

***Can haptic steering guidance enhance learning of steering task for articulated vehicles?***

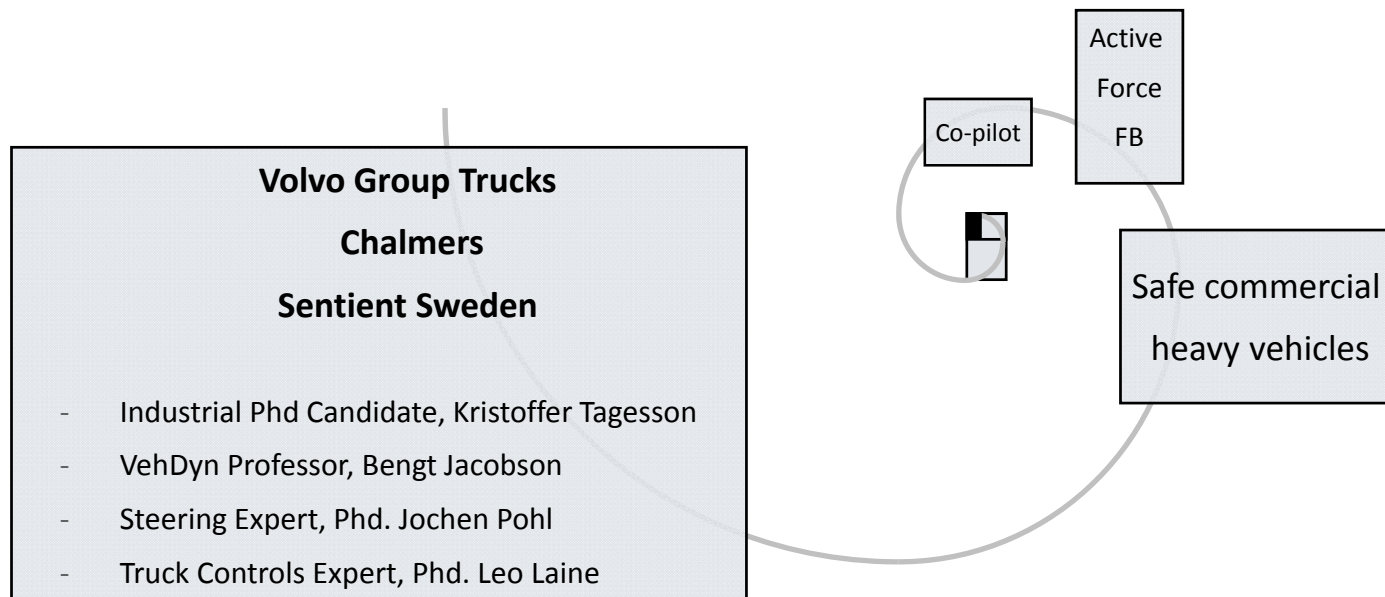


**Presenter: Bengt Jacobson**

**Researchers: Kristoffer Tagesson  
& David Cole**

# Project

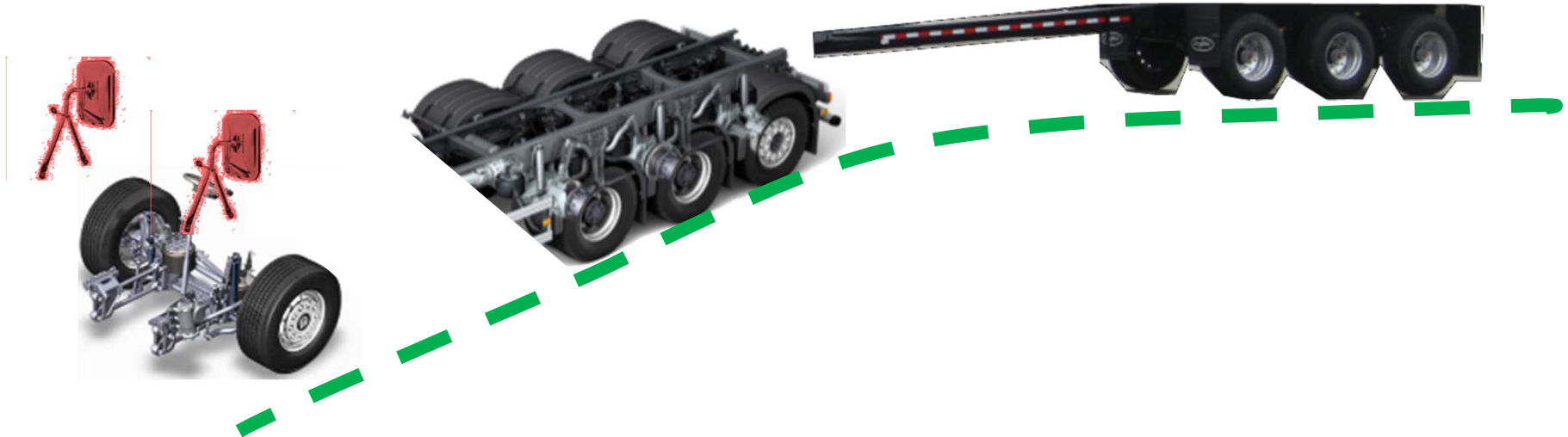
## Active Steering Force Feedback for Commercial Heavy Vehicles



*Normally steering feedback only comes from front axle!*

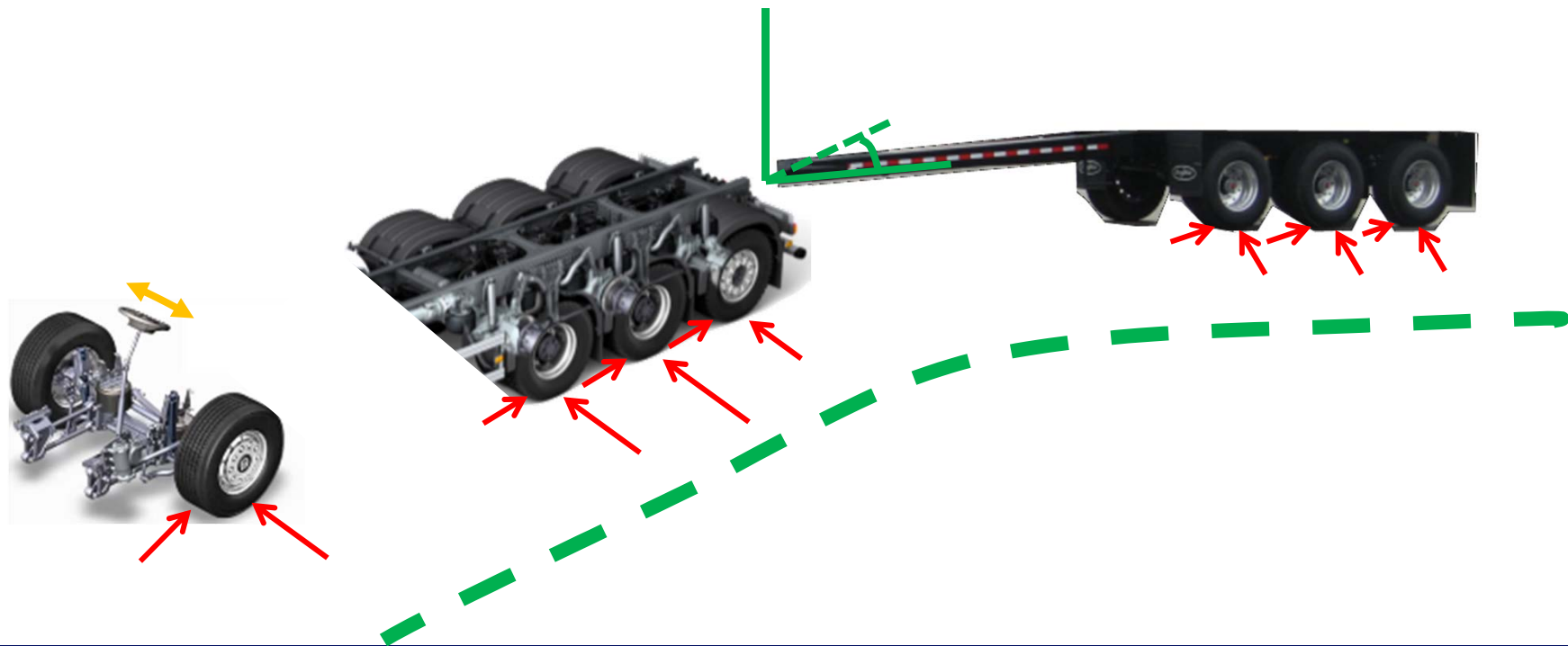


*And we use mirrors to track other axles!*



# *How about, extending steering feedback!*

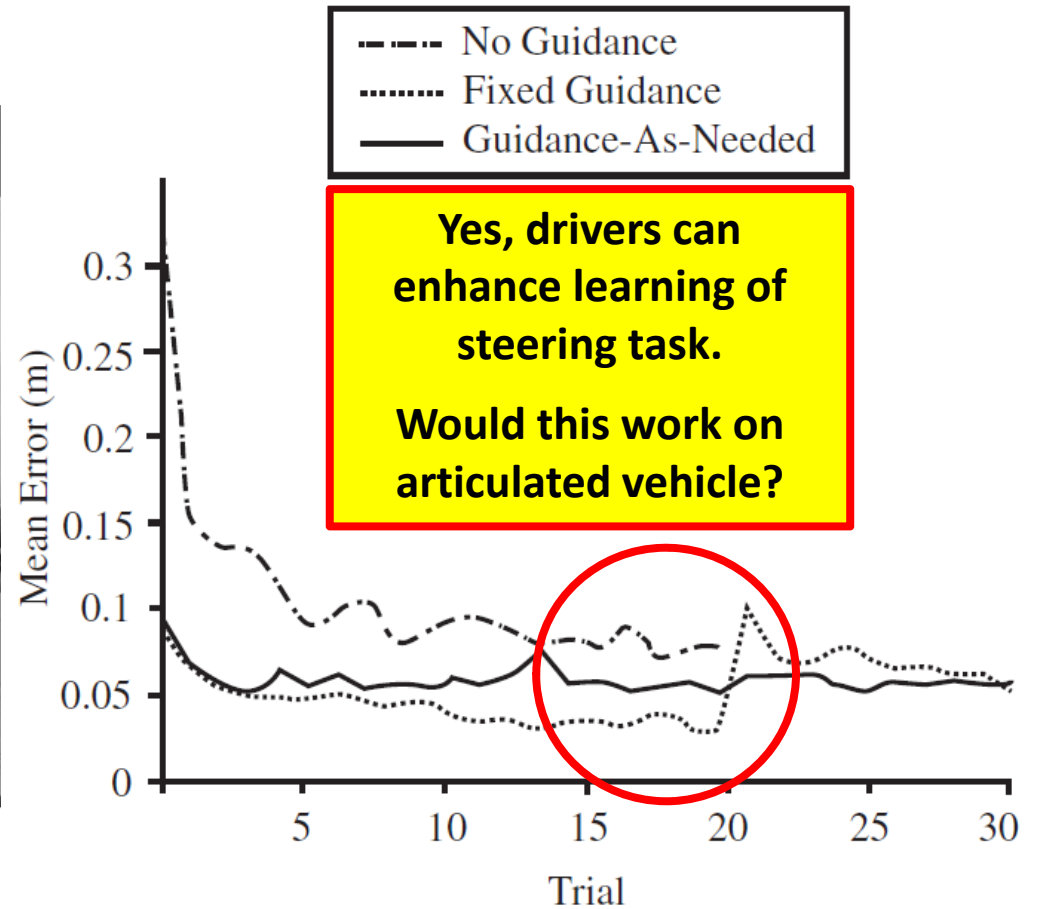
Could this enhance learning of steering task for articulated vehicles?



# Example of previous work



Crespo, Laura Marchal, and David J. Reinkensmeyer. "Haptic guidance can enhance motor learning of a steering task." *Journal of motor behavior* 40.6 (2008): 545-557



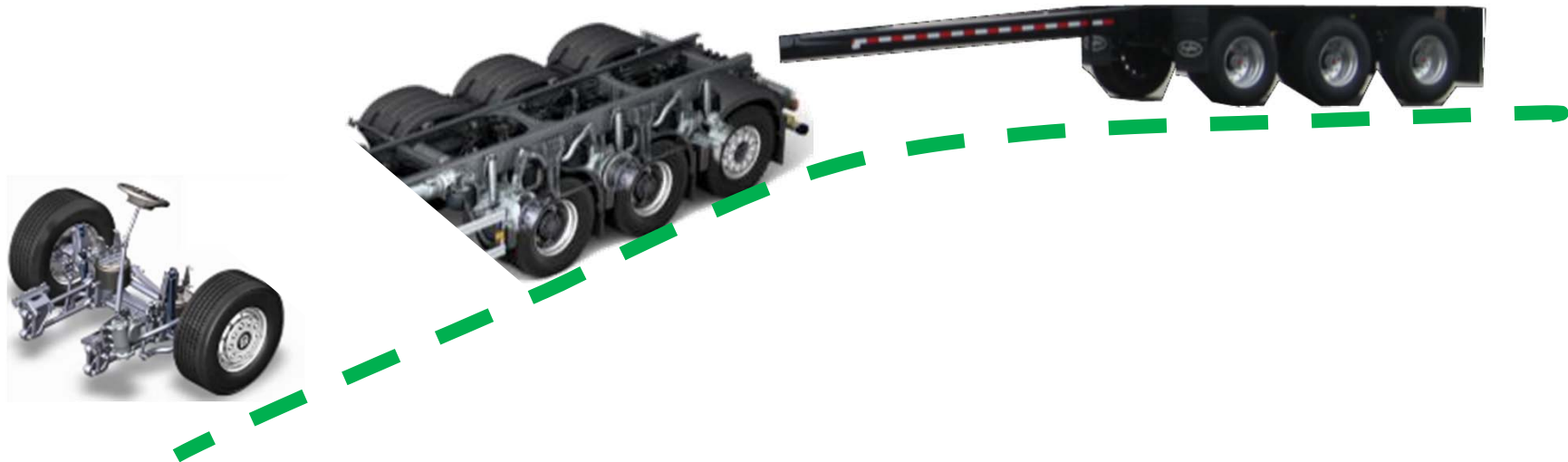
# Current Experiment Series, p1(2)

## Enhance Learning of Steering Task in Articulated Vehicle

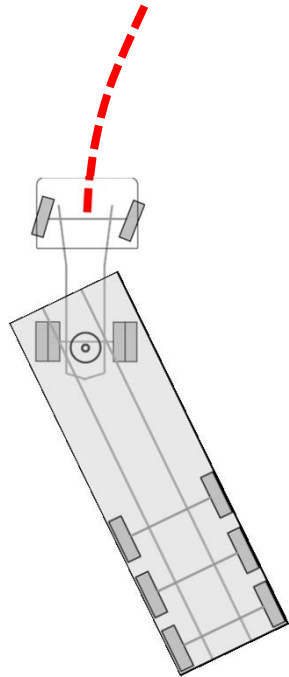
Simple rules are used  
when driving an  
articulated vehicle  
(Claimed by many)

Can we refine these  
rules by acting as a  
driving instructor?

to be continued...



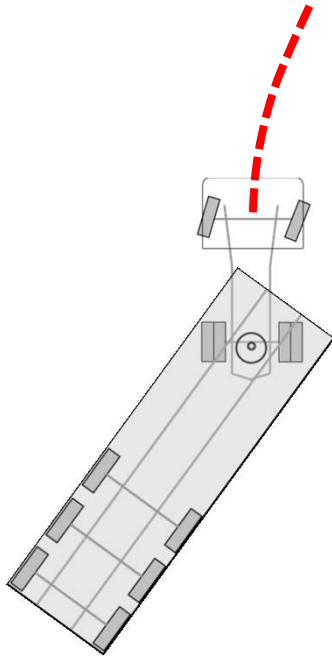
*We are also looking into*



**Jack-knife**

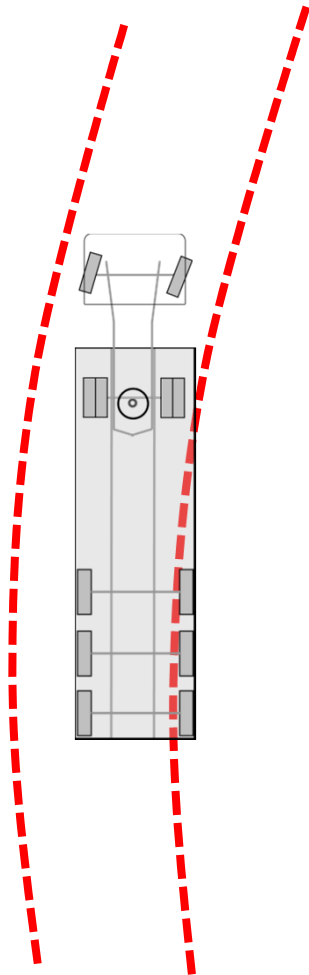


*We are also looking into*



**Swing-out**

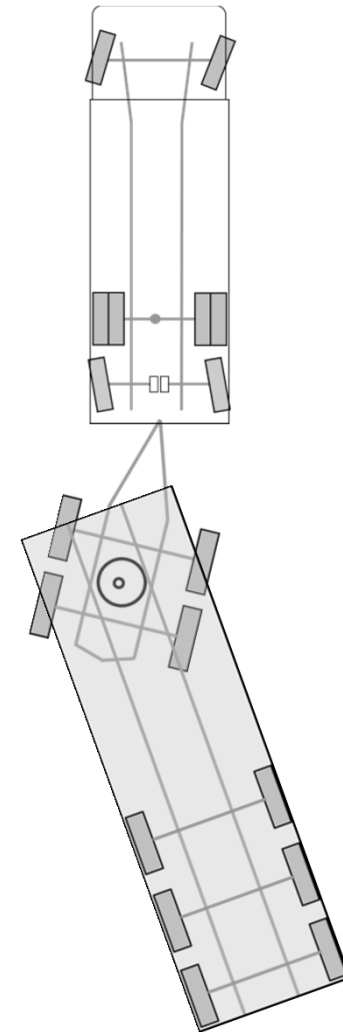
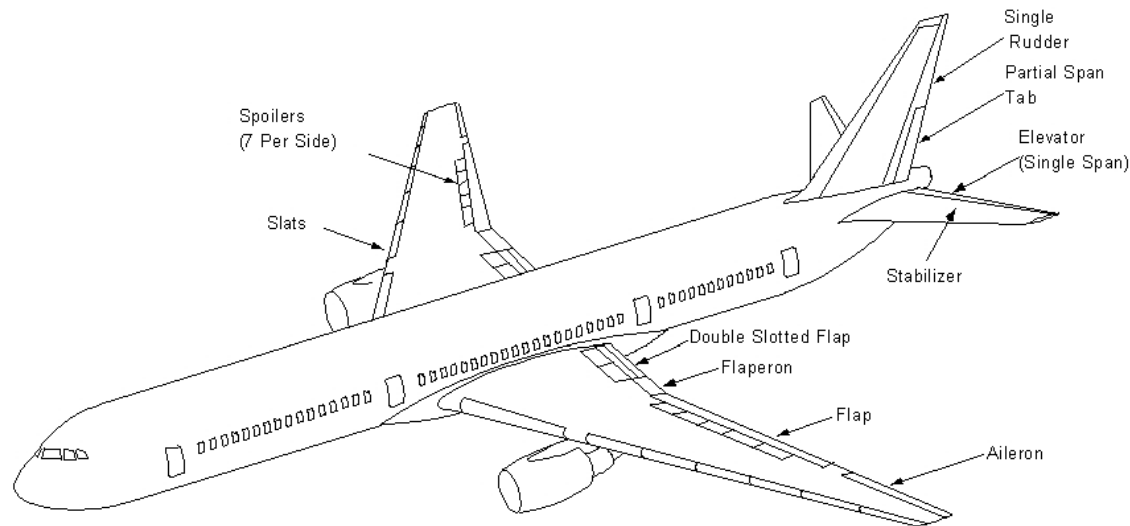
*We are also looking into*



**Swept area**

# Hypothesis

Use force feedback as **envelope protection** for commercial heavy vehicle combinations



**Boeing 777 design utilizes *envelope protection* with force feedback extensively**

## Ultimate Goal

*To meet the traffic safety goals for 2020 with safe commercial heavy vehicles, future active steering systems introduced in such vehicles must provide an intuitive and informative steering force feedback to the driver about the vehicle combination's stability envelope, blended with safe driving in traffic by guidance in lane, obstacle avoidance, and during automated emergency braking.*

