Problem Statement:

Nordic Sensing is among the top 5 firms in the IoT space specialising in the production of energy and energy-consumption sensors. Between early-stage development and testing, the failure rate among sensors coming off of the assembly line was 1%-2%. It has since ballooned to 15% today. QA failure at one or more of the company's 26 vendors is the suspected cause of the jump in sensor malfunction.

Criteria for Success:

Our objective is to reduce the failure rate to 5% by identifying the faulty part(s), their manufacturers, and removing one or both from the supply chain.

Scope of Solution Space:

Due to the company's diversified supply chain, the scope of the problem is broad. Individual parts for any of the 7 sensors can be sourced from any one of 26 vendors. It is unclear if the increased failure rate is due to the malfunction of a single part or the interaction effects of multiple parts failing jointly.

Constraints of the Solution Space:

The amount of data and our deadline are our two most formidable constraints. The increase in failures was identified in March, but it could have started any month prior. Furthermore, the data are logged by a single system that restricts exports. Specifically, *"Here is data from Cert (I hope Excel format is ok). The system limits exports, so this only has 20k rows. You can tell which drives failed by the column titled "STATUS" (Failure rate was about 15% on these sensors). The data covers manufacturing dates going back two quarters with dated results for testing."* Data from Singapore may be challenging to clean. Our solution must be easy to follow and communicate to all levels of management. A CART or other tree-based model would be ideal in this case.

Stakeholders to Provide Key Insight:

Shane Buchholtz, Gary Neumont, and Jessica Jones – Engineering Department
Anna Landis – VP LithBat
Vince Maccano – Head of Data Science
Tony R. Abraham – VP
Bernard Ong - Head of Data Science

Key Data Sources Required:

Cert data dump mentioned above is critical.
Pinpointing what happened around March at any or all suppliers. This may be gleaned from quantitative data, in addition to any personnel with supplier contact.