**Problem Statement**

Peterbilt Motor Company builds Heavy Duty vehicles for On-highway and Vocational applications. The company offers a wide array of build specifications to its customers and delivers a customized product line to support its customers diverse use cases and applications for their vehicles.

The Peterbilt Advanced Analytics team has provided two datasets. Within the first file is a list of attributes (8) and an assigned “Option Code” that were selected for those attributes (Option 1 – 315). Additionally, a file containing warranty claims has been attached. These claims are for the same truck population attached in the set of trucks.

**Business Case**

The Advanced Analytics team at Peterbilt is currently conducting a multivariate analysis, intended to identify attribute pairings that lead to increased warranty costs. The team would like to identify potential approaches to this problem and evaluate students in their ability to take a complex business problem and develop a model or framework to tackle an issue.

**Problem Statement**

The key questions to be addressed include:

1. Which individual attributes or option codes are significantly associated with increased warranty costs?

2. Are there specific pairs of attributes that interact in a way that exacerbates warranty claims?

3. What modeling approaches can effectively quantify these relationships and offer predictive insights for future vehicle configurations?