Mobile perimeter and border security have long been potential applications for unmanned ground vehicles (UGV). Clear advantages of UGVs are found in operator safety and mitigating inattention, fatigue, and boredom of human operators.

- **Polaris Security UGVs:** The vehicle automation kit developed by Autonomous Solutions, Inc. (ASI) supplies basic by-wire navigation and path following for patrol vehicles based off the military Polaris Ranger platform. By leveraging the low-cost and reliable Polaris platform, ASI eases maintenance costs and logistics that would be present in a custom-designed ‘robot.’

- **Navigation and Road Following:** Unmanned navigation primarily relies on GPS waypoints. Point-and-go functionality in ASI’s Mobius™ command and control software allows operators to modify existing waypoints to explore unusual areas or items of interest in real-time. A laser-based road-following system allows the UGV to stay on path even if GPS connection is lost between waypoints.

- **Safe Operations:** The Polaris Ranger platform uses ASI’s Vantage obstacle detection and avoidance system for dynamic sense-and-avoid behavior. Emergency stop (E-Stop) and fail-safe systems, designed to aerospace standards, ensure safe operations in all conditions.

- **Intruder Detection:** In addition to real-time video, the perimeter and border security vehicles will use a radar-based intruder detection system that detects intruders at distances of 400m regardless of lighting or weather.