

Eco-Railways

The Industry's view

UNIFE

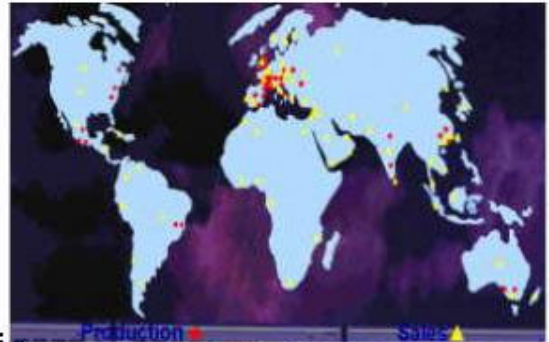
The Union of European Railway Industries

Drewin Nieuwenhuis

UNIFE General Manager

REPID & PROSPER network meeting, Paris, 2 April 2003

AnsaldoBreda - Ansaldo Signal



Alstom Transport

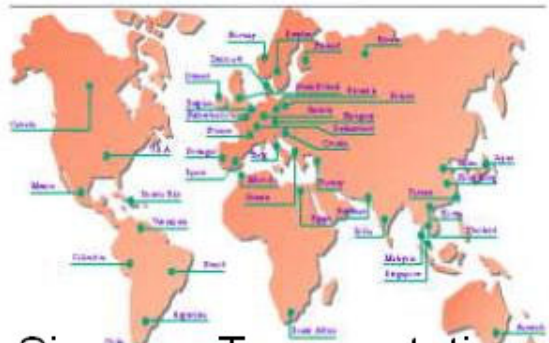


Knorr-Bremse

Ansaldo Trasporti Sistemi Ferroviari



Bombardier Transportation



Siemens Transportation



Faiveley



General Electric



Invensys Rail



ELECTRO-MOTIVE
General Motors Corporation

General Motors

Forecast turnover for world market of railway industry:

- from 34 billions in 2000
- to 42 billions in 2006

source: IRJ Rail Outlook 2002

World trend (turnover in billions of Euros):	2000	2006	pa
– Western Europe:	13.3	15.9	+3%
– Asia and Australia	10.7	12.6	+3%
– North/Central America	5.5	7.8	+6%
– Eastern Europe and CIS	2.9	3.7	+4%
– Africa, Near and Middle East	0.9	1.2	+6%
– South America	0.6	0.9	+6%

Annual **Investment** in World-wide

Transport

300 Billion USD

Railway

70 Billion USD

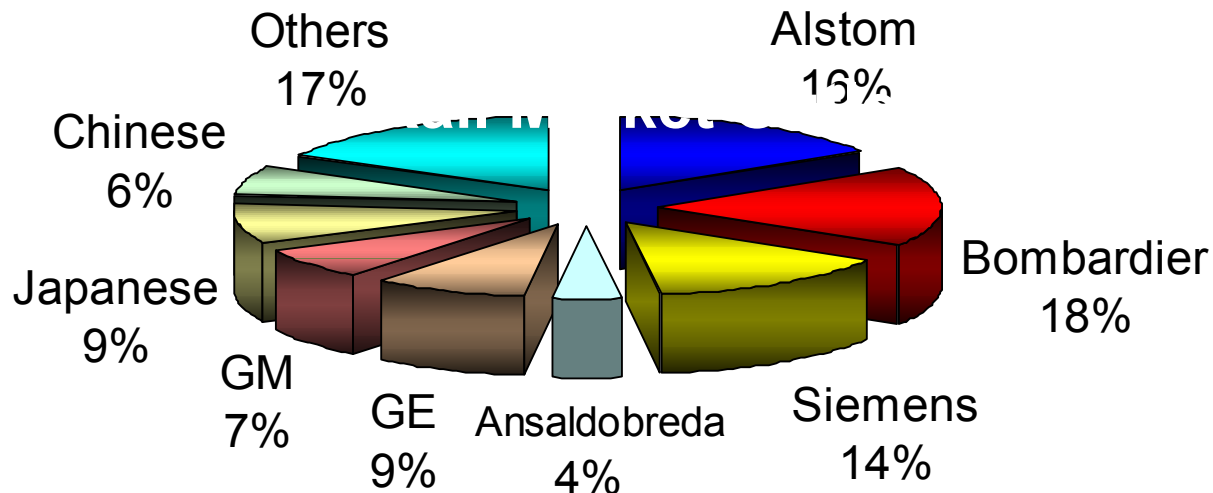
Infrastructures

45 Billion USD

Rail Vehicles

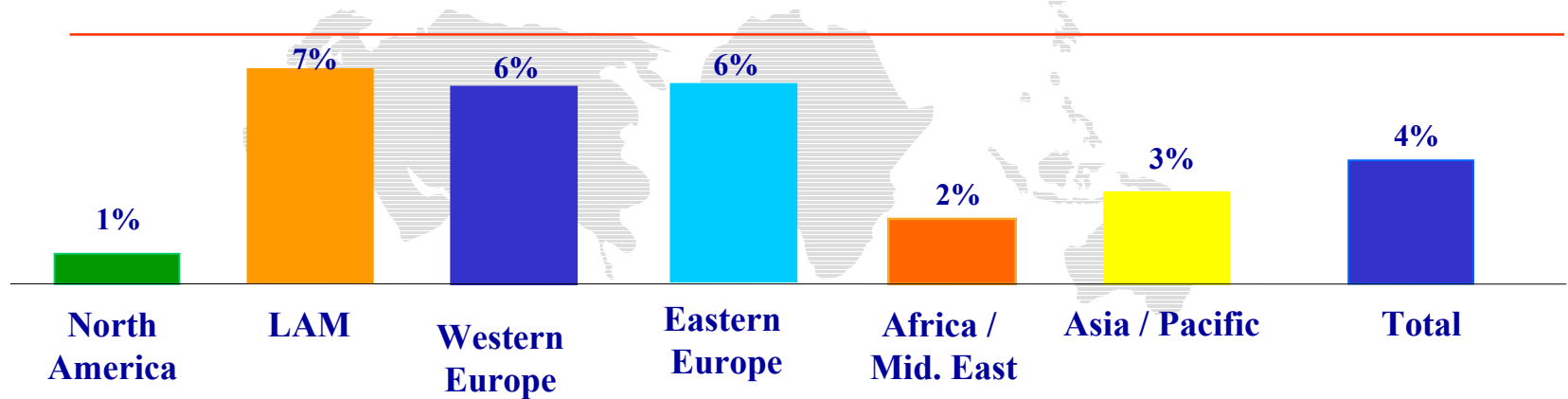
25 Billion USD

Market share – rolling stock and signalling (based on 2001/2 sales)



Expected Market Growth

2002-2004 in %



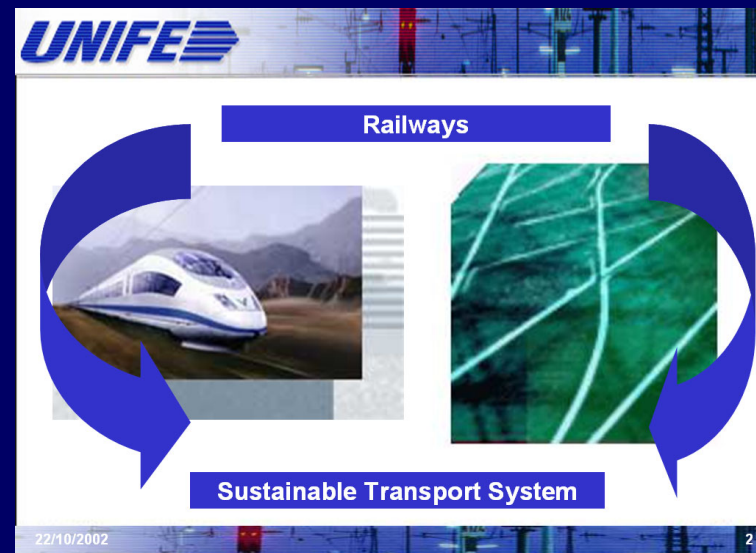
Rail Environmental Specifications



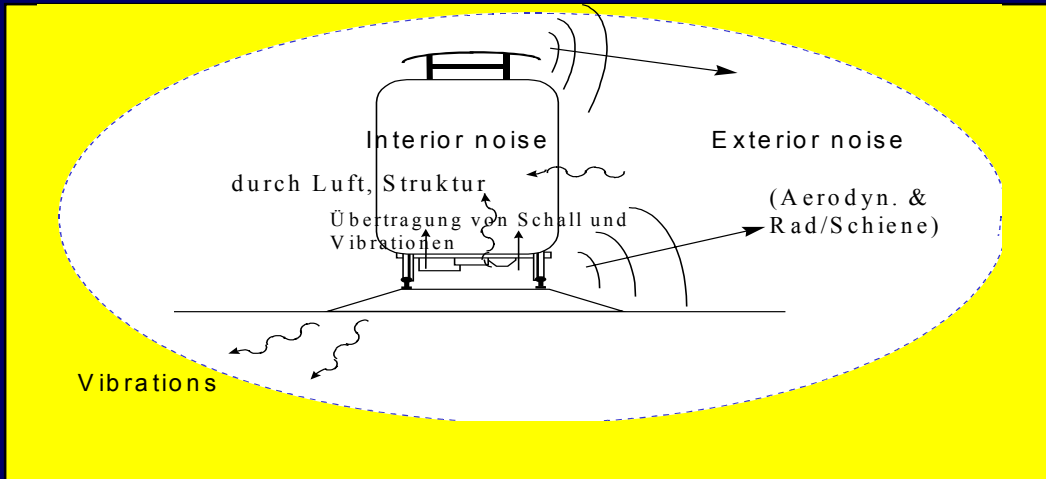
General requirements
Energy Efficiency
Noise Emissions
Exhaust Emissions
Emissions to soil and others
Materials / Recycling / Waste
Electric Magnetic Fields

UNIFE supports Innovative Eco-Technology:

- Noise
- Materials
- Recycling
- Air Pollution
- Electric Magnetic Emissions
- Energy Efficiency
- Modularisation



NOISE - Development of noise attenuation techniques



Exterior Noise:

Example: Gardemoen Train (N):
 88 dB(A) at 200 km/h (typical values:
 90 - 95 dB(A) at 130 km/h).

Interior Noise:

<i>Train</i>	<i>Country</i>	<i>Speedt [km/h]</i>	<i>Interior Noise [dB(A)]</i>
ICE 2	Germany	160	60
Regio Shuttle	Germany	80	71
Talgo	France	160	76
TGV	France	300	69
X 2000	Sweden	200	61
Gardemoen	Norway	200	65



NEW MATERIALS

Improve construction techniques

Recycle

Safety

Energy efficiency

Competitive pricing

High speed

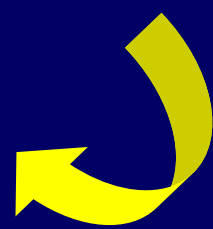
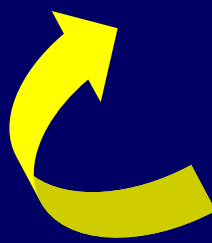
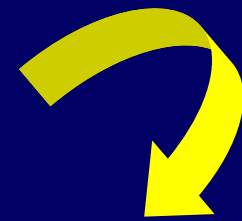
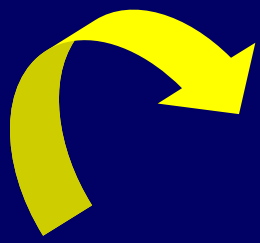
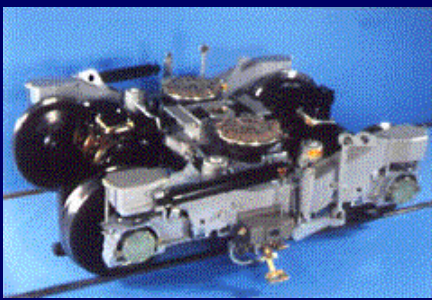
Reduced weight

User Friendliness



RECYCLING

a joint responsibility of the operators and the suppliers



Air Pollution

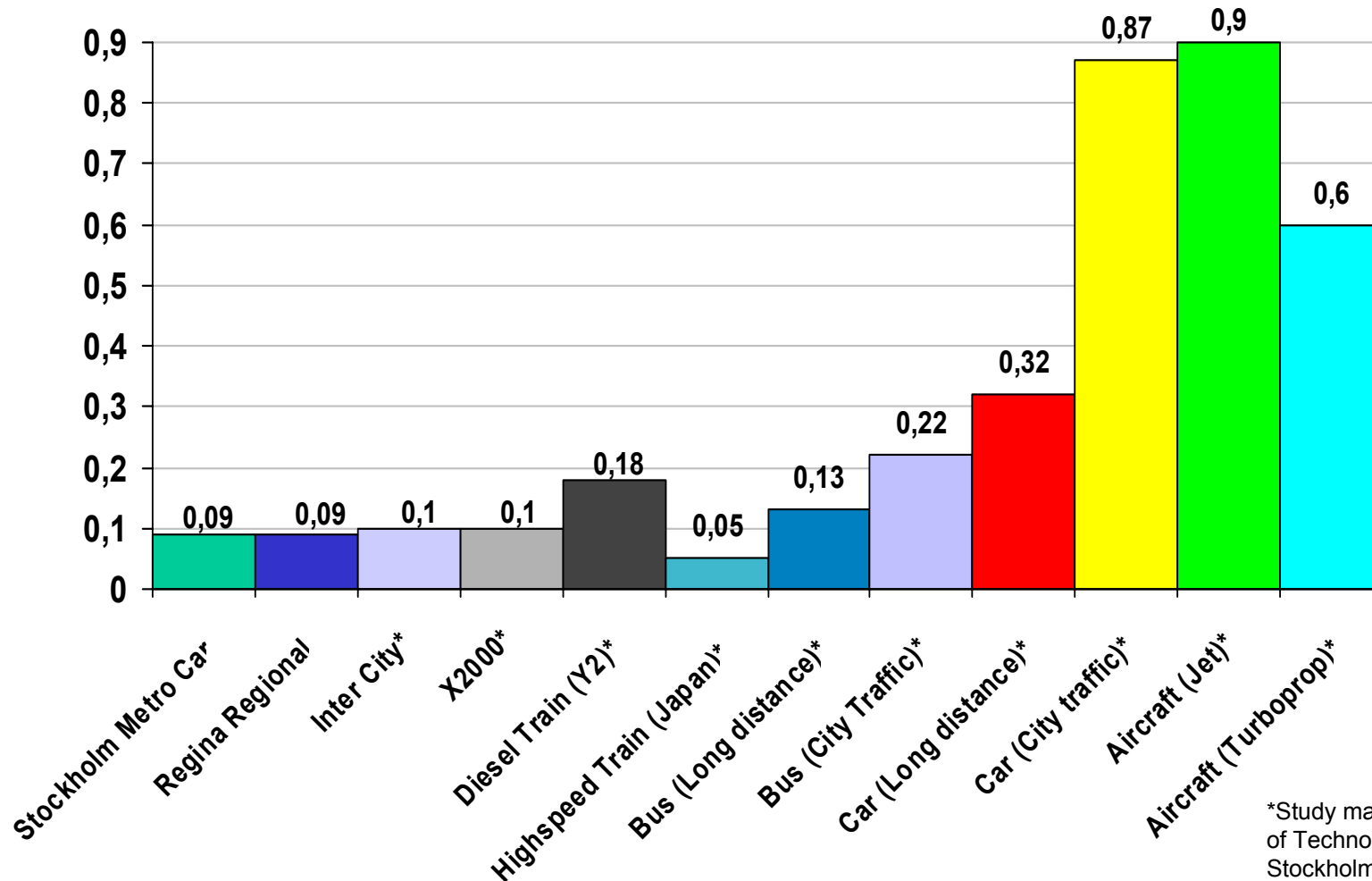
Reducing impact on the atmosphere:

- Limiting the green house effect
- Reducing polluting emissions
(diesel and heating emissions)



ENERGY consumption

kWh/passenger kilometres



*Study made by Royal Institute of Technology (KTH) in Stockholm -94

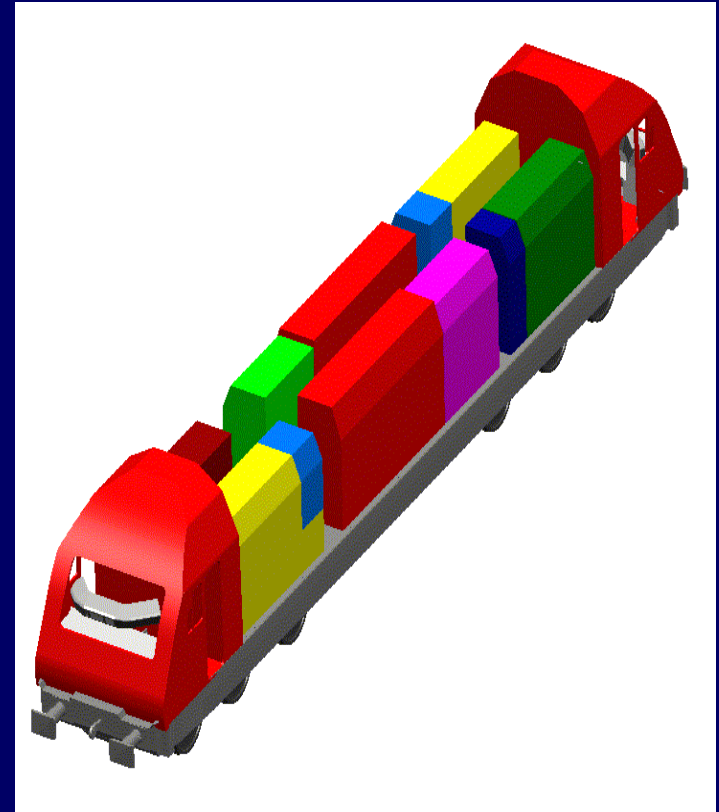
MODULARISATION

Respond to operator requirements

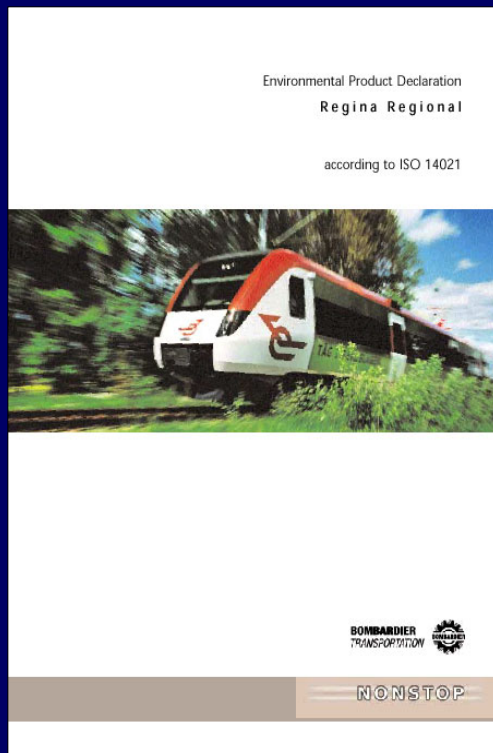
Reduce consumption
and waste by refurbishment

Environmental up-grading

Reduce vehicle construction costs

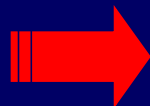


EPD - Environmental Product Declaration



Examples of Environmental Product Declaration

- Stockholm Metro Car
 - According to ISO 14025 (Type III)
- Tram of Milan
 - According to ISO TR 14021 (II)
- Regina platform
 - According to ISO TR 14021 (II)
- Planned: Loco BR 185
 - According to EMAS



**Present environmental performance in a reliable way
- ISO standard or EMAS**

UNIFE welcomes REPID and PROSPER

Tools for Railway Eco-Efficiency and Sustainable Performance



REPID Board

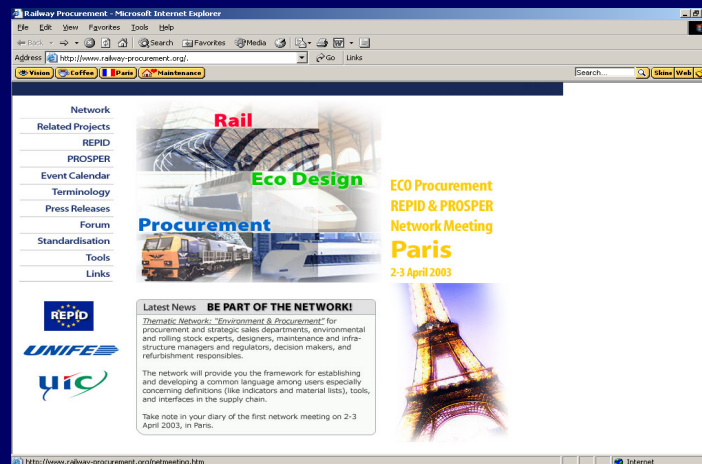
Network for dealing with standardisation of Environmental Product Indicators and Data Formats

IT Tool

For improving the usability of Environmental Performance Indicators and Data Formats

PROSPER

UIC Environmental Guideline for Procurement of new Rolling Stock





www.unife.org

