Dispatcher3
Innovative CleanSky2 action

Project motivation

- good understanding of the **differences between planned and executed flight plans**

- **uncertainty factors**: arrival runway, actual weather, holding delay…

- understand **driving factors** for variations between planned and realised flight plans to design robust and efficient flight management solutions:
  - network planning → post-operational analysis; flight policy definition

Main R&D objectives

- Identify airline **policies** and their **targeted KPIs**
- Provide a data platform with data processing and machine learning capabilities to **clean**, **synchronise** and **merge** past flight and other operational data
- Develop a software **prototype** to give support to the optimisation of future flights providing:
  - **Predictive capabilities** for alternative flight plans
  - **Advice** for dispatchers, pilots, duty managers and tactical planners

3 layers of Dispatcher3
Layer 1: Data infrastructure

- **BeSt by DataBeacon**
  BeSt is an **ingestion**, **storage** and **processing** data platform specifically designed for **AI applications** in aviation.

- **How will BeSt be used in Dispatcher3?**
  - Capture, merge and store data from multiple sources;
  - Data processing (remotely or locally) and ML model building.
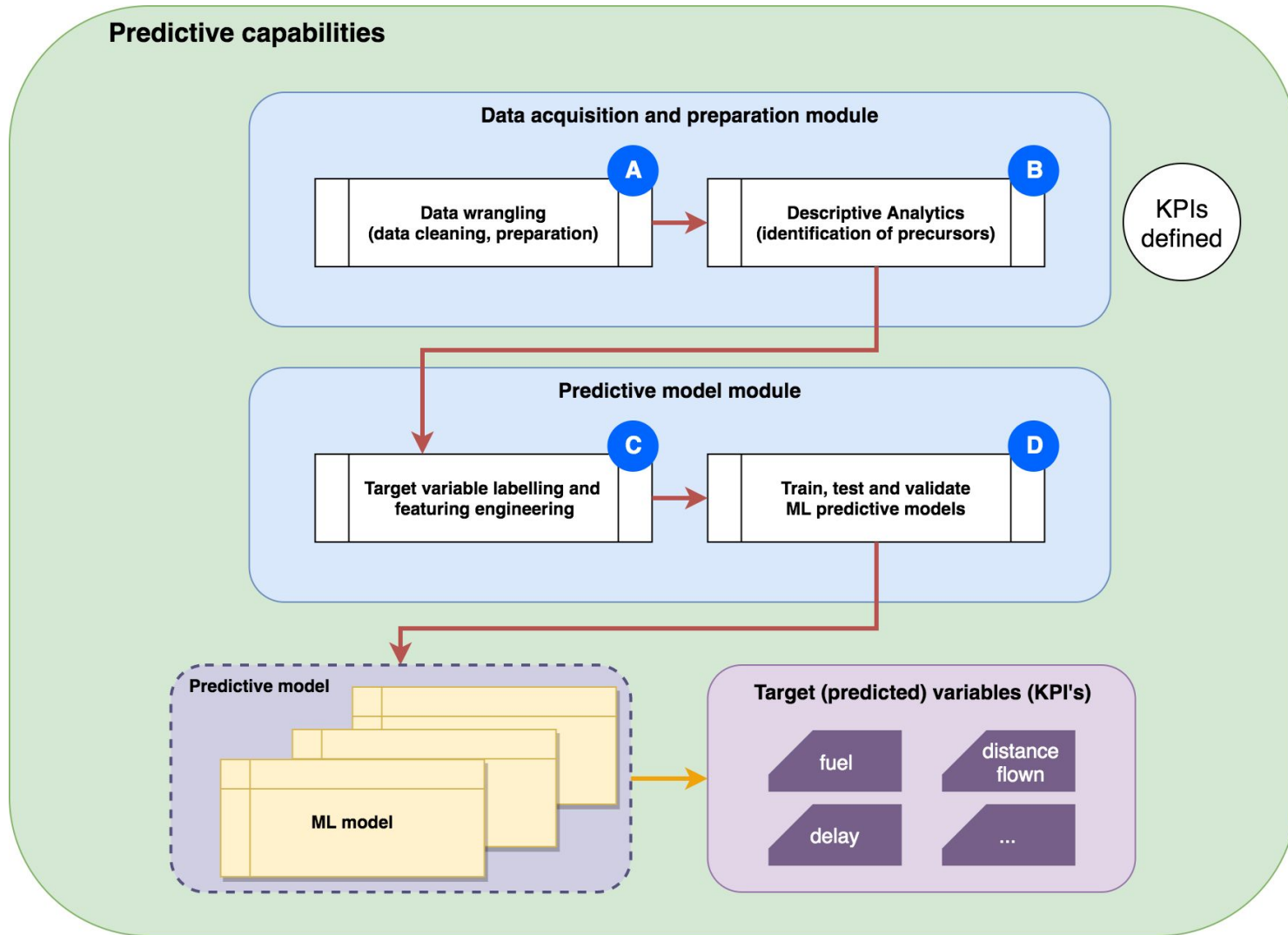
Historical Planned Data   Historical Actual Data   Airline Policies

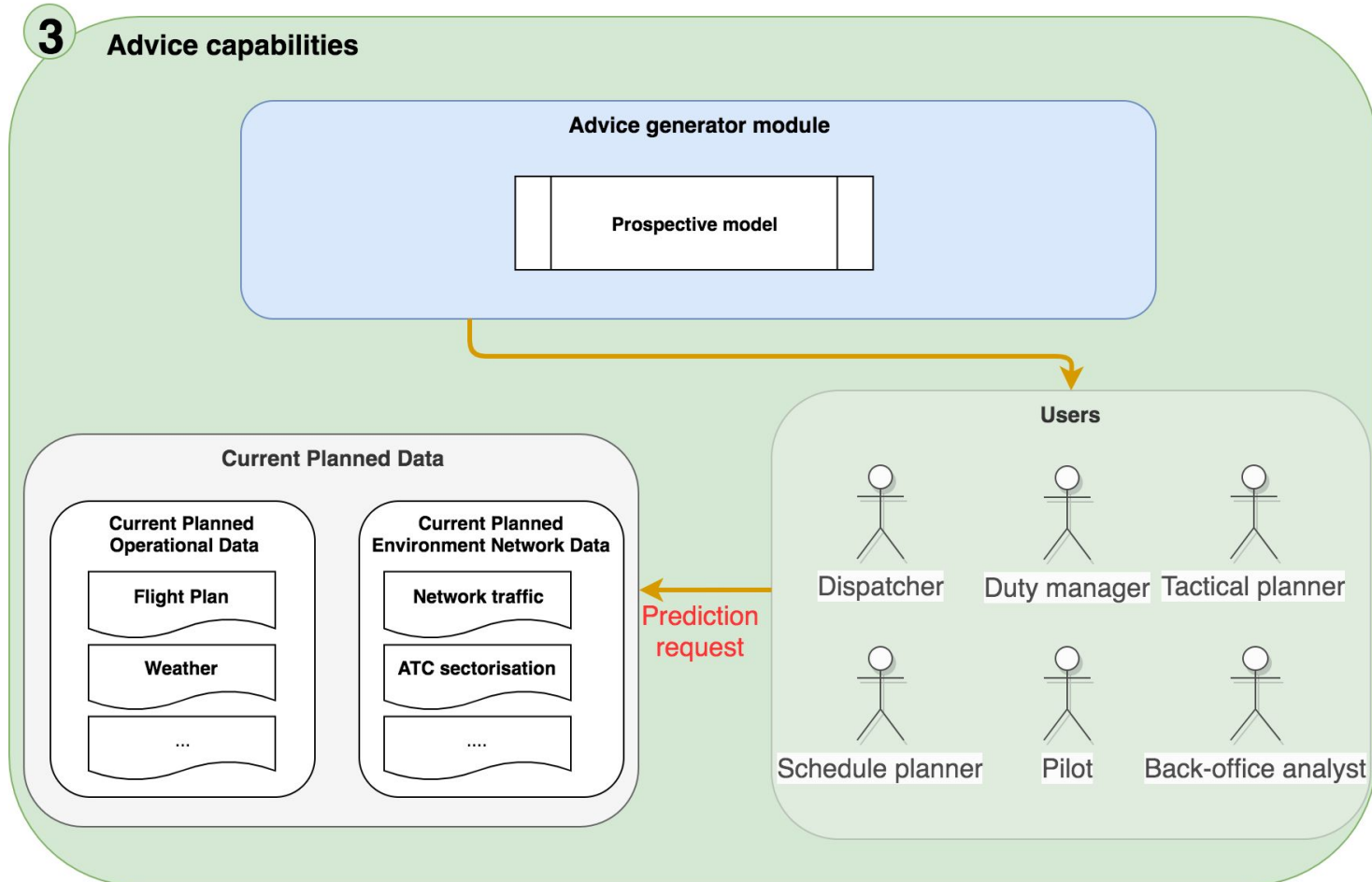**BeSt will take care of the data management processes in Dispatcher3**

3 layers of Dispatcher3
Layer 2: Predictive capabilities

Predictive capabilities

Data acquisition and preparation module

A Data wrangling (data cleaning, preparation) → **B** Descriptive Analytics (identification of precursors)

KPIs defined

Predictive model module

C Target variable labelling and featuring engineering → **D** Train, test and validate ML predictive models

Predictive model
ML model

Target (predicted) variables (KPI's)
fuel
distance flown
delay
...

3 layers of Dispatcher3
Layer 3: Advice capabilities

Producing advice for the users relying on the output of the predictive layer

Users

Tactical planners

Identification of potential flight plan disruptions on the day prior operations, supporting the planning of alternative solutions (aircraft swapping, crew rotations, etc.)

Crew

Provide qualitative advice on flight operations with an indication of the variances that they can expect during their flight and follow up rotations

Dispatchers

Identification of the key driving factors for the variations between planned and executed flight plans, predictions of the expected actual performance of a flight (e.g. assess different flight plans in the presence of turbulences or ATFM regulations)

Back-office

Provide infrastructure and predictions to support the definition of flight policies.

Schedule planners

Infrastructure for easier detection of flights that are systematically prone to variations and that could be optimised

Duty managers

Enhanced predictive capabilities to identify which flights might suffer disruptions and propagate them through the network with a few hours of look-ahead
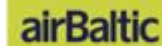
Key info

COORDINATOR

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skeyes *nice to guide you*   P A C E *a TXT company*

- **Topic Manager: Thales AVS France SAS**
- **June 2020 - November 2022**

ADVISORY BOARD:

- Airlines   SWISS   norwegian   airBaltic
- Institutions   EUROCONTROL
- Experts   **A3 Aviation Consulting**   **Valentín Lago**

Thank you!