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**(54) Title:** A SYSTEM AND METHOD FOR AUTHORISING AND EXECUTING SAFE SEMI-AUTONOMOUS ENGAGEMENT OF A SAFETY-CRITICAL DEVICE

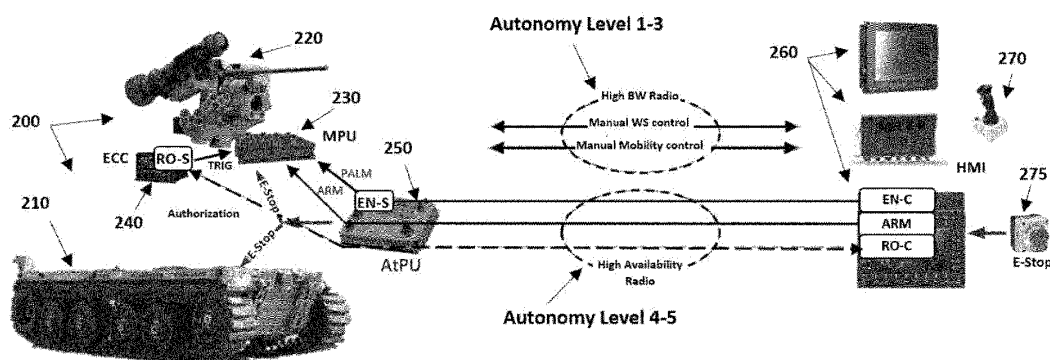


Fig. 2

**(57) Abstract:** A system and method for authorizing and executing safe semi-autonomous engagement of a safety critical firing device at a remote location. The system comprises, at a near location, a Human Machine Interface with input means comprising at least one hardware safety barrier and hardware barrier communication means with interfaces connected to a network providing at least three different signal communication channels, a first signal communication channel for carrying activation control signals (PALM), a second signal communication channel for carrying authorization signals and a third signal communication channel for carrying arming control signals (ARM). The system further comprises, at the remote location, a control unit and an Robotic Operator Server connected to a fire control system of the safety critical firing device and to the network, where the control unit is adapted to receive the activation control signal (PALM) carried on the first signal communication channel, and where the control unit comprises at least one hardware safety barrier and hardware barrier communication means with interfaces connected to the network, making the third signal communication channel as a closed loop signal communication channel between the hardware safety barriers of the Human Machine Interface and the control unit for transferring the arming control signals (ARM) to a fire control system of the safety critical firing device via the control unit, and where the Robotic Operator Server comprises software for detecting and locking to a target and for providing authorization information via the second signal communication channel of the network to the Human Machine Interface, and to transfer trigger signals (TRIG) to the fire control system when authorisation of engagement is confirmed by an operator via the control panel, and where the

[Continued on next page]

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**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
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safety critical firing device is engaged if all of activation control signals (PALM), arming control signals (ARM) and the trigger signals (TRIG) are present in the fire control system.