**Project Title: Project Design Phase-I** - **Solution Fit Template Team ID:** PNT2022TMID12521

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

**Explore AS, differentiate**

**Deﬁne CS, ﬁt into CC**

or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking

Using a machine learning model, we can predict flight arrival delays. We then use decision tree classifier to predict if the flight arrival will be delayed or not. we compare decision tree classifier with logistic regression and a simple neural network for various figures of merit.

**AS**

**5. AVAILABLE SOLUTIONS**

Which solutions are available to the customers when they face the problem

What constraints prevent your customers from taking action or limit their choices

of solutions? i.e. spending power, budget, no cash, network connection, available devices.

 The Airline Delay Management Problem (ADMP), which can be described as the task of dealing with daily airline operational delays and deciding whether to delay subsequent flights at a hub airport or to have them departing on time. An innovative integer linear programming approach is presented to the capacitated case of the ADMP and airport limitations in terms of bay availability, taxiway capacity and runway separation are incorporated to represent capacity constraints.

**CC**

**6. CUSTOMER CONSTRAINTS**

**CS**

**1. CUSTOMER SEGMENT(S)**

Who is your customer?

i.e. working parents of 0-5 y.o. kids

The airline customer segmentation is divided into the following segments: Old Travelers, Business Travelers Budget conscious Travelers, Loyal Travelers, Urgent Travelers. Traditionally, airlines segment their customers into business and economy passengers and align their product strategy with flexibility for business passengers and price.

**Explore AS, differentiate**

**Define CS, fit into CC**

i.e. directly related: ﬁnd the right solar panel installer, calculate usage and beneﬁts; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

Delays affect airline operations, resulting in increased block times on routes and, in general, higher carrier costs and airfares. Delays are calculated against scheduled block times as well as against more idealized feasible flight times. Based on econometric estimations, welfare impacts of flight delays are calculated. flight delays on a route reduce passenger demand and raise airfares, producing significant decreases in both consumer and producer welfare.

**BE**

**7. BEHAVIOUR**

What does your customer do to address the problem and get the job done?

**RC**

**9. PROBLEM ROOT CAUSE**

What is the real reason that this problem exists? What is the back story behind the need to do this job?

i.e. customers have to do it because of the change in regulations.

### **Maintenance issues**

### **Crew problems**

### **Aircraft cleaning and preparation**

### **Baggage loading**

### **Extreme Weather**

### **Non-extreme weather**

### **Air Traffic Control (ATC)restrictions**

**J&P**

**2. JOBS-TO-BE-DONE / PROBLEMS**

Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

Air and ground congestion are a major factor why flights get delayed. If a scheduled flight pushes back from the gate late, that flight could impact the departure of other flights, such as the next flight scheduled to arrive at the gate occupied by the late flight departure. Flight delays cause a decrease in efficiency, an increase in capital costs, reallocation of flight crews and aircraft, and additional crew expenses

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

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**Identify song TR & EM**

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| --- | --- | --- | --- | --- |
|  | **3. TRIGGERS TR**  What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efﬁcient solution in the news. **Adverse weather conditions,** k**nock-on effect due to a delayed aircraft,** Waiting for connecting passengers, **Waiting forcargo, Gettingsecurity clearance.** the crew needs to ensure the aircraft is ready for boarding. Basis requisites have to be checked and filled before passengers board a flight. | **10. YOUR SOLUTION SL**  If you are working on an existing business, write down your current solution ﬁrst, ﬁll in the canvas, and check how much it ﬁts reality.  If you are working on a new business proposition, then keep it blank until you ﬁll in the canvas and come up with a solution that ﬁts within customer limitations, solves a problem and matches customer behaviour.  The delay ratio is calculated by summing all the flights that have been delayed at the origin, and dividing by the total number of flights made at the origin. The trick is narrowing your scope by location and time. | 1. **CHANNELS of BEHAVIOUR CH**     1. **ONLINE**   What kind of actions do customers take online? Extract online channels from #7   * 1. **OFFLINE**   What kind of actions do customers take ofﬂine? Extract ofﬂine channels from #7 and use them for customer development.  **ONLINE:**  The flight delay is notified in web applications such as: Your airline’s app, Flight aware, Lounge Buddy and Airhelp.  **OFFLINE:**  The gate agents should be transparent about the cause of the flight delay. |  |
| **4. EMOTIONS: BEFORE / AFTER EM**  How do customers feel when they face a problem or a job and afterwards?  i.e. lost, insecure > conﬁdent, in control - use it in your communication strategy & design.  Delays and cancellations affect both passengers and air carriers. By resulting in increased travel time and increased expenses on food and lodging, they cause stress among passengers. Further, they disrupt the purpose of air travel — rapid, affordable and safe — and make the passengers distrust airlines. On the other hand, airlines suffer from extra crew costs, costs associated with accommodating disrupted passengers, and aircraft re-positioning, as airline fleet and crew schedules are largely based on the scheduled times. |