Project Design Phase-I - Solution Fit Template **Team ID:** PNT2022TMID12895

Project Title: Machine Learning-Based Predictive Analytics for Aircraft Engine

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

Air carriers wishing to utilize this solution to reduce catastrophic engine failures is the customer segment for this proposed solution.

6. CUSTOMER CC

Currently, the customer cannot replace engines whenever there is a single failure. Additionally, hardware modifications to the engine are expensive and not feasible.

5. AVAILABLE SOLUTIONS AS

Determining when an aircraft engine must be serviced.

No particular solution that identifies trend in underlying data to detect failures in an intuitive manner.

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS J&P

Inconsistent engine checks

Revenue loss

Fatality risk

9. PROBLEM ROOT CAUSE RC

Aircraft engines failures can seem unpredictable when they are manually predicted based on manual observations and decisions. The decisions on whether or not to replace certain components are made without taking into consideration any underlying pattern that could exist in the data.

7. BEHAVIOUR BE

The customer tests the model before implementing.

They study the performance and accuracy of the model, calculate the benefits and profit associated with it, and discuss the difficulties in implementing this solution.

Focus on J&P, tap into BE, understand RC

3. TRIGGERS TR

With increasing focus on passenger safety standards, the customer is under pressure to put into place stringent safety checks and measures to ensure the safety of the passengers under their care.

4. EMOTIONS: BEFORE / AFTER EM

BEFORE: Not being able to say when an engine could fail. Had to accept the elevated risk of mid-flight engine failure.

AFTER: Able to predict accurately when an engine would fail, and reduce the risk of fatality by a great extent.

10. YOUR SOLUTION SL

Using Machine Learning that takes on previous aircraft engine data and to predict the energy output will help in reducing the risk of fatalities, and improve the general confidence that the public have on air travel.

8. CHANNELS OF BEHAVIOUR CH

The performance of every engine can be monitored from a central office using this solution. It would give details of the current status of the engine.

Specific engines can also be manually assessed by a technician on site if manual intervention is required.