## Week 1 – Framing a ML Problem

### Use case: Aircraft scheduling

If the use case is a ML problem:

1. What is being predicted?
   1. The block time (flight departure to flight arrival) for each planned flight several months in the future.
2. What data is needed?
   1. Historical data on actual block times and individual components such as time required for taxiing and time spent in the air, departure times, arrival times, origin and destination airport, season, time of day, aircraft type, and anticipated airport congestion. (Note that we are focusing on variables that are either known or can be reasonably guestimmated in advance).

If the ML problem is a question of software?

1. What is the API for the problem during prediction?
   1. predictBlockTime(month, aircraft\_type, destination, origin)
2. Who will use this service?
   1. Airline logistics or schedule planners.
3. How are they doing it today?
   1. Off-the-shelf software or a crude analysis of past similar flights with some adjustment for outliers.

If the use case is a data problem:

1. What data are we analysing?
   1. Historical airline flight data.
2. What data are we predicting?
   1. Flight times based on user-input of the month, aircraft time and origin and destination airports.
3. What data are we reacting to?
   1. The profitability of the proposed schedule for the airline and whether it is robust to unforeseen delays or operational conditions.