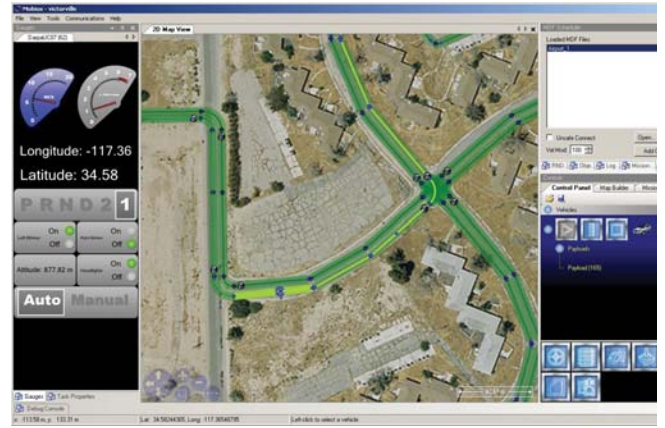


# Polaris Security UGVs

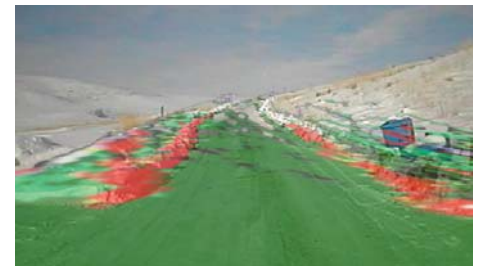


Mobile perimeter and border security have long been potential applications for unmanned ground vehicles (UGV). Clear advantages of UGVs are found in operator safety and mitigating inattention, fatigue, and boredom of human operators.

- **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.



ASI's vehicle automation kit is universal and easily interchangeable between vehicles. ASI can automate vehicles using mechanical actuators (above) or by emulating signals of an existing by-wire vehicle control system.



3D mapping and overlay capability of ASI's Vantage obstacle detection and avoidance system enables an operator to see what the vehicle sees with the enhanced ability of visually identifying potentially dangerous obstacles in all weather and lighting conditions.



**Forecast**  
3D Laser System

While sensors seek intruders on the patrol route, ASI's Forecast 3D laser system sweeps the area ahead of the vehicle for potential obstacles, continuously feeding data into the Vantage software which plans a safe path around obstacles.

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