What is claimed is:

1. A method for calculating a position of an object relative to another object, the method comprising:

at a first object including a controller, a wireless transceiver, and a first plurality of inertial measurement units (IMUs) each mounted in one or more positions and orientations relative to other of the first plurality of IMUs, wherein the first object is configured to:

receive a first object initial absolute position for the first plurality of IMUs or the controller;

sense, using the first plurality of IMUs, motion of the first object and generate sensed motion data of the first object;

generate, using the controller, a motion signal representative of the motion of the first object, wherein the motion signal is generated by calculating a rectified data output based on sensed motion data from each of the first plurality of IMUs, a predetermined position of each of the first plurality of IMUs and a predetermined orientation of each of the first plurality of IMUs;

calculate, using the controller, a first object current absolute position using the motion signal generated by the controller and the first object initial absolute position;

receive, using the wireless transceiver, referential data from a second object, the referential data including a second object current absolute position calculated using a second plurality of IMUs associated with the second object; and

calculate a relative position of the first object relative to the second object using the first object current absolute position and the second object current absolute position, wherein the relative position includes at least one of: (i) a distance between the first object and the second object and (ii) an orientation of the first object relative to the second object.

2. The method of claim 1, wherein the referential data includes a third object current absolute position of a third object calculated using a third plurality of IMUs associated with the third object, wherein the first object is configured to:

calculate a relative position of the first object relative to the third object using the first object current absolute position and the third object current absolute position, wherein the

relative position includes at least one of: (i) a distance between the first object and the third object and (ii) an orientation of the first object relative to the third object.

3. The method of any of claims 1-2,
wherein the first object is configured to:

transmit, using the wireless transceiver at the first object, the first object current absolute position of the first object to the second object;
wherein the second object is configured to:

receive, using a wireless transceiver at the second object, the first object current absolute position of the first object; and

calculate, using a controller at the second object, a relative position of the second object relative to the first object using the first object current absolute position and the second object current absolute position, wherein the relative position includes at least one of: (i) a distance between the second object and the first object and (ii) an orientation of the second object to the first object.

4. The method of any of claims 1-3, wherein the first plurality of IMUs generates the motion signal using at least one of: shape correction, static calibration, motion decomposition, dynamic calibration, motion synthesis, and edge condition smoothing.

5. The method of any of claims 1-4, wherein the first plurality of IMUs includes an accelerometer or a gyroscope.

6. The method of any of claims 1-5, wherein the first object current absolute position and the second object current absolute position are calculated without an external reference signal.

7. The method of any of claims 1-6, wherein the first object is a first car and the second object is a second car, wherein the first object is configured to:

after calculating a relative position of the first car relative to the second car, determine whether the relative position of the first car to the second car meets emergency criteria; and

in response to determining that the relative position of the first car to the second car meets emergency criteria, cause the first car to perform an evasive maneuver, wherein the evasive maneuver includes braking the first car or turning the first car.

8. The method of any of claims 1-7, wherein the first object is configured to:
display, at a user interface associated with the first object, a position of the first object on a graphical representation of a map using the relative position of the first object relative to the second object.

9. The method of any of claims 1-6, wherein the first object is a home appliance and the second object is a car, wherein the home appliance is configured to:

after calculating a relative position of the car relative to the home appliance, determine whether the relative position of the car to the home appliance meets operational state change criteria; and

in response to determining that the relative position of the car to the home appliance meets operational state change criteria, cause the home appliance to change from an off state to an on state.

10. A system for calculating a position of a first object relative to a second, the system comprising:

a first object including a controller, a wireless transceiver, and a first plurality of inertial measurement units (IMUs), wherein the first object is configured to perform the steps of any of claims 1-9.

11. A non-transitory computer readable storage medium storing one or more programs, the one or more programs comprising instructions, which when executed by a first object including a controller, a wireless transceiver, and a first plurality of inertial measurement units (IMUs), cause the first object to perform the steps of any of claims 1-9.