## I. INTRODUCTION

The driving behaviour of High Capacity Transport (HCT) vehicles is in many ways different to that of single unit trucks and needs to be researched in great detail to gain an understanding of the vehicle's dynamic properties, that is equally detailed as it is for other vehicle classes. This will lead to development of better safety and assistance systems and thus reduce threat potential, accidents and fatalities involving this emerging mode of transportation.

The research project in which this work is embedded aims to develop an active dolly, meaning that steering will be autonomously conducted by the dolly based on the driving situation at hand and various vehicle parameters (e.g. speed, steering wheel angle). This abstract control algorithm will be executed on a rapid-prototyping system which is linked to and controls the dolly. To supply this connection between the hardware and control-algorithm implemented in the modeling-environment Simulink is the main-contribution of this work.

The following points will be covered in this paper:

- outline of the development process of the experimental platform and presentation of the utilized hard- and software systems
- evaluation of existing hardware delays and implemented measures to eliminate them
- discussion of a standard driving maneuver of a combinationexecuted on the developed Hardware-in-the-Loop (HiL)-system
- a comparison between these HiL-maneuver and simulation results, which proofs the validity of the platform
- present an outlook over future works

The limitations of for this work are:

- only HiL-applications of the system are covered
- low-speed maneuvers are only to be considered
- all measurements in this work were undertaken with the system being suspended to eliminate friction