



INTELLIGENT GROUND SYSTEMS



IMPROVED MOBILITY AND OPERATIONAL PERFORMANCE THROUGH AUTONOMOUS TECHNOLOGIES (IMOPAT) ARMY TECHNOLOGY OBJECTIVE (ATO)

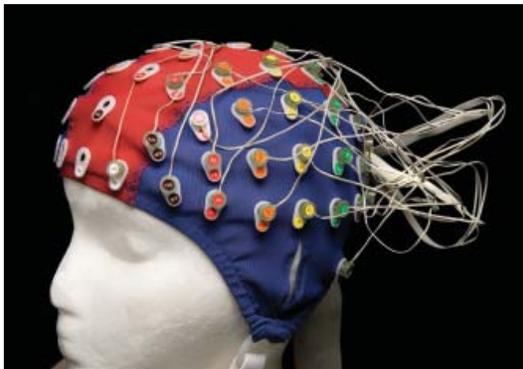
The U.S. Army Tank Automotive Research, Development and Engineering Center's (TARDEC's) Intelligent Ground Systems IMOPAT ATO mission is to increase Soldier safety and vehicle mobility performance in urban terrain with:

- Affordable, effective mobility and situational awareness (SA) solutions for closed-hatch manned ground vehicles (MGVs).
- Improved crew protection, vehicle mobility and local SA through improved electro-optic indirect vision systems.
- Advanced Warfighter Machine Interface and Soldier monitoring systems for optimizing crew workloads.

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Application Areas

The IMOPAT ATO will mature electro-optic-based technologies and automations to improve crew safety, vehicle mobility and operational performance during MGCV closed-hatch operations. Products developed under this program will increase driving performance, enable greater information sharing, shift Soldier workloads when overburdened and achieve improved SA. System components for visual local SA and autonomous threat detection can be readily integrated into existing architectures on Current Force systems. TARDEC engineers will integrate neuro-ergonomic and autonomous mobility technologies into surrogate systems, which will be matured for application to the Future Force.



Near-Term Capabilities

- Advanced warfighter-machine interfaces to augment driving performance and local operational environment SA.
- Autonomous and semi-autonomous mobility aids and state-of-the-art optical sensors to increase indirect vision systems' driving performance.
- Neuro-ergonomic-based crew stations to assist in managing crew members' and squads' workloads.
- A 360-degree by 110-degree visual local SA hemisphere to increase commanders' and squads' SA.
- Autonomous threat detection and slew-to-cue technologies to enable rapid increase of commanders' SA through indirect vision systems.
- Digital video recording of 360-degree by 110-degree visual local SA hemisphere to enable instant playback of target interrogation and for after-action review.



Future Developments for Increased Capabilities

- Adaptive crew stations that dynamically re-task mounted crew members based on their present workload classifications.
- Advanced autonomous mobility control algorithms consisting of fused laser detection and ranging (LADAR) and non-LADAR technologies.
- Increased operational environment SA for platoon level and above.

