)**	Regulator
Opaque, as (dominantly) state-owned companies	**Transparency**	Full, as stock market listed companies
Public budgets	**Source of investments**	Private money from value-added service
Public service passenger transport (politicians)	**Focus of attention**	Market demand (mostly freight)
~€35 billion / year	**Annual investment spending**	~€20-22 billion / year
high	**Degree of political influence**	low
18.3% (2015)	**Modal share of rail freight**	38.6% (2015)

STEP

05

17:00 DAY 3

DIRFT, UK

TERMINAL

19:00 DAY 3

DAVENTRY, UK

SUPERMARKET LOADING BAY

INTERMODAL TERMINALS AS URBAN DISTRIBUTION NODES

EU COMPARISON US

The location of intermodal terminals near major urban areas is essential to integrate intermodal freight transport into city logistics and the economy as a whole.

Terminals should have the capability to directly link into the supply chains of cities with value added services such as short-term storage.

Intermodal loading units are ideal for intermediate storage serving as an inventory buffer within logistics chains. Terminals often provide space for such storage on their premises.

Cleaning and repairing intermodal loading units is also a value-added service of many terminals.

STEP

05

02:00 DAY 6

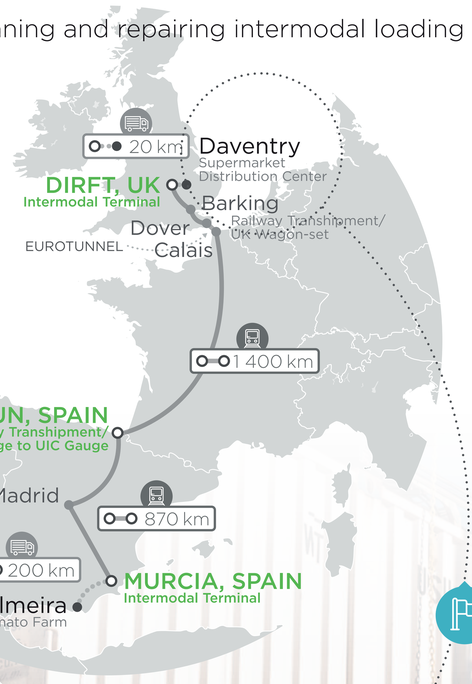
MEMPHIS REGION

INTERMODAL RAIL TERMINAL

07:00 DAY 6

MEMPHIS

MALL



INTERMODAL FREIGHT SERVES SOCIETY

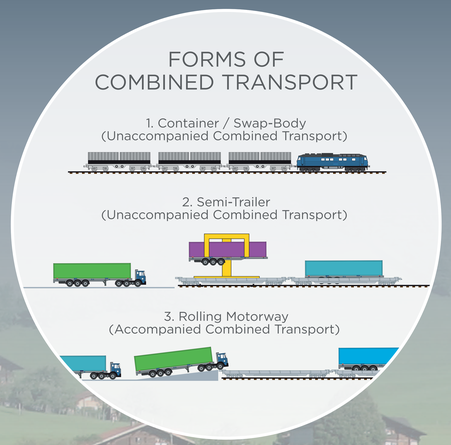
FAST
SAFE
ENERGY EFFICIENT
ECOLOGICALLY SUSTAINABLE

RELIABLE
PRODUCTIVE
AFFORDABLE
ENVIRONMENTALLY FRIENDLY

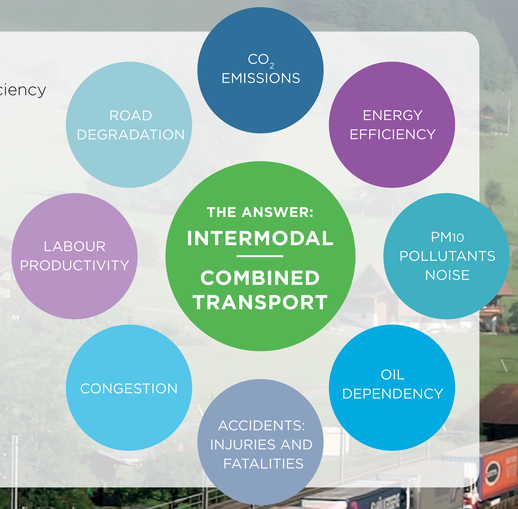
EU COMPARISON US

Intermodal transport efficiently delivers the advantages offered by non-road freight transport modes to any transport-chain for the carriage of any type of commodity.

- superior energy efficiency
- minimal pollution and climate gas emissions
- productive jobs that offer humane work/life balance
- superior transport safety, reduced accidents and loss of property
- reliability and security to logistics chains
- efficient land-use without undue infrastructure degradation



- **Climate:** CO_2 and energy efficiency
- **Environment:** air and noise pollution, vibration
- **Public security:** oil dependency
- **Safety:** accident injuries/ fatalities and material losses
- **The economy:** GDP loss due to congestion
- **Employment:** labour productivity
- **Infrastructure:** road degradation and spatial constraints



UIRR

THE INTERNATIONAL UNION FOR ROAD-RAIL COMBINED TRANSPORT

MEMBERSHIP:

UIRR's membership consist of 38 entities in 18 EU Member States who operate a network that spans the entire Continent and also includes intermodal transport lanes to/from Asia.

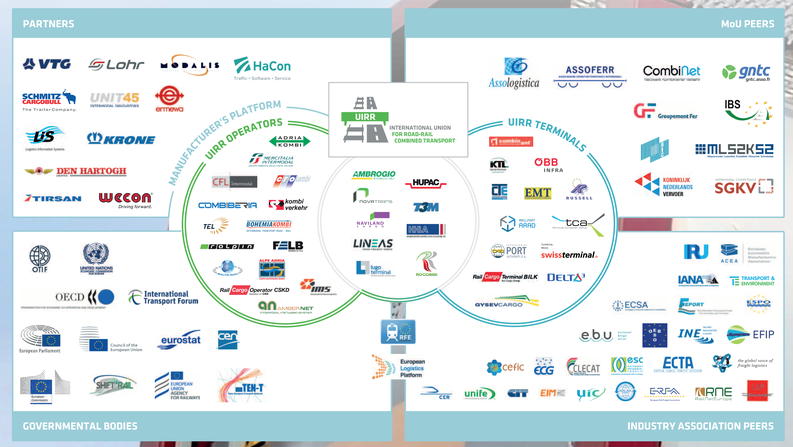
Combined Transport Operators – companies which organise road/rail combined transport services throughout Europe as well as between Europe and Asia; members range from asset-light – agency type – organisations to asset-heavy entities that own wagons, terminals and rail traction capacities.

Transhipment Terminal Managers – companies that are specialised owners (developers) and/or operators of intermodal terminals.

ALLIES OF UIRR:

Partners – National Associations for Intermodal and Technology Suppliers to the sector.

Peers – Industry Associations of related sectors.



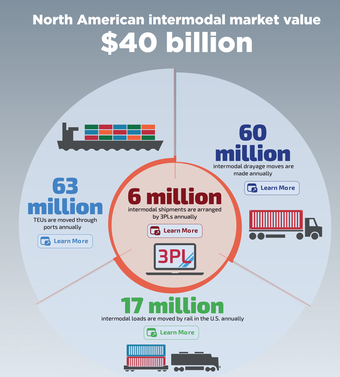
IANA

THE INTERMODAL ASSOCIATION OF NORTH AMERICA

MEMBERSHIP:

IANA membership comprises over 1 000 entities divided into the following divisions

- **3PL Division** – companies that act as shipping intermediaries that arrange, purchase and sell intermodal freight shipments.
- **Marine Division** – companies that provide freight transportation by water that has prior or subsequent movement by another transportation mode; also includes intermodal stacktrain transportation companies, port authorities and port terminal operators.
- **Motor Carrier Division** – companies that provide truck transportation of freight that may or may not have a prior or subsequent movement by another mode of transportation.
- **Rail Division** – companies that provide intermodal rail transportation and associated intermodal terminal services.
- **Supplier Division** – companies that provide products or services other than transportation to any member of the association, covering a broad spectrum of service and product providers.

NON-VOTING MEMBERS:

- **Associate** – limited to individual representatives from government and the military, associations, shippers/receivers, the academic community, students, media and other related organizations.
- **At-Large** – limited to individuals employed by IANA member companies.