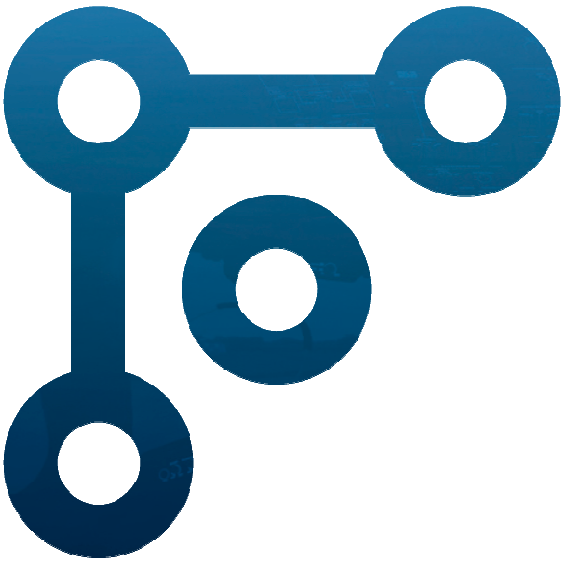

FlyAnalytics

User Guide

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Log of Revisions

Version	Changes	Date
0.0.0	Initial version	October 25th, 2017

1. Introduction

FlyAnalytics is a web based solution designed for operators who seek efficiency while monitoring flight data for safety, fuel and maintenance. It is able to identify events and trends, reducing costs and risks in operations. Unlike other similar solutions, FlyAnalytics compares the operator data against the world fleet providing information to decision making process.

2. Access FlyAnalytics

FlyAnalytics can be accessed through FlyEmbraer web portal (http://www.flyembraer.com). In the Flight Operations tab, click on FlyAnalytics (colocar figura quando houver o link).

Exploring the FlyAnalytics

The next chapters describe the FlyAnalytics options, pages and data.

2.1. Initial Dashboard – Home Page

The initial dashboard is the FlyAnalytics main screen. It contains high level information about each FlyAnalytics Module and also has a lateral menu to quick access through the system features (Figure 1).

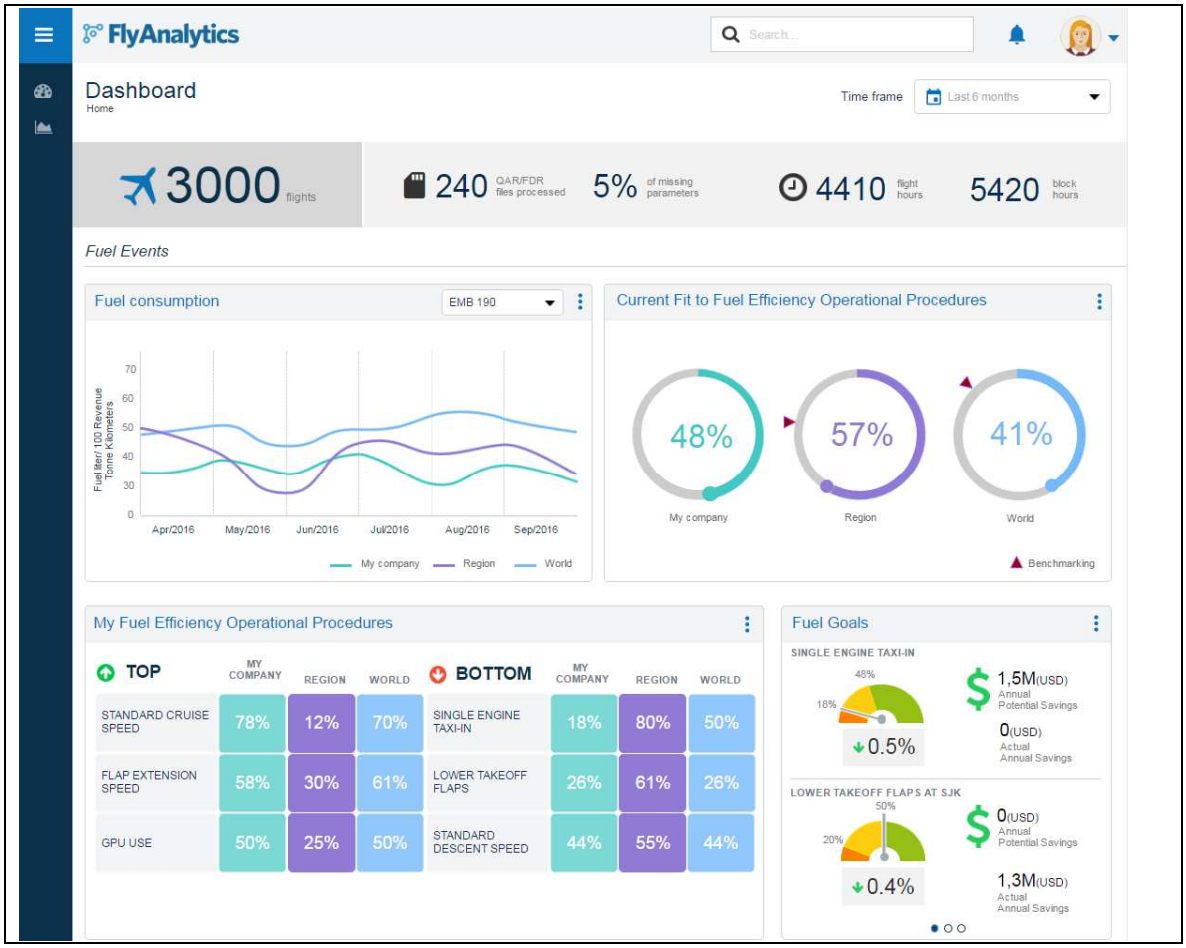

Figure 1 - Main dashboard

2.1.1. Menu

The lateral menu is presented in all FlyAnalytics pages and has three buttons (Figure 2):

1. It expands and retracts the lateral menu providing the icons description;

2. It navigates to the *Initial Dashboard (Home Page)*;
3. It navigates to the *Manage Analysis* screen.

Figure 2 - Lateral menu

3.1.2. Time Frame

The time frame specifies the time range to be considered during the analysis. The value of the time frame constrains the data showed (Figure 3).

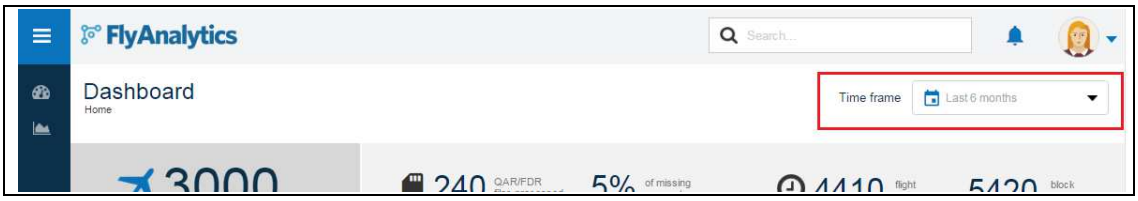

Figure 3 - Global time frame

3.1.3. Header Information

The header (Figure 4) contains information related to the QARs and flights sent by the customer to FlyAnalytics correspondent to the selected time frame. The information provided are listed below:

- Total number of flights;
- Total number of QAR files received;

- Percentage of corrupted QARs;
- Total flight hours;
- Total block hours.

The header is shown in all analysis pages.

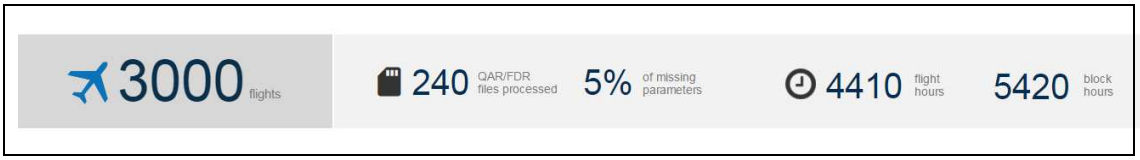

Figure 4 - Header information

3.1.4. Fuel Module

The fuel module (Figure 5) contains data concerning the fuel efficiency initiatives or techniques. The main dashboard has four high level statistics: fuel consumption (1), fit to fuel initiatives (2), top and bottom practices (3) and fuel goals (4). The fuel goals are only visible once they have been created by any user.

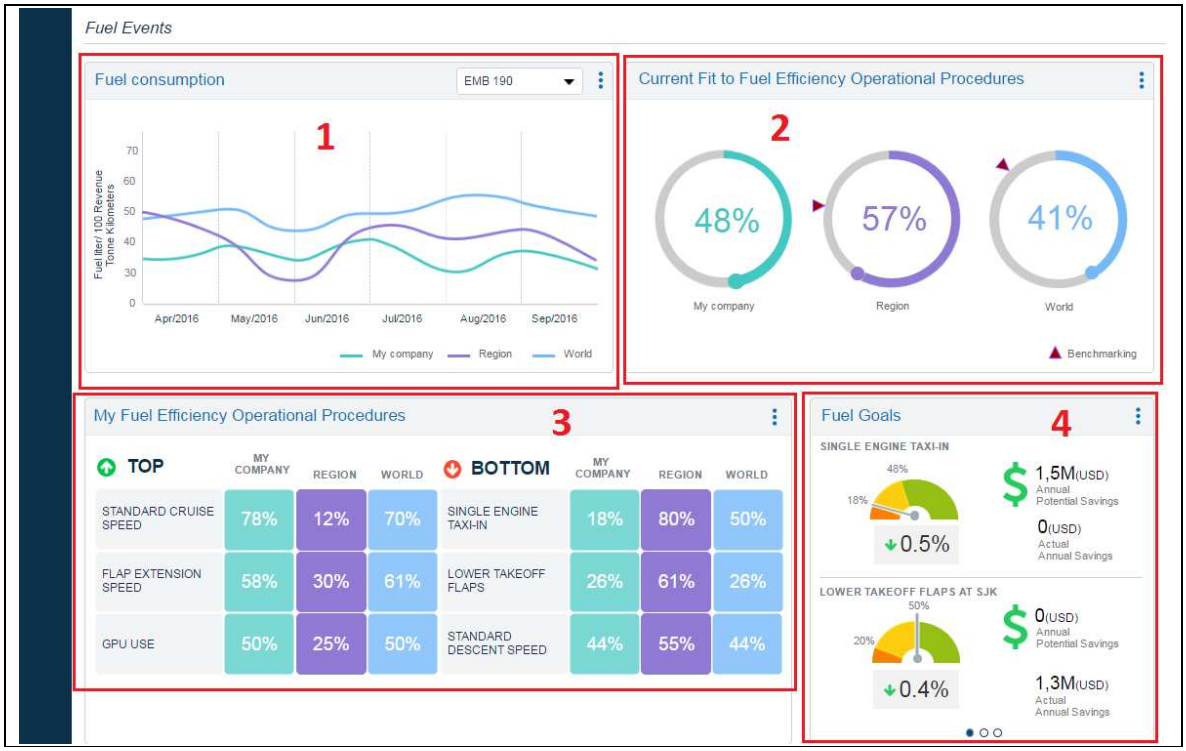

Figure 5 - Fuel Module Dashboard

3.2. Analyzing a Fuel Initiative

It is possible to analyze a Fuel Initiative through two different dashboards: Worldwide and My Fleet. Both of them contain statistics related to the filters and constraints applied to that specific analysis. It is possible to navigate between

Worldwide and My Fleet by clicking on the tabs. All figures presented at 3.2 are examples related to Single Engine Taxi-In initiative, and it is important to highlight that all initiatives of the Fuel Module have the same structure.

3.2.1. Worldwide Analysis

The Worldwide Analysis screen (Figure 6) has data concerning the customer, the region where it operates and the world, respecting data confidentiality requirements. It contains four different statistics:

- Fuel consumption: it measures the amount of fuel consumed by the aircraft over time. To compute the fuel consumption, it is only considered the flight phase in which the fuel saving initiative is placed, for example: in single engine taxi-in analysis, only the taxi-in is considered; for cruise speed, only cruise is considered.
- Fit to the initiative: it measures the adhesiveness of the customer operation to the specific fuel saving initiative taken into account the opportunities in which it is possible to perform the technique.
- Fit trend: it represents the fit variation over time, providing information about the evolution of the operation concerning that specific fuel saving initiative.
- Indicators: they show information concerning the fuel saving initiative in analysis and vary according to the different techniques.

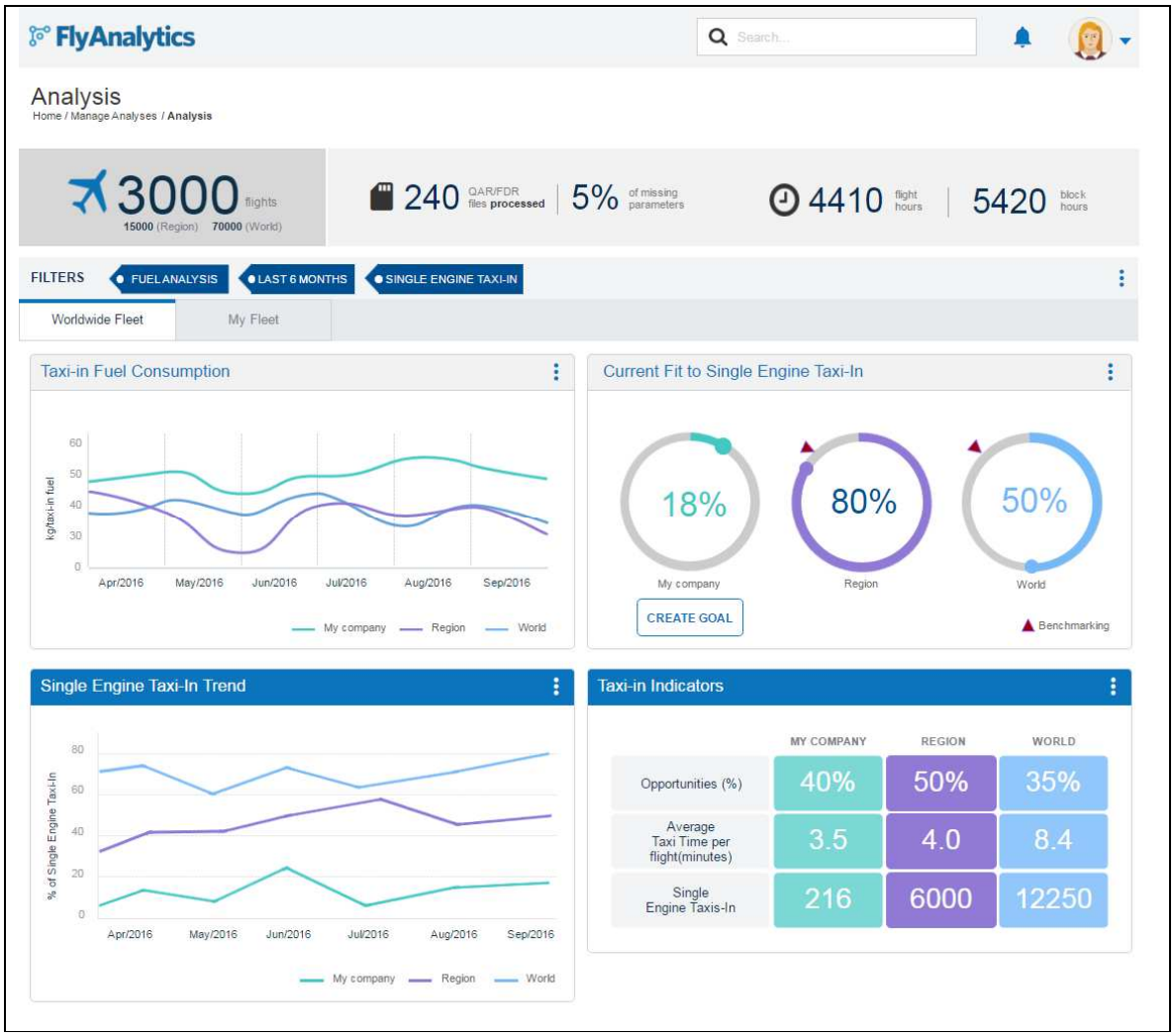

Figure 6 - Fuel Initiative Worlwide Fleet - example

3.2.2. My Fleet Analysis

The My Fleet Analysis screen has data concerning the customer operation, respecting data confidentiality. It contains the same statistics as the Worldwide Analysis (fuel consumption, fit to the initiative, fit trend and indicators), however there are more data represented which vary depending on the fuel saving initiative selected. The fuel consumption and the fit trend charts might contain more information than their pairs in Worldwide Analysis. These additional information are showed once a goal is created and will be detailed in the *Creating a Goal* item.

3.2.2.1. Single Engine *Taxi-In and* Single *Engine Taxi-Out*

For Single Engine Taxi-In and Single Engine Taxi-Out, besides the information also provided on the Worldwide Analysis, the following statistics are showed on My Fleet Analysis (Figure 7):

- Flight Distribution per Airport: number of flights distributed by airport displayed in a pizza chart. By passing the mouse above each region of the chart, it is possible to visualize the percentage and amount of flights.
- Breakdown per Airport: distribution of the single engine taxis performed and the opportunities (primary y-axis) as well as the average taxi time (secondary y-axis) per airport. It is possible to sort the elements to be shown by clicking on “Sort by” and selecting an option.
- Breakdown per Engine Side: distribution of the engine used to perform the single engine taxi by tail number (bar chart) as well as the total fleet distribution (pizza chart).

Figure 7 - My Fleet Analysis - Single Engine Taxi-In and Out

3.2.3. Filtering the Data

The data displayed for the Worldwide and My Fleet analysis can be filtered. By filtering the data, only the flights that met the filters will have their statistics presented. Data confidentiality is respected according to item 4. The filter can be applied by clicking on the filter tags (1) or by accessing the filter page (2) on the *More Options* and on *Change Filters* (Figure 8).

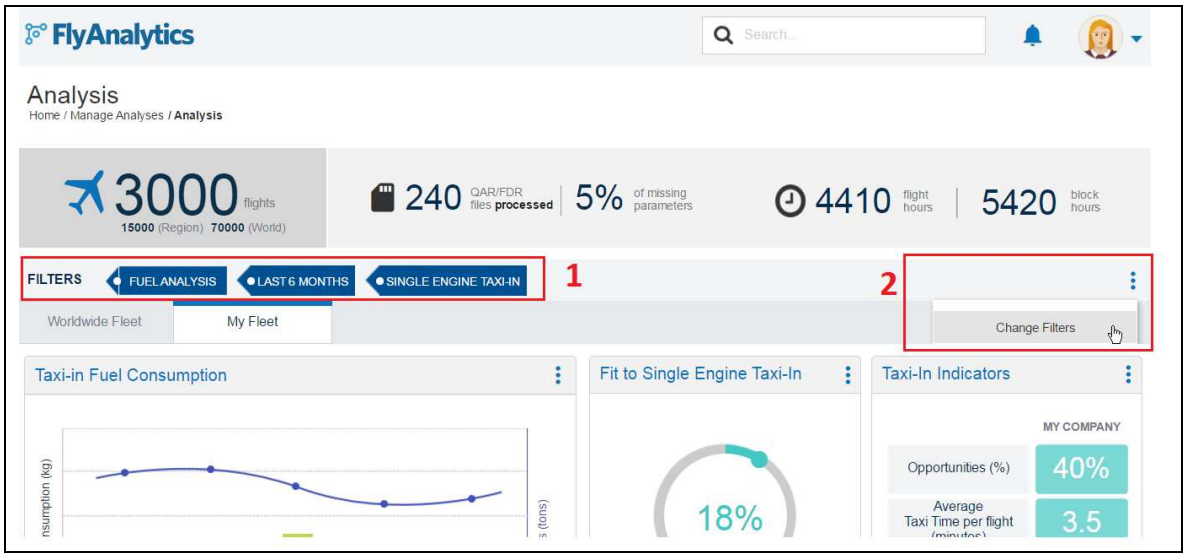

Figure 8 - Change filters

The filter page (Figure 9) shows the current analysis area (Fuel, Safety or Maintenance), time frame and fuel saving initiative. The time frame can be changed by clicking on the drop down button and selecting the desired on.

It is possible to filter the data by:

- Airplane: type the registration or tail number and add the selected ones.
- Route: type the departure and destination airports and add the selected ones.
- Airport: type the airport name or code (IATA/ICAO) and add the selected ones.

Once the filters have been selected, click on *Filter* to apply the constraints and updated the data displayed or *Cancel* to return to the analysis without applying the filters.

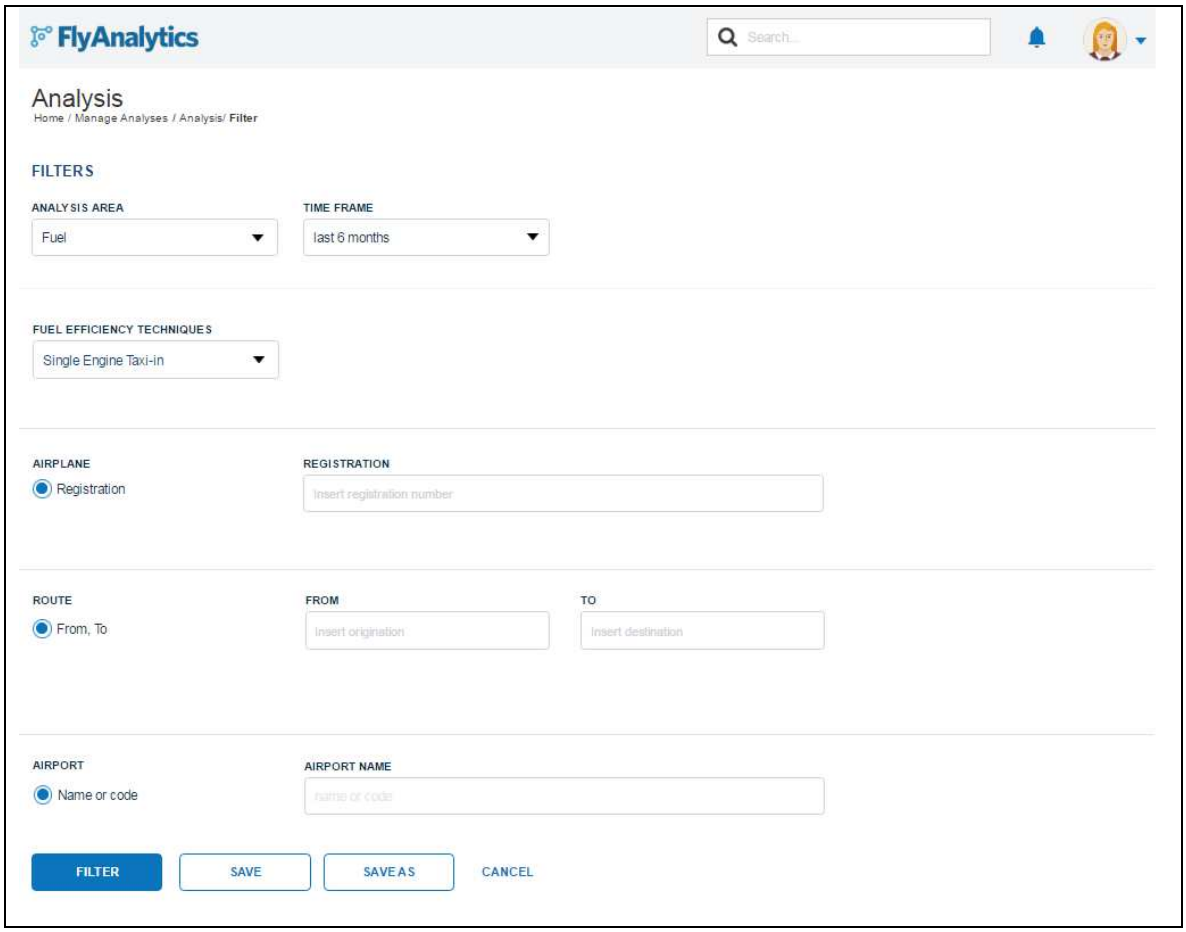

Figure 9 - Creating a filter

3.2.4. Creating a Goal

One of the FlyAnalytics features is to create and monitor a goal concerning. It is necessary to enter into a specific analysis to create a goal which will reflect the objective to that scenario.

Fuel Efficiency

In the Fuel Efficiency Module, the goal is created based on the fit to a specific fuel saving initiative. The goal can be attributed to any combination of filters or analysis created.

To define a goal, click on Create Goal button (Figure 10) displayed below the Fit chart (in both Worldwide and My Fleet analysis).

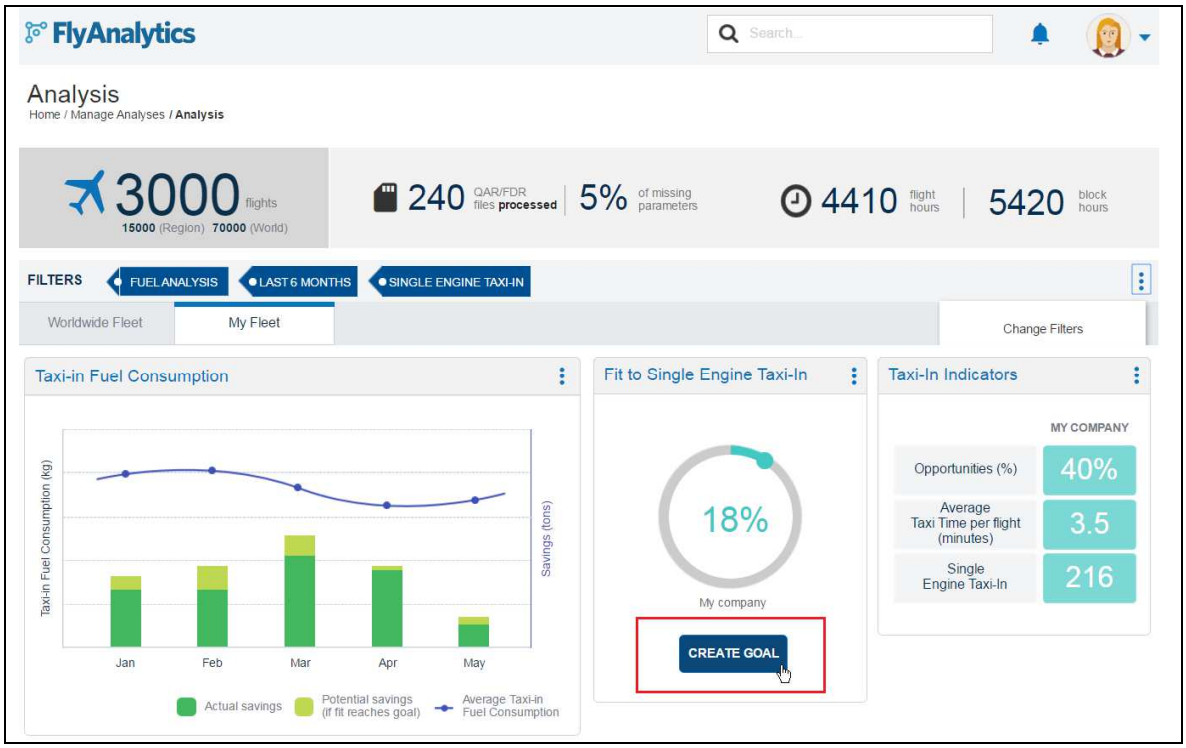

Figure 10 - Creating a fuel initiative goal

A new screen will appear (Figure 11) in which is possible to define the goal by dragging the pointer in the *Define Goal* field, selecting a title to the goal and specifying the number of flights in a month. As these inputs are filled, the top of the screen will be updated with the gauge changing to show where the goal is placed and the *Annual Potential Savings* in terms of fuel savings and percentage of total fuel consumption.

It is possible to show the goal in the main dashboard by clicking on the check box *Show in dashboard*.

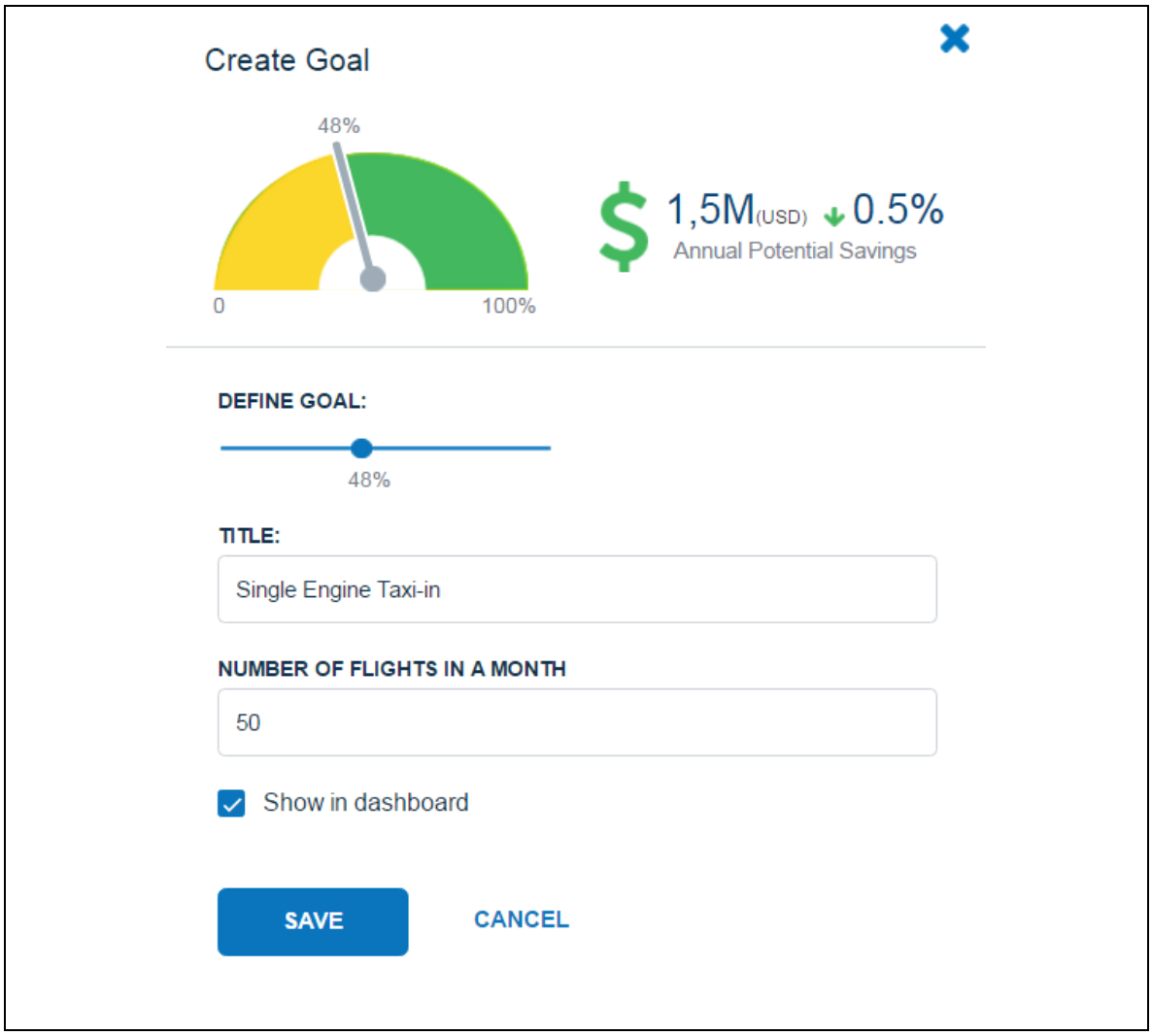

Figure 11 - Defining a fuel initiative goal

3.3. Managing an Analysis

The Manage Analysis page (Figure 12) can be accessed by clicking on the third button of the lateral menu (1). In this page it is possible to create a new analysis (2), visualize (3), duplicate (4), edit (5) and delete (6) any analysis saved in the system. It is also possible to delete any analysis by selecting it through the check box and then clicking on *Delete* (7).

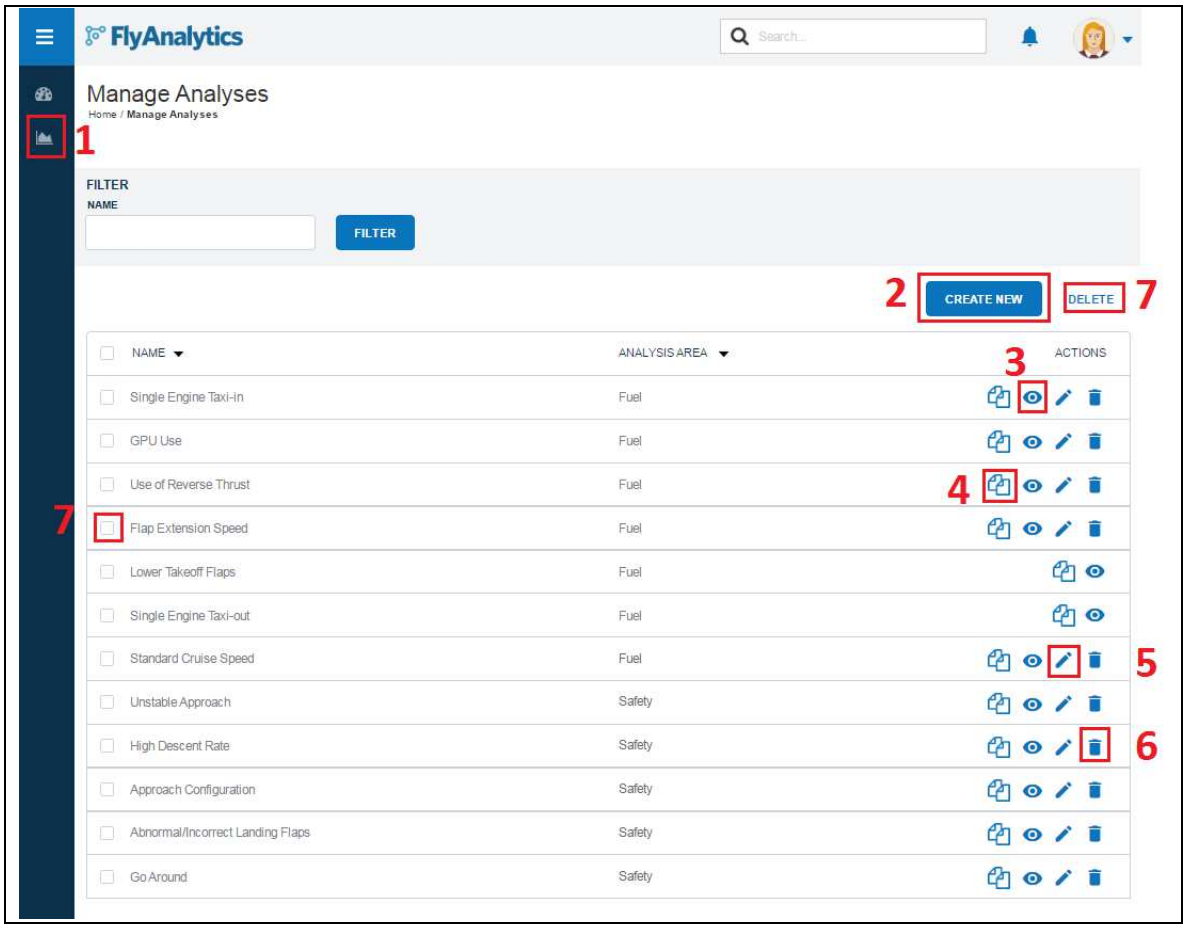

Figure 12 - Manage Analyses

3.3.1. Creating an Analysis

It is possible to create a new analysis by clicking on the create analysis button. The Create Analysis page (Figure 13) will be shown and the following inputs must be filled to create an analysis:

- Name: type the analysis name.
- Analysis area: select the area of analysis (Fuel, Safety or Maintenance).
- Time frame: select the time frame to be consider in the analysis.
- Airplane: type the registration or tail number and add the selected ones.
- Route: type the departure and destination airports and add the selected ones.
- Airport: type the airport name or code (IATA/ICAO) and add the selected ones.

Once all options have been filled, click on Create to create and visualize the analysis.

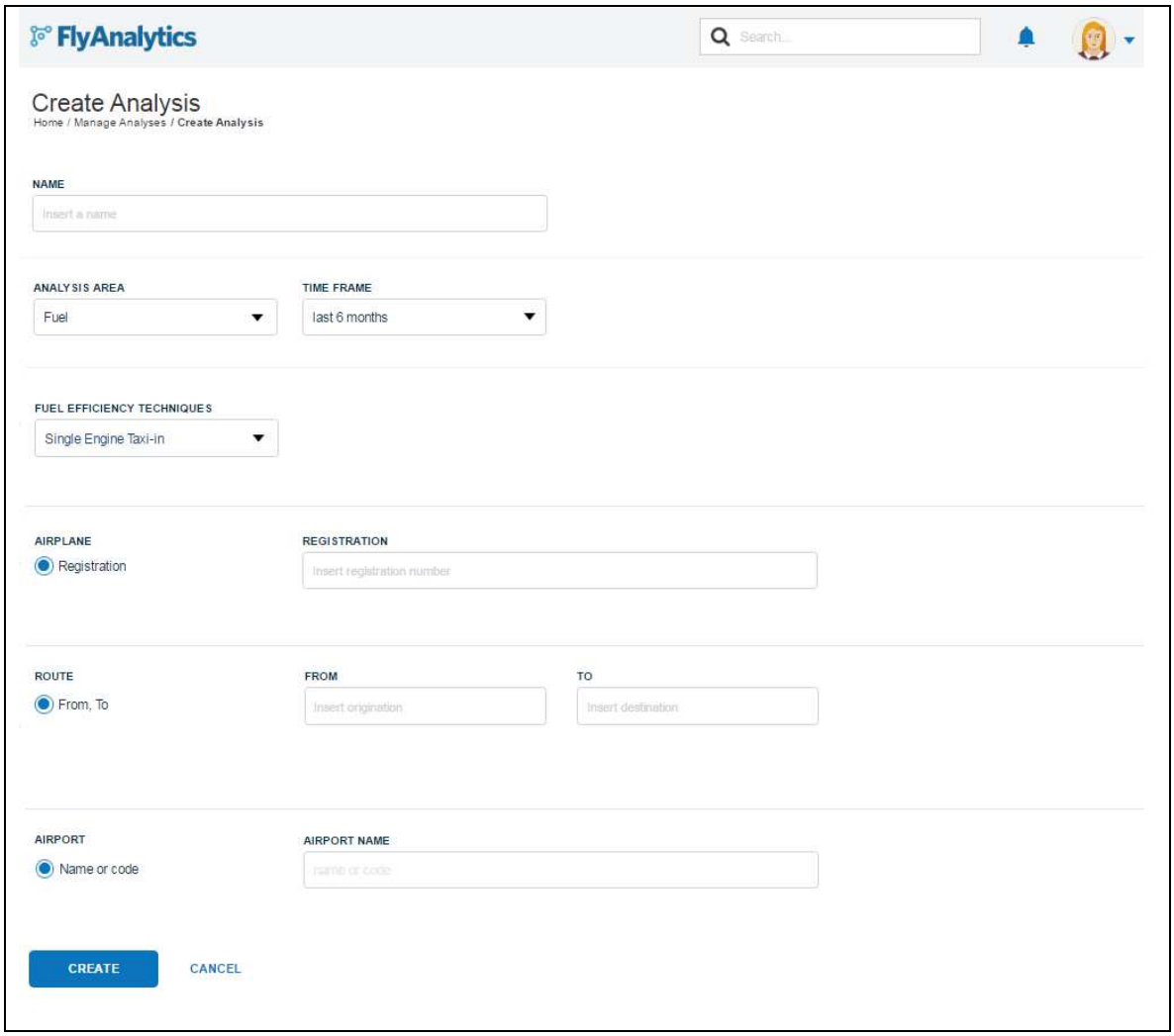

Figure 13 - Create an analysis

3. System Requirements

The following computer specifications are the minimum recommended requirements for running FlyAnalytics:

- Google Chrome 54+ or Firefox 47+;
- 1 GB or higher RAM memory;
- Screen resolution of 1200x768 pixels or higher;
- Internet connection.

4. Confidentiality Requirements

FlyAnalytics shall in all respects be governed, construed and interpreted in order to safeguard airlines internal confidentiality policies. FlyAnalytics requires that the information processed by the tool reports at least eight flights per analysis. In case this requirement does not be accomplished, for any filters combination, no data will be displayed and FlyAnalytics will present the following message: "*Due to confidentiality requirements this analysis does not have enough data to be displayed.*"

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