Kata Brief

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We are redesigning a **Flight Search Platform** with a goal of providing the most accurate pricing and availability information to our customers.

This platform will serve as the foundation for a travel business operating across 20+ countries and 10+ brands.

Flight Search is considered mission-critical, with downtime directly impacting revenue at approximately £100,000 per hour.

Core Definition

A Flight is considered to be a combined inbound and outbound journey with a single total price, made up of one or more legs, possibly returning to a different airport. For example:

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Outbound
  Stockholm Arlanda to Tenerife South
Inbound
  Tenerife South to London Gatwick
  London Gatwick to Stockholm Skavsta
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Key Requirements

Scale & Performance

- System must handle "peak seasonal demand" while maintaining "acceptable response times"
- API must support "high throughput" for both B2C and B2B consumers
- Results must be "fresh" and reflect current availability

Functional Requirements

- The system must provide an API supporting searching, filtering, paginating and ordering on the Flight Only path of the website
- The system provides an API to the aggregation service to combine flights with hotels for the Holiday Finder path
- Customers can request a number of bags to be included in the total price
- Pricing rules differ across brands and locales
- The business may choose to promote specific flights (exclusive flying)
- Flight schedule changes should be pushed to internal booking management systems
- Reports can be generated including route coverage, availability and data freshness
- System must enable "personalized search results" based on customer preferences
- Integration with "partner loyalty programs" is necessary

Data Challenges

- Flight data are acquired from a variety of sources (flat files, streaming APIs, scheduled collection), with differing structures (single leg, paired returns) and variety in data quality
- We may receive the same flight from many sources with "conflicting information"
- Each flight can have multiple fare types - some fare types may only be used when a hotel is combined with a flight
- Source data may contain "pricing anomalies" that need to be identified
- Historical data must be maintained for "regulatory compliance"
- Some flight data sources have "inconsistent availability"

Business Constraints

- The system must be able to handle the addition of new data sources within "short timeframes"
- "Cost efficiency" in cloud resource usage is a priority
- Compliance with international regulations around "fare display" is required
- System must support deployment of "pricing experiments" for specific customer segments

Additional Context

- Current platform processes approximately 50 million searches per day
- 15+ different flight data providers with varying APIs and data formats
- Peak-to-average traffic ratio is 5:1
- The platform has strategic importance for future expansion into new travel verticals