What is claimed is:

1. A method for determining usage of a road vehicle, the method comprising:

acquiring a vibration signal from a sensor of a device traveling with the vehicle;

processing the vibration signal in the device to determine a signal characteristic of the vibration signal,

the signal characteristic including a frequency-related characteristic of the vibration signal,

the signal characteristic depending on at least one use characteristic of the vehicle, the use characteristics including a speed of the vehicle;

using the determined signal characteristic to determine a use characteristic of the vehicle over a plurality of time periods and to identify time periods during which the vehicle is in a first mode, the first mode being defined according to a speed of the vehicle;

accumulating usage in a data storage in the device, including accumulating a first usage for the vehicle during the identified time periods in which the vehicle is in the first mode of use; and

transmitting the accumulated usage from the device.

2. The method of claim 1 wherein the first mode of use is a non-stationary mode.

3. The method of claim 1 wherein accumulating the first usage includes accumulating at least one of a duration and a distance of travel on a first road type.

4. The method of claim 3 wherein accumulating the first usage includes accumulating a distance of travel on the first road type according to a duration of the identified time periods and an average travel speed on the first road type.

5. The method of claim 1 comprising:

using the determined signal characteristic to identify time periods during which the vehicle is in each mode of use of a plurality of modes of use including the first mode of use; and

accumulating usage of the vehicle in each mode of the plurality of modes according to the identified time periods.

6. The method of claim 5 wherein the plurality of modes of use comprises travel on a plurality of road types, each mode of use corresponding to a different road type.

7. The method of claim 6 wherein the plurality of road types includes at least one or a highway road type and an urban road type.

8. The method of claim 1 wherein the sensor traveling with the vehicle comprises an accelerometer.

9. The method of claim 8 wherein the sensor traveling with the vehicle comprises an accelerometer affixed to the vehicle.

10. The method of claim 8 wherein the sensor traveling with the vehicle comprises an accelerometer of a personal electronic device traveling with but not affixed to the vehicle.

11. The method of claim 8 wherein the sensor traveling with the vehicle comprises an accelerometer and the sensor signal comprises a multidimensional sensor signal, each dimension corresponding to a different direction relative to the vehicle.

12. The method of claim 1 wherein the sensor traveling with the vehicle comprises a microphone.

13. The method of claim 1 wherein the sensor signal comprises a time series.

14. The method of claim 1 wherein the signal characteristic comprises a spectral characteristic.

15. The method of claim 14 wherein the spectral characteristic characterizes frequencies of

one or more energy peaks.

16. The method of claim 15 wherein the spectral characteristic characterizes a vibration frequency of a component of the vehicle.

17. The method of claim 14 wherein the spectral characteristic characterizes an energy distribution over frequency.

18. The method of claim 1 wherein the signal characteristic comprises a nonlinear or linear characteristic.

19. The method of claim 1 wherein the signal characteristic comprises a timing characteristic.

20. The method of claim 19 wherein the timing characteristic comprises a periodicity time characteristic.

21. The method of claim 19 wherein the timing characteristic comprises an inter-event time characteristic.

22. The method of claim 1 further comprising determining and storing the data associating speed of the vehicle with the one or more characteristics, the determining comprising:

acquiring a second sensor signal from a sensor traveling with the vehicle and acquiring a vehicle speed signal;

processing the second sensor signal to estimate the signal characteristic of the speed related component of the acquired sensor signal; and

determining the data associating speed of the vehicle with the at least one characteristic to represent an association of the acquired vehicle speed and the estimated at least one characteristic.

23. The method of claim 1 further comprising repeating use of estimates of the characteristic over time to estimate speed over time, and combining the estimate of speed over time to estimate

a distance traveled by the vehicle.

24. The method of claim 1 further comprising correcting a drift in an output of an inertial sensor according to the accumulated usage.

25. The method of claim 24 wherein the sensor traveling with the vehicle is the inertial sensor.

26. Software stored on a non-transitory machine readable medium, the software comprising instructions for causing one or more processors to:

acquire a vibration signal from a sensor of a device traveling with the vehicle;

process the vibration signal in the device to determine a characteristic of the signal related to a use of the vehicle, the signal characteristic including a frequency-related characteristic of the vibration signal and depending on a speed of the vehicle;

use the determined characteristic to identify time periods during which the vehicle is in a first mode of use, the first mode being defined according to a speed of the vehicle;

accumulate usage in a data storage in the device, including accumulating a first usage for the vehicle during the identified time periods in which the vehicle is in the first mode of use; and

transmit the accumulated usage from the device.

27. A device for affixing to a vehicle, the device comprising:

a vibration sensor for providing a vibration signal;

a signal processor configured to process the vibration signal in the device to determine a characteristic of use of the vehicle, including determining a frequency-related characteristic of the vibration signal that depends on a speed of the vehicle;

a usage mode detector configured to process the determined characteristic and provide an indicator of whether the vehicle is in a first mode of use, the first mode of use being defined according to a speed of the vehicle;

a data storage for accumulating a usage for the vehicle according to time periods determined from the provided indicator; and

a transmitter for transmitting the accumulated usage from the device.