



High Capacity Transport-Road: DUO2

GRRF MVC Informal Group – Modular Vehicle Combinations
1st meeting 2014-07-02 in Gothenburg

Lena Larsson, Volvo Group Truck Technology
DUO2, Project Manager

The Concept versus the System

The Modular Concept (MC):

- Existing trucks and trailers (“modules”) defined in Directive 96/53/EC can be combined to form new combinations longer than 16,5 / 18,75 m

The European Modular System (EMS):

- The Modular Concept applied in a logistics system
- Using new, smarter, vehicle combinations according to the Modular Concept
- Adapted to local conditions
- On an appointed road network
- Preferably using modules adapted for intermodal transport



The Modular Concept is based on existing modules

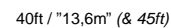
Basic idea: Combine existing modules (vehicle components and load units) in different ways and adapt to local conditions

Load units



Short module

- Dimensions equal to
- ISO container 20ft
 - Swap body CEN Class C
7,15m 7,45m 7,82m



Long module

- Dimensions equal to
- ISO container 40ft
 - "13,6m" semitrailer
 - 45 ft container if this will be generally allowed in EU

Vehicles



Truck
For short module



Tractor 4x2
For semitrailer



Tractor 6x2, 6x4
For semitrailer

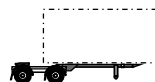
Trailers



Semitrailer "13,6m"
for long module



Centre axle trailer
for short module



Variant of Semitrailer;
"B-train", "link"



dolly

Volvo Trucks



The European Modular System (EMS) is the Modular Concept applied in a logistics system

The EMS has three corner stones:

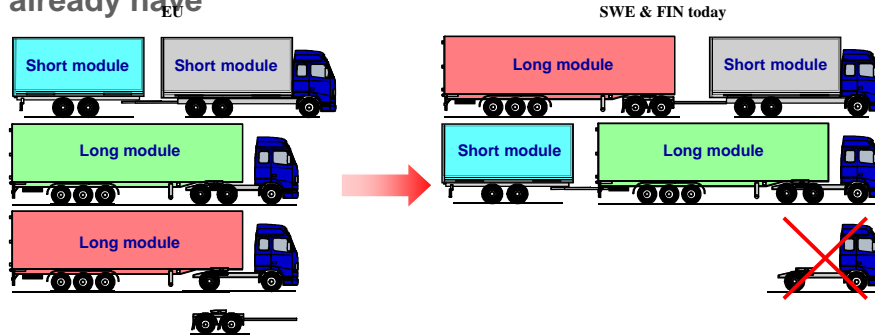
- Modular combinations based on defined (96/53/EC) vehicle units and standardized load units.
- Long vehicle combinations are not intended to be used on all roads. Classification of the roads in some form is therefore a part of EMS.
- The use of standardized loading units gives possibility to support combined transports / intermodality; (road – rail - sea)

Flexibility – Efficiency – Modularity

Volvo Trucks



The Swedish and Finnish way of using the European Modular System; One way to “make better use of what we already have”



Easy to implement

- Based on existing equipment
- Easy to implement
- “Use small vehicles when needed, use the largest vehicles when possible”

Two vehicles instead of three







- Possible to rearrange to shorter combinations
- Standard loading units
- Same volume of cargo
- Less total fuel consumption
- Less emissions per tonkm
- Less total room on road
- Lower cost per tonkm
- Less road damage

Volvo Trucks



Different ways to combine modules as to 96/53/EC

Combinations of modules (lengthwise) according to 96/53/EC

One long module		EU today – 16,5m OAL
Two short modules		EU today – 18,75m OAL
One short and one long module		EMS as used today in SWE, FIN, NLD, NOR, DEN
FUTURE EMS		
Three short modules		EMS as proposed for trials in SWE
Two long modules		EMS as proposed for trials in SWE
Two short and one long module		EMS as tested in SWE (VETT)

Volvo Trucks





Duo2

A research project for increased transport efficiency

Our need for transport is increasing



Volvo Trucks



DUO2 – a cooperation between industry and society



Volvo Trucks



Ambitious project scope

- CO2 15–30% reduction
- 50–100% increased productivity
- Maintained or increased safety
- Sustained traffic rhythm



Volvo Trucks



Duo2 Modular concept



Standard (EU)

16,5 m 40/44 ton



EMS-combinations (Sweden, Finland, Netherlands, Denmark)

25,25 m 60 ton



Duo2-combination

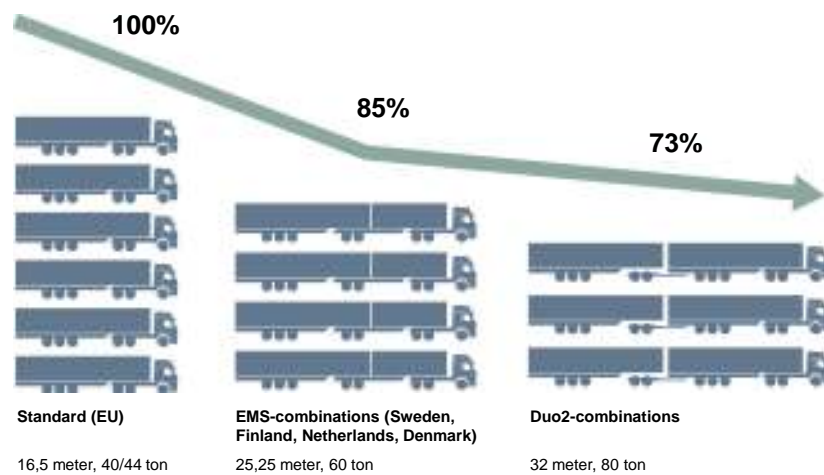
32 m 80 ton



Volvo Trucks



Larger vehicles means lower emissions



Volvo Trucks



The right vehicle at the right place



Volvo Trucks



Tests on a selected road network



32 meter

Max 80 ton distributed on 11 axles



Volvo Trucks



The number speaks for themselves – real fuel consumption from production

Standard EU

Load: 16 ton, 100 m³

Fuel consumption: 37 l / 100 km

Savings compared to standard EU:

- 16% fuel and CO₂

EMS

Load: 24 ton, 150 m³

Fuel consumption: 48 l / 100 km

Savings compared to standard EU:

- 27% fuel and CO₂

Duo2

Load: 32 ton, 200 m³

Fuel consumption: 53 l / 100 km

Volvo Trucks



Technology with superior safety



Volvo Trucks



HMI Driver support

Shown on dashboard:

- Axle weights
- Total weight
- Weights on driven axles



Volvo Trucks



On-going analysis and research

- Optimizing vehicles
- Effects on roads and bridges
- Selection of suitable road network
- Verification of traffic safety
- Optimized logistics



Volvo Trucks



Conclusions – large potential at reasonable cost

- Increased transport efficiency
- Decreased energy usage
- Decreased CO2 emissions
- Increased safety



Volvo Trucks



Thanks!

lena.larsson@volvo.com

sara.ranang@dbschenker.com

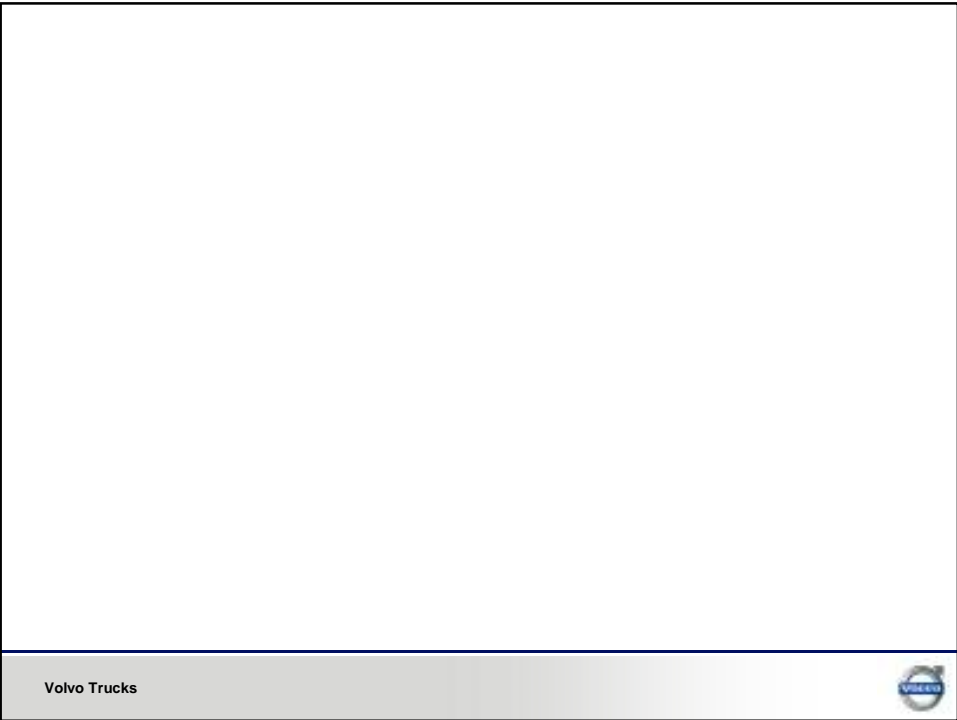
<http://www.youtube.com/watch?v=3vNHQNdv7WI>

<http://www.youtube.com/watch?v=nLA6zPxApGY>



Volvo Trucks





Volvo Trucks

