

# AI-Driven Demand Forecasting & Capacity Optimization for FedEx Tricolor

## Objective

Develop an AI-powered solution that enhances demand forecasting accuracy for customer SKUs (Stock Keeping Unit) and optimizes logistics capacity planning for Tricolor (FedEx's commercial package flight network), reducing inefficiencies and improving cost-effectiveness.

## Background

Inaccurate demand forecasting leads to mismatches between predicted and actual product movement, resulting in underutilized logistics capacity and missed opportunities for cost optimization. This challenge aims to bridge that gap by leveraging AI to forecast demand and align it with logistics planning.

## Problem Segments:

### Segment 1: Customer-Centric Demand Forecasting

Participants must build a model that forecasts customer SKU demand using:

- Promotional Campaigns
- Global Sustainability Trends & Regulatory Policies
- Digital Platform Sentiment Analysis (e.g., social media, e-commerce reviews)

*Deliverables for Segment 1:*

- At least one customer analysis using the above inputs
- A Python script that performs the analysis
- An output DataFrame schema showing forecasted demand

### Segment 2: FedEx-Centric Capacity Optimization

Using the forecasted demand from Segment 1 and flight capacity data (participants may generate own datasets to solve the problem), participants must:

- Optimize Tricolor flight capacity planning
- Generate a recommendation plan (prescription) for customers - to secure better logistics rates.
- Enable FedEx to plan flight capacity more efficiently by integrating digital technologies that improves response times, real-time updates, personalized interactions and delivers a consistent, positive customer journey.

*Deliverables for Segment 2:*

A model or script that:

- Ingests forecasted demand and flight capacity data
- Outputs an optimized logistics plan
- Recommends pricing strategies and capacity allocations

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