Claims

1. An apparatus comprising

an equipment for use on board a first ground transportation entity,

the equipment having

(a) a receiver for information generated by a sensor of the environment of the first ground transportation entity,

(b) a processor, and

(c) a memory storing instructions executable by the processor to

determine motion parameters of a third ground transportation entity, and

generate and send safety message information to a second ground transportation entities based on the information generated by the one or more sensors.

2. The apparatus of claim 1 in which the instructions are executable by the processor to generate a prediction for use in generating the safety message information.

3. The apparatus of claim 2 in which the prediction is generated by a predictive model.

4. The apparatus of claim 3 in which the predictive model is configured to predict a dangerous situation involving one or more of the first ground transportation entities, one or more of the second ground transportation entities, or one or more other ground transportation entities.

5. The apparatus of claim 4 in which the dangerous situation involves a crossing of a lane of a road by one or more of the second ground transportation entities.

6. The apparatus of claim 5 in which the one or more of the second ground transportation entities comprise one or more vehicles, and the dangerous situation comprises a skidding across the lane by the one or more vehicles.

7. The apparatus of claim 5 in which the one or more second ground transportation entities comprise one or more pedestrians or one or more other vulnerable road users crossing a road.

8. The apparatus of claim 7 in which one or more vulnerable road users are crossing the road at an intersection.

9. The apparatus of claim 7 in which the vulnerable road user is crossing the road other than at an intersection.

10. The apparatus of claim 4 in which the predicted dangerous situation comprises a predicted collision between the third ground transportation entity and the second ground transportation entity.

11. The apparatus of claim 1 in which the first ground transportation entity comprises a vehicle and the second ground transportation entity comprises a pedestrian or other vulnerable road user.

12. The apparatus of claim 10 in which the third ground transportation entity is following the first ground transportation entity and a view of the third ground transportation entity from the first ground transportation entity is occluded.

13. The apparatus of claim 10 in which the third ground transportation entity is in a lane adjacent a lane in which the first ground transportation entity is traveling.

14. The apparatus of claim 1 in which the second ground transportation entity has only an obstructed view of the third ground transportation entity.

15. The apparatus of claim 1 in which the second ground transportation entity comprises a pedestrian or other vulnerable road user.

16. The apparatus of claim 1 in which the safety message information sent by the processor comprises a basic safety message.

17. The apparatus of claim 1 in which the safety message information sent by the processor comprises a virtual basic safety message.

18. The apparatus of claim 1 in which the safety message information sent by the processor comprises a personal safety message.

19. The apparatus of claim 1 in which the safety message information sent by the processor comprises a virtual personal safety message.

20. The apparatus of claim 1 in which the safety message information sent by the processor comprises a virtual basic safety message sent on behalf of the third ground transportation entity.

21. The apparatus of claim 20 in which the third ground transportation entity comprises an unconnected ground transportation entity.

22. The apparatus of claim 1 in which the safety message information sent by the processor comprises a virtual personal safety message sent on behalf of the third ground transportation entity.

23. The apparatus of claim 1 in which the equipment has a receiver for information sent wirelessly from a source external to the first ground transportation entity.

24. The apparatus of claim 1 including the first ground transportation entity.

25. The apparatus of claim 1 in which the safety message information comprises a virtual intersection collision avoidance message (VICA).

26. The apparatus of claim 1 in which the safety message information comprises an intersection collision avoidance message (ICA).

27. The apparatus of claim 1 in which the safety message information comprises a virtual combined safety message (VCSM).

28. The apparatus of claim 1 in which the safety message information comprises a combined safety message (CSM).

29. A method comprising

receiving information generated by a sensor, mounted on a first ground transportation entity, of the environment of the first ground transportation entity,

determining motion parameters of a third ground transportation entity, and

generating and sending safety message information to a second ground transportation entity based on the information generated by the sensor.

30. The method of claim 29 comprising generating a prediction for use in generating the safety message information.

31. The method of claim 30 in which the prediction is generated by a predictive model.

32. The method of claim 31 in which the predictive model is configured to predict a dangerous situation involving the first ground transportation entity, the second ground transportation entity, or another ground transportation entity.

33. The method of claim 32 in which the dangerous situation involves a crossing of a lane of a road by the second ground transportation entity.

34. The method of claim 33 in which the second ground transportation entity comprises a vehicle and the dangerous situation comprises a skidding across the lane by the vehicle.

35. The method of claim 33 in which the second ground transportation entity comprises a pedestrian or other vulnerable road user crossing a road.

36. The method of claim 35 in which the vulnerable road user is crossing the road at an intersection.

37. The method of claim 35 in which the vulnerable road user is crossing the road other than at an intersection.

38. The method of claim 32 in which the predicted dangerous situation comprises a predicted collision between the third ground transportation entity and the second ground transportation entity.

39. The method of claim 29 in which the first ground transportation entity comprises a vehicle and the second ground transportation entity comprises a pedestrian or other vulnerable road user.

40. The method of claim 38 in which the third ground transportation entity is following the first ground transportation entity and a view of the third ground transportation entity from the first ground transportation entity is occluded.

41. The method of claim 38 in which the third ground transportation entity is in a lane adjacent a lane in which the first ground transportation entity is traveling.

42. The method of claim 38 in which the second ground transportation entity has only an obstructed view of the third ground transportation.

43. The method of claim 29 in which the second ground transportation entity comprises a pedestrian or other vulnerable road user.

44. The method of claim 29 in which the safety message information comprises a basic safety message.

45. The method of claim 29 in which the safety message information comprises a virtual basic safety message.

46. The method of claim 29 in which the safety message information comprises a personal safety message.

47. The method of claim 29 in which the safety message information comprises a virtual personal safety message.

48. The method of claim 29 in which the safety message information comprises a virtual basic safety message sent on behalf of the third ground transportation entity.

49. The method of claim 29 in which the third ground transportation entity comprises an unconnected ground transportation entity.

50. The method of claim 29 in which the safety message information comprises a virtual personal safety message sent on behalf of the third ground transportation entity.

51. The method of claim 29 comprising receiving information sent wirelessly from a source external to the first ground transportation entity.

52. The method of claim 29 in which the safety message information comprises a virtual intersection collision avoidance message (VICA).

53. The method of claim 29 in which the safety message information comprises an intersection collision avoidance message (ICA).

54. The method of claim 29 in which the safety message information comprises a virtual combined safety message (VCSM).

55. The method of claim 29 in which the safety message information comprises a combined safety message (CSM).