



# *USING FDM TO INFLUENCE PILOT BEHAVIOUR*

SAFETY FORUM - EUROCONTROL

MAY 2018

*NETJETS*

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# *NETJETS INTRODUCTION*

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# *NETJETS EUROPE – HIGHLIGHTS*

- Flight crew: 630 (27 nationalities)
- Fleet of 82 aircraft - 700 aircraft worldwide
- Flights to more than 1000 destinations in the last 5 years
- Non-crew employees: 525 in Lisbon Operations HQ
- Other offices in UK, France and Germany
- Operating environment:
  - EASA AOC - Portugal
  - Fractional Ownership model
  - Partnership with Lufthansa Private Jet

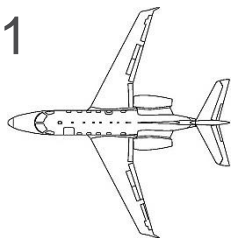


## *OPERATIONAL CHARACTERISTICS*

- Worldwide operations
- No operational hub
- Destinations include:
  - Large international airports
  - Small mountainous airports
  - VFR airports
- Operations are unpredictable and changes occur at short notice – 10 hours customer notice
- Each day's schedule is unique and constantly changing

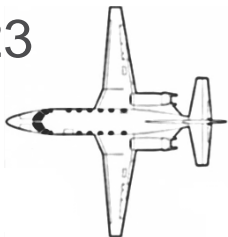
# NETJETS EUROPE – FLEET

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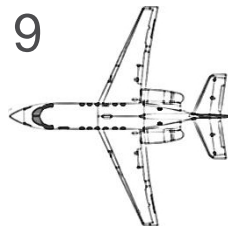
Embraer  
Phenom 300

23



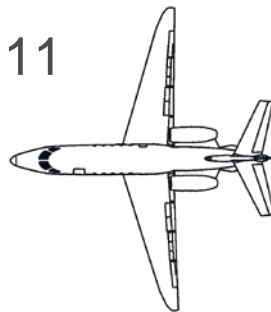
Cessna  
Citation XLS

9



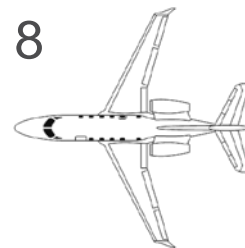
Hawker Beechcraft  
750/800

11



Cessna Latitude

8



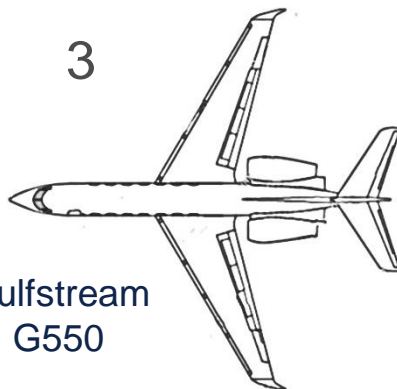
Bombardier  
Challenger 350

10



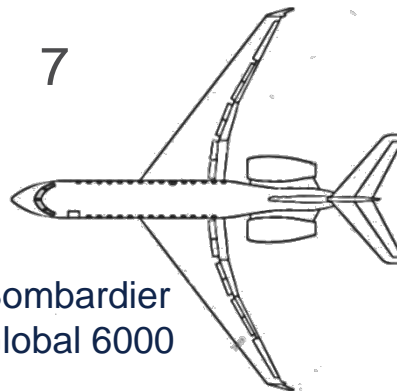
Dassault  
Falcon 2000EX

3



Gulfstream  
G550

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Bombardier  
Global 6000

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*FLIGHT DATA MONITORING WITHIN THE SMS*

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# FLIGHT DATA MONITORING

***Flight Data monitoring (FDM) is the systematic, pro-active use of digital flight data from routine operations to improve aviation safety within an intrinsically non-punitive and just Safety Culture. (UK CAA)***

- ICAO – Annex 6, Part 1 – Flight Data Analysis
- EASA – AIR OPS, Part ORO (ORO.AOC.130 – Flight Data Monitoring)
- UK CAA – Flight Data Monitoring, CAP 739
  
- Requirement for aircraft at or above 27,000kg MTOW
  - NetJets has FDM on all fleets, including those less than 27,000kg
- Required to be non-punitive and to protect the identity of the crew



# *FDM PROGRAMME – TARGETED AREAS*

## **CREW**

- Event investigations by the Honest Brokers (best source of information)
- Individual confidential e-mails with landing performance and details on unstable approaches
- Present case studies with real NetJets flights during Ground Recurrent Training
- Individual debrief of events and trends

## **FLIGHT OPERATIONS**

- Monthly SPI report
- Monthly fleet-specific report (as requested by the chief pilot)
- Investigation of operational events (within the confidentiality principles)
- Support for Operational Risk Assessments
- Support for the development of new SOPs
- Flight Operations Safety Action Group

Provide information that recipients want or appreciate the value  
Mix standard safety information with other types



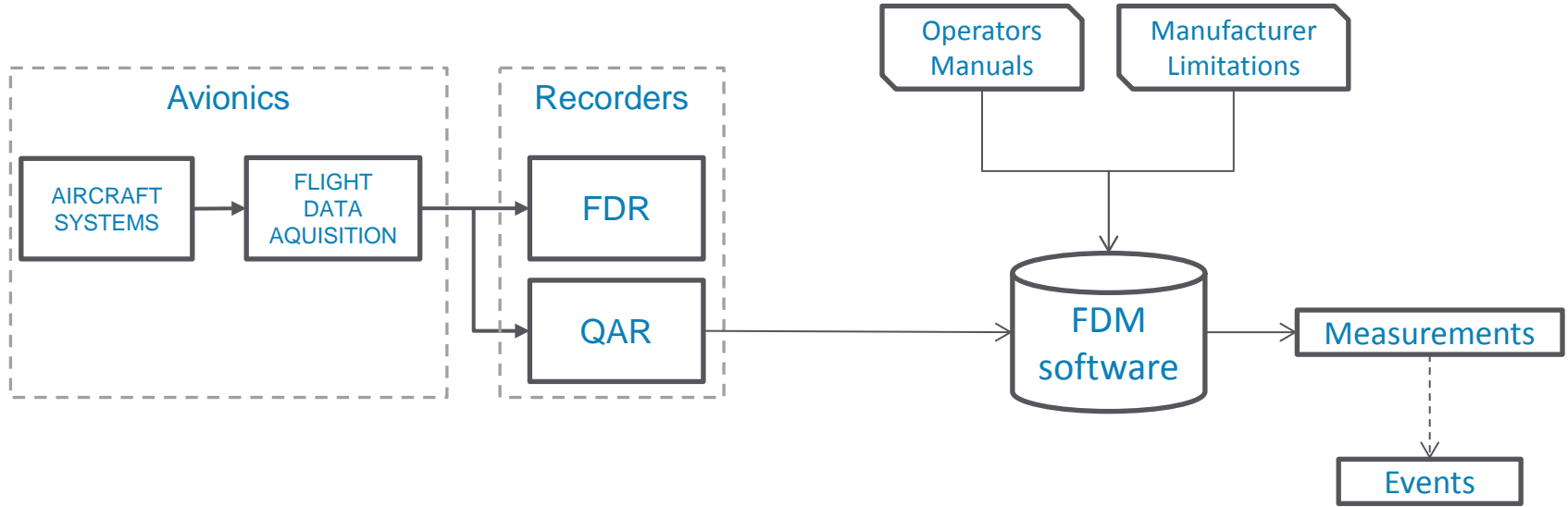
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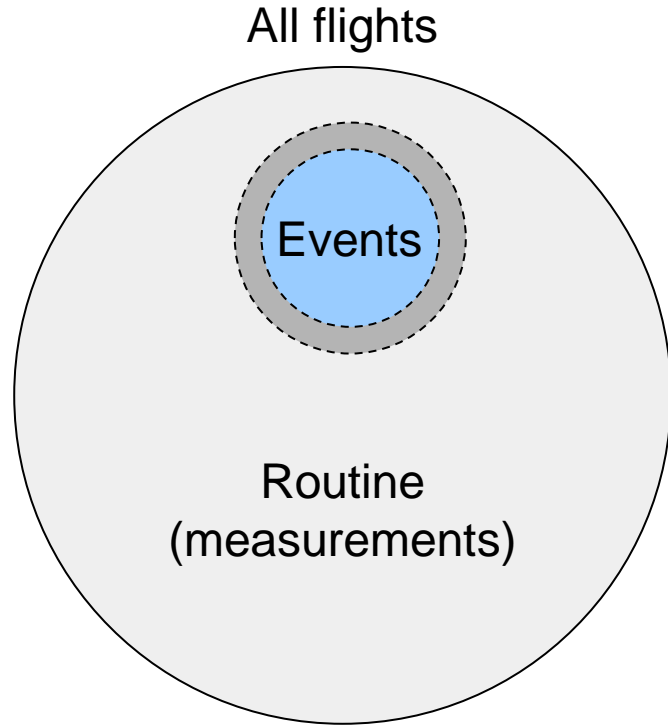
*NETJETS FLIGHT DATA MONITORING PROGRAMME*

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# HOW DOES FDM WORK



# FLIGHT DATA MONITORING OBJECTIVES



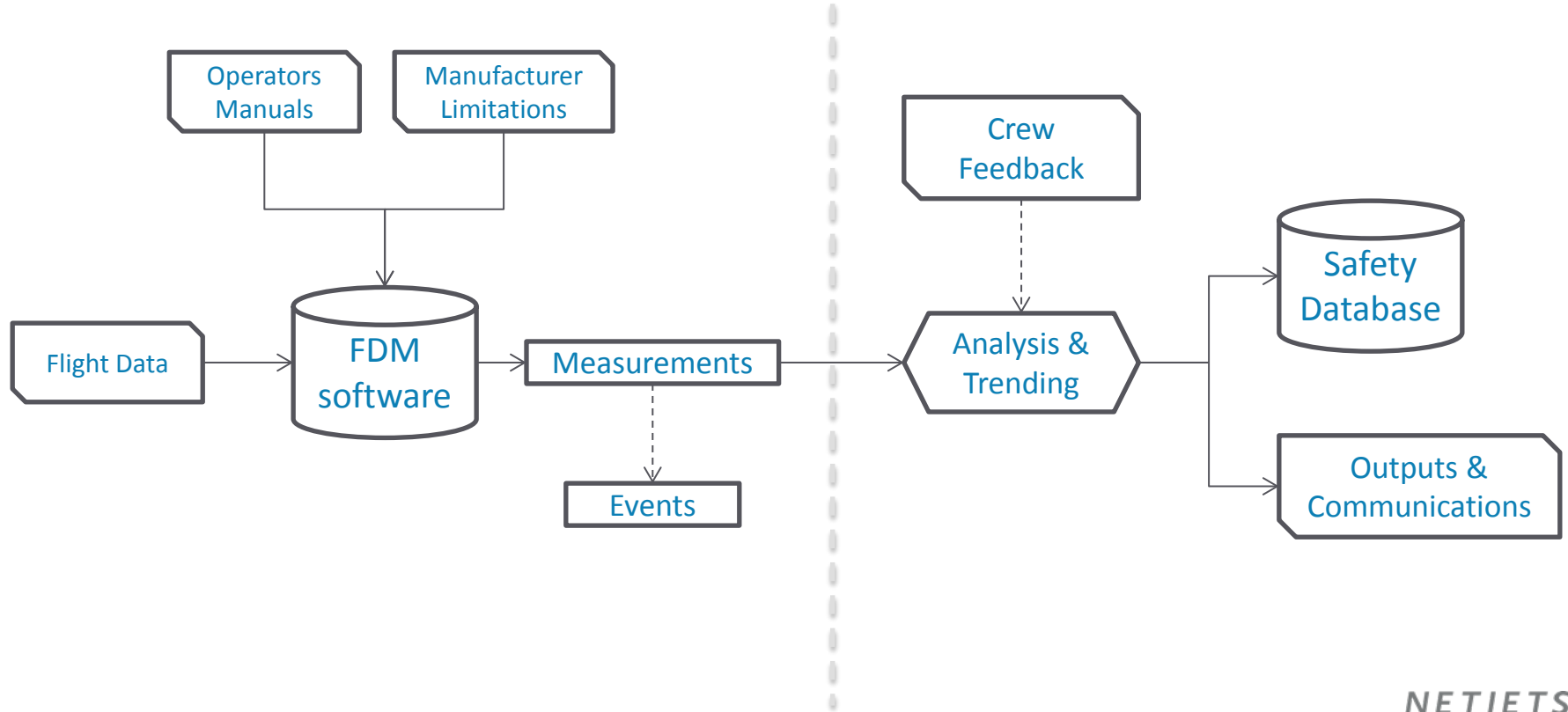
Highlight occurrences of non-standard, unusual or unsafe circumstances

Identify areas of operational risk and quantify current safety margins;

Allows the assessment of the safety risks and supports prioritization of remedial measures

Confirm effectiveness of remedial actions

# INTEGRATING FDM IN THE SMS



# *FDM PROGRAMME – SAFETY FOCUS*

## **UNIQUE BENEFITS**

Unbiased and objective

Proactivity: allows detection of precursors

Verify effectiveness of actions and mitigation

## **SAFETY FOCUS**

Sole objective is Safety

De-identified and non-punitive

Confidential investigations conducted by peer

Consent required to widen the investigation

# INTERACTION WITH CREWS

## Protection

Information collected and processed in a confidential manner and shall not be used for punishment or open to public criticism

## Motivation

Make sure they feel helpful and involved in the process by providing their perspective and opinion. Provide positive feedback.

## Fairness

Never judge or patronize and try to understand their perspective. Always be constructive.

## Integrity

Needs to be done by a respected and respectable peer. Data integrity is fundamental – do not ask about “events” that didn’t exist

Extremely powerful promotion tool and is highly effective passing safety messages.

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## *VISUAL PRESENTATION OF DATA*

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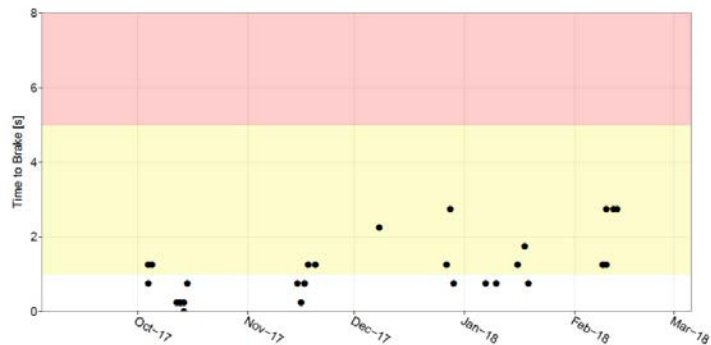
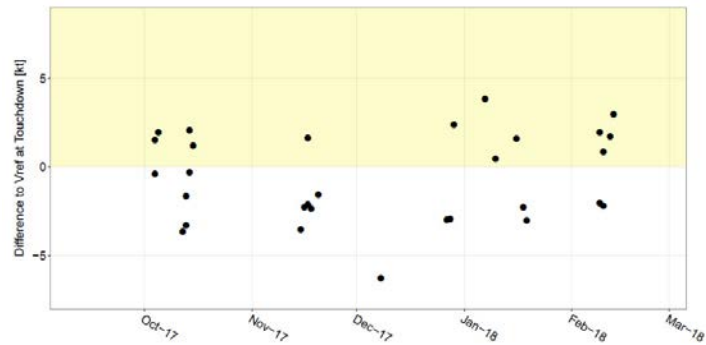
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*FLIGHT CREW MONTHLY EMAILS*

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# MONTHLY INDIVIDUAL CREW REPORT



# MONTHLY INDIVIDUAL CREW REPORT

Dear Crew Member,

This is your monthly unstable approach snapshot. It includes all flights captured in the FDM system in which you were pilot on board, but not necessarily the pilot flying.

If you had any unstable approaches, the details of the flight will be listed on a second table.

Flights in the last 6 months: 102

Unstable approach rate: 1%

Date	Aircraft	ICAO	ROD	ON FINAL	CONFIG
10-March	CS-CHB	LFLB	X	OK	OK

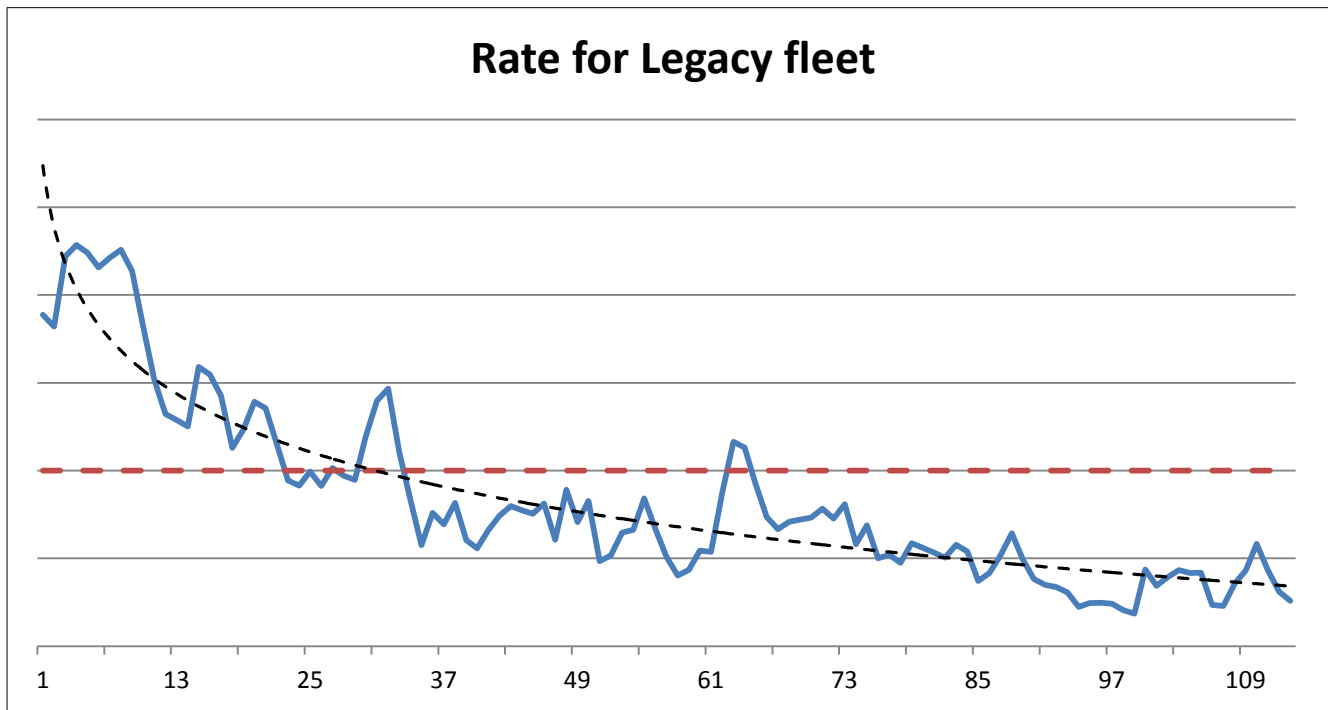
For the purpose of this communication, approaches are classified as stable or unstable using the following criteria:

- ROD: rate of descent
- ON FINAL: establishment on the required approach path
- CONFIG: aircraft configuration

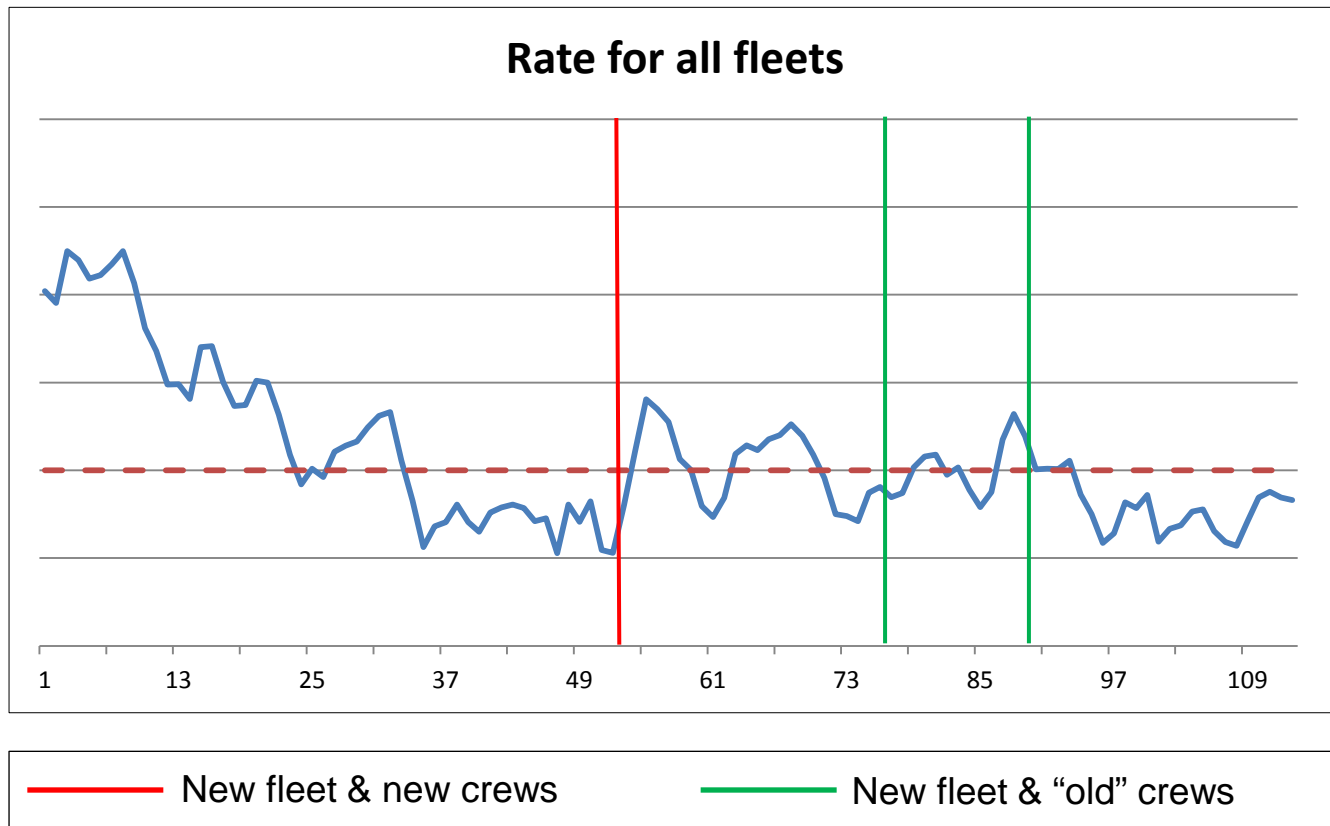
Please note that the number of flights reported may be less than the actual performed during this time period; this is because the capture rate of the FDM system is less than 100% and also due to the delay in receiving data from aircraft.

Send all your questions and feedback to [LIS-FDM@netjets.com](mailto:LIS-FDM@netjets.com)

# RESULTS OF UNSTABLE APPROACHES CAMPAIGN



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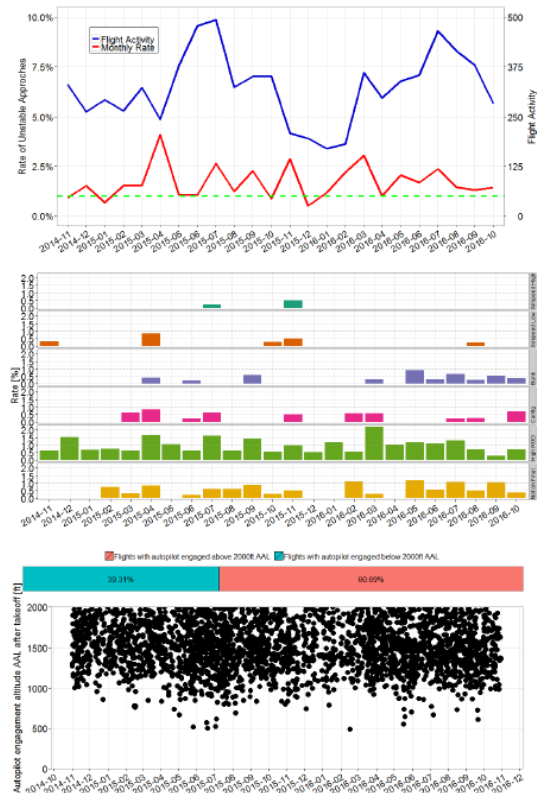
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## *FLEET SPECIFIC REPORT*

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# MONTHLY FLEET-SPECIFIC SPI REPORT



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## *SAFETY ACTION PLANS*

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# 5.1

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*SAFETY ACTION PLAN – NICE, FRANCE*

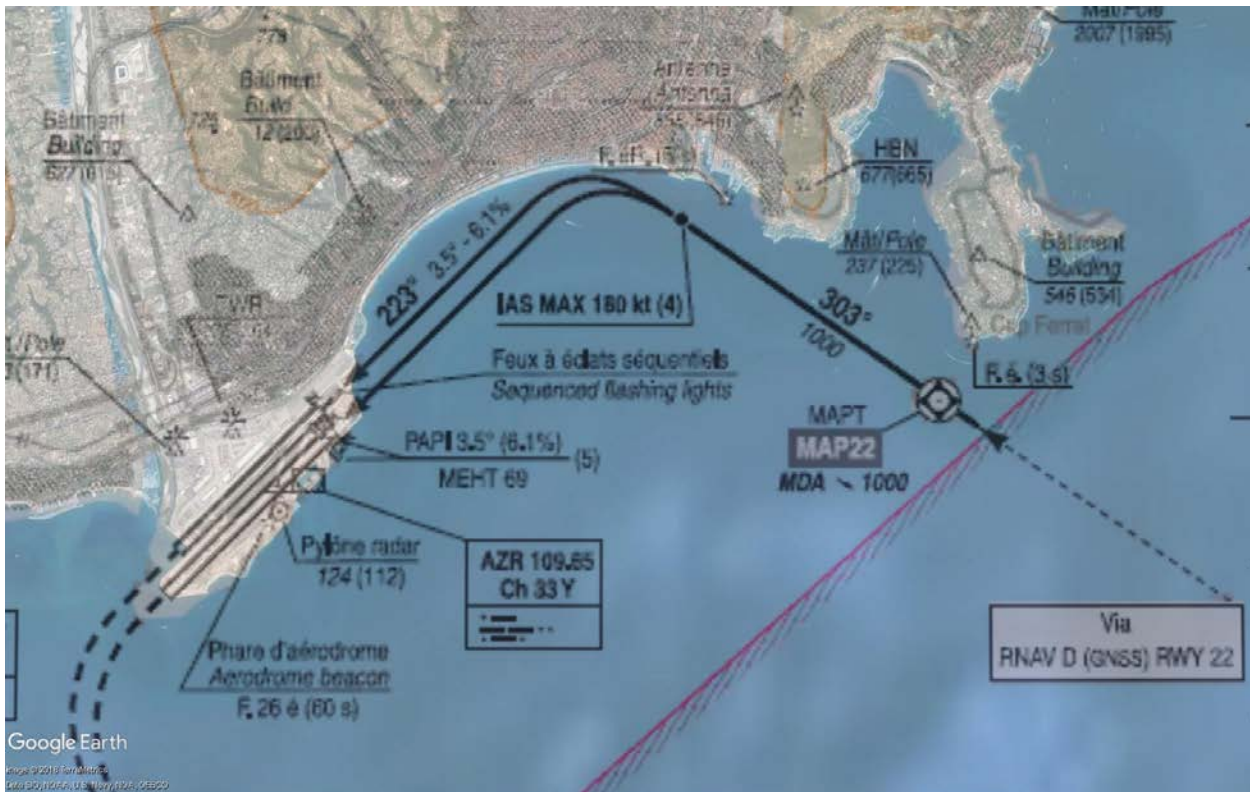
**NETJETS**

# *APPROACH OVERVIEW – NICE RWY 22*

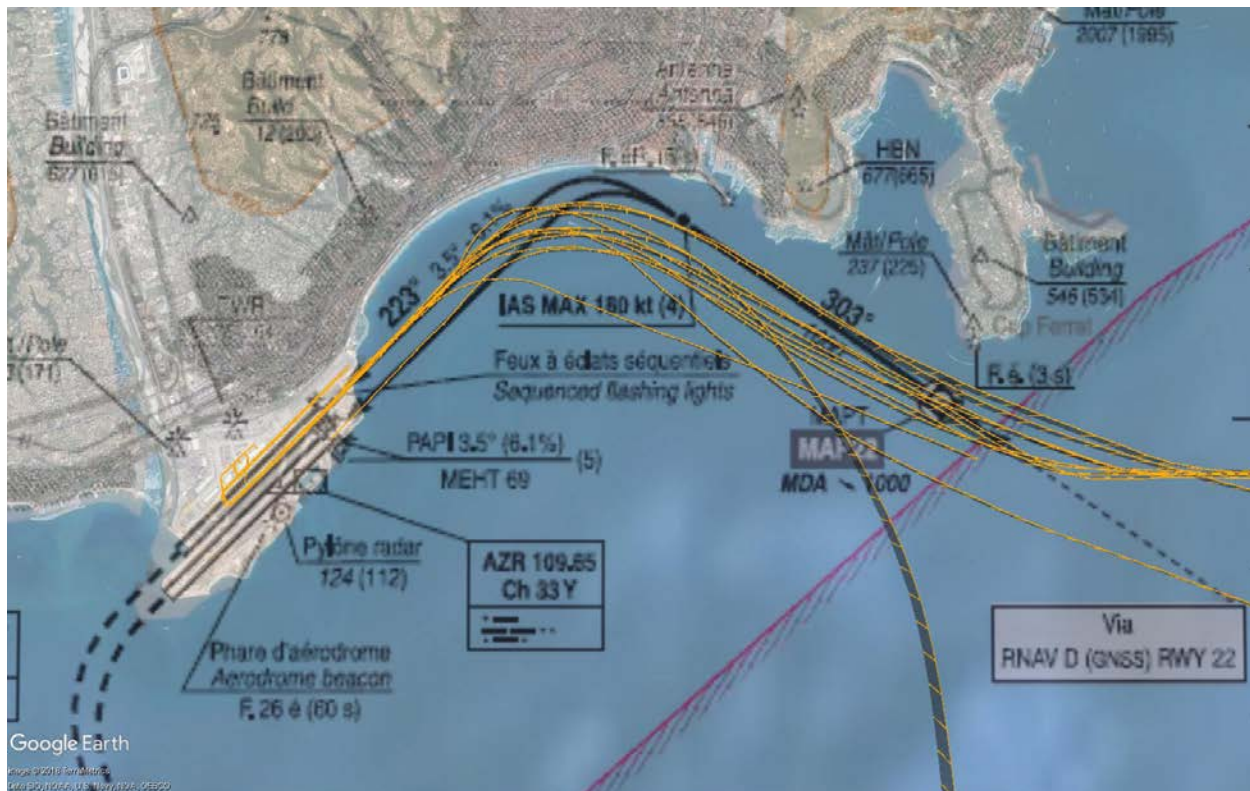


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## APPROACH OVERVIEW – NICE RWY 22

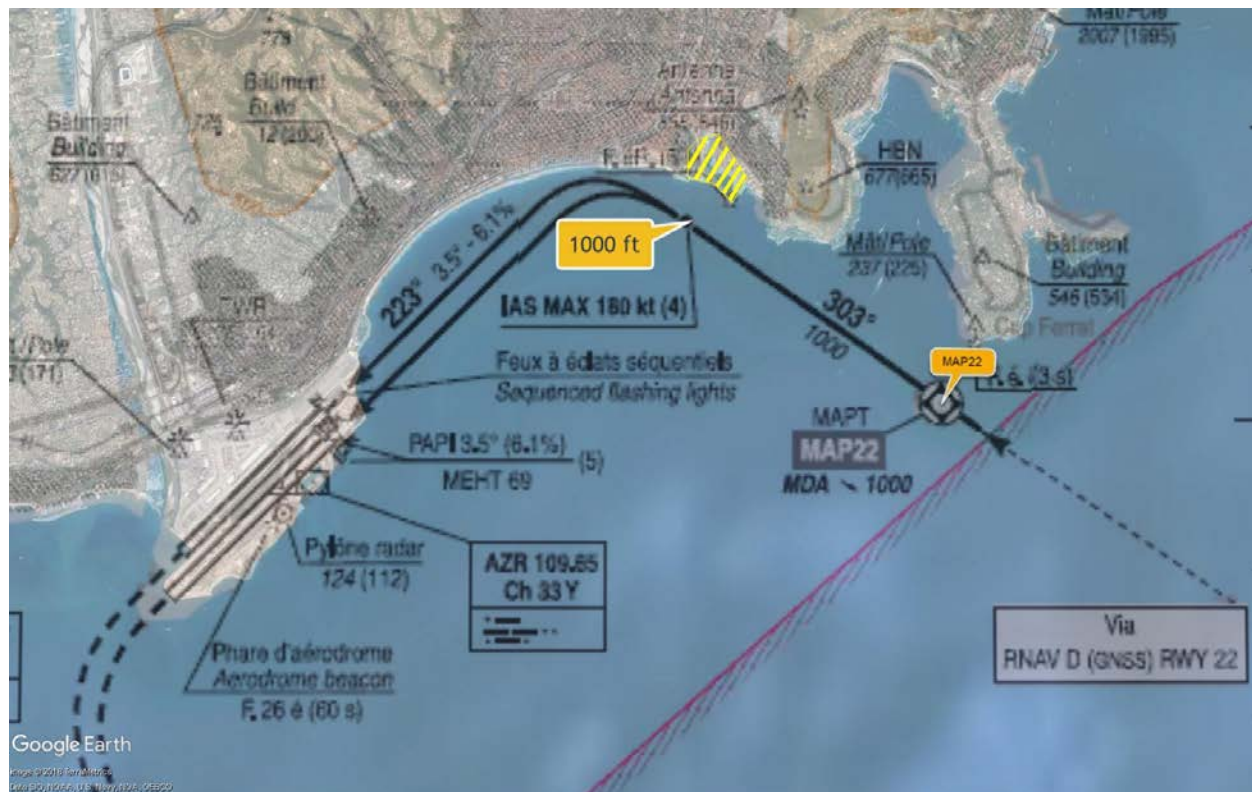


# APPROACH OVERVIEW – NICE RWY 22



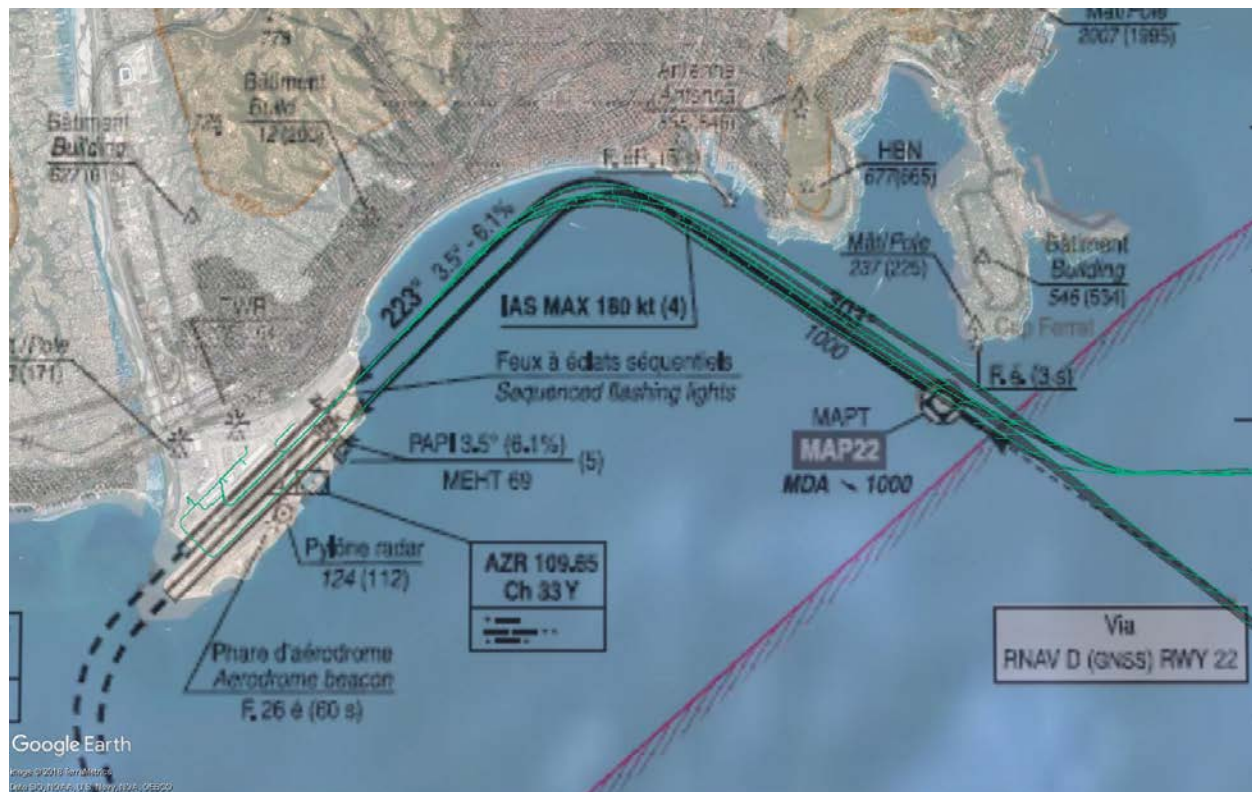


## APPROACH OVERVIEW – NICE RWY 22

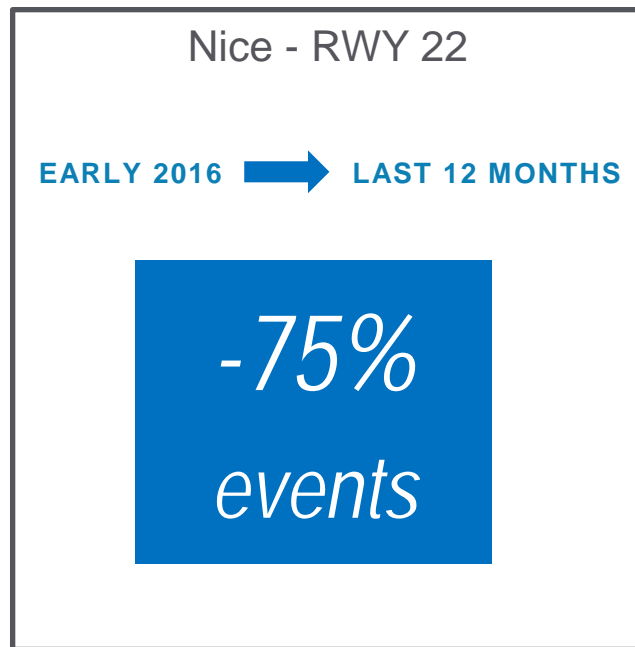




## APPROACH OVERVIEW – NICE RWY 22



## RESULTS- NICE RWY 22



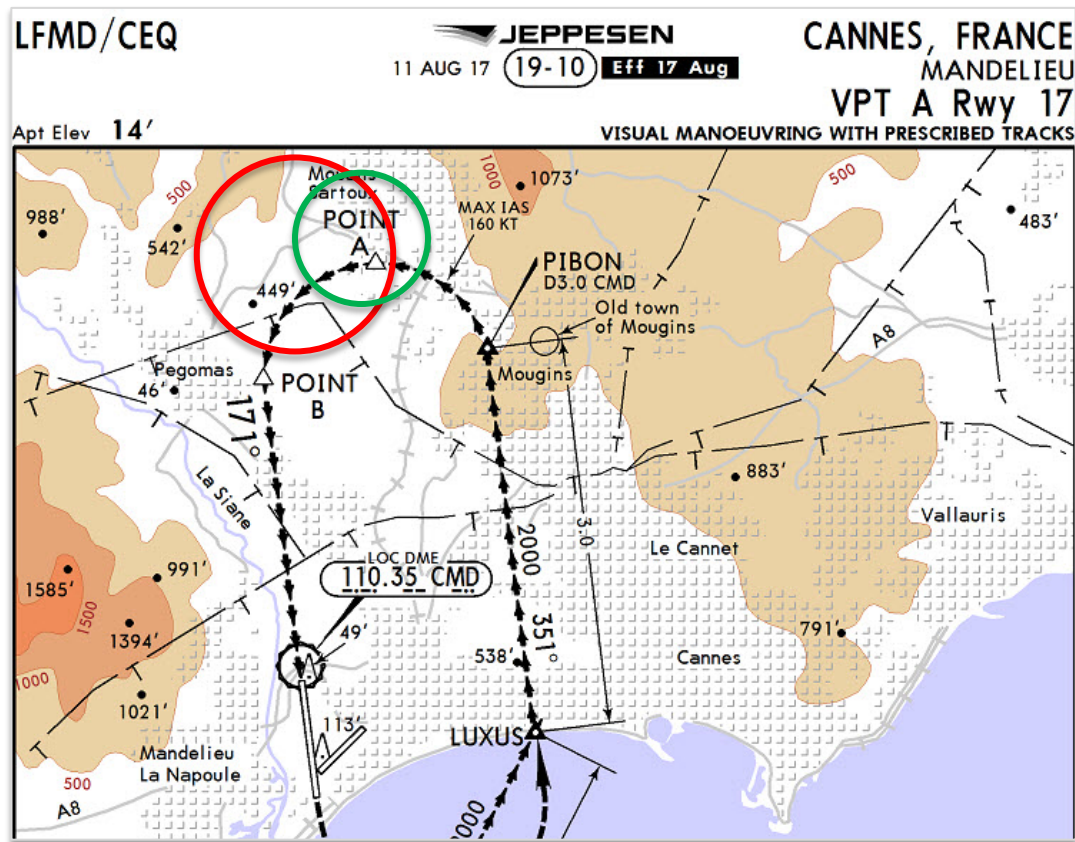
# 5.2

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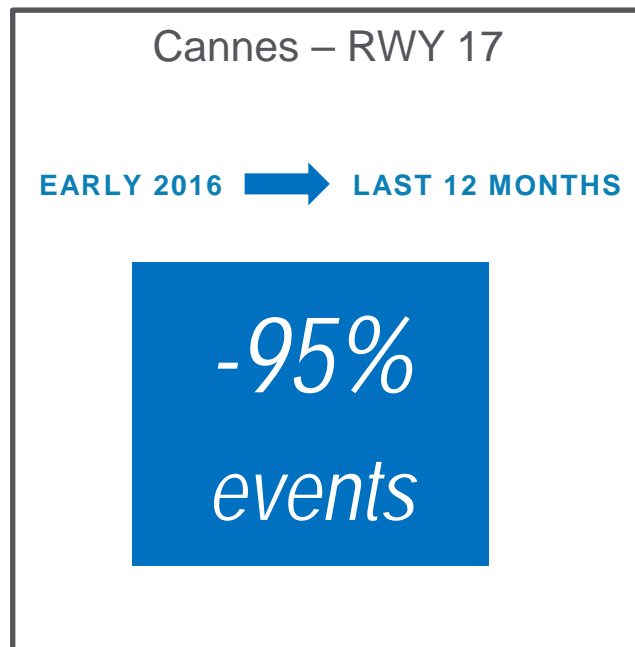
*SAFETY ACTION PLAN – CANNES, FRANCE*

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# APPROACH OVERVIEW – CANNES RWY 17



## RESULTS – CANNES RWY 17



# *FDM INFLUENCING FLIGHT CREW BEHAVIOURS*

## **CONCLUSIONS**

- Must have the trust of the flight crew
- Data protection procedures have to be robust, transparent and consistently applied
- Cannot be used for disciplinary actions
- Must be used in a way that is seen as added value for the crew
- The wider interests of the safety culture should always govern use of data

## **INDIVIDUAL BEHAVIOUR CAN BE CHANGED BY**

- Constructive, confidential use of individual data does influence behaviour
- Aggregate data can also be used to influence behaviour
- Flight data analysis can lead to effective safety action plans that change behaviour

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