Questions for Miguel

1. How should we merge the csv, when one MNS02 has 111 variable ?
2. To which Degree should we implement the Business Case in that project?
3. What are the submission contents ?
4. Is there starting point in the roadmap you suggest us starting with?
5. Is there a model family you recommend us starting with ?
6. Did we understand correctly that the goal should focus on which variables have the highest impact on the performance of you models ?
7. Is it expected to add any additional data ?
8. Are they variables where NAN represent a turned off aircraft ?
9. What is the difference between Fuel Transfer Mode and Pump ?
10. What does 0., 6., 1., 3 mean in Transfer Mode ?
11. What is the target variable?
12. What are the STBY tank ?
13. Where is the central tank located is it possible to get a blueprint of the type of aircraft to better envision the architecture of tank positions.

LSTU1\_A\_VOLUME

LSTU1\_F\_VOLUME

RSTU1\_A\_VOLUME

RSTU1\_F\_VOLUME

STATUS\_FUEL\_LEAK\_DETECTED\_VALID

LEAK\_DETECTION\_LEAK\_FLOW

Questions we should ask ourselves:

1. In which Flight phase do the most leakage appear ?
2. How long is average flight?
3. How long is average time in air or on ground?
4. How long is average time in each flight phase

**1. CSV Merging with 111 Variables (MNS02):** What's the optimal strategy for merging CSV files with such a high number of variables? Are there specific tools or techniques to consider?

MNS02-39 = Plates of Aircraft → AC80 Aircraft?

Military aircraft only 4 engine manucrafted in seville

No trim tank

**2. Degree of Business Case Implementation:** To what extent should we implement the business case in our project? Are there specific aspects or key factors to prioritize?

Business case important

Think of a commercial aircraft - estimate numbers, cost-benefit-analysis,   
  
**3. Submission Contents**: Could you outline the essential components required for our project submission? Are there specific formats or documentation you recommend?

Analysis, Model, Level of Business Case   
1.CODE, 2.PRESENTATION, 3.   
   
**4. Roadmap Starting Point:** Do you suggest a particular starting point in the roadmap for our project implementation? Any critical milestones or phases to focus on initially, e.g EDA, Unsupervised Models first to find patterns in leak appearance etc.?

E.g. Dashboard contains analytical analysis   
Understand Data to find a solution, so business can use the insights   
PCA  
  
**5. Model Family Recommendation**: Is there a specific model family or approach you recommend we start with for our project? Any considerations or preferences?  
  
**6. Variable Impact on Model Performance**: Confirming our understanding – should our goal primarily focus on identifying which variables have the highest impact on model performance?  
  
We must construct our own features to monitor a leakage   
Measure fuels   
Real time analysis   
  
**7. Additional Data Requirements:** Is there an expectation to include additional data beyond what we currently have? If so, any specifics on the type or source?  
NO  
  
**8. NAN Representation for Aircraft Status:** Do variables exist where a NaN value signifies a turned-off aircraft? If yes, could you provide examples or guidance on handling such cases?

When engine on (only in the beginning seconds) - try to avoid because it could be old data saved in memory -

**9. Fuel Transfer Mode vs. Pump:** Could you clarify the distinction between Fuel Transfer Mode and Pump in the context of our project?

Pump binary -

Fuel transfer mode value -   
  
**10. Interpretation of Transfer Mode Values (0., 6., 1., 3):** What do the values 0., 6., 1., and 3 represent in the Transfer Mode variable? Any significance or interpretation guidance?

Tanks have different sequences, transfer from central to feet etc.

Understand how the tanks behave → Stacked columns? 100% stacked columns to see percentage of tank used or even tank capacity??   
  
**11. Target Variable Definition:** What is the specific target variable we should be focusing on in our modeling efforts? As far as we understood STATUS\_FUEL\_LEAK\_DETECTED\_VALID is the variable which should indicate the fuel leak.   
  
No - feature engineering ! Simple algorithms which much more preprocessed data, additional columns

**12. STBY Tank Identification:** Could you provide information on STBY tanks and their significance in the context of our project?  
  
STATE\_PMP\_XFR\_1\_L\_ - transfer tank between main and feet 2 on each side

**13. Central Tank Location and Blueprint:** Could you confirm the location of the central tank? Is it feasible to acquire a blueprint for a clearer understanding of the tank positions' architecture? Alternatively, is the blueprint provided in the Briefing PDF accurate for this purpose? We've identified the four engines and the four feet tanks, but aligning the STBY and Central/Main tanks proves challenging.

**14. Perform a Steamlite** interphase to input different variables status and based on that predict when the next leakage could be…

Position of pitch and roll?? → flight phase → 3 positions of altitude (search in internet the names and relationship between them to insphere for other flights

Understand the problem of AIRBUS

HOW do we find the LEAK ?

* Fuel

skywise airbus → ~500 sensors for Airbus aircrafts

We found that for other flights we have very few values of “Fuel Used” as most of the values are N/A.   
Should we drop all flights without Values for Fuel Used?   
For those in which we have at least one value or more, we would like to take a regression from that point to the start and calculate the other values.

There is only one fuel leakage in the data (is it in flight 37??)

Create an algorithm to detect leakage without enough leakage data points.

* Expected amount of fuel based on FOB and Fuel Used “expected” or estimated?
* FOBexpected = FOB t0 - Fuel Used
* FOB measure = FOB total - Fuel Used - Leakage
* Try to inject data of simulated leakage
* First understand was is normal consumption and then detect anomalies
* If the fuel is recovered, then it’s not an outlier.
* If it is a leakage then the FOB should be reduced over time with a rate (size of leakage) at least for a certain period of time. If then the FOB keeps reducing as expected, could be cause leakage is on external tanks or at a level when the fuel doesn’t get anymore.

Business Cases:  
- Money saved based on accurately preventing leakages and therefore AOG which implies money per hour