CLAIMS:

1. A system for generating a three-dimensional (3D) map of part of a field-of-view (FOV) of at least one detector of an active 3D scanner, the system comprising:

the active 3D scanner, comprising:

a scanning mechanism configured to scan the FOV;

at least one energy emitting source configured to emit energy pulses, in synchronization with the scanning mechanism, to cover the FOV; and

the at least one detector; and

processing circuitry configured to:

obtain mapping designation information, wherein at least some of the mapping designation information is tracker-based designation information that is designated by a user of the system via a tracker that tracks a line-of-sight between the user and the FOV;

selectively activate the at least one energy emitting source to emit a subset of the energy pulses, in accordance with the mapping designation information, including the tracker-based designation information, and in synchronization with the scanning mechanism, to cover the part of the FOV;

obtain current readings, from the at least one detector, based on reflections of the subset of the energy pulses; and

generate the 3D map based on the current readings.

2. The system of claim 1, wherein the mapping designation information includes a designation of the part of the FOV or a second part of the FOV that is not the part of the FOV.

3. The system of claim 1, wherein the mapping designation information includes one or more of: designation of a pixel resolution of the 3D map for one or more regions within the part of the FOV, or a designation of energy levels of one or more first energy pulses of the subset of the energy pulses.

4. The system of claim 1, wherein at least some of the mapping designation information is based on a geolocation of one or more objects within the FOV.

5. The system of claim 4, wherein the geolocation of at least one of the objects is stored in a geographical database.

6. The system of claim 1, wherein at least some of the mapping designation information is based on one or more of: a terrain elevation map, or a decoded image that includes the part of the FOV.

7. The system of claim 1, wherein the at least one energy emitting source is selectively activated, at least in part, to conserve energy resources of the system.

8. The system of claim 1, wherein at least some of the mapping designation information is associated with one or more fixed coordinate areas within the FOV having fixed coordinates in a fixed coordinate system established in space and wherein the processing circuitry is further configured to:

upon identifying a change in at least one of a position or an orientation of the at least one detector relative to the fixed coordinate areas, update the at least some of the mapping designation information based on the change.

9. The system of claim 1, wherein at least some of the mapping designation information is associated with one or more fixed coordinate areas within the FOV having fixed coordinates in a fixed coordinate system established in space, wherein the active 3D scanner is gimbaled to a platform by a gimbal, and wherein the processing circuitry is further configured to:

upon identifying a change in a first orientation of the platform relative to the fixed coordinate areas, provide a control signal for rotating the active 3D scanner along the gimbal to maintain a second orientation of the at least one detector relative to the fixed coordinate areas notwithstanding the change in the first orientation of the platform relative to the fixed coordinate areas.

10. The system of claim 1, wherein at least some of the mapping designation information is associated with one or more moving objects within the FOV and wherein the processing circuitry is further configured to:

upon identifying a change in at least one of a position or an orientation of the at least one detector relative to the moving objects, update the at least some of the mapping designation information based on the change.

11. The system of claim 1, wherein at least some of the mapping designation information is associated with one or more moving objects within the FOV, wherein the active 3D scanner is gimbaled to a platform by a gimbal, and wherein the processing circuitry is further configured to:

upon identifying a change in a first orientation of the platform relative to the moving objects, provide a control signal for rotating the active 3D scanner along the gimbal to maintain a second orientation of the at least one detector relative to the moving objects notwithstanding the change in the first orientation of the platform relative to the moving objects.

12. The system of claim 1, wherein the active 3D scanner is mounted on a platform, and wherein at least some of the mapping designation information is generated to reduce an exposure of the platform to sensors that are capable of detecting the energy pulses.

13. The system of claim 1, wherein the active 3D scanner is mounted on a platform, and wherein at least some of the mapping designation information is generated to reduce temporary blinding of sensors on the platform or external to the platform.

14. The system of claim 1, wherein the active 3D scanner is mounted on an airborne platform, and wherein, during a landing approach for landing the airborne platform at a selected landing area, the part of the FOV is associated with one or more of: the selected landing area or a path to the selected landing area.

15. The system of claim 1, wherein the active 3D scanner is mounted on an airborne platform, and wherein, during flight of the airborne platform along a flight path, the part of the FOV is associated with one or more flight paths pre-approved for flying the airborne platform.

16. The system of claim 1, wherein the processing circuitry is further configured to:

obtain targeting designation information that designates one or more designated targets; and

activate the at least one energy emitting source to emit one or more targeting energy pulses towards the designated targets.

17. The system of claim 16, wherein the targeting designation information is obtained from the user of the system.

18. The system of claim 17, wherein the targeting designation information is obtained from the tracker that tracks a line-of-sight between the user and the designated targets.

19. The system of claim 1, wherein the at least one energy emitting source is a Light Detection and Ranging (LiDAR), and wherein the energy pulses are laser pulses.

20. The system of claim 1, wherein the at least one energy emitting source is a radar, and wherein the energy pulses are radio pulses.

21. The system of claim 20, wherein the radar is a frequency-modulated continuous-wave (FMCW) radar.

22. The system of claim 1, wherein the active 3D scanner is mounted on a moving platform, and wherein the processing circuitry is further configured to:

provide a pre-loaded 3D model of a mission area, pre-loaded prior to performing a mission by the moving platform; and

obtain a current location of the moving platform;

wherein at least some of the mapping designation information is determined based on the 3D model, the current location and one or more mapping designation rules.

23. A method for generating a three-dimensional (3D) map of part of a field-of-view (FOV) of at least one detector of an active 3D scanner, the method comprising:

obtaining mapping designation information, wherein at least some of the mapping designation information is tracker-based designation information that is designated by a user via a tracker that tracks a line-of-sight between the user and the FOV;

selectively activating at least one energy emitting source of the active 3D scanner to emit a first number of energy pulses, in accordance with the mapping designation information, including the tracker-based designation information, and in synchronization with a scanning mechanism of the active 3D scanner, to cover the part of the FOV, wherein the scanning

mechanism is configured to scan the FOV, and wherein the at least one energy emitting source is configured to emit a second number of energy pulses, in synchronization with the scanning mechanism, to cover the FOV, the second number of energy pulses being greater than the first number of energy pulses;

obtaining current readings, from at least one detector of the active 3D scanner, based on reflections of the first number of energy pulses; and

generating the 3D map based on the current readings.

24. The method of claim 23, wherein the mapping designation information includes a designation of the part of the FOV or a second part of the FOV that is not the part of the FOV.

25. The method of claim 23, wherein the mapping designation information includes one or more of: a designation of pixel resolutions of the 3D map for one or more regions within the part of the FOV, or a designation of energy levels of one or more first energy pulses of the first number of energy pulses.

26. The method of claim 23, wherein at least some of the mapping designation information is based on a geolocation of one or more objects within the FOV.

27. The method of claim 26, wherein the geolocation of at least one of the objects is stored in a geographical database.

28. The method of claim 23, wherein at least some of the mapping designation information is based on one or more of: a terrain elevation map, or a decoded image that includes the part of the FOV.

29. The method of claim 23, wherein the at least one energy emitting source is selectively activated, at least in part, to conserve energy resources.

30. The method of claim 23, wherein at least some of the mapping designation information is associated with one or more fixed coordinate areas within the FOV having fixed coordinates in a fixed coordinate system established in space, and wherein the method further comprises:

upon identifying a change in at least one of a position or an orientation of the at least one detector relative to the fixed coordinate areas, updating the at least some of the mapping designation information based on the change.

31. The method of claim 23, wherein at least some of the mapping designation information is associated with one or more fixed coordinate areas within the FOV having fixed coordinates in a fixed coordinate system established in space, wherein the active 3D scanner is gimbaled to a platform by a gimbal, and wherein the method further comprises:

upon identifying a change in a first orientation of the platform relative to the fixed coordinate areas, providing a control signal for rotating the active 3D scanner along the gimbal to maintain a second orientation of the at least one detector relative to the fixed coordinate areas notwithstanding the change in the first orientation of the platform relative to the fixed coordinate areas.

32. The method of claim 23, wherein at least some of the mapping designation information is associated with one or more moving objects within the FOV, and wherein the method further comprises:

upon identifying a change in at least one of a position or an orientation of the at least one detector relative to the moving objects, updating the at least some of the mapping designation information based on the change.

33. The method of claim 23, wherein at least some of the mapping designation information is associated with one or more moving objects within the FOV, wherein the active 3D scanner is gimbaled to a platform by a gimbal, and wherein the method further comprises:

upon identifying a change in a first orientation of the platform relative to the moving objects, providing a control signal for rotating the active 3D scanner along the gimbal to maintain a second orientation of the at least one detector relative to the moving objects notwithstanding the change in the first orientation of the platform relative to the moving objects.

34. The method of claim 23, wherein the active 3D scanner is mounted on a platform, and wherein at least some of the mapping designation information is generated to reduce an exposure of the platform to sensors that are capable of detecting the energy pulses.

35. The method of claim 23, wherein the active 3D scanner is mounted on a platform, and wherein at least some of the mapping designation information is generated to reduce temporary blinding of sensors on the platform or external to the platform.

36. The method of claim 23, wherein the active 3D scanner is mounted on an airborne platform, and wherein, during a landing approach for landing the airborne platform at a selected landing area, the part of the FOV is associated with one or more of: the selected landing area or a path to the selected landing area.

37. The method of claim 23, wherein the active 3D scanner is mounted on an airborne platform, and wherein, during flight of the airborne platform along a flight path, the part of the FOV is associated with one or more flight paths pre-approved for flying the airborne platform.

38. The method of claim 23, further comprising:

obtaining targeting designation information that designates one or more designated targets; and

activating the at least one energy emitting source to emit one or more targeting energy pulses towards the designated targets.

39. The method of claim 38, wherein the targeting designation information is obtained from the user.

40. The method of claim 39, wherein the targeting designation information is obtained from the tracker that tracks a line-of-sight between the user and the designated targets.

41. The method of claim 23, wherein the at least one energy emitting source is a Light Detection and Ranging (LiDAR), and wherein the energy pulses are laser pulses.

42. The method of claim 23, wherein the at least one energy emitting source is a radar, and wherein the energy pulses are radio pulses.

43. The method of claim 42, wherein the radar is a frequency-modulated continuous-wave (FMCW) radar.

44. The method of claim 23, wherein the active 3D scanner is mounted on a moving platform, and wherein the method further comprises:

providing a pre-loaded 3D model of a mission area, pre-loaded prior to performing a mission by the moving platform; and

obtaining a current location of the moving platform;

wherein at least some of the mapping designation information is determined based on the 3D model, the current location and one or more mapping designation rules.

45. A non-transitory computer readable storage medium having computer readable program code embodied therewith, the computer readable program code, executable by processing circuitry of a computer to perform a method for generating a three-dimensional (3D) map of part of a field-of-view (FOV) of at least one detector of an active 3D scanner, the method comprising:

obtaining mapping designation information, wherein at least some of the mapping designation information is tracker-based designation information that is designated by a user via a tracker that tracks a line-of-sight between the user and the FOV;

selectively activating at least one energy emitting source of the active 3D scanner to emit a first number of energy pulses, in accordance with the mapping designation information, including the tracker-based designation information, and in synchronization with a scanning mechanism of the active 3D scanner, to cover the part of the FOV, wherein the scanning mechanism is configured to scan the FOV, and wherein the at least one energy emitting source is configured to emit a second number of energy pulses, in synchronization with the scanning mechanism, to cover the FOV, the second number of energy pulses being greater than the first number of energy pulses;

obtaining current readings, from at least one detector of the active 3D scanner, based on reflections of the first number of energy pulses; and

generating the 3D map based on the current readings.

46. The system of claim 1, wherein the mapping designation information is independent of past readings obtained by the at least one detector, if any.

47. The method of claim 23, wherein the mapping designation information is independent of past readings obtained by the at least one detector, if any.