

# DFS World Webinars Vol. 2

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## RIAS - A new generation of Runway Safety

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# Agenda

## ① INTRODUCTION

## ② RIAS CONCEPT

2.1 Alerting Controllers

2.2 Alerting Pilots

2.3 In-Field Detection

## ③ OUTLOOK AND NEXT STEPS

INTRODUCTION

# Fraport AG – Global Experience in Airport Business

## Frankfurt Airport Services Worldwide

Over the past decades, Fraport has become one of the leading players in the international airport business

Today, the Fraport Group has subsidiaries at 30 locations worldwide and based on this global experience we provide consulting services to clients around the world.



## Frankfurt Airport – Our Homebase

In 2019 Frankfurt Airport was the 4<sup>th</sup> biggest Airport in Europe handling more than **70 Mio. passengers** per year.

A typical day in FRA will see almost **200,000 Pax** and **1,400 flights**

**⇒ Safety and operational excellence through collaboration !**



## INTRODUCTION

# Runway Incursion

## Definition of Runway Incursion (ICAO):

*Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.*

## Runway Incursion Prevention:

- Data shows that there is a minimum of 2 daily runway incursions in Europe with numbers remaining steady <sup>1)</sup>
- Contributing factors are complex infrastructure, poor visibility, training of drivers and pilots, procedures, etc.
- To significantly reduce the risk of critical incidents and accidents additional “safety nets” should be deployed
- Given the split responsibility for the runway (operation, system / infrastructure) this has to be a joint effort of airport and ANSP



1) European Action Plan for the Prevention of Runway Incursions - EAPPRI

RIAS CONCEPT

# Overall Approach



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**Alerting  
Controllers**

**Alerting  
Pilots**

**In-field Detection**

RIAS CONCEPT

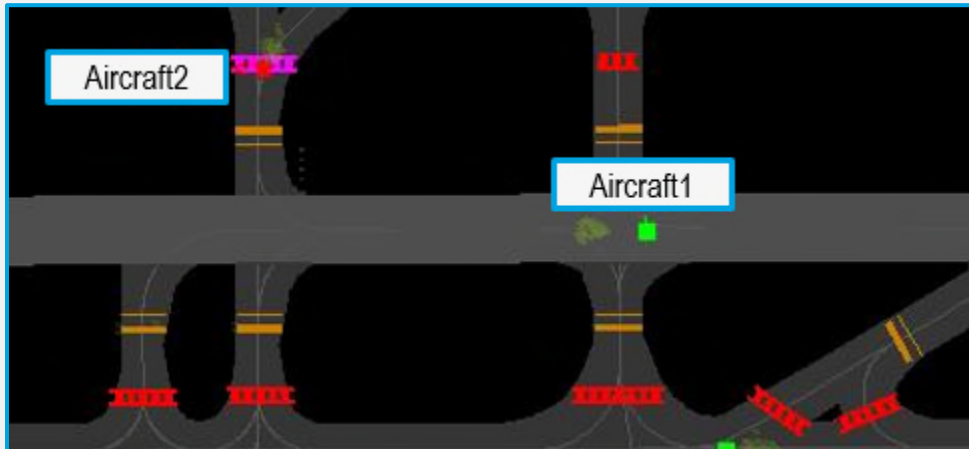
# From Trials to Operation



**> 77.000 single movements**

RIAS CONCEPT

# Alerting of Controllers



## Integration into A-SMGCS

- critical spot is marked/highlighted directly to the controller
- visual and acoustical alerts are provided
- controller to take immediate action

prevention of runway incursions

no additional controller workload

increase of operational safety at the airport

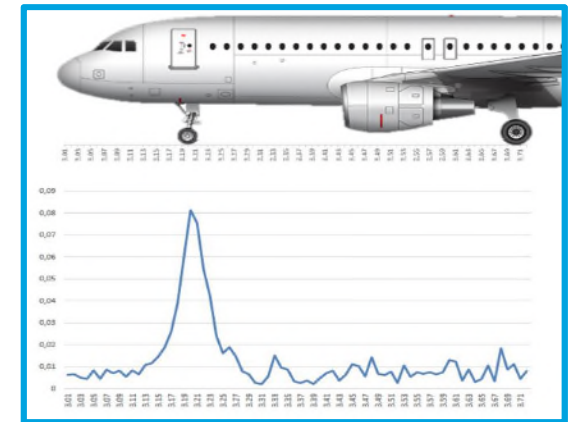
support of safe runway crossings

## RIAS CONCEPT

# In-field Detection and Alerting

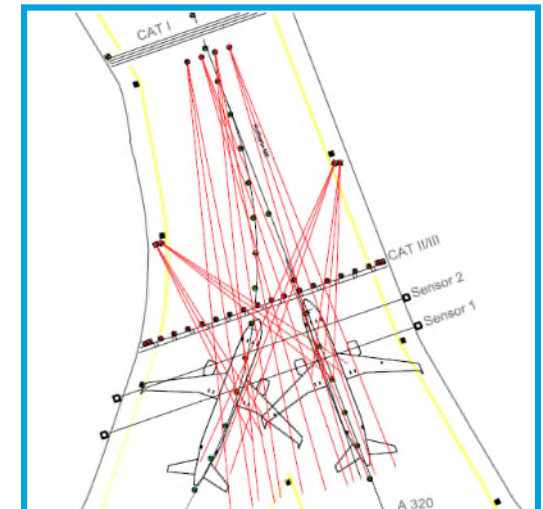
## Detection through in-field sensors

- SMR or other typical A-SMGCS usually lack the precision required for the detailed surveillance of runway entry points
- Additional sensors, i.e. microwave radar, inductive loops or magnetic field sensors are installed at all critical points
- Sensors shall be deployed in a way they can detect a potential stopbar overrun before it actually occurs



## The importance of direct alerting:

- In parallel to the alert raised by the system in the ATC-Tower, the pilot / driver causing the violation shall also be alerted directly, e.g. through lights and acoustic signals in the field
- Direct alerting is extremely important to reduce reaction times through latencies in transmission and and to mitigate the risk of failures in the communication infrastructure



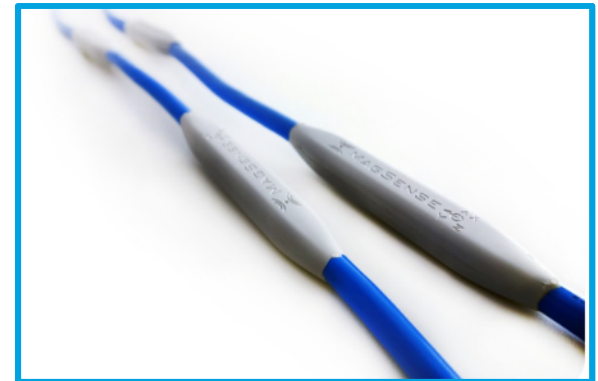


## OUTLOOK AND NEXT STEPS

# RIAS – A flexible and innovative concept for every airport

## Innovative Development:

- After the first successful implementation at Frankfurt, the RIAS concept has been continuously further enhanced
- Examples for new features under development are:
  - New cheap and easy-to-install magnetic field sensors
  - Automated voice alerting for cockpit crew
  - ASTERIX Category 4 alerting for easy A-SMGCS integration
  - Use of AI to predict braking profiles of aircraft at stopbars



## How can other airports benefit from RIAS ?

- RIAS is a flexible concept can incorporate locally available technology
- DFS and Fraport have gained extensive know-how from daily operations in FRA and from various related R & D projects
- The combination of this know-how with our experience from international projects makes us the right partner to take your airport to a new safety level



**Further questions?  
More information please?**

**Let us #stayconnected!**

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