

- **Who**

- **Topic Number:** N121-002 (A2-6967)
- **Topic Title:** Automatic Terrain Detection System
- **TPOC:** Scott Heim (586) 282-4723
- **Principal Investigator:** Kevin Hubert (906) 370-3896

GS Engineering, Inc. is an established multi-disciplined company focused on innovation and product realization. Our team provides turn-key engineering solutions with a managed programs approach supporting mechanical and electrical design, modeling and simulation, laboratory and field test activities, and production of components throughout the product lifecycle.



- **What**

- **Operational Need and Improvement:** Operating a vehicle in theater is a challenge for the best of drivers but becomes increasingly more difficult when vehicles are operated remotely or autonomously. Understanding the terrain yields improved mobility, increased safety, enables autonomous functionality and can reduce logistics costs.
- **Specifications Required:** To successfully navigate a terrain, operators make decisions based on the response of the vehicle to the given terrain. This becomes a challenge when the operator is not in the vehicle or the vehicle is operating autonomously.
- **Technology Developed:** The Automatic Terrain Detection System (ATDS) is a critical vehicle system that monitors the state of the terrain for firmness and roughness and provides a prediction on the terrain state to vehicle via the onboard data bus.
- **Warfighter Value:** In manned systems, ATDS helps to reduce operator overload by monitoring the terrain and automatically controlling vehicle systems to allow the operator to focus on mission critical roles. In unmanned or autonomous systems, ATDS replaces the senses of the operator and informs the vehicle of the terrain so adjustments to operation can be automated or transmitted to the remote operator.



## • When

- **Phase I (Navy)** – Variable VCI Research Complete – 2013
- **Phase II (Navy)** – MTRV Demonstration Complete – 2016
- **Predictive Adaptive Mobility** – M1151 Integration Complete – 2019
- **Phase II (Army)** – ATDS for AGR PLS Complete – 2020
- **CoVeR** – Autonomous Operation & Remote Feedback In-Process – 2020



- **How**

- **Current Opportunities and Path Forward:**

- The next transition for ATDS is to incorporate the technology into the LVSR vehicle platform in a joint venture between Ground Vehicle Robotics and the Marine Corps. It is anticipated this Phase III SBIR will be awarded during the 2020 calendar year.
- In support of the CoVer program, GS Engineering will be working on continued integration and refinements to ATDS for unmanned and autonomous vehicles.

- **Website address:** <https://www.gsengineering.com/>

- **POCs for follow up questions:**

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