First Project: Data Warehouse design

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Assumptions:
- All the measures in the schema are at the lowest level of granularity. The calculation of the KPIs is done after the ETL at the moment of answering queries or creating materialized views.
- Only delays with a duration between 15 minutes and 6 hours are considered for the delays and average delay time measures.

Justifications:
- Two dimensions and two facts are considered in our suggested model.
  1) Time Dimension: this dimension covers day, month and year.
  2) Aircraft_info Dimension: it covers all information related to aircraft, model and manufacturers. "source: aircraft manufacturers"
  3) Aircraft_metric Fact: this fact has general information about each flight such as flight hours, maintenance scheduled, unscheduled and so on.
  4) Logbooks Fact: information related to logbooks and reporters are covered in this fact. "Source: maintenance-personnel-airport"

  In our design, we use the operator DRILL-ACROSS in order to relate the fact tables in order to aggregate a new measure from another table.

- Two materialized views are created, OPERARTIONS_MONTHLY and LOGBOOK_MONTHLY.

  First one, will be a general view covering aircraft and maintenance metrics grouped by aircraft, model, month and year in order to be able to answer queries from the points a) and b) of the project statement. Only missing the queries per day which we consider that this data can be retrieved directly from the table as the company has 700 flights on average per day.

  The second one is created to get the logbook counts related to reports grouped by aircraft, model, manufacturer, airport, month and year in order to query the data from the points c) and d) of the project statement.

  The materialized views are populated immediately with BUILD IMMEDIATE. The data is updated incrementally with REFRESH FAST, so we can update data incrementally, however the KPIs have to be calculated by the user through queries. Moreover, ENABLE QUERY REWRITE is activated and the materialized views are refreshed ON DEMAND every month.