What is claimed is:

~~1. A system for operating a remotely operated vehicle comprising:~~

~~a database module of 3D elements representing objects disposed in an operation environment of said vehicle, said 3D elements comprising data acquired by multibeam sonar;~~

~~a virtual video generating module for generating a virtual video of incorporating said 3D elements;~~

~~a video camera mounted to the vehicle for generating a real video of the operation environment of said vehicle;~~

~~a synchronizing module for synchronizing an angle and position of a virtual camera with an angle and position of the video camera mounted to the vehicle, wherein the virtual camera defines a field of view for the virtual video; and~~

~~a superimposition module for superimposing said virtual video and said real video, wherein said superimposition module is configured to modulate the transparency or opaqueness of a region of lesser interest in one of the virtual or real videos such that a corresponding region of the other video is more visible, said superimposed virtual and real videos comprising hybrid 3D imagery.~~

~~2. The system according to claim 1, wherein the superimposition module is configured to superimpose graphic information, textual information, or both, onto the hybrid 3D imagery.~~

~~3. The system according to either claim 1 or 2, wherein said superimposing is based on a luminance threshold in Red-Green-Blue hexadecimal format, wherein luminance is set to values between 0-0-0 and 255-255-255, and preferably between 0-0-0 and 40-40-40.~~

41. A system for ~~undersea~~ exploration comprising:

a remote operated vehicle (ROV), wherein said ROV comprises a video camera for acquiring a ~~real~~ live video feed;

a networked operating system ~~comprising a computer and computer executable software, said networked operating system~~ comprising a visualization engine, wherein said visualization engine further comprises:

a database module of 3D elements representing objects disposed in an operation environment of said remote operated vehicle;

a virtual video generating module for generating a virtual ~~video of~~ video feed incorporating said 3D elements;

a synchronizing module for synchronizing an angle and position of a virtual camera with an angle and position of the video camera ~~mounted to the vehicle~~, wherein the virtual camera defines a field of view for the virtual video feed, wherein the field of view is preferably between about 45 and 144 degrees from a central point of view; and

a superimposition module for superimposing said virtual video feed and said ~~real~~ live video feed, wherein said superimposition module is configured to modulate the transparency or opaqueness of a region of lesser interest in one of the virtual or ~~real videos~~ live video feeds such that a corresponding region of the other video feed is more visible, said superimposed virtual and ~~real videos~~ live video feeds comprising hybrid 3D imagery; and

a navigation interface configured to display said hybrid 3D imagery, said navigating interface comprising at least one networked monitor.

~~5~~2. The system according to claim ~~4~~ 1, wherein the operating system is capable of sharing data with a plurality of remote monitors, said plurality comprising up to 12 remote monitors, and preferably between 3 and 9 remote monitors.

~~6~~3. The system according to either claim ~~4~~ 1 or ~~5~~ 2, further comprising an external system configured to determine whether the system is working or is in a fail state.

~~7~~4. The system according to claim ~~6~~3, wherein the external system is configured to switch the monitor input from hybrid 3D imagery ~~to a~~ to said live video feed if the system is in a fail state.

~~8~~5. The system according to any one of claims 41 - ~~7~~4, wherein the navigation interface comprises at least three networked monitors, wherein said monitors are arranged adjacent to one another such that the middle monitor displays ~~video and augmented reality~~ superimposed virtual and live video feeds, while both side monitors display an expanded view of a field of operation.

~~9. The system according to any one of claims 4 – 8, wherein the navigation interface comprises one or more touch screens, one or more speakers for providing audio warnings and sounds, one or more microphones for receiving voice commands, one or more joysticks, one or more gamepads, and/or one or more computer mice.~~

~~10. The system according to any one of claims 4 – 9, wherein functions of the operating system are abstracted such that the operating system is compatible with a plurality of hardware options.~~

6. The system according to any of claims 1 - 5, wherein the 3D elements are obtained from any of pre-recorded sonar data, live sonar data, programmed 3D objects, user-determined inputs, and bathymetry.

7. The system according to claim 1, wherein the superimposition module is configured to superimpose graphic information, textual information, or both, onto the hybrid 3D imagery.

8. The system according to either claim 1 or 2, wherein said superimposing is based on a luminance threshold in Red-Green-Blue hexadecimal

format, wherein luminance is set to values between 0-0-0 and 255-255-255, and preferably between 0-0-0 and 40-40-40.

~~11~~9. A method ~~of operating a remotely operated vehicle~~ for exploration, comprising:

~~obtaining 3D bathymetry data using multibeam sonar;~~

storing 3D elements in a database module, said 3D elements representing objects disposed in the remotely operated vehicle's operation environment ~~and comprising said 3D elements comprising said 3D bathymetry data~~;

generating a virtual video feed of said 3D elements;

obtaining a live video feed using a video camera;

synchronizing an angle and position of a virtual camera with an angle and position of the video camera mounted to the remotely operated vehicle, wherein the virtual camera defines a field of view for the virtual video feed; and

superimposing said virtual video feed and said ~~real~~ live video feed on a video screen, wherein superimposing further comprises the step of modulating the transparency or opaqueness of a region of lesser interest in one of the virtual or ~~real~~ live video feeds such that a corresponding region of the other video feed is more visible, said superimposed virtual and ~~real~~ live video feeds comprising hybrid 3D imagery.

~~12~~10. The method according to claim ~~11~~9, further comprising superimposing graphic information, textual information, or both, onto the hybrid 3D imagery.

~~13~~11. The method according to either claim ~~11~~9 or ~~12~~10, wherein the step of modulating the transparency or opaqueness further comprises establishing a luminance threshold.

~~14~~12. The method according to claim ~~14~~9, wherein establishing the luminance threshold comprises maintaining a background of the virtual video feed at a higher transparency than the background of the real video feed.

~~15~~13. The method according to any one of claims ~~11~~9 - ~~14~~12, wherein synchronizing the angle and position of the ~~cameras~~ video camera comprises the steps of:

calculating an angle between a heading of the vehicle and a direction of a ~~real camera~~ field of view of the video camera;

calculating an angle between a vertical orientation of the vehicle and the direction of the ~~real~~ video camera field of view; and

calculating an angle between the vehicle and a geographic horizon.

~~16. The method according to one of claims 11 - 15, further comprising the step of displaying said hybrid 3D imagery on a navigation interface.~~

~~17. The method according to claim 16, further comprising analyzing the displayed information to determine the status of procedures.~~

~~18. The method according to either claim 16 or 17, further comprising~~ updating the displayed information as tasks are completed.

~~19~~14. The method according to one of claims ~~16~~9 - ~~18~~13, wherein the step of ~~displaying~~ superimposing further comprises modulating the amount of 2D or 3D information superimposed onto the video screen based on the position of the ROV relative to ~~undersea structures~~ objects disposed in the remotely operated vehicle's operation environment.

~~20~~15. The method according to one of claims ~~16~~9 - ~~19~~14, wherein the step of ~~displaying~~ superimposing further comprises providing a minimap, said minimap defining a computer-generated graphic showing either or both cardinal points or a position of an object in 3D.

~~21. The method according to one of claims 11 - 20, further comprising determining the positioning of said 3D elements using a global positioning system.~~

~~22. The method according to one of claims 11 - 21, further comprising the step of planning an undersea exploration mission, wherein said planning comprises entering user-determined information for display on a navigation interface, said user-determined information comprising any one or combination of bathymetry information, ROV waypoint information, ROV checkpoint information, procedure information, timed procedure information, flight path information, 3D modeled elements, GPS-determined position information and pilot information.~~

~~23. The method according to any one of claims 11 - 22, further comprising the step of logging an undersea exploration mission, wherein said logging comprises recording any one or combination of telemetry data, sonar data, 3D models; bathymetry data, flight path information, ROV waypoint information, ROV checkpoint information, procedure information, positioning information and inertial data.~~

~~24~~16. The method according to ~~claim 22~~ any of claims 9 - 15, comprising the step of configuring the operating system such that entering, leaving, or remaining longer than a designated time at a GPS-determined position triggers any one or combination of an alarm, notification, procedure change or task change.

~~25. The method according to claim 23, further comprising reporting information that has been logged.~~

~~26. The method according to either claim 23 or 25, further comprising saving information that has been logged to a networked database.~~

~~27. The method according to claim 26, further comprising producing a report based on the saved information, wherein said report provides a 3D recreation of the operation.~~

17. The method according to any of claims 9 - 16, wherein the 3D elements are obtained from any of pre-recorded sonar data, live sonar data, programmed 3D objects, user-determined inputs, and bathymetry.

~~28~~18. A computer program product, stored on a computer-readable medium, for implementing the method according to any one of claims ~~1~~9 - ~~27~~17.