AI-Powered Passenger DNA & Next-Trip Recommendation Engine for Airlines – Developed by a Turkish R&D Company

Summary

Profile type	Company's country	POD reference
Research & Development Request	**Türkiye**	**RDRTR20260121007**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Research and development cooperation agreement**	**• World**
Contact Person	**Term of validity**	**Last update**
Enrico FRANZIN	**21 Jan 2026** **21 Jan 2027**	**21 Jan 2026**

General Information

Short summary

The project is a flight-intent aware next-trip recommendation system for airlines. It infers passenger motivation (“Passenger DNA”) from historical flight and booking signals and recommends both destination and optimal timing (“where & when”) using a LLM-enhanced hybrid model. The output enables micro-segmentation, personalized CRM communication, ancillary upsell timing, and low load-factor flight promotion.

Full description

Airlines struggle with generic recommendation engines because passengers on the same route can have different motivations (business, leisure, visiting friends & family). The project addresses this by estimating travel purpose at ticket/client/destination level and turning it into actionable “Passenger DNA”.

The solution incorporates the temporal dimension of travel demand: time between successive trips, booking-to-flight horizon, national/school holidays, weather and seasonal appeal, and events/festivals. Therefore, recommendations propose a timeline together with the destination (“where & when”).

Core analytics layer: An LLM-enhanced hybrid model for travel purpose estimation that combines probabilistic intent scoring, sequential travel-pattern learning, business-rule constraints and latent interaction modelling across customer–destination relationships. Outputs include travel purpose distributions for clients, destinations and individual tickets.

Business value layer:
-CRM / Loyalty & lifecycle management: intent-driven micro-segmentation enables personalized channel, timing and language plus tailored destination recommendations.
-Ancillary services upsell: matching persona and booked-flight intent supports personalized timing and pricing of ancillary offerings during the book-to-flight window.
-Revenue management: when temporal demand slowdown is detected, high-intent customers can be targeted to promote low load-factor flights via destination recommendations.

R&D collaboration scope:
-Data & feature co-design: define data contracts and feature sets from booking/PNR, loyalty/CRM and ancillary signals; privacy-preserving processing and evaluation datasets.
-Model co-development: improve intent inference and time-aware recommendation quality; incorporate airline-specific constraints (network, seasonality, commercial rules).
-Experimentation & validation: design offline metrics and A/B testing methodology for engagement, conversion and revenue uplift; bias/robustness checks.
-Pilot-to-production design: define deployment architecture (batch/near-real-time), monitoring, retraining and governance.

Additional capability: demographic and intent-based archetypes and personalized content generation for customer engagement workflows.

Advantages and innovations

-Intent-aware profiling: models passenger motivation signals rather than relying on generic similarity-only recommendations.
-Time-aware recommendations: incorporates travel cadence and seasonality drivers to propose an actionable timeframe with destination.
-Hybrid AI architecture: combines probabilistic learning + sequential signals + rules + latent factorization, enhanced with LLM capabilities.
-Research-ready design: supports systematic experimentation, ablation and validation across airlines and markets.
-Productization path: developed by a Turkey-based R&D company with a clear roadmap for pilot-to-production industrialization.

Technical specification or expertise sought

The company seeks R&D partners (such as airlines, research institutes, universities, technology laboratories, or corporate innovation units) to collaborate on the co-development and validation of an advanced data-driven solution within an R&D cooperation framework.

The cooperation is expected to include:

Access to representative airline booking and passenger-related datasets (e.g. PNR-level and optional loyalty or ancillary indicators) for research and pilot evaluation purposes, using privacy-preserving and fully compliant data-sharing mechanisms.

Expertise in recommendation systems, sequential behavioral modeling, experimentation methodologies (including A/B testing), and uplift measurement techniques.

Capability to jointly design and implement a pilot framework and define a scalable pilot-to-production architecture, including data pipelines, monitoring systems, model retraining processes, and governance structures.

The expected outcome is a jointly validated prototype accompanied by a clear industrialization roadmap, with potential opportunities for joint scientific publications and/or joint productization, depending on partner preferences.

Stage of development

Under development

Sustainable Development goals

- **Goal 8: Decent Work and Economic Growth**

IPR Status

No IPR applied

IPR Notes

Partner Sought

Expected role of the partner

when).

The partner is expected to contribute to one or more of the following work packages:

1) Data Collaboration & Evaluation Setup

Provide access to representative airline booking and PNR-level datasets, and optionally loyalty/CRM and ancillary-related signals, for research and pilot evaluation purposes.

Ensure privacy-preserving data processing, including pseudonymisation, aggregated data views, and secure computing environments.

Support the definition of data dictionaries, data quality validation rules, and assessment of feature availability across different markets and regions.

2) Model and Methodology Co-Development

Contribute to the enhancement of passenger intent inference and time-aware recommendation performance through the design and testing of complementary modelling components, such as:

intent scoring mechanisms,

sequential behavioural pattern learning,

interaction modelling approaches,

incorporation of controllable business constraints.

Support adaptation of the solution to airline-specific operational constraints, including network topology, seasonality effects, campaign rules, and cabin or fare-family contexts.

3) Experimentation & Validation

Define offline evaluation protocols and success metrics, including ranking performance, calibration and consistency checks, and robustness across seasons and markets.

Design uplift measurement methodologies and A/B testing frameworks targeting CRM engagement and conversion improvement, and where relevant, ancillary attach-rate and/or load-factor optimisation.

4) Pilot-to-Production Design (Optional but Preferred)

Jointly define a scalable system architecture enabling batch or near-real-time scoring, performance monitoring, retraining strategies, and governance requirements.

Support integration points with CRM, loyalty management platforms, and/or airline analytics environments to enable pilot execution.

Expected Outcomes

The collaboration is expected to deliver:

a jointly validated prototype,

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **SME 50 - 249**
- **Big company**
- **R&D Institution**
- **SME <=10**
- **SME 11-49**
- **University**

Call Details

Framework program

Eureka

Call title and identifier

Eurostars

Submission and evaluation scheme

Anticipated project budget

Coordinator required

No

Deadline for EoI

19 Mar 2026

Deadline of the call

19 Mar 2026

Project duration in weeks

Web link to the call

Project title and acronym

Dissemination

Technology keywords

- **02008001 - Air Transport**

Market keywords

- **02007001 - Systems software**

Targeted countries

- **World**

Sector groups involved

- **Aerospace and Defence**