Claims:

1. A method of determining position of a mobile platform using satellite beacon signals, the method comprising executing a positioning process:

pointing a beyond line of sight (BLOS) antenna onboard the mobile platform operable for facilitating communication with the mobile platform, for receiving at least two beacon signals, each beacon signal transmitted by a respective satellite;

wherein for each beacon signal of the at least two beacon signals the method comprises:

adapting a viewing angle of the antenna, to align and lock the antenna with the respective satellite transmitting the signal;

determining pitch and yaw angles of the antenna relative to the respective satellite transmitting the signal;

determining a pointing vector from the mobile platform to the respective satellite transmitting the signal; and

calculating an estimated position of the mobile platform using two or more pointing vectors.

2. The method of claim 1, wherein determining a pointing vector from the mobile platform to the respective satellite transmitting the signal further comprises:

determining orientation of the mobile platform;

transforming pitch and yaw angles in antenna frame to mobile platform frame; and

determining the pointing vectors from the mobile platform to the respective satellite transmitting the signal.

3. The method of claim 1, wherein determining a pointing vector from the mobile platform to the respective satellite transmitting the signal further comprises:

determining orientation of the mobile platform;

determining the pointing vectors from the antenna to the respective satellite transmitting the signal;

determining the estimated position of the antenna using two or more pointing vectors; and

transforming pitch and yaw angles in antenna frame to mobile platform frame to thereby obtain the position of the mobile platform.

4. The method of claim 1 further comprising:

scanning the atmosphere with the antenna to locate the at least two beacon signals.

5. The method of any one of claims 1 to 3 further comprising:

obtaining data indicative of an estimated current position of at least one beacon transmitting satellite; and using the data for pointing the antenna in the direction of the satellite.

6. The method of any one of the preceding claims further comprising: autonomously initiating the positioning process following determination that one or more conditions are met.

7. The method of claim 6, wherein the conditions include loss of GPS signals for a period longer than a certain length.

8. The method of any one of claims 6 and 7, wherein the conditions include obtaining an indication of suspected GPS signal spoofing or suspected GPS signal blocking.

9. The method of any one of the preceding claims further comprising:

using a GPS positioning unit onboard the mobile platform to determine GPS positioning data; comparing between the GPS positioning data and the estimated position of the mobile platform and validating the GPS positioning data based on the result of the comparison.

10. The method of any one of the preceding claims, further comprising:

repeatedly determining the orientation of the mobile mobile platform; and

updating the pointing vectors and the estimated position of the mobile platform according to changes in the orientation.

11. The method of any one of the preceding claims further comprising:

obtaining altitude of the mobile platform and determining a three-dimensional positioning data of the mobile platform.

12. The method of any one of the preceding claims further comprising:

switching the BLOS antenna between receiving beacon signals and communicating.

13. A positioning unit mountable on a mobile platform,

the positioning unit being operatively connected to a beyond line of site (BLOS) antenna onboard the mobile platform operable for facilitating communication with the mobile platform and comprises a processing circuitry configured to:

generate instructions for causing the antenna to point in a direction of at least a first beacon transmitting satellite to enable receiving a first beacon signal and a second beacon transmitting satellite to enable receiving a second beacon signal; for each one of the first beacon signal and the second beacon signal:

determine pitch and yaw angles of the antenna relative to a respective beacon transmitting satellite;

determine a respective pointing vector from the mobile platform to the respective beacon transmitting satellite;

upon detection of at least two pointing vectors including a first pointing vector from the mobile platform to the first beacon transmitting satellite and a second pointing vector from the mobile platform to the second beacon transmitting satellite, calculate an estimated position of the mobile platform using the at least two pointing vectors.

14. The positioning unit of claim 13, wherein the processing circuitry is configured for determining a pointing vector from the mobile platform to the respective beacon transmitting satellite, to:

determine orientation of the mobile platform using an inertial navigation system (INS) onboard the mobile platform;

transform pitch and yaw angles in antenna frame to mobile platform frame; and

determine the pointing vectors from the mobile platform to the respective beacon transmitting satellite.

15. The positioning unit of claim 13, wherein the processing circuitry is configured for determining a pointing vector from the mobile platform to the respective beacon transmitting satellite to:

determine orientation of the mobile platform, using inertial navigation system (INS) onboard the mobile platform;

determine the pointing vectors from the antenna to the respective beacon transmitting satellite;

determine an estimated position of the antenna, using two or more pointing vectors; and

transform pitch and yaw angles in antenna frame to mobile platform frame to thereby obtain the position of the mobile platform.

16. The positioning unit of any one of claims 13 to 15, wherein the processing circuitry is further configured to generate instructions for scanning the atmosphere with the antenna to locate at least two beacon signals.

17. The positioning unit of any one of claims 13 to 15, wherein the processing circuitry is further configured to: obtain data indicative of an estimated current position of at least one of the first beacon transmitting satellite and the second beacon transmitting satellite; and use the data for pointing the antenna in the direction of the satellite.

18. The positioning unit of any one of claims 13 to 17, wherein the processing circuitry is further configured to autonomously initiate calculation an estimated position of the mobile platform following determination that one or more conditions are met.

19. The positioning unit of claim 18, wherein the conditions include loss of GPS signals for a period longer than a certain length.

20. The positioning unit of claim 18, wherein the conditions include obtaining an indication of suspected GPS signal spoofing or suspected GPS signal blocking.

21. The positioning unit of any one of claims 13 to 19, wherein the processing circuitry is further configured to obtain a GPS positioning data determined by a GPS positioning unit onboard the mobile platform; compare between the GPS positioning data and the estimated position of the mobile platform and validate the GPS positioning data based on the result of the comparison.

22. The positioning unit of any one of claims 13 to 19, wherein the processing circuitry is further configured to repeatedly obtain orientation of the mobile platform; and

update the pointing vectors and the estimated position of the mobile platform according to changes in the orientation.

23. The positioning unit of any one of claims 13 to 22 wherein the mobile platform is a UAV.

24. The positioning unit of any one of claims 13 to 23, wherein the antenna is a beyond line of sight antenna.

25. A positioning system mountable on a mobile platform comprising: a BLOS antenna operable for facilitating communication with the mobile platform, an INS and a beacon positioning unit operatively connected to the antenna; the beacon positioning unit comprising a processing circuitry configured to:

generate instructions for causing the antenna to point in a direction of at least a first beacon transmitting satellite to enable receiving a first beacon signal and a second beacon transmitting satellite to enable receiving a second beacon signal;

for each of the first beacon signal and the second beacon signal:

determine pitch and yaw angles of the antenna relative to a respective beacon transmitting satellite;

determine the respective pointing vector from the mobile platform to a respective beacon transmitting satellite;

upon detection of at least two pointing vectors, including a first pointing vector from the mobile platform to the first beacon transmitting satellite and a second pointing vector from the mobile platform to the second beacon transmitting satellite, calculate an estimated position of the mobile platform using the at least two pointing vectors.

26. The system of claim 25 further comprising a pan and tilt assembly connected to the antenna, wherein the processing circuitry is configured to control the pan and tilt assembly for adjusting pitch and yaw angles of the antenna.

27. The system of any one of claims 25 and 26, wherein the beacon position unit is operatively connected to an inertial navigation system (INS) onboard the mobile platform and wherein the processing circuitry is further configured to:

determine orientation of the mobile platform using the INS;

transform a pointing vector from antenna frame to mobile platform frame; and

determine the respective pointing vector from mobile platform to the respective beacon transmitting satellite.

28. The system of any one of claims 25 to 27, wherein the mobile platform is an aircraft.

29. The system of claim 28 wherein the aircraft is a UAV.

A computer-readable memory device tangibly embodying a program of instructions executable by the computer for executing the method according to any one of claims 1 to 12.

30. The positioning unit of any one of claims 13 to 24 further comprising a switching unit configured to switch between serving for communication and serving for positioning of the mobile platform based on beacon signals.

31. The system of any one of claims 25 to 30 further comprising a switching unit configured to switch between serving for communication and serving for positioning of the mobile platform based on beacon signals.