**Private Jet Selection Advisor – Project Brief**

**1. Problem Statement**

ultra–high–net–worth individuals (uhnwi) often want to purchase a private jet but lack the time or expertise to dig into technical details like max range, runway requirements, or cabin height. they need a quick, intuitive tool where they can answer a few plain–language questions and instantly see tailored aircraft recommendations.

the app must:

* minimize time spent (short question set).
* translate lifestyle/travel needs into specs.
* balance hard requirements (range, pax capacity, runway length) with soft preferences (comfort, new vs preowned, brand).
* output 3–5 best–fit aircraft in a modern, easy–to–understand way.

**2. Project Objectives**

* design a concise questionnaire that captures all critical client needs.
* calculate utilization (annual flight hours) based on trips instead of asking for it directly.
* match client needs against a catalog of jets (light, midsize, heavy, ultra–long–range).
* highlight trade–offs (e.g., nonstop vs one stop).
* present clear recommendations and reasoning.

**3. Core Project Requirements**

**functional requirements**

1. **questionnaire intake** – form where client answers key questions.
2. **recommendation engine** – logic that maps answers to aircraft specs.
3. **results presentation** – 3–5 aircraft cards with key data (range, pax, comfort, price band).
4. **comparison layer** – quick explanation of why each option fits.
5. **reset + search buttons** – user can clear inputs and start over easily.

**non–functional requirements**

* interface must be clean, modern, and fast (since clients are time–constrained).
* database or static dataset of aircraft specs (range, ceiling height, runway length, pax capacity, list price).
* scalable to add more aircraft later.
* usable on tablet/desktop.

**4. Client Questions (Finalized List)**

1. **what’s your home base airport?**
   * helps define runway length limits, weather considerations, and default starting point.
2. **how many people do you typically travel with?**
   * determines seating needs.
3. **what’s the maximum number of passengers you may need?**
   * ensures peak loads are supported (e.g., family + business colleagues).
4. **what’s the longest trip you expect to take?**
   * sets minimum required aircraft range.
5. **what are your most frequent trips?**
   * used to calculate annual hours, trip lengths, and fuel stop needs.
6. **what’s your comfort preference?**
   * ensures cabin height, width, and luxury match client expectations.
7. **would you prefer a new or pre–owned aircraft?**
   * affects cost, depreciation, and availability.
8. **do you travel seasonally more (e.g., summer, holidays)?**
   * used to adjust flight utilization automatically.

**5. Method to Derive Annual Hours**

* take frequent trips list.
* assume standard frequency (e.g., x times/month).
* multiply by flight time for each trip.
* add long trips (like international flights).
* apply seasonal multipliers:
  + +20% utilization in summer months.
  + +10% utilization during christmas break.

this way, client doesn’t need to guess annual hours — the system estimates it for them.

**6. Example Scenario**

**client profile**

* **home base:** chicago o’hare (ord).
* **max passengers:** 12 (9 adults + 3 children).
* **typical travel group:** family of 3, but occasionally colleagues.
* **longest trip:** chicago → london gatwick (ord → lgw).
* **frequent trips:**
  + chicago → boston
  + boston → new york
  + new york → chicago
  + chicago → dallas
  + dallas → wichita
  + wichita → chicago
* **comfort preference:** full–standing cabin height (≥6ft).
* **aircraft type preference:** open to both new & preowned.

**annual utilization calculation**

* frequent trips add up to ~180–200 hours/year.
* one or two ord–lgw round trips add ~20–30 hours/year.
* add seasonal factors:
  + summer flights +20%.
  + christmas flights +10%.
* estimated **annual hours ≈ 260–280 hours**.

**recommendation outcome (sample logic)**

* midsize jet → insufficient for ord–lgw (needs stop).
* super midsize → can handle ord–lgw with one fuel stop, fits 10–12 pax tight.
* heavy jet (e.g., gulfstream g500, bombardier global 6000) → ideal: nonstop ord–lgw, 12 pax, 6’2”+ cabin, suitable for frequent domestic hops too.

system would present 3 aircraft with pros/cons, highlighting why heavy jet is optimal given the london route and pax count.