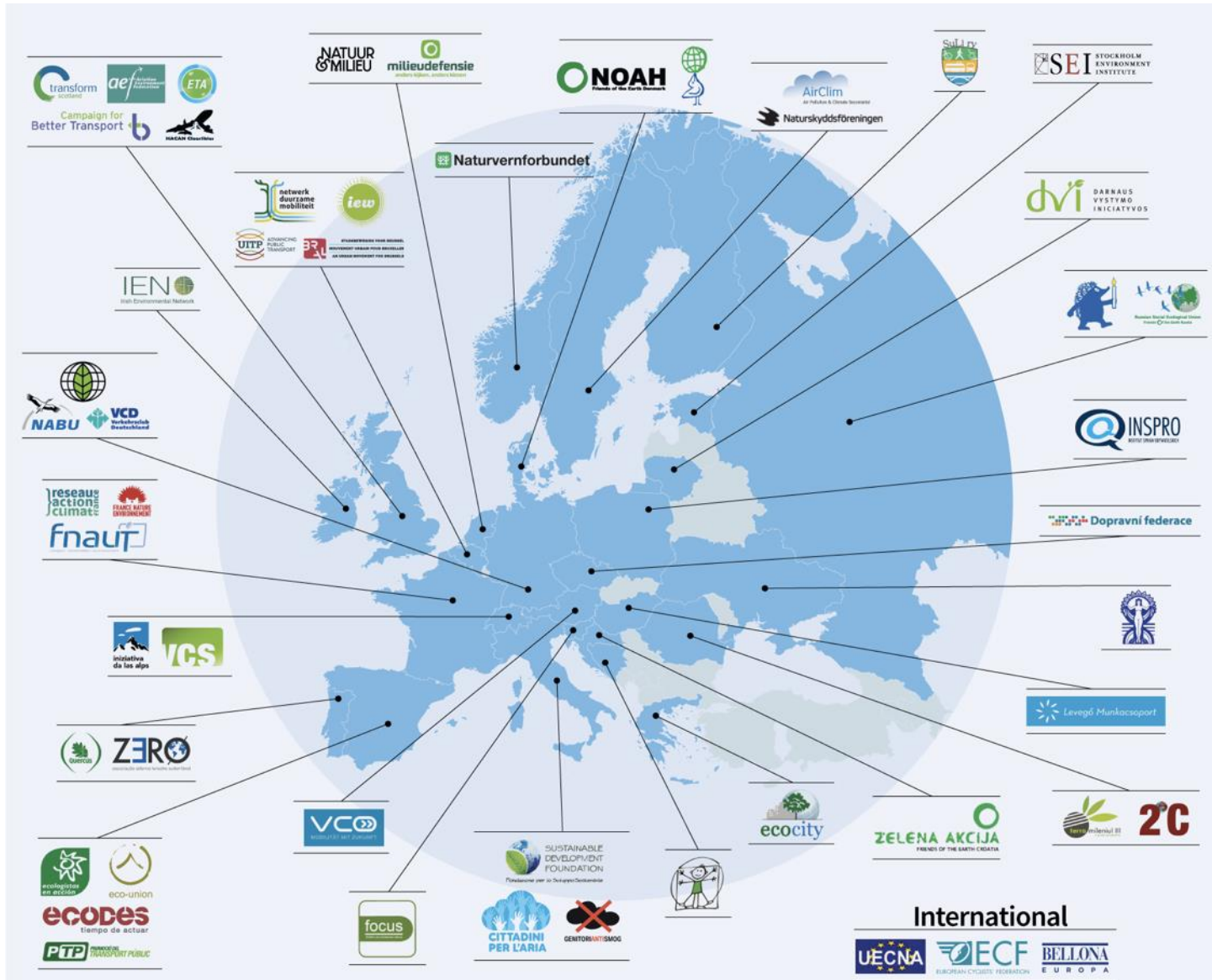# Direct Vision in Trucks:

towards a UNECE standard

UNECE VRU-Proxi meeting

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TRANSPORT & ENVIRONMENT

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T&E: 26 COUNTRIES
53 MEMBERS

DIFFERENTIATION BY VECTO CATEGORY

- T&E supports differentiation: it allows different trucks to achieve to different levels, raising the min, enhancing safety and the market

- VECTO categories are an established principle in the EU and the definitions are reasonably straightforward

- With some additions (more on this below) Vecto categories could be incorporated into UNECE

- The first issue is around naming / terminology

WHAT'S IN A NAME? WE MUST GET THE TERMINOLOGY RIGHT

T&E proposes a more neutral naming of the levels (e.g. Levels A to E, or Platimum+ to bronze)

- VECTO can help categorise trucks, but we must acknowledge there is no universal urban/non-urban, or highway/non highway, distinction. In some cases the latter are used on the former, and vice versa. (Annex 3 gives one example.)

- Names used in the standard must not mislead cities, contracting parties or buyers

HOW WILL FUTURE IMPROVEMENTS BE RECOGNISED?

Blind perimeter
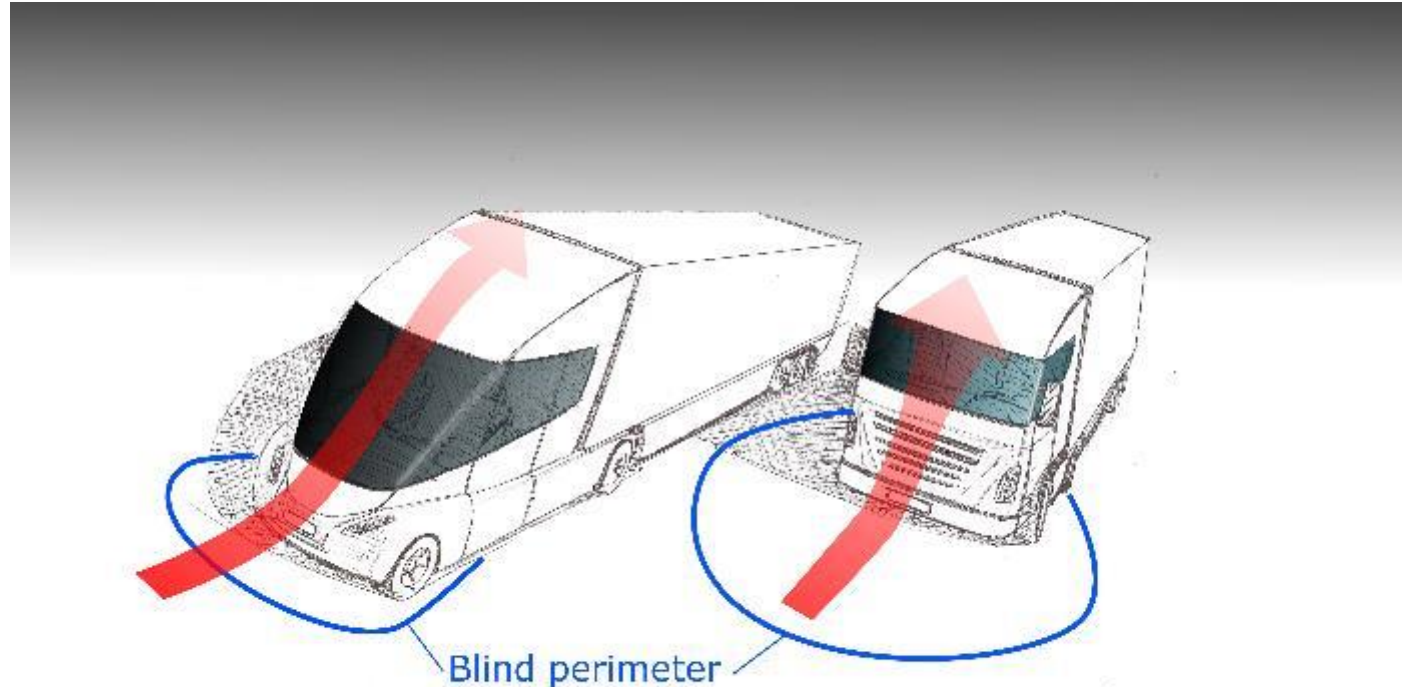
Above image by PEM Motion GmbH shows key design differences between new & old typologies at concept level.

Right: Bugatti concept truck

NAMING: 2 SUGGESTIONS

- Direct vision is a sliding scale of performance; rating needs to be published for each truck

- Enables market forces to work correctly:
  - Gives manufacturers credit where is due
  - Helps operators choose
  - Enables cities implement schemes to solve local problems based on a common technical standard
  - Five levels to encourage progress (or a similar no.)

Industry suggestion	Use of Levels	Use of Bronze to Platinum+
	Level A	Platinum plus
	Level B	Platinum
	Level C	Gold
'Urban'	Level D	Silver
'Highway'	Level E	Bronze

VECTO CATEGORY 5 (4 X 2)

- Category 5 trucks are the most commonly sold trucks in the EU with around 45% of new registrations (ICCT)

- A tiny fraction are certified in the Regional Delivery cycle of Vecto, <1% according to ACEA's March 2020 report

- Vecto category 5 trucks certified in the Regional Delivery cycle of Vecto should fall under Level D/Silver (rather than Level E/Bronze, as suggested by OICA/ACEA)

VECTO CATEGORY 10 (6 X 2)

- Category 10 trucks are the 3rd most commonly sold trucks in the EU with around 10 - 12% of new registrations (ICCT)

- A tiny fraction are certified in the Regional Delivery cycle of Vecto, 0.1% according to ACEA's March 2020 report

- Vecto category 10 trucks certified in the Regional Delivery cycle of Vecto should fall under Level D/Silver (rather than Level E/Bronze, as suggested by OICA/ACEA)

SPOT THE (MAIN) DIFFERENCE :)

POWER THRESHOLD FOR 3-AXLE RIGIDS

4x2 rigid truck – Vecto Cat. 4 (assume LH cycle)

When <265kW, 2 axle rigids must reach the higher level (industry proposal)

6x2 rigid truck – Vecto Cat. 9 (assume LH cycle)

An analogous power threshold is missing for 3 axle rigids: what is a good solution that works for all powertrain types?

Note: 370kW is used as a threshold in cat's 11, 15 and 16.

The base proposal

Vecto group	Chassis	Axle config	Max mass (tonnes)	Sub-Group	Cab type	Engine Power (kW)	Proposed DVS Standard
0	Rigid	4*2	>3.5 - <7.5	NA			Urban
1	All	4*2	7.5 - 10	NA			Urban
2	All	4*2	>10 - 12	NA			Urban
3	All	4*2	>12 - 16	NA			Urban
4	Rigid	4*2	>16	4-UD (Urban Delivery)	Either	<170	Urban
		4*2		4-RD (Regional Delivery)	Day	≥170	Urban
		4*2			Sleeper	≥ 170 and <265	Urban
		4*2		4-LH (Long haul)	Sleeper	≥265	Highway
5	Tractor	4*2	>16	5-RD	Day	All	Highway
		4*2			Sleeper	<265	Highway
		4*2		5-LH	Sleeper	≥265	Highway
6	Rigid	4*4	7.5 - 16	NA			Highway
7	Rigid	4*4	>16	NA			Highway
8	Tractor	4*4	>16	NA			Highway

Vecto group	Chassis	Axle config	Max mass (tonnes)	Sub-Group	Cab type	Engine Power (kW)	Proposed DVS Standard
9	Rigid	6*2	All	9-RD	Day	All	Urban
				9-LH	Sleeper	All	Highway
10	Tractor	6*2	All	10-RD	Day		Highway
				10-LH	Sleeper		Highway
11	Rigid	6*4	All	11 - S (Standard)*	All	≤370	Urban
				11 - EMS (high capacity)*	Sleeper	>370	Highway
12	Tractor	6*4	All	NA			Highway
13	Rigid	6*6	All	NA			Highway
14	Tractor	6*6	All	NA			Highway
15	Rigid	8*2	All	11 - S (Standard)*	All	≤370	Urban
				11 - EMS (high capacity)*	Sleeper	>370	Highway
16	Rigid	8*4	All	11 - S (Standard)*	All	≤370	Urban
				11 - EMS (high capacity)*	Sleeper	>370	Highway
17	Rigid	8*6 or 8*8	All	NA			Highway

* means a new sub-category not yet confirmed in Vecto

APOLLO
VEHICLE SAFETY

SUMMARY

- The standard must be neutrally-named, future-proof, and support innovation; it must not mislead cities, contracting parties or buyers

- 5-RD and 10-RD should be at Level D/Silver (not level E/Bronze)

- Category 9-LH needs a power threshold (as Category 4-LH already has)

- The standard must recognise and reward progress (ie movement towards Level A/Platinum+)

- Multiple levels will enable direct vision enhancement to be duly acknowledged

- Mandatory publication of level (with 5 suggested) will reward innovation, empower cities, enhance the market and incentivise progress

# THANK YOU

Questions / comments?

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SUBGROUP SHARE

	Q3-Q4 share	Configuration	GCW [T]	Engine [kW]	Cabin
4-UD	0.4%	R 4x2	>16	<170	All
4-RD	7.9%	R 4x2	>16	≥170 day cab ≥170 <265 sleeper cab	Day & sleeper
4-LH	1.9%	R 4x2	>16	≥265	Sleeper
5-RD	0.8%	T 4x2	>16	All-day cab <265 sleeper cab	Day & sleeper
5-LH	62.8%	T 4x2	>16	≥265 sleeper cab	Sleeper
9-RD	7.2%	R 6x2			Day
9-LH	9.2%	R 6x2			Sleeper
10-RD	0.1%	T 6x2			Day
10-LH	9.7%	T 6x2			Sleeper

On the other hand, subgroups 4-UD (4x2 rigid lorries, GCW >16t), 5-RD (4x2 tractors, GCW >16t) and 10-RD (6x2 tractors, all weights) each have a share of less than 1% of total sales during quarter 3 and 4 of 2019, and together account for only 1.3% .
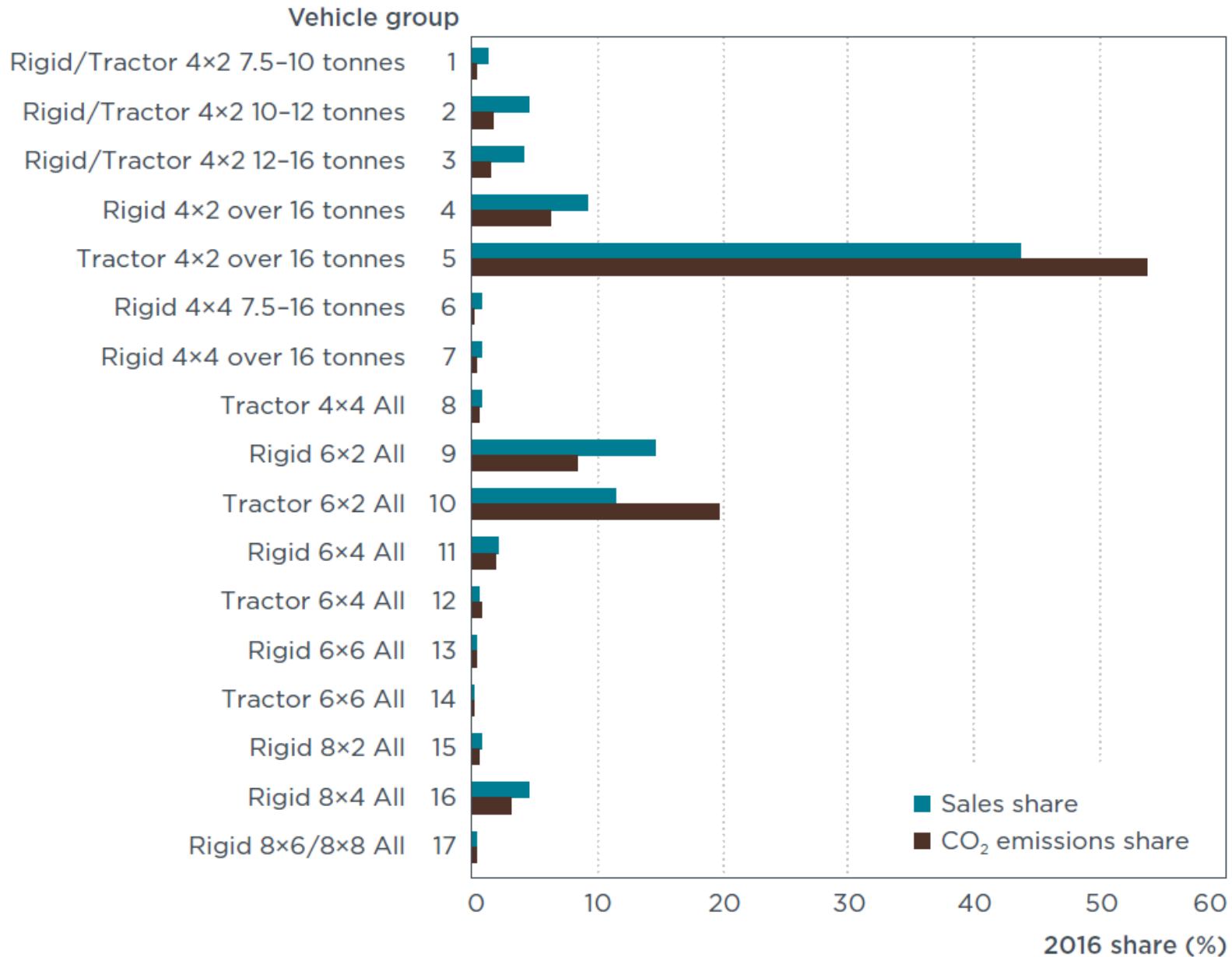
Figure 1. Distribution of new HDV registrations and CO_2 emissions in the European Union in 2016

Annex 3 - Source: techurbs.com, on a plan for an urban 3-axle heavy truck

Mercedes Working on an Urban e-Truck

👤 Hotcliks Media   📅 Monday, August 01, 2016   🏷 CARS

Mercedes-Benz Urban eTruck prototype is a fully electric, three-axle heavy truck meant for distribution and delivery within cities.

It has an estimated range of 124 miles, supposedly enough for most daily delivery routes (at least in Europe), and Mercedes says it could be ready for series production by "the beginning of the next decade." With an electrically powered rear axle and wheel-mounted electric motors drawing power from a 212-kWh lithium-ion battery pack, the eTruck weighs about 3700 pounds more than an equivalent internal-combustion truck, according to the company. But Mercedes says the eTruck's gross vehicle weight rating of 26 metric tons, or approximately 57,300 pounds, is roughly comparable to a diesel-powered truck. Rather than equip the eTruck