CLAIMS:

1. A tactical advanced robotic engagement system (ARES) comprising:

a heads-up display (HUD) mounted on a helmet of a user;

a weapon or tool having a one-hand-operable controller mountable on the weapon or tool; and

an unmanned ground vehicle (UGV) and an associated unmanned aerial vehicle (UAV) or unmanned underwater vehicle (UUV);

wherein the HUD, the one-hand-operable controller, the UGV and UAV or UUV are in communication links, and the one-hand-operable controller comprises two manouvre switches (162,164) to select communication link with the UGV and/or UAV (or UUV), so that operation of the ARES reduces visual and mental cognitive loads on the user, enhances the user's situation awareness, enhances decision making with reduced risks, and allows the user to maintain mission-critical, time-critical or safety-critical readiness, thereby to achieve task effectiveness and mission success.

2. The tactical ARES according to claim 1, wherein the one-hand-operable controller further comprises a preset button for pre-set navigational control of the UGV, UAV or UUV and two buttons for programmable speed and directional control, with the two buttons being operable simultaneously for programmable hover control of the UAV or UUV, thereby providing quick response to effective navigation control to the user.

3. The tactical ARES according to claim 1 or 2, wherein the hand-operable controller further comprising a joystick for yaw and roll programmable control and homing of the UAV or UUV to the UGV, where homing allows the UAV to return and dock with the UGV for battery charging.

4. The tactical ARES according to any one of claims 1-3, wherein the HUD further comprises a manual select button located virtually on a user interface (UI), which UI displays four multi-modal buttons, with the manual select button being linked to the one-hand-operable controller and is given a command priority over the other three multi-modal buttons (namely, a voice, a gesture and a brain sensory) to execute autonomous control of the UGV and/or UAV or UUV.

5. The tactical ARES according to any one of the claims 1-4, wherein the one-hand-operable controller further comprises 3D sensors, with outputs of the 3D sensors for gesture control of the UGV and/or UAV or UUV by panning and tilting the one-hand-operable controller.

6. The tactical ARES according to any one of claims 1-5, further comprising a dead-reckoning algorithm and an AI algorithm, wherein the dead-reckoning algorithm allows the ARES to track and guide the user when GPS is ineffective in a built-up area, and the AI algorithm allows inputs from various sensors deployed in the UGV, UAV or UUV to recommend execution of a strategy plan to reach a target area or object of interest with low risks and high effectiveness.

7. The tactical ARES according to claim 6, wherein the dead-reckoning algorithm and AI algorithm functionalities are built into the HUD, UGV or a command centre.

8. The tactical ARES according to any one of the preceding claims, wherein the HUD mounted on the helmet comprises up-down and forward-retract adjustments to allow a better fit to the user according to the user's head and eyes profiles.

9. The tactical ARES according to any one of the preceding claims, wherein the HUD comprises a health and electric power monitor to notify the user with alerts in order to achieve mission success or to reduce mission failure.

10. The tactical ARES according to any one of claims 6-9, wherein the UGV, UAV and HUD have GPS sensors that provide positional nodes, so that locations on the GPS map can be determined with predetermined accuracies.

11. The tactical ARES according to any one of the preceding claims, further comprising a camera mounted on the UAV or UGV for taking photos or videos of a target area or object-of-interest, wherein the photos or videos are transmitted to the HUD or an associated command centre for stitching together by a graphics stitching module or algorithm to create a strategy map for mission planning.