CLAIMS

1. A vehicle, comprising:

a first vehicle section comprising a driver compartment, and a primary wireless network node comprising a first type of wireless communications interface and a second type of wireless communications interface, the primary wireless network node associated with a first set of attributes characterizing capabilities of the first vehicle section;

a second vehicle section comprising a cargo compartment, and a secondary wireless network node comprising the second type of wireless communications interface and a third type of wireless communications interface;

wherein the primary wireless network node establishes, with the first type of wireless communications interface, a first wireless communications connection between the primary wireless network node and a server affiliated with a network service, and the primary wireless network node establishes, with the second type of wireless communications interface, a second wireless communications connection between the primary wireless network node and the secondary wireless network node;

wherein the secondary wireless network node establishes, with the third type of communications interface, respective wireless communications connections between the secondary wireless network node and peripheral wireless network nodes in the cargo compartment that are affiliated with the network service, and

wherein the primary wireless network node and the secondary network node are programmed to determine compatibility between the capabilities of the first vehicle section and the requirements of the second vehicle section based on the first and second sets of attributes.

2. The vehicle of claim 1, wherein the first type of wireless communications interface is characterized by a first range and a first communications protocol, the second type of wireless communications interface is characterized by a second range and a second communications protocol, and the third type of wireless communications interface is characterized by a third range and a third communications protocol; wherein the first range is greater than the second range, and the second range is greater than the third range.

3. The vehicle of claim 1, wherein the primary wireless network node establishes the first wireless communications connection by presenting a specific authentication identifier and credentials.

4. The vehicle of claim 1, wherein the first vehicle section and the second vehicle section are separated by a physical barrier, and the primary wireless network node and the secondary wireless network node establish the second wireless communications connection through the physical barrier.

5. The vehicle of claim 1, further comprising a wired communications connection between the primary wireless network node in the first vehicle section and the secondary wireless network node in the second vehicle section.

6. The vehicle of claim 5, wherein the wired communications connection is established between the primary wireless network node and the secondary wireless network node over a controller area network (CAN) bus system.

7. The vehicle of claim 1, further comprising an electronic logging device (ELD) (20) programmed to collect, analyze, and present vehicle and driver performance data to a second network service (30).

8. The vehicle of claim 7, wherein the ELD (20) and the primary wireless network node are integrated into a common device structure.

9. The vehicle of claim 1, wherein the peripheral wireless network nodes (40) are associated with respective parcels.

10. The vehicle of claim 1, wherein the capabilities and the requirements are expressed according to a structured description language.

11. The vehicle of claim 1, wherein the first vehicle section comprises a tractor unit, and the second vehicle section comprises a semi-trailer.

12. A hierarchical wireless communications system for a vehicle, comprising:

a primary wireless network node in a first vehicle section comprising a driver compartment, wherein the primary wireless network node comprises a first type of wireless communications interface and a second type of communications interface;

a secondary wireless network node in a second vehicle section comprising a cargo compartment, wherein the secondary wireless network node comprises the second type of communications interface and a third type of communications interface; and

wherein the primary wireless network node establishes, with the first type of wireless communications interface, a first wireless communications connection between the primary wireless network node and a server affiliated with a network service, and the primary wireless network node establishes, with the second type of wireless communications interface, a second wireless communications connection between the primary wireless network node and the secondary wireless network node;

wherein the secondary wireless network node establishes, with the third type of communications interface, respective wireless communications connections between the secondary wireless network node and peripheral wireless network nodes in the cargo compartment that are affiliated with the network service; and

wherein the primary wireless network node is associated with a first set of attributes characterizing capabilities of the first vehicle section, and the secondary wireless network node is associated with a second set of attributes characterizing requirements of the second vehicle section; and the primary wireless network node and the secondary network node are programmed to determine compatibility between the capabilities of the first vehicle section and the requirements of the second vehicle section based on the first and second sets of attributes.

13. The hierarchical wireless communications system for a vehicle of claim 13, wherein the peripheral wireless network nodes (40) are associated with respective parcels.

14. The hierarchical wireless communications system for a vehicle of claim 13, wherein the parcels are on a pallet comprising a tertiary wireless network node; wherein the secondary wireless network node is programmed to establish wireless communications with the tertiary network node, and the tertiary network node is programmed to establish wireless communications with the peripheral nodes.

15. A method of communicating between primary and secondary electronic logging devices in first and second sections of a vehicle, comprising:

transmitting, by the secondary electronic logging device in a second section of the vehicle, an advertisement packet comprising authentication identifier and credentials to the primary electronic logging device;

establishing, by the primary electronic logging device in a first section of the vehicle, a handshake with the secondary electronic logging device on an advertisement channel responsive to receipt of the authentication identifier and credentials;

handing off, by the primary electronic logging device, communication with the secondary electronic logging device to a data channel over which the primary electronic logging device obtains a product identification number and a type identification number of the secondary electronic logging device;

sending, by the primary electronic logging device, a communication notification to a network service;

broadcasting, by the secondary electronic logging device, one or more parameters, requirements, and itinerary of the second section of the vehicle to the first section of the vehicle;

broadcasting, by the primary electronic logging device, one or more capabilities of the primary electronic logging device; and

evaluating, by the primary electronic logging device, values of parameters and requirements received from the secondary electronic device.

16. The hierarchical wireless communications system for a vehicle of claim 12, further comprising an electronic logging device (ELD) programmed to collect, analyze, and present vehicle and driver performance data to a second network service, the ELD and the primary wireless network node integrated into a common device structure.

17. The method of claim 15, further comprising:

determining, by the primary electronic logging device, that the first vehicle section and the second vehicle section are

compatible based on the evaluation by the primary electronic logging device; and

responsive to determining the first section of the vehicle and the second section of the vehicle are

compatible, matching the first vehicle section and the second vehicle section.

18. The method of claim 15, further comprising

determining, by the primary electronic logging device, that the first vehicle section and the second vehicle section are incompatible based on the evaluation by the primary electronic logging device;

responsive to the primary electronic logging device determining that the first vehicle section and the second vehicle section are incompatible, determining, by the secondary electronic logging device that the incompatibility is locally resolvable;

responsive to the secondary electronic logging device determining that the incompatibility is locally resolvable, matching the first vehicle section and the second vehicle section.

19. The method of claim 15, further comprising:

determining, by the primary electronic logging device, that the first vehicle section and the second vehicle section are incompatible based on the evaluation by the primary electronic logging device;

responsive to the primary electronic logging device determining that the first vehicle section and the second vehicle section are incompatible, determining, by the secondary electronic logging device that the incompatibility is not locally resolvable;

responsive to the secondary electronic logging device determining that the incompatibility is not locally resolvable, reporting, by the primary electronic logging device, the incompatibility to the network service.

20. The method of claim 19, further comprising:

responsive to receiving the report of the incompatibility from the primary electronic logging device, assigning, by the network service, another second vehicle section to match with the first vehicle section, the other second vehicle section having a higher compatibility with the first vehicle section than the second vehicle section.

21. The method of claim 15, wherein the first vehicle sections are truck tractor units and the second vehicle sections are trailers.