



The Impact of multi-brand platooning on other road users: a simulator study

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Focus on other road users



Impact on road, tunnels and bridges Infrastructure Impact on fuel consumption **Environment and** and life cycle impacts life cycle Implementation in real-**Development of multi-Economic & logistics Economic benefits and** life and multi-fleet brand platooning business case business modelling **logistical operation** technology **Traffic flow** Impact on traffic flow Traffic Impact other road users safety

Objectives



Evaluating the interaction between the platoon characteristics and car drivers

- Road users' emotional and attentional states
- Road users' driving behaviour



Experimental Design







Use cases:

- 3 or 7 trucks
- Truck Inter distance 0,8 sec and 1,5 sec
- Overtakings; egress and ingress on highway; low and high traffic

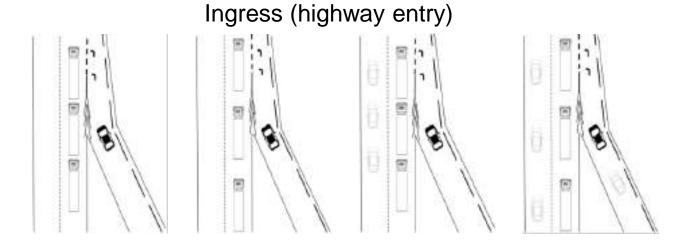
Experimental Design & Hypotheses



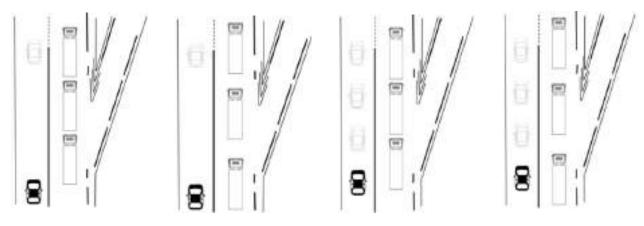
Hypotheses:

- Emotion and attention:
 - Higher negative impact of 7-truck platoon

- Road users' driving behaviour
 - No cut-in with 0,8 sec intervehicle distance



Egress (highway exit)



Experimental Design



Participants

- 51 persons involved (32 males)
- Between 20 and 49 yo (mean=27.63 yo, sd=8.62)
- French driving license for 3 years or more

Divided into 2 groups

(3 trucks platoon group)



7 trucks platoon group













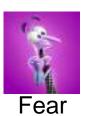


Measurement



Subjective:

- Emotional state:







Attentional level: Alertness



• Behavioural:

- Speed
- Position of the participant: ahead, between trucks or behind the platoon