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QUANTUM COMPUTING CHALLENGE

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Passenger Re-accommodation for a planned Schedule Change

Background

Airlines routinely change their flight schedules for various reasons like seasonal demands, to pick new routes, time changes needed based on daylight savings, changes to flight numbers, operating frequency, timings, etc. Many passengers will get impacted due these schedule changes and they need to re-accommodate to the alternate flights. Airlines need a solution to analyze the impact to the passengers with their planned schedule changes and automatically identify the suitable alternate flights for the impacted passengers.

- ❖ Identify impacted flights and passengers with the proposed schedule changes

- ❖ Based the impact at flight and passenger level, identify the suitable alternate flight (Optimization)

- ❖ Rank alternate flight solutions based on various factors like time to reach destination, impact to the purchased ancillary services, etc. (Calculation)

- ❖ Rank passengers for the re-accommodation priority on various factors like passenger type (unaccompanied minor, on duty employee, loyalty customer levels, paid class of service, etc.) (Calculation)

- ❖ Flexibility to alter the business rules for flight ranking and passenger ranking and reproduce the solution.

- ❖ Option for the airline to pick the right solution from the multiple reports.

- ❖ Generate the flight and passenger re-accommodation solution files and rank each solution.

- ❖ Ground rules to set up the expiration date and time.

Key Problem Statement / Scenario

Identify optimal/best alternate flight solutions for all the impacted passengers (impacted due to planned schedule change) based on the provided rule sets. Also, ensuring validity of solution with all the rule sets enforced. Rank the solutions based on various factors like time to reach destination, impact to the purchased ancillary services, etc. as well as include Ranking of passengers on the solution based on re-accommodation priority based on factors like passenger type (unaccompanied minor, on duty employee, loyalty customer levels, paid class of service, etc.). You can enforce the rule sets as part of optimization constraints or as Pre or Post process calculation.

Requirements / Rule Sets List

Please refer to the rules list - Rule Set List-V1.1 (Comprising of Rules that needs to be applied on PNR Ranking, Alternate Flight Ranking, Alternate flight and connecting flights selection and Downgrade & Upgrade classes)

Business rule Engine profiling - should help to create different rule profiling to generate different solution files for different set of business rules:

- Rules engine should be flexible to enable/disable specific rules.
- Indicative scores to be applied given as part of the Rule Sets and this score should be configurable by the airline agent.

Output solution should generate two sets of solution file:

- Flight level default solution for re-accommodation where majority of the passengers will be re-accommodated.
- Exception list – It will give the re-accommodation at PNR level, which are not fall under the majority category.

Value addition or Nice to have:

- Generation Mailing option to the passengers to pick the different alternate flight solution
- Finalize the solution file based on the passenger's response.

Schema List & Description of the Data (Input)

Any IATA standard data model and schema can be used (Schedule, Inventory, Reservation, Ticketing)
Refer to the data models - Data Models.

Assumptions

Business rules for the flight and passenger ranking will be provided.

Industry data models can be used for the schedules, inventory, check-in and One order (PNR, ticket)

Expected Outcome

Business rules engine which has the flexibility to create different rule profiles for agents

Default flight level re-accommodation solution file where it explains about the flight-to-flight re-accommodation solution

Exception re-accommodation solution file which gives the re-accommodation solution at PNR level, which is not falling under the default flight level re-accommodation.

Verification of Results
(How solution will be evaluated include any weightages)

1. **Solution file outcome and effectiveness**
2. **Ranking of the solution and percentage of impacted passengers ended with no**
3. **alternate solution**
4. **Flexibility and validity of all business rules application**

Evaluation

- Solution file outcome and effectiveness (**60 Points**)
- Flexibility and validity of the all business rules application (**30 Points**)
- Ranking of the solution and percentage of impacted passengers ended with no alternate solution (**10 Points**)