CLAIMS

1. A multiple degrees of freedom motion base assembly, the degrees of freedom comprising pitch and roll, the motion base assembly comprising:

a. a lower reaction plate defining a first horizontal plane, the lower reaction plate comprising:

i. a first outer boundary; and

ii. a center;

b. an upper reaction plate spaced apart from the lower reaction plate, the upper reaction plate defining a second horizontal plane and comprising:

i. a second outer boundary;

ii. a center; and

iii. a longitudinal axis defined between each of two opposing ends of the second horizontal plane; and

c. a pivotable coupling, comprising:

i. an upper section coupled to the upper reaction plate proximate the upper reaction plate center, the upper section configured to allow substantially similar displacement of the upper reaction plate about the upper reaction plate center at either end of the two ends of the second horizontal plane; and

ii. a lower section pivotably connected to the upper section and coupled to the lower reaction plate proximate the lower reaction plate center;

d. two linear actuator assemblies spaced apart from each other on opposite sides of the pivotable coupling with respect to the upper reaction plate longitudinal axis and from the pivotable coupling, each linear actuator assembly comprising:

i. an actuator coupling connected to the upper reaction plate intermediate the second outer boundary and the pivotable coupling;

ii. a connector connected to the lower reaction plate intermediate the first outer boundary and the pivotable coupling; and

iii. an electric linear actuator constrained to be extendable and retractable along a longitudinal axis of the electric linear actuator, the electric linear actuator comprising:

1. a selectively, forcibly extendable and retractable shaft defining the longitudinal axis of the electric linear actuator;

2. an electric actuator operatively coupled to the selectively, forcibly extendable and retractable shaft;

3. an upper portion coupled to the actuator coupling; and

4. a lower portion connected to the clevis assembly; and

e. an electrical power supply operatively in communication with the two electric linear actuators as a sole source of operating energy for the two electric linear actuators.

2. The multiple degrees of freedom motion assembly of claim 1, wherein the upper portion of at least one linear electric actuator extends at least partially through the upper reaction plate.

3. The multiple degrees of freedom motion assembly of claim 1, wherein the pivotable coupling comprises a fixed length.

4. The multiple degrees of freedom motion assembly of claim 1, wherein the electrical power supply comprises a rechargeable battery operatively in communication with the two electric linear actuator assemblies as a sole source of operating energy for the two electric linear actuators.

5. The multiple degrees of freedom motion assembly of claim 1, wherein the actuator coupling comprises a gimbal.

6. The multiple degrees of freedom motion assembly of claim 1, wherein the connector comprises a clevis assembly.

7. A multiple degrees of freedom motion assembly, comprising:

a. a lower reaction plate, comprising:

i. a first outer boundary; and

ii. a center;

b. an upper reaction plate spaced apart from the lower reaction plate, the upper reaction plate defining a horizontal plane and comprising:

i. a second outer boundary;

ii. a center; and

iii. a longitudinal axis defined between each of two opposing ends of the horizontal plane;

c. a pivotable coupling, comprising:

i. an upper section coupled to the upper reaction plate proximate the upper reaction plate center, the upper section configured to allow substantially similar displacement of the upper reaction plate about the upper reaction plate center at either end of the two ends of the second horizontal plane; and

ii. a lower section pivotably connected to the upper section and coupled to the lower reaction plate proximate the lower reaction plate center;

d. two linear actuator assemblies spaced apart from each other on opposite sides of the pivotable coupling with respect to the horizontal plane along the upper reaction plate longitudinal axis and from the pivotable coupling, each linear actuator assembly comprising:

i. an actuator coupling connected to the upper reaction plate intermediate the second outer boundary and the pivotable coupling;

ii. a connector connected to the lower reaction plate intermediate the first outer boundary and the pivotable coupling; and

iii. a linear actuator comprising:

1. an upper portion coupled to the actuator coupling extending at least partially through the upper reaction plate;

2. a lower portion connected to the clevis assembly; and

3. a transport assembly, comprising a chassis connected to the lower reaction plate.

8. The multiple degrees of freedom motion assembly of claim 7, wherein the linear actuator comprises an electric linear actuator, a screw actuator, or a hydraulic actuator.

9. A multiple degrees of freedom motion assembly of claim 7, wherein the connector comprises a clevis assembly.

10. A vehicle, comprising:

a. a chassis;

b. a first actively steerable propulsion wheel coupled to the chassis, the first actively steerable propulsion wheel rotatable in a first predetermined direction at a first predetermined speed

along a preprogrammed route without the use of a mechanical track or a wire stretched along the preprogrammed route;

c. a second actively steerable propulsion wheel coupled to the chassis, the second actively steerable propulsion wheel rotatable in a second predetermined direction at a second predetermined speed along the preprogrammed route without the use of a mechanical track or a wire stretched along the preprogrammed route; and

d. a multiple degree of freedom motion base assembly, comprising:

i. a lower reaction plate coupled to the chassis, the lower reaction plate defining a first horizontal plane, the lower reaction plate comprising:

1. a first outer boundary; and

2. a center;

ii. an upper reaction plate spaced apart from the lower reaction plate and connected to the chassis, the upper reaction plate defining a second horizontal plane and comprising:

1. a second outer boundary;

2. a center; and

3. a longitudinal axis defined between each of two opposing ends of the second horizontal plane; and

iii. a pivotable coupling, comprising:

1. an upper section fixed to the upper reaction plate proximate the upper reaction plate center, the upper section configured to allow substantially similar displacement of the upper reaction plate about the upper reaction plate center at either end of the two ends of the second horizontal plane; and

2. a lower section pivotably connected to the upper section and fixed to the lower reaction plate proximate the lower reaction plate center;

iv. two linear actuator assemblies spaced apart from each other on opposite sides of the pivotable coupling with respect to the second horizontal plane along the upper reaction plate longitudinal axis and from the pivotable coupling, each linear actuator assembly comprising:

1. an actuator coupling connected to the upper reaction plate intermediate the second outer boundary and the pivotable coupling;

2. a connector connected to the lower reaction plate intermediate the first outer boundary and the pivotable coupling; and

3. an electric linear actuator constrained to extend and retract along a longitudinal axis of the electric linear actuator, the electric linear actuator comprising:

a. an upper portion coupled to the actuator coupling; and

b. a lower portion connected to the clevis assembly; and

v. an electrical power supply operatively in communication with the two electric linear actuator assemblies as a sole source of operating energy for the two electric linear actuators.

11. The vehicle of claim 10, wherein the upper portion of at least one linear electric actuator extends at least partially through the upper reaction plate.

12. The vehicle of claim 10, wherein:

a. the vehicle comprises a predetermined set of other electrical components; and

b. the electrical power supply comprises a rechargeable battery operatively in communication with the two electric linear actuator assemblies and the other electrical components of the vehicle as their sole source of operating energy.

13. The vehicle of claim 10, wherein the vehicle further comprises:

a. a wireless communication interface; and

b. a controller operatively in communication with the wireless communication interface and operative to execute a command received through the wireless communication interface if the command is addressed to a unique address of the vehicle.

14. The vehicle of claim 10, further comprising:

a. a passenger platform fixed to the upper reaction plate;

b. a predetermined set of rows of seats fixed to the passenger platform.

15. The vehicle of claim 10, further comprising:

a. a slew bearing, comprising:

i. a first portion fixed to the chassis; and

ii. a second portion operatively connected to a predetermined one of the upper reaction plate or lower reaction plate, the slew bearing rotatable with respect to the chassis and operative to provide substantially continuous, selectively controlled rotation in a predetermined direction to a predetermined azimuth position at a predetermined rotational speed;

b. a slew bearing pinion motor comprising a shaft, the slew bearing pinion motor connected to the chassis; and

c. a slew bearing pinion fixed to the shaft, the slew bearing pinion operatively in communication with slew bearing gear and rotatable at a commanded slew speed and direction.

16. The vehicle of claim 15, wherein the predetermined direction selectively comprises both a clockwise direction and a counterclockwise direction.

17. The vehicle of claim 15, wherein:

a. the pivotable coupling comprises a vertically oriented pivotable coupling; and

b. the central axis of the vertically oriented pivotable coupling passes through a point at a geometric center of the slew bearing.

18. The vehicle of claim 17, wherein:

a. the vehicle further comprises:

i. a passenger platform fixed to the upper reaction plate; and

ii. two rows of seats connected to the passenger platform; and

b. the vertically oriented pivotable coupling comprises a central axis which passes through a point at a geometric center of the slew bearing and through a point on the passenger platform that is between a first row of the two rows of seats and a second row of the two rows of seats.

19. The multiple degrees of freedom motion assembly of claim 10, wherein the connector comprises a clevis assembly.