

Bladerunner 2017 - a tethered electric road/rail hybrid platform



The Technology: (1) The 'SCM' command steered pivotal bogie semitrailer (left) was designed, built and tested in the UK. This award winning concept was also the motivation behind the longer semitrailer (LST) study and ongoing road trials. It drives like it is on rails and, as such, forms the backbone to the Bladerunner concept. However, as is evident in the adjacent image, when any articulated combination turns a corner the driver loses sight down one side of the vehicle entirely

obscured by the headboard. This is in addition to the large blind spot zones around the vehicle due predominantly to the high 'cab-over' [engine] driving position. The fifthwheel, that interconnects the tractor and trailer, rotates with the tractor unit and so reduces the roll support given to the trailer in a turn. The coupling also isolates the driver from feedback to the motion of the load. Because the coupling is mounted at the rear of the tractor unit, overrun and braking forces make these vehicles susceptible to jackknifing. The now mandatory Electronic Braking Systems (EBS) can mitigate for yaw instabilities at the expense of some stopping distance, but because they apply the brakes once they detect a corner - braking in a turn - they do little to address the persistent and global problem of vehicle rollovers (left).



(2) The new plug-in safety coupling (shown passing the 50t pull-out test - right) moves the



articulation axis of the vehicle forward, reducing the moment arm that drives a jackknife instability and uses the imposed load to induce a roll-in moment. These fundamental improvements in both the yaw and roll stability of the vehicle and the improved handling dynamics are built into the steered SCM bogie / chassis combination that defines the platform for Bladerunner. **(3)** The overall transport efficiency of general freight is maximised by selecting the right sized 'boxes' and filling them. Too small a box and the network gets congested with less efficient smaller vehicles travelling the same routes. Too large and the vehicles travel part laden carrying excessive deadweight. Bladerunner can carry any sized loading unit but, as with any vehicle combination, will be most effective when carrying 54' (16.5m) or multiple 27' (8.25m) containers or swap-bodies which are optimised for general freight. Ideally Bladerunner will work in conjunction with passenger and freight pods linking 'PRT' feeder systems. The lightweight rail axle modules and the dynamic power transfer systems are the last elements yet to be incorporated.

