

# IDEATION PHASE

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## PROBLEM STATEMENTS

TEAM ID	PNT2022TMID16815
TEAM PROJECT TITLE	Machine Learning-Based Predictive Analytics for Aircraft Engine
DATE	10 October 2022

### 1. Need of more Data:

*Our first step is to identify the target variable which we want to predict. Since our dataset consists of columns containing sensor readings, it initially isn't intuitive as to what will help us arrive at our target variable. Through some analysis, we realized that based on the maximum number of cycles until failure, we can compute the Remaining useful life or RUL. After which we will approach predictive maintenance as a binary classification problem.*

### 2. Need of code for perfect results :

*The problem can be posed as a regression or binary classification or multi-class classification for this dataset. In this case study, binary classification is done and the code predicts whether the Engine will fail in next 30 cycles or not. Class label 1 represents that it will fail in next 30 cycles and class label 0 represents that it won't. These labels are not given by dataset but are generated by code. As it is more important to correctly classify it as failure when it is going to fail, Recall is considered as the performance metrics in this case study.*

### 3. Problem with Engines :

*Preventable fuel problems such as exhaustion, mismanagement, contamination, or mis-fueling . Structural failures where a broken connecting rod, crank, valve, or camshaft is present account for seventeen percent of engine failures, primarily in Continental engines.*

#### **4. Problem with Human resources**

*It is better to record and maintain data and the malfunction with systems through machine learning with the Aid of Artificial Intelligence. But there is a need of Human resource is needed to maintain the datasets preferably exact ones. There is such need of pilot and second officers are needed to maintain the customers. There is no one to have a look on condition of airplane, pilots concentration is fully focused on flights stability. There is no possibility to have a look on engines condition. So machine learning can help to read the data.*

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