# Future Logistic Convoy Operations: Recommendation for Autonomous Vehicles

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**Abstract:** The Allied Forces fighting against terrorism in Afghanistan and Iraq have experienced an increasing threat of improvised explosive devices over the past 15 years. Due to the inability to consistently detect these devices, the United States military has suffered casualties at a significant rate. In order to mitigate this threat, the United States military began transitioning its vehicles from utilizing human drivers to a leader follower method. Ultimately, the military aims to have completely autonomous vehicles by 2040. In coordination with the Tank Automotive Research and Development Engineering Center (TARDEC), this research proposes a System Modeling Language (SysML) diagram outlining a prospective conceptual design for an autonomous logistic vehicle convoy. Our conceptual design incorporated the use of an Unmanned Aerial System (UAS) to assist with route planning and threat identification in support of the autonomous convoy. Through use of the Systems Design Process, we determined the most informative conceptual diagram.

*Keywords:* Autonomous Vehicles, TARDEC, SysML, Systems Architecture, Leader Follower