

Comment of Bruce Perens

The proposal so far, and especially the comments of NTSB chair Robert Sumwalt, place an undue priority upon safety during the *testing and evolution* of autonomous driving systems, *rather than upon the outcome*.

Human beings have always been the least reliable factor in the safety of vehicular systems, and shall always be so for as long as humans rather than machines are the primary driver or pilot. Many more lives will be saved by *replacing* human beings in these roles than could ever be lost during the testing of these systems under existing law and operations.

The few accidents cited for autonomous driving systems have not increased their probability of causing injury or death over those of their solely human-controlled equivalents. Indeed, the Tesla vehicles are well-known for their performance in accident avoidance when the human driver was unaware of the hazard or would not have reacted in time.

For that reason, I believe it is critical to continue the development of the Tesla vehicles *by their normal use by drivers in a human-supervised-autonomous mode* in which the driver can intervene when necessary. Tesla vehicles collect data from their normal use which is used to train neural networks and is input to the human developers. To the extent that other brands are capable of this same sort of development, they, as well, should be allowed to continue to operate as at present.

To that end, the main regulatory change at this time should be to require that the vehicles supervise the attention of the human driver

through the use of cameras and other sensors, and safely terminate autonomous operation unless the driver is attentive.

Respectfully Submitted

Bruce Perens