Airline Co System

Model:

Kimball Two-layer approach was utilized, for the following reasons:

- Data marts was priorly known,
- Fast construction with no normalization, to serve fast-growing business
- Focusing on individual business areas and processes rather than the whole enterprise

Business Process: Airline Tracking Process

Granularity:

1. Flight Fact: per transaction
2. Customer Care Fact: per flight
3. Finance Fact: per reservation

Dimensions:

- Aircraft

  Describes aircraft by specifying its ID, model, name and serial no

- Airport

  Describes the airports which are available for landing (ID, Name, Country)

- Passenger

  Describes the customers of the airline system (ID, Name, Gender, Phone, Address, Nationality)

- Date

  Has an ID, Year, Quarter, Month and Day

- Frequent Flyer

  Describes the programmes designed for frequent flyers (ID, Duration, Price, Status, Name, Min_Req_Miles, Min_Req_Seg, Desc)

- Fare Basis

  Describes the fare base code for each class (First, Business and Economy)

- Time

  Timestamp (Hour:Minute)
- Promotion

  Describes the promotions available in the system (ID, Name, Desc)
- Booking Channel

  Describe the booking channel (Online, Travel agency or On premise) as well as the payment method (Cash, Credit or Master)
- Service

  Describe the rate of the services provided (ID, Occurrence (Pre-Flight, On-board or Post-Flight), Rate)
- Complaint

  Describe the customers complaints (ID, Severity, Desc, Occurrence (Pre-Flight, On-board or Post-Flight))

Facts:
- Flight Fact

  Linked to:

  (Aircraft, Airport, Passengers, Frequent Flyer, Fare Basis, Date, Time, Promotion, Booking Channel) + Flight ID (DD)

  Measures:

  - Miles

  - Duration

- Customer Care Fact

  Linked to:

  (Date, Passenger, Complaint, Service)
- Finance Fact

  Linked to:

  (Passengers, Frequent Flyer, Date, Promotion, Booking Channel)

  Measures:

  - Cost

  - Revenue

  - Gross Profit

SQL Queries

1. No. of flights between 6 pm to 6 am

```
1  SELECT COUNT (DISTINCT FLIGHT_ID ) AS NO_FLIGTS_6PM_6AM FROM FACT_FLIGHT F JOIN DIM_TIME T
2  ON F.ACTUAL_TIME_ID = T.TIME_ID
3  WHERE T.HOURS BETWEEN 6 AND 18 ;
```

History	Results

Result set 1	Details

Q   Filter table

NO_FLIGTS_6PM_6AM
2

2. For the top flight in reservations, which complaint was the most issued

```
1  SELECT Complaint_ID
2  FROM FACT_CUSTOMERCURE
3  WHERE Flight_ID =
4  (SELECT Flight_ID
5  FROM FACT_CUSTOMERCURE
6  GROUP BY FLIGHT_ID
7  ORDER BY Count(*) DESC
8  LIMIT 1)
9  GROUP BY Complaint_ID;
10
```

History	Results

Result set 1	Details

Q   Filter table

COMPLAINT_ID
C0001
C0003
C0008

3. Number of tickets in each flight

```
1  SELECT FLIGHT_ID , COUNT(TICKET_ID) AS NO_TICKETS
2  FROM FACT_FLIGHT
3  GROUP BY FLIGHT_ID
```

History | **Results**

Result set 1 | Details

🔍 Filter table

FLIGHT_ID	NO_TICKETS
1100	5
1200	10
1300	4
1400	10

4. In a given flight, specify aircraft ID and model

```
1  SELECT FLIGHT_ID , PASSANGER_ID , P.NAME , F.FRQUENT_FLYER_ID
2  FROM FACT_FLIGHT F JOIN DIM_PASSENGER P
3  ON F.PASSANGER_ID = P.PASSENGER_ID
4  WHERE FRQUENT_FLYER_ID IS NOT NULL
5
```

History | **Results**

Result set 1 | Details

🔍 Filter table   To

FLIGHT_ID	PASSANGER_ID	NAME	FRQUENT_FLYER_ID
1400	1	AHMED	P002
1100	3	SALWA	P010
1300	4	ALY	P002
1100	5	AYMAN	P003
1400	6	IBRAHIAM	P010
1400	12	ETMAN	P002
1200	13	EMAN	P012
1200	21	SCOOT	P003

5. Which passengers are frequent flyers

```sql
SELECT F.FLIGHT_ID , F.AIRCRAFT_ID , A.NAME
FROM FACT_FLIGHT F JOIN DIM_AIRCRAFT A
ON F.AIRCRAFT_ID = A.AIRCRAFT_ID
GROUP BY F.FLIGHT_ID , F.AIRCRAFT_ID , A.NAME
```

History | Results

Result set 1 | Details

Filter table

FLIGHT_ID	AIRCRAFT_ID	NAME
1100	1001	Airbus A330
1200	1002	Boeing 747
1300	1003	E-Jet Family
1400	1004	Boeing 727

DIM PASSENGER

PK	PASSENGER ID
	PASSENGER KEY
	NAME
	PHONE
	GENDER
	ADDRESS
	NATIONALITY

Customer Care Fact

Passenger Key (FK)

Date Key (FK)

Complain Key (FK)

IDFlight (DD)

Service Key (FK)

DIM DATE

SK	DATE ID
	DATE
	YEAR
	QUARTER
	MONTH
	DAY

COMPLAINT

PK	ID
	Severity
	Occurrance
	Description

SERVICE

PK	ID
	Occurrance
	Rate

DIM PASSENGER

PK	PASSENGER ID
	PASSENGER KEY
	NAME
	PHONE
	GENDER
	ADDRESS
	NATIONALITY

Finance Fact

DATE KEY (FK)

PASSENGER KEY (FK)

PROMOTION KEY (FK)

FREQUENT FLYER (FK)

BOOKING CHANNEL (FK)

IDFLIGHT (DD)

IDTICKET (DD)

COST

REVENUE

GROSS PROFIT

DIM DATE

SK	DATE ID
	DATE
	YEAR
	QUARTER
	MONTH
	DAY

DIM PROMOTION

SK	PROMOTION ID
	PROMOTION NAME
	PROMOTION DESC

DIM FREQUENT FLYER

SK	FREQUENT FLYER ID
	DURATION
	PRICE
	NAME
	STATUS
	MIN_REQ_MILES
	MIN_REQ_SEG
	DESC

DIM BOOKING CHANNEL

SK	BOOKING CHANNEL ID
	BOOKING CHANNEL
	BOOKING DESC
	PAYMENT

DIM AIRPORT

SK	**AIRPORT ID**
NK	AIR PORT KEY
	AIR PORT NAME
	COUNTRY

DIM PASSENGER

PK	**PASSENGER ID**
	PASSENGER KEY
	NAME
	PHONE
	GENDER
	ADDRESS
	NATIONALITY

DIM PROMOTION

SK	**PROMOTION ID**
	PROMOTION NAME
	PROMOTION DESC

DIM AIRCRAFT

PK	**AIRCRAFT ID**
	AIRCRAFT KEY
	NAME
	MODEL
	SERIAL NO

FACT FLIGHT

SCHEDULED DATE ID (FK)
ACTUAL DATE ID (FK)

AIRPORT ORIGIN (FK)
AIRPORT DESTNATION (FK)
PASSANGER ID (FK)
FARE BASIS ID (FK)
FRQUENT FLYER ID (FK)
SCHEDULED TIME ID (FK)
ACTUAL TIME ID (FK)
PROMTION ID (FK)
AIRCRAFT (FK)
BOOKING CHANNEL ID (FK)

FLIGHT ID (DD)
TICKET ID (DD)
MILES
DURATION

DIM DATE

SK	**DATE ID**
	DATE
	YEAR
	QUARTER
	MONTH
	DAY

DIM FARE BASIS

SK	**FARE BASIS ID**
	FARE BASIS CODE
	FARE BASIS DESC

DIM TIME

SK	**TIME ID**
	TIME STAMP

DIM FREQUENT FLYER

SK	**FREQUENT FLYER ID**
	DURATION
	PRICE
	STATUS
	NAME
	MIN_REQ_MILES
	MIN_REQ_SEG
	DESC

DIM BOOKING CHANNEL

SK	**BOOKING CHANNEL ID**
	BOOKING CHANNEL
	BOOKING DESC
	PAYMENT