



Project sAFE

After-Market eCall for Large Goods Vehicles (LGV's)

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- **Findings from the sAFE study into LGV's**
- **Implications for aftermarket eCall**



sAFE Study

- i. Take account of market size, dynamics including price sensitivities may require a different solution.
- ii. Study analysing accidents and incidents involving LGV's and their impact. The key findings of this study will help inform the selection of the key parameters to formulate a suitable triggering algorithm for aftermarket eCall appropriate to the different sizes, loads and types of vehicle within this category.
- iii. Review of available sensors, both OEM and aftermarket which can or could contribute to the triggering data or provide context on load or conditions to the PSAP

Vehicle Category Variance



A SIMPLIFIED GUIDE TO LORRY TYPES AND WEIGHTS

Recommended Description	Identifier	UK Maximum Gross Weight (tonnes)	Shape
LIGHT GOODS VEHICLES	2 axles	3.5	no rear side windows
LORRIES (Vehicles over 7.5 tonnes gross require a Heavy Goods Vehicle Driver's Licence)	SMALLER 2-AXLE LORRIES	2 axles	Over 3.5 7.5
	BIGGER 2-AXLE LORRIES	2 axles	Over 7.5 18
	HEAVY GOODS	3 axles rigid	25 26
		3 axles artic.	30 32
	MULTI-AXLE	4 axles rigid	36 38
		4 axles artic.	30 36**
	VEHICLE AND DRAW-BAR TRAILER 4 AXLES	Vehicle and draw-bar trailer 4 axles	30 36**
		5 axles or more artic. (see note (a))	40
	AXLE	Vehicle and draw-bar trailer 5 axles (see note (a))	40**
		6 axles artic. (see note (b))	41*
	LORRIES	6 axles draw-bar (see note (b))	41* and **
		5 or 6 axles artic. (see notes (b) and (c))	44* and **
		6 axles draw-bar	44*,** and **
		6 axles artic. (see note (d) and (e))	44*
	6 axles draw-bar (see note (d) and (e))	44* and **	



Market Size, Dynamics and Price Sensitivities

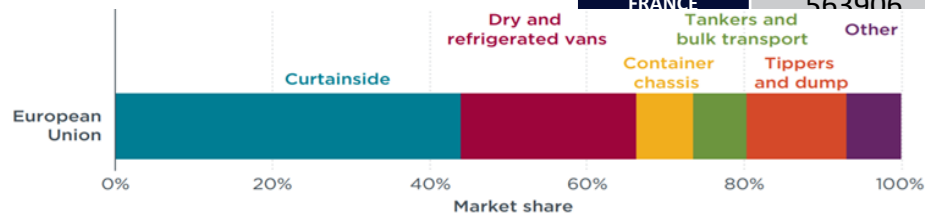


6.6m Commercial Vehicles in the EU

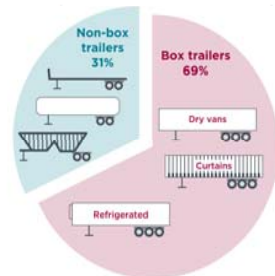
@2% of all vehicles

POLAND	1108975
GERMANY	946541
ITALY	904308
UK	605393
SPAIN	567000
FRANCE	563906

	LGV	Average age
ROMANIA	309167	15.6
HUNGARY	94996	12.6
SLOVAKIA	85241	12.7
LITHUANIA	65996	11.6
CROATIA	45720	14.9
ESTONIA	38277	18.2
SLOVENIA	35864	8.9
LATVIA	27710	12.4



@2 Million Trailers



Fleet Dynamics

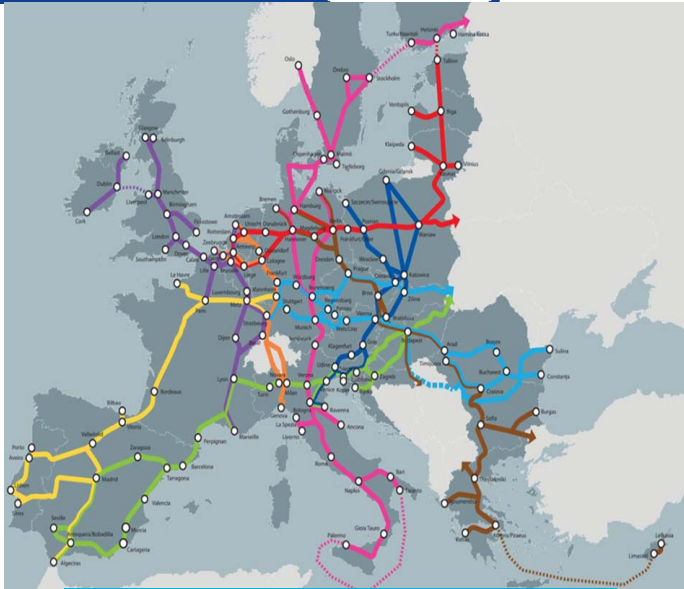


**Average fleet size: 1-5 vehicles.
Some single vehicle operators**

1.25m Freight enterprises across the EU.

**Low profit margins-
Reluctance to invest in new technology with older vehicles?**

**Opportunity for Aftermarket eCall!!
42% of all freight is carried by vehicles of 3-5 years of age**



37% of haulage journeys are international

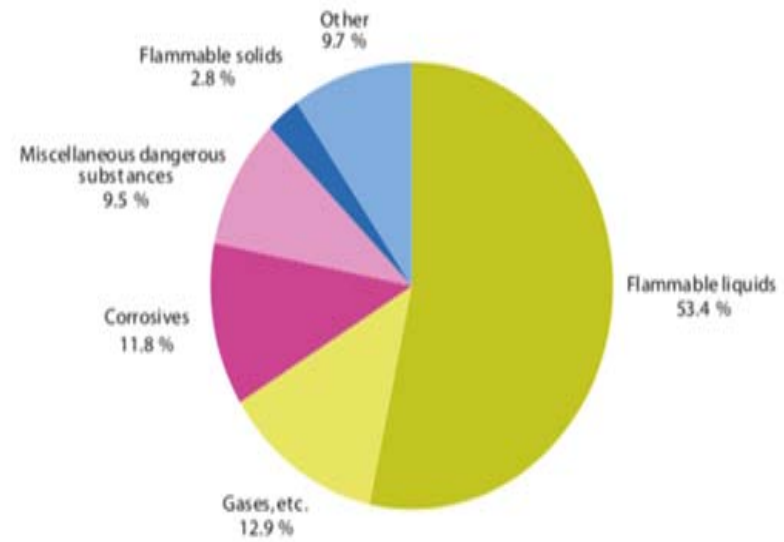


Dangerous Goods



Account for 4-7% of all goods carried

(% share in tonne-kilometres)



Source: Eurostat (online data code: road_go_ta_dg)



Triggering of an automatic eCall

Collisions

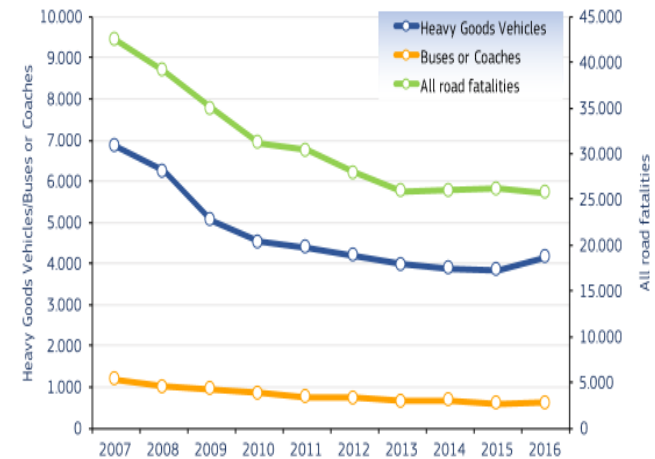


- Collisions

The number of persons killed in road collisions involving an LGV is 15.6% of the overall total.

HOWEVER

Of these, only @6% involved serious injury or death of the driver of the LGV



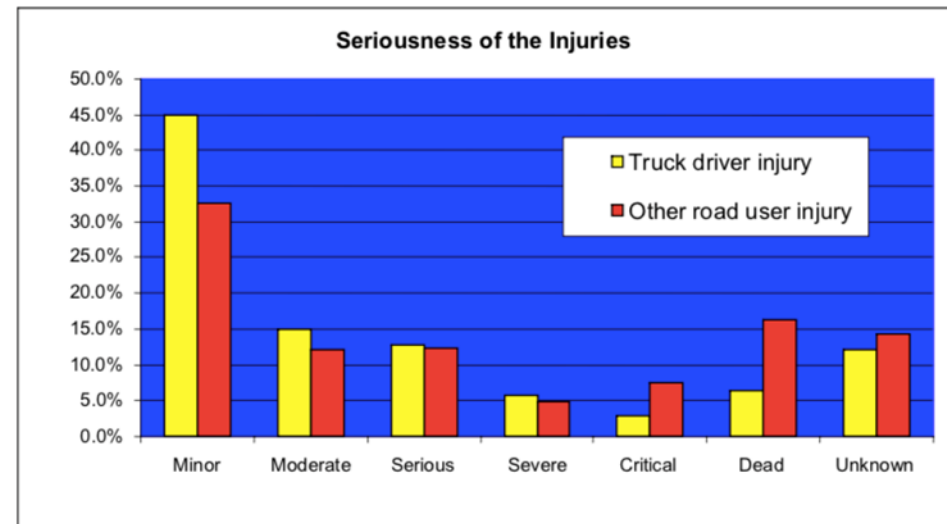
- 35-40% of incidents - the A1 scenario involve a single vehicle, where the truck drives off the road, often followed by roll over
- 20% of incidents - the A2 scenario is loss of control, often followed by rollover
- 5-10% of incidents - the A3 scenario is frontal impact with another truck. 25-35% are catastrophic

A1 35-40%	Scenario: Single truck accident where the truck drives off the road. Often - but not necessarily - followed by rollover or collision with an object. Typical cause: Driver inattention or fatigue, driver swerves to the side to avoid an obstacle.	
A2 20%	Scenario: Single truck accident due to roll or yaw instability on the road. Often followed by lane departure, driving off the road or rollover. Typical cause: Excessive speed, driver inattention or misjudgement, unstable vehicle combination, load displacement, slippery roads, tyre explosion.	
A3 5-10%	Scenario: Frontal collision with oncoming truck. Offset and impact angle varies, but main impact normally on driver's side. Typical cause: Driver inattention, curves with poor visibility, narrow or slippery roads.	
A4 15-20%	Scenario: Collision with another truck going in the same direction (driving into the rear of the truck in front). Offset and impact angle varies extensively, but main impact normally on passenger's side. Typical cause: Driver inattention, limited visibility, slippery roads or because the vehicle in front is not conspicuous enough.	
A5 ≤5%	Scenario: Frontal collision with an oncoming car. Offset and impact angle varies, but main impact normally front of both vehicles. Injuries to truck occupant normally occur in a secondary scenario, for example rollover or driving off the road. Typical cause: Most often car in wrong lane.	
A6 5%	Scenario: Truck collides with (drives into) object on the road, for example bridge or bridge pillars. Typical cause: Driver inattention or misjudgement of distance or height.	
Other ≤10%	Example of scenarios: Collision between trucks at intersection (one drives into the side of the other). Collision between truck and rail-bound vehicle at intersection (train or tram drives into truck side). Typical cause: Truck does not give right of way or cannot stop for example due to slippery road or misjudged stopping distance.	

The European Truck Collision Causation study-IRU



- In the 600 collisions examined, truck drivers suffered more minor and moderate injuries but significantly less severe or critical injuries.
- 20% involved a Rollover
- 64% of all crashes involved the LGV changing direction or going round a bend,



Graph: Injuries for different road users



Other Incidents



Criminality

- Theft from Vehicle
- Hijack
- Assaults

Other Incidents

- Vehicle fire (Own or another vehicle)
- Medical emergency (own or another vehicle)
- Other risk to life or property

Country	2019 Cargo Crime	+/- %
Germany	2905	+1945%
France	1542	+817%
UK	1199	-53.6%
Netherlands	680	+55.6%
Sweden	607	+1114%
Spain	388	+53.9%
Italy	159	+174.1%
Belgium	120	+118.1%
Czech	73	+421%
Romania	68	+165.3
Denmark	50	+1150%
Hungary	44	+450%
Poland	40	+344.4%

Source TAPA



Summary



- **Market average is made up of mainly small operators (1-5 vehicles)**
- **Small profit margins**
- **Other eCall value add benefits may incentivise purchase-Crime etc**

- **As found in I_HeERO Load information, particularly relating to Dangerous Goods is vital in determining appropriate response**

- **Variable types of vehicles and uses making automatic collision parameters very difficult to calculate**
- **No natural on-board sensors for aftermarket eCall to link to, without OEM support.**
 - No airbag sensors
- **Issues with accurate automatic collision detection**
 - Risk of death/serious injuries to LGV drivers relatively low
- **Rollover is an issue (20%-60% of cases)**



- **Aftermarket eCall for LGV's**
 - Automatic Rollover Detection included
 - No Automatic collision detection for aftermarket systems
 - Manual eCall functionality
 - Load information to form part of the MSD
- **Additional Elements**
 - Fuel type as part of MSD: Risk to Emergency Responders



Questions?

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