



Safety Risk Management

Do we really know what good looks like?

Do we have clear safety goals?

Understanding safety from all sources (not just data)

Taking action to mitigate the top risks

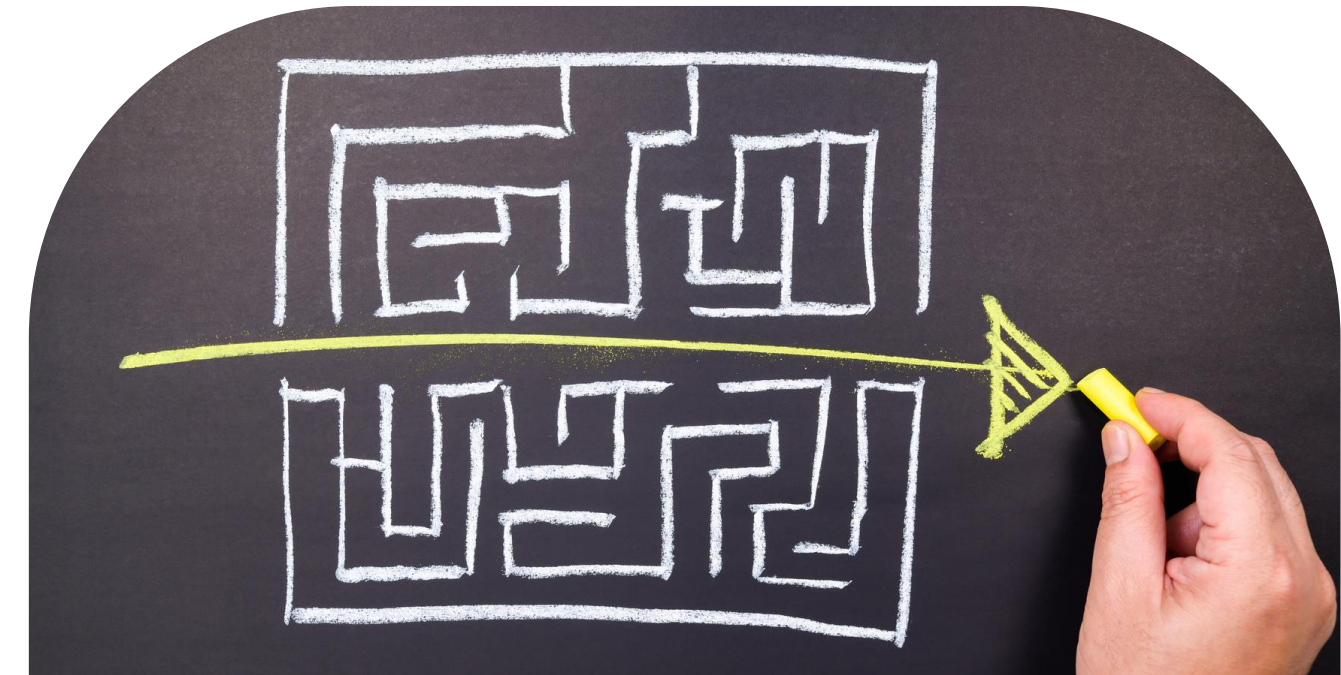


Back to Basics - In a Complicated World



Aviate-Navigate-Communicate

Taking stock of where the industry is now and what needs to be done to chart the course it takes going forward.



“Doing” Safety is not always easy

With the challenge to be “compliant” while battling the theory of Safety I, Safety II, Safety Differently

The Safety Map

Purpose

Safety as the ability to create and maintain the conditions for safe and effective operations - as organisations, leaders/ managers and individuals.



Be Ready.

Defining and living by the values that creates the trust needed to support positive safety conversations.

Mindset



Having enough competent people who are operationally ready so they can perform to the best of their abilities

People



Ensuring safe aircraft products that are supported by the right tools, equipment and infrastructure

Resources



Stay Safe



Compliance

Encouraging people to do things right by following the relevant rules, procedures and practices.



Risks

Effectively identifying and mitigating risks effectively as part of a resilient management system.



Learning

Talk openly about safety and have a positive approach to learning and solving problems.

SAFE360 2025 – Risk Management

Neil Richardson



We are all different, yet also the same.

- Our fallible selves
- Our different perspectives
- What about how others make sense of the world?
- Can we ever know everything?
- Embracing discomfort over familiarity



About me...

- Great to be here and share my thoughts
- 35 years Aviation experience
- Aircraft Maintenance and Continuing Airworthiness
- 20 Years of Safety Management 'discovery'
- Current Safety Manager



On one hand...

- SMS maturity
- Purpose, purpose, purpose!
- Risk acceptability
- Legacy beliefs and bias remain strong
- Ownership
- Humans & systems, systems and humans



On the other...

- Our amazing people
- Hunger for change
- THEY are our leaders, THEY are our followers
- THEY have something to say
- THEY are the power behind change
- THEY will determine success or failure
- Our choices today will affect those made tomorrow: Resilient and Performing systems or 'Paper Safe'



Comfortable with the uncomfortable?

- Comfort blankets
- Cues that provide insight to cultural identity
- “Language is the roadmap of culture - It tells you where its people come from and where they are going”
- The search for certainty can fuel a damaging motive.
- True learning is embracing our own fallibility



Who has the answers?

- A recent engagement
- “Hear me”
- WE & the by products of silence
- A conversation with a fallible person requires us to suspend our agenda, submit control and pay attention to the other [Dr Nippin Anand]
- Togetherness – one conversation at a time



I hope we all took something away.



Thank you and let's talk.



Owning risks in Business Aviation

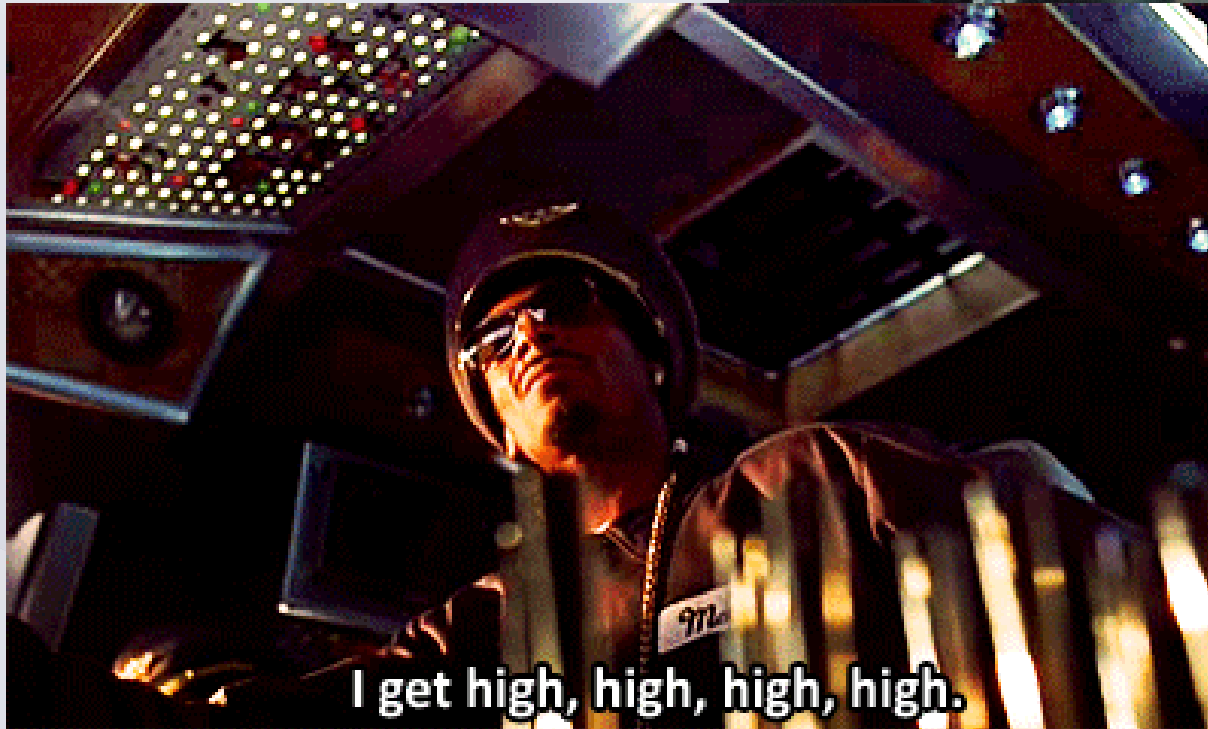


SAFE360

Cologne, September 30, 2025

Senior Capt. Mr. He/Him. Sir. Lord. Ing. Dr. Pr. HRH. Maxime Wauters
AKA "MiniMax"

How bizjet crews are « perceived »... I kid you not!







VS

**WHAT YOU
SEE...**

**COMMERCIAL
PRESSURE**

**FATIGUE
&
TIREDNESS**

**HEAVY
TRAINING
REQUIREMENTS**

**FUEL
MANAGEMENT**

**FLIGHTS TO/FROM/OVER
CONFLICT ZONES**

**HIRING &
RETAINING
TALENT**

**COMPLEXITY OF
INTERNATIONAL OPERATIONS**

MENTAL HEALTH

**REGULATORY
COMPLEXITY**

Customer demands,
Last-minute changes
Delays



Aircraft knowledge,
CRM, Slots,
Commercial
pressure, etc.

#BANPRIVATEJETS

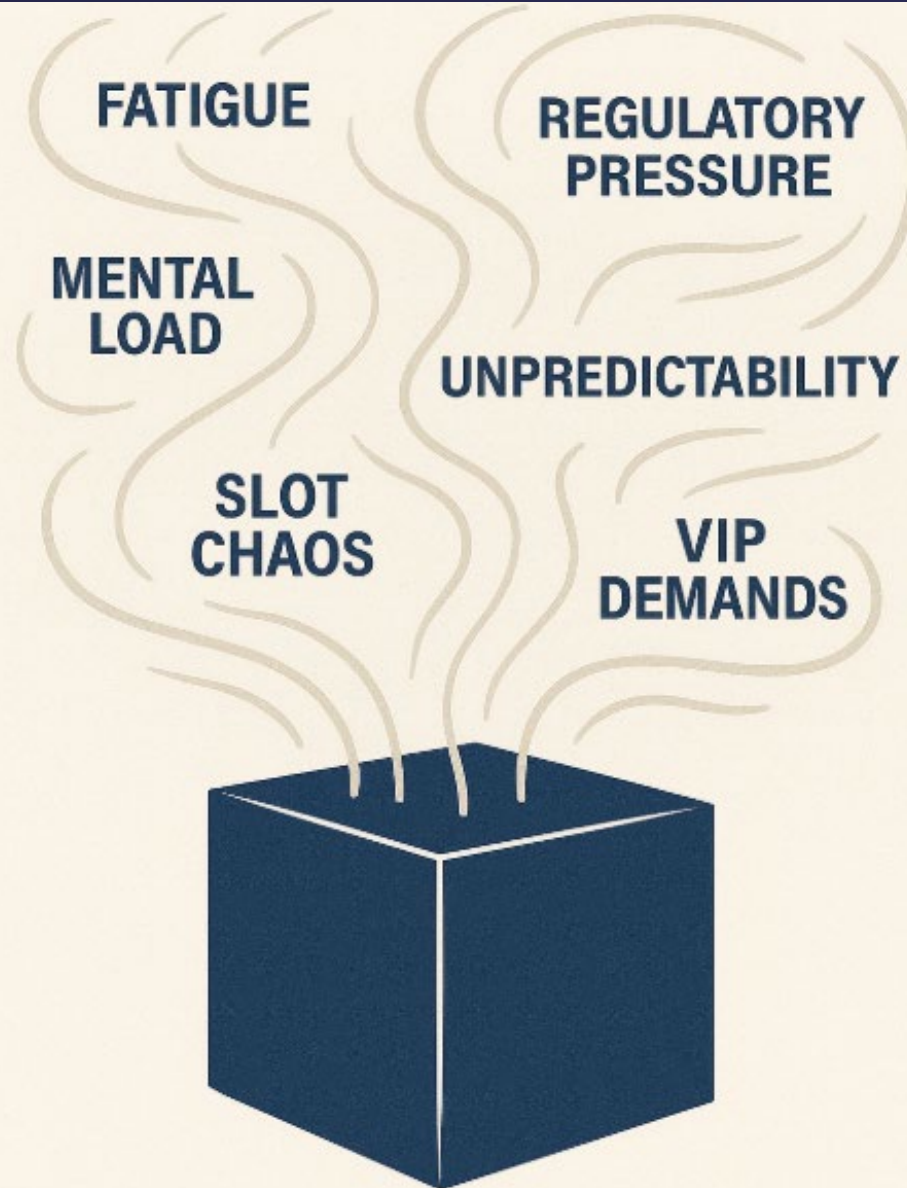


#CLIMATECRIMINALS

#FLYGSKAM



What you don't see... The dirty black box



From the apron... with love



THANK YOU



I also animate team buildings,
weddings, parties, bar mitzvahs...



Safety Landscape and Risk Management

Understanding the right challenges

Measuring and monitoring

Taking the right action

Strategic and Operational Topics





Exploring Safety Challenges

Discoveries from IATA's Risk-based IOSA

Edickson Santamaria - IATA



Based Risk IOSA - Overview

2024 Traditional IOSA Audit transitioned to a Risk-Based IOSA.

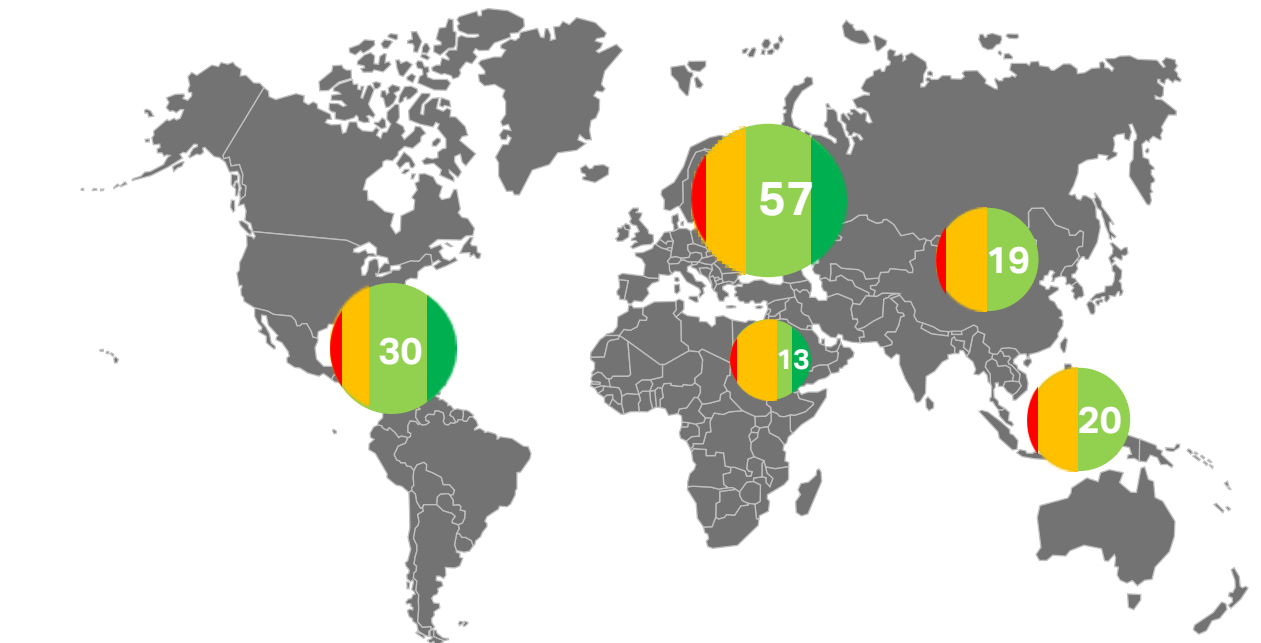
2025 (June) **+ 250** Risk-based audits have been conducted.

+100 European air carriers have been audited under RBI

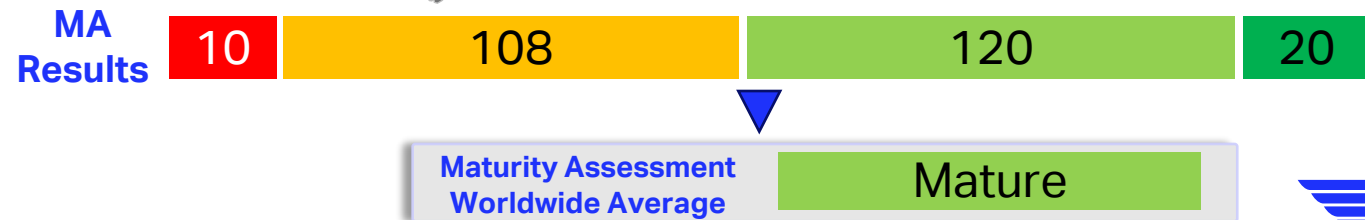
The risk-based model:

- Offers a **tailored audit scope** for each airline, and
- Incorporates an SMS **maturity assessment**

Current Status after +250 RBI



56%
IOSA
Carriers



01.

02.

03.

04.

05.

**Management
& control**

**Risk
Management**

**Safety
Assurance**

**Quality
Assurance**

**Safety
Promotion**



01.

**Management
& control**



Management Commitment - Poor safety culture / low-level safety reporting/lack of awareness of the safety policy



Lack of a process for setting safety objectives to ensure their continued relevance to operations



Safety Objectives not clearly linked to the relevant aspects of the operational safety performance





02.

Risk

Management



Lack of proactive hazard and threat identification across all operational domains



Lack of safety reports processing, safety investigations of operational occurrences, and feedback to reporters



Lack of External Hazard/Threat identification tools linked to external organizations





03.

Safety Assurance



Lack of process for setting safety Performance indicators (SPI) and targets (SPT)



Not interface between Quality Assurance (QA) and Safety Management process



Lack of process for conducting Management of Change





04.

Quality Assurance



Deficiency in root cause identification knowledge/understanding



Poor Auditors' training and qualification process



The Quality assurance program does not adapt according to the safety performance needs





05.

Safety Promotion



The operator's personnel do not understand their role in the organization's SMS



Operator does not have a process to ensure that external service providers receive safety information relevant to the operations conducted



Lack of a process to update the SMS training program effectiveness





How do the current challenges in safety management prevent us from effectively addressing operational safety issues?

“The wider system level challenges that underpin our main safety challenges and tackling the cultural barriers that stop us really fixing them”

Or in Colin's words:

“What is going to sneak up on us and really bite us hard in the arse?”









The only thing that is
constant is change

Heraclitus



WHAT DO YOU THINK
ABOUT SOCIAL MEDIA?



678,000 cabin crew

416,000 aircraft maintenance technicians

300,000 pilots

71,000 air traffic controllers

HOW OPEN-MINDED ARE
WE REALLY?

Are we ready to 'unlearn' as
well as learn?





ECA

European Cockpit Association

Understanding the real safety challenges our operational staff face in ensuring the safety of passengers and staff:

Captain Paul Reuter
European Cockpit Association

EASA SAFE360 2025



ECA

European Cockpit Association

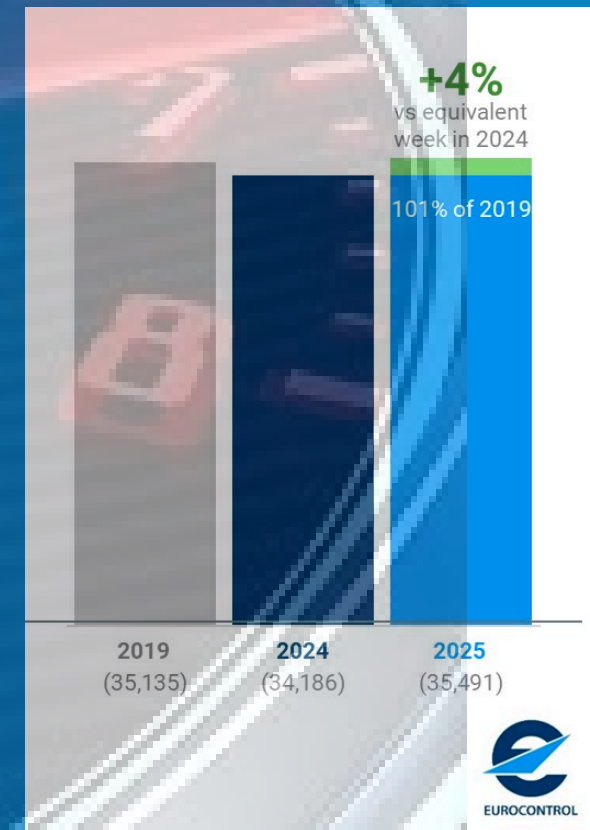
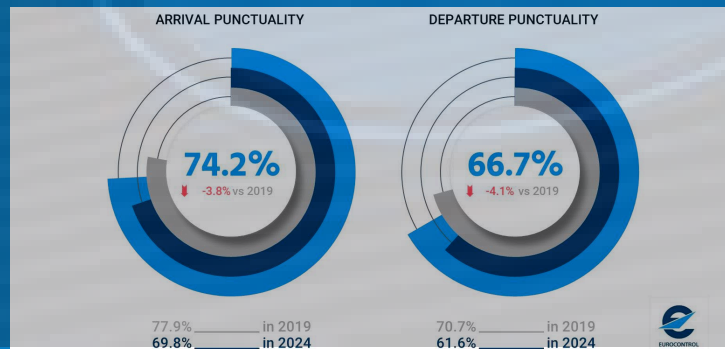
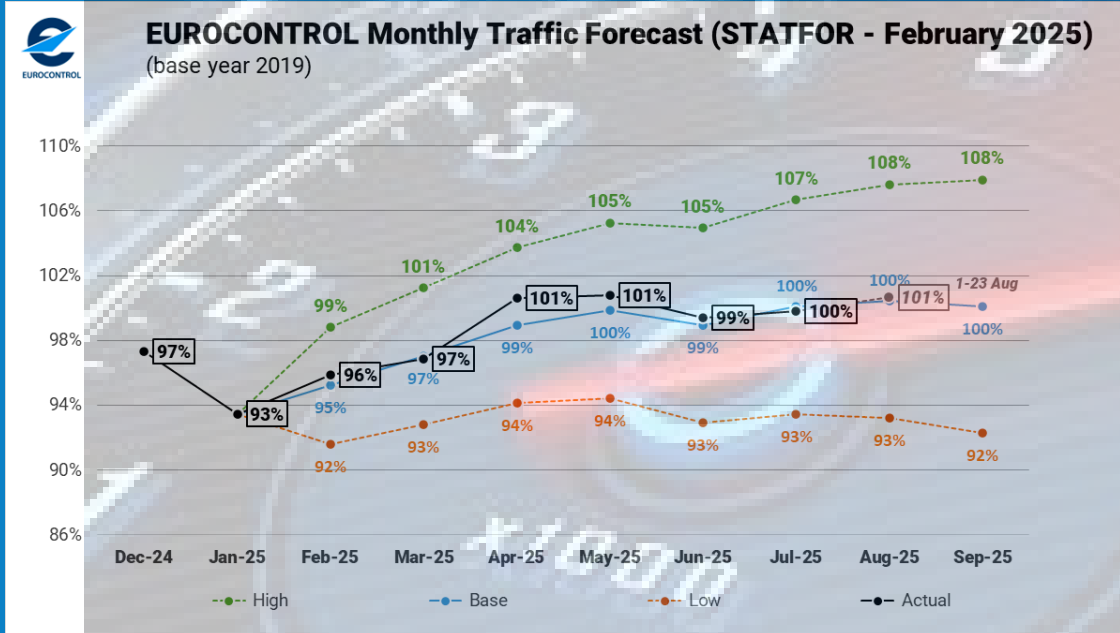
The industry is doing well....

European pilots | 2025



ECA

European Cockpit Association



EASA SAFE360 2025

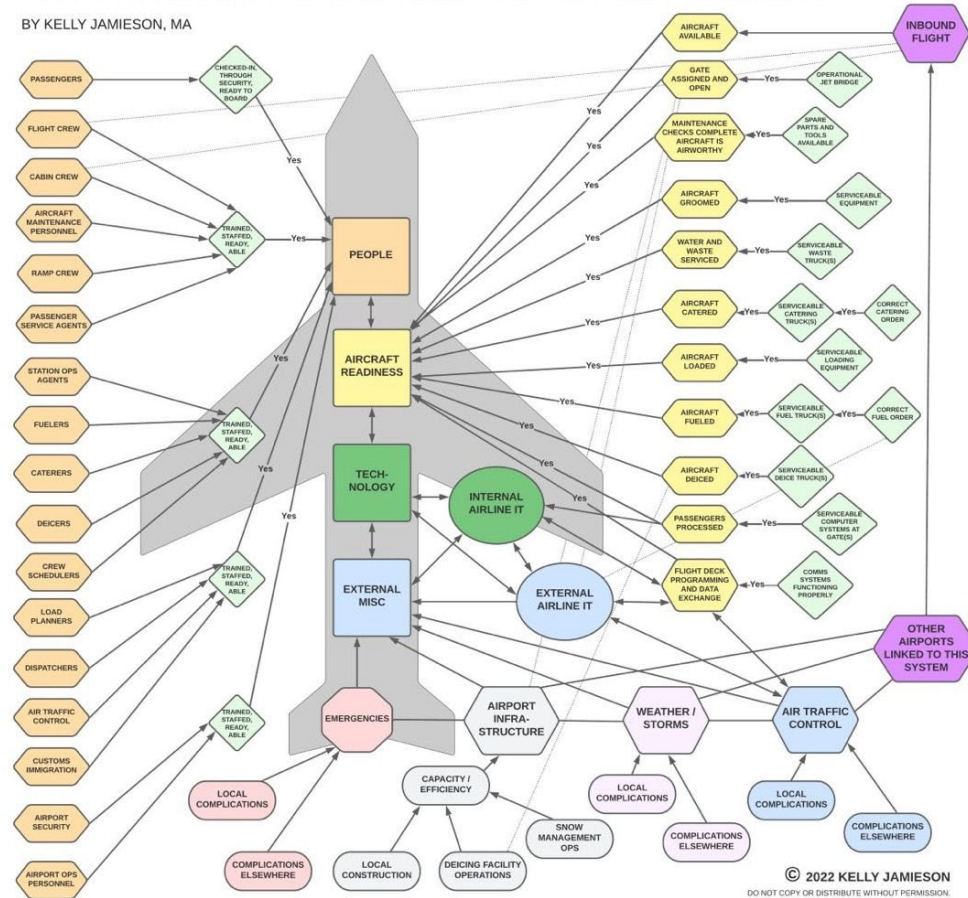
European Cockpit Association

...Meanwhile... on the front line...

European pilots | 2025

FACTORS AFFECTING ON-TIME PERFORMANCE

BY KELLY JAMIESON, MA



...a sobering thought...



SAFE360°slides for APM slot

Intro



EASA APM Team



Anastasios PAVLOPOULOS
Technical Lead for APM
Senior Expert - Air Operations



Stefano OPRANDI
Flight Crew Training Expert



Lado KULJANISHVILI
ATM/ANS Expert



Aigars KRASTINS
Senior Aviation Safety Risk
Manager



Gilles GARDIOL
Project Manager for APM
Senior Impact Assessment Officer

How will Slido be used today?

→ Part of SRM process:

- Safety Issue Assessment and Impact Assessment of SIA recommendations (validation and rescoping when necessary of proposed actions).
- This is combined in a report called « Best Intervention Strategy », subject to consultation with Advisory Bodies

→ Today:

- Slido closed questions to better manage your initial feedback on the proposed actions
- Slido will also enable to get open questions during the presentation



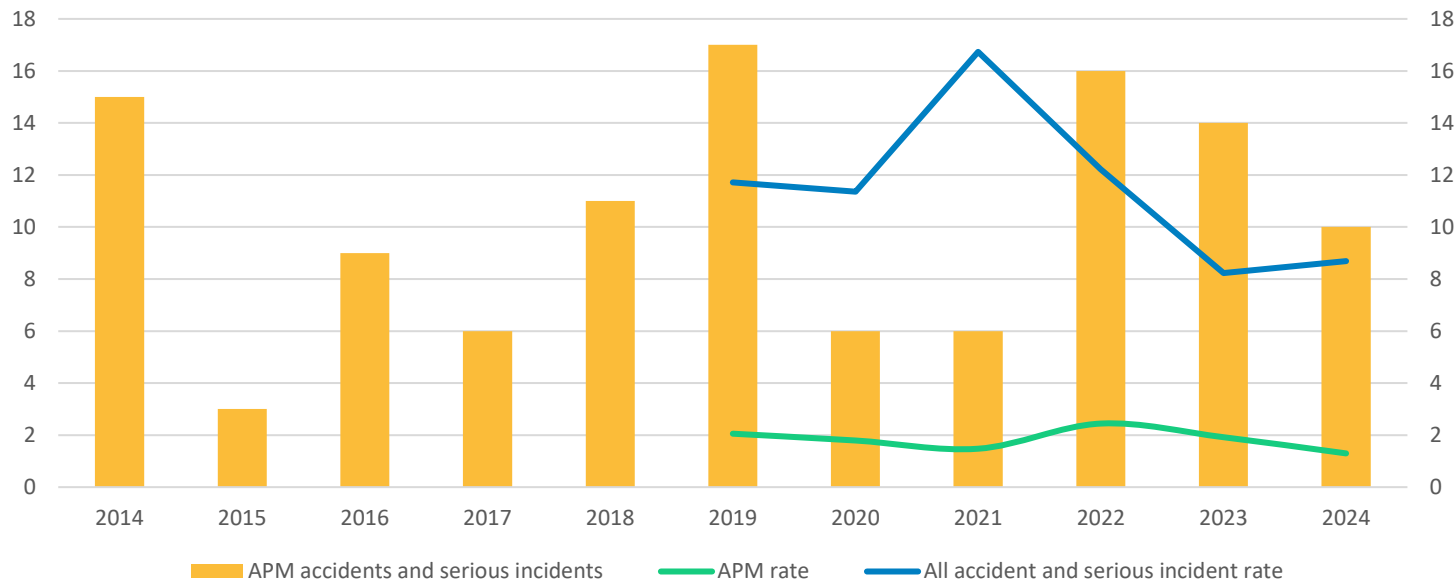
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APM safety trends for the EASA MS operators

APM accidents and serious incidents and rate per 1 Mio flights



SIA outcome as per the EU SRM process

- 44 (2016-2020) occurrences included in the bowtie analysis, that highlighted two higher risk threat scenarios among others:
 - Poor weather encounter & poor runway condition, and
 - displaced threshold on runway due to construction works
- It identified the weak or missing barriers, safety gaps and existing enhancements from the literature review;
- Various draft mitigating actions were proposed to address these (as rulemaking, safety promotion, research, or Member State tasks);
- Up to today, several RMTs and SPTs have been implemented that strengthened aircraft design (e.g. Runway Overrun Awareness and Alerting System (ROAAS)) and infrastructure barriers (e.g. GRF);
- Impact Assessment of the proposed mitigating actions is ongoing: subject of today's session

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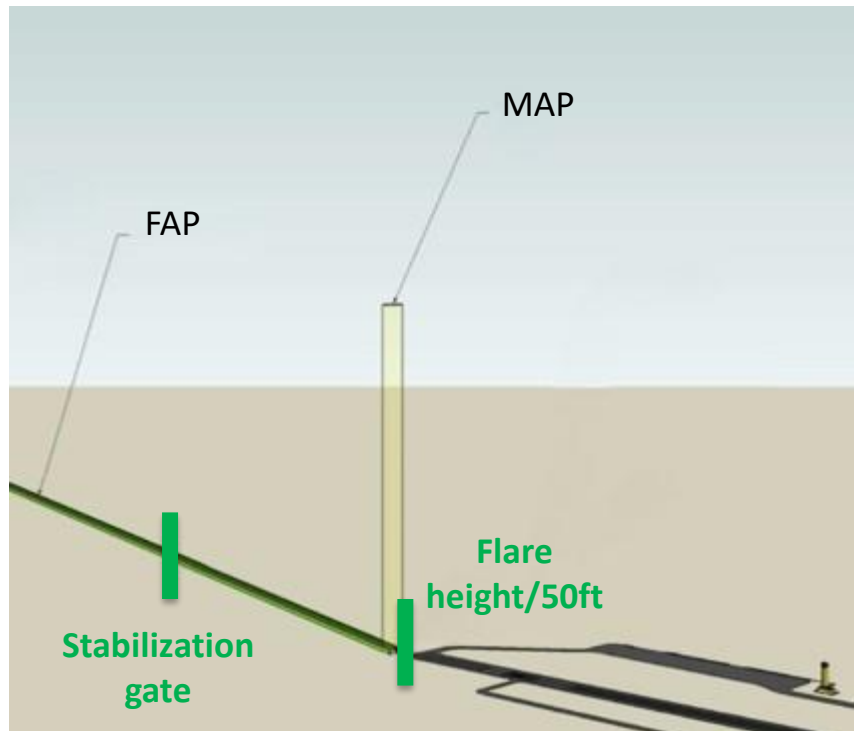


OPS - Where we stand – CAT.OP.MPA.115

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Stable from Gate to Flare height/50ft



Pre-Approach Setup

- **FMS and approach aids** must be correctly configured.
- **Radio aids** must be identified before a defined point or altitude.

Flight Parameters from Stabilization Point

- **Bank angle:** Less than 30°.
- **Descent rate:** Matches the required vertical path at planned approach speed. Variation: Should not exceed $\pm 50\%$ of the target.

Stabilization Conditions

- **Lateral and vertical path:** Within acceptable tolerance.
- **Vertical speed:** Within acceptable tolerance.
- **Airspeed:** Within acceptable tolerance of landing speed.
- **Configuration:** Correct for landing (unless final change is planned after visual reference).
- **Thrust/power and trim:** Appropriately set.

Stabilization Altitudes

- **Visual reference available:** Stabilized by 500 ft AGL.
- **No visual reference:** Stabilized by 1000 ft AGL. Exception: Later airspeed stabilization allowed if higher approach speed is operationally required.



ATM - Where we stand – SERA and ATM/ANS

- Regulation (EU) 2017/373 ATS.TR.155 ATS surveillance services
 - (c) **An air traffic services provider** shall, in accordance with the functions for which ATS surveillance information is used in the provision of air traffic services, **establish procedures for:**
 - (2) providing position information to aircraft;
 - (3) vectoring aircraft;
- AMC2 ATS.TR.155(c)(3) ATS surveillance services (**VECTURING FOR APPROACH CONTROL**)
 - (b) The **air traffic controller** should advise the pilot **of an aircraft being vectored for an instrument approach** of its position at least once **prior to commencement of final approach**.

ATM - Where we stand – SERA and ATM/ANS

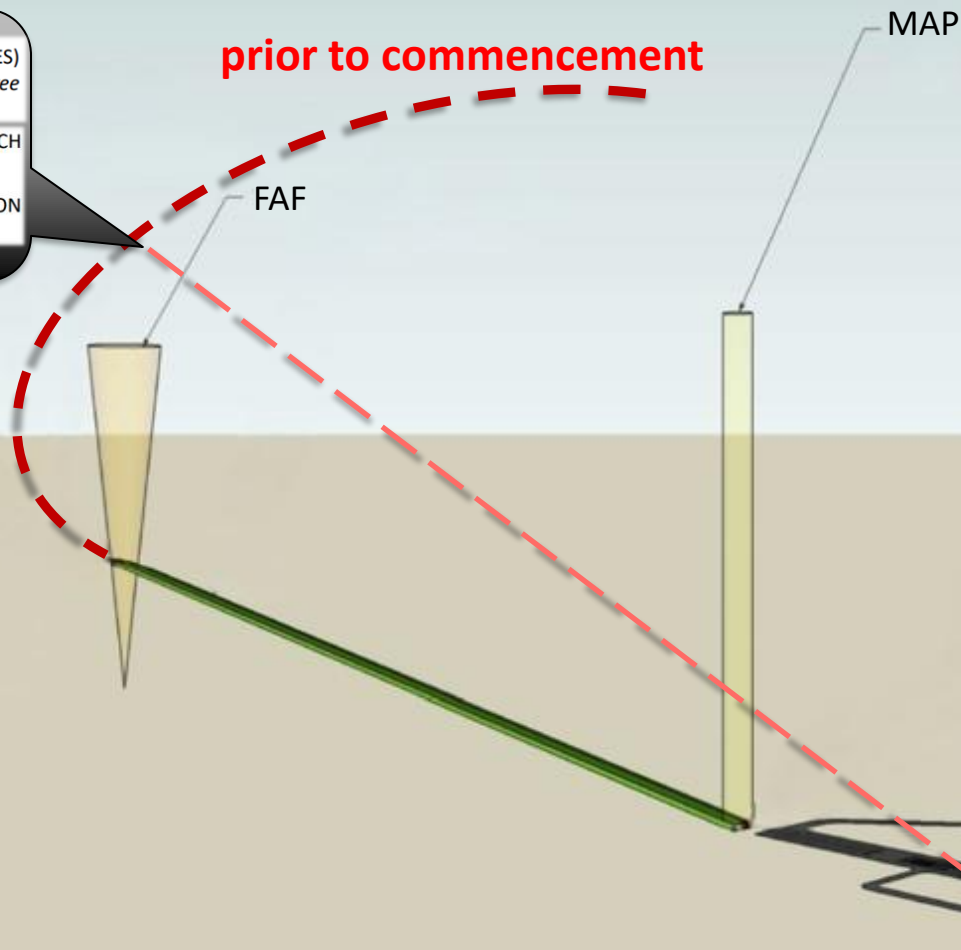
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a) POSITION (*number*) KILOMETRES (*or* MILES) from x). TURN LEFT (*or* RIGHT) HEADING (*three digits*);

d) CLEARED FOR (*type of approach*) APPROACH RUNWAY (*number*);

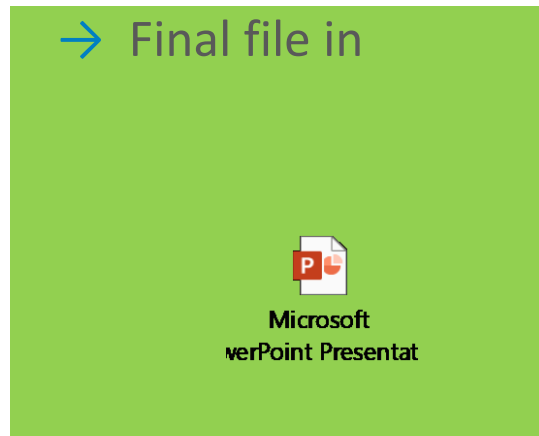
e) REPORT ESTABLISHED ON LOCALISER (*or* ON [GLS/RNP/MLS] [FINAL] APPROACH [COURSE]);



KLM presentation



Martin Nijhof,
Sr Flight Safety Investigator



easyJet presentation



VICTOR ZEWARD
LEAD FLIGHT OPERATIONS SAFETY CAPTAIN

easyJet

- Final file in:
- Q:\Impact Assessment\SRM TST\TST - Approach Path Management (BIS27 SI-0007)\03-SAFE360\2025\Final Slides for John

easJet presentation

- easyJet: how to embed these slides in EASA slides? See with John
- FINAL SLIDES TO BE RECEIVED BY STEFANO ON FRIDAY 26/9
- Q:\Impact Assessment\SRM TST\TST - Approach Path Management (BIS27 SI-0007)\03-SAFE360\2025\Stakeholders slides\easyJet SAFE360 2025 APM slot.pptx

Video: Michael Hufnagl

ZIB

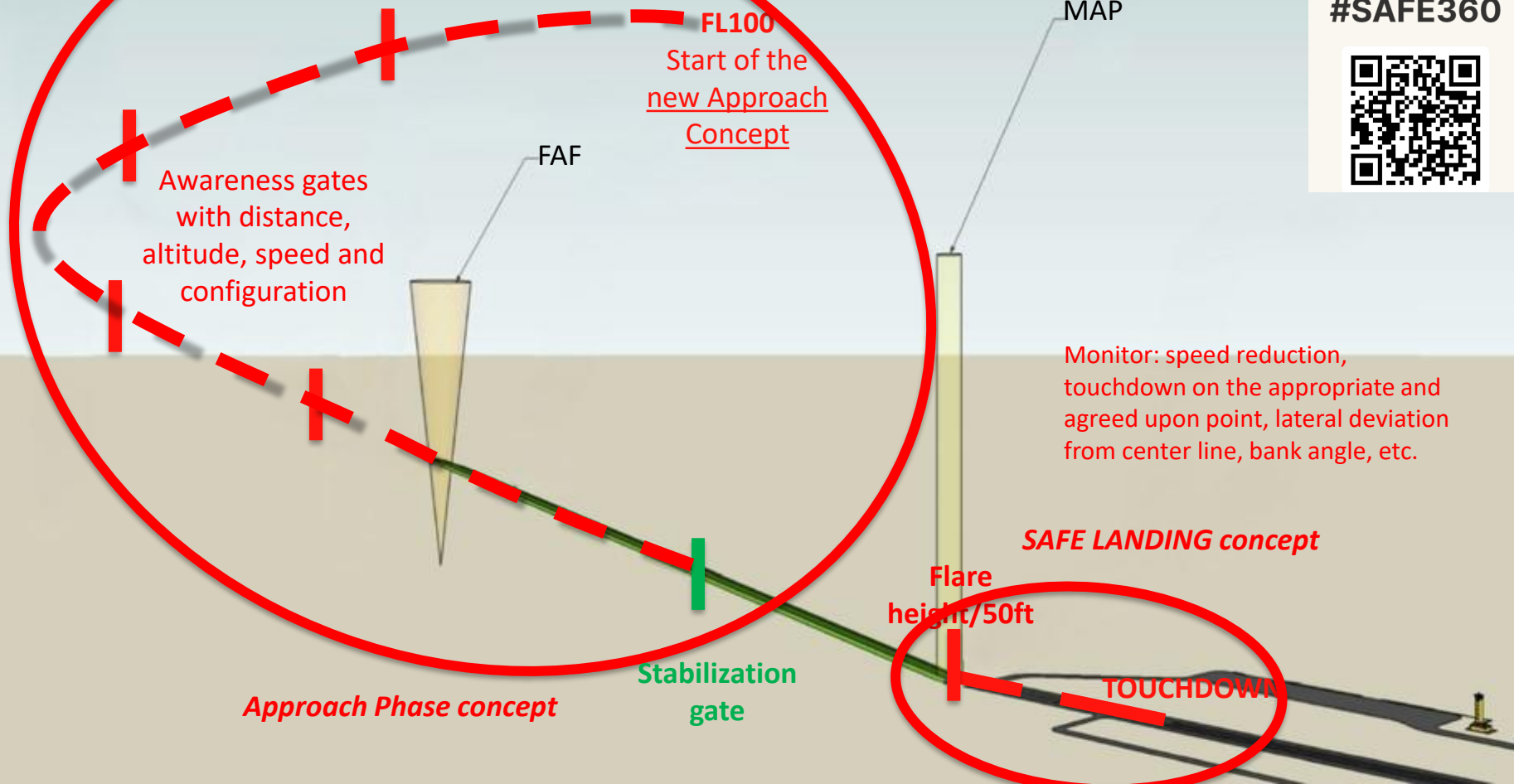


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A way forward for new concepts?

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Is the proposed way forward going to help the crew to do the right thing?



Is it needed to enhance the PF and PM training to manage and monitor energy?

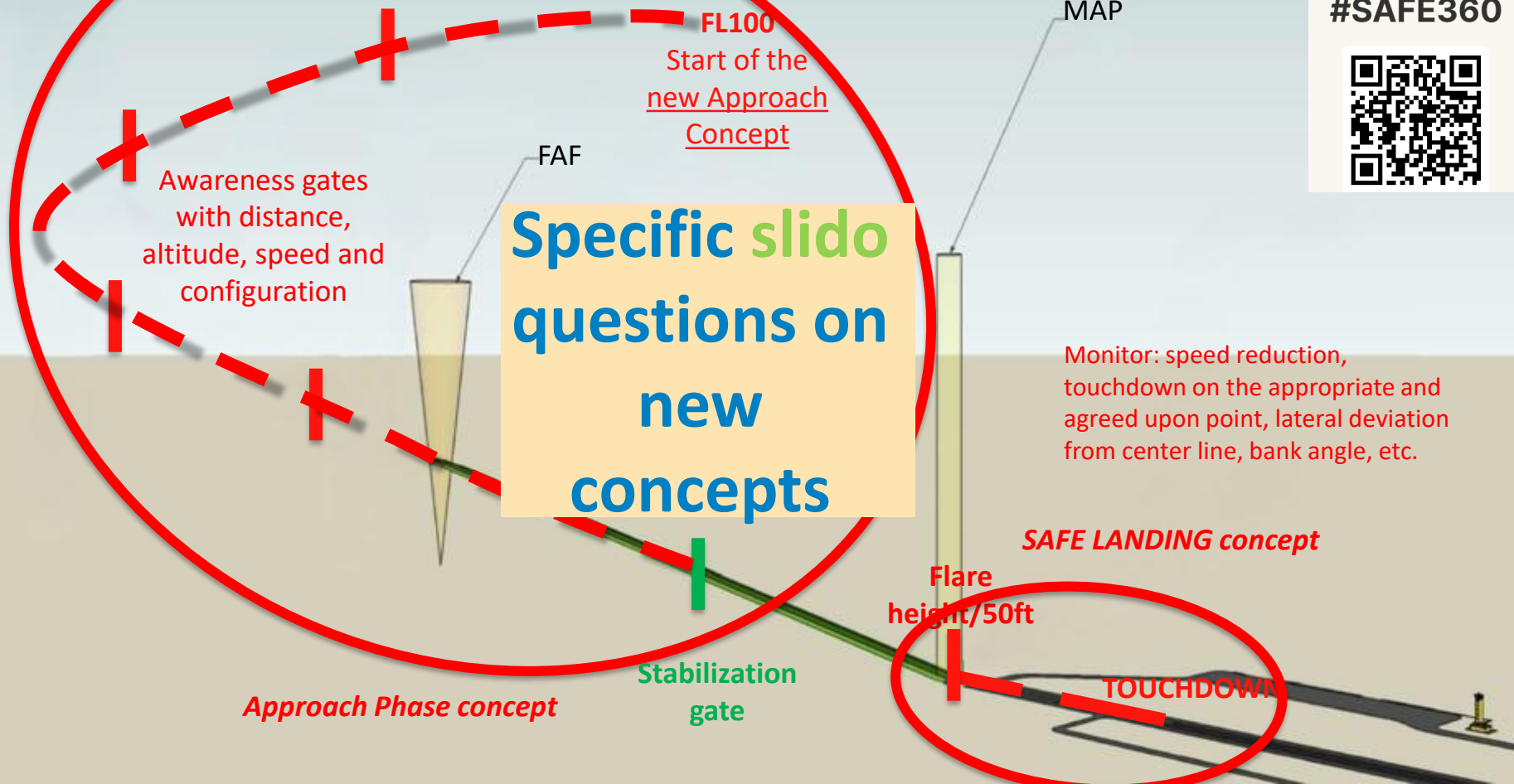


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A way forward for new concepts?

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TRACK MILES - A way forward for a new policy?

d) CLEARED FOR (type of approach) APPROACH
RUNWAY (number);
e) REPORT ESTABLISHED ON LOCALISER (or ON
[GLS/RNP/MLS] [FINAL] APPROACH [COURSE]);

FAF

MAP

TRACK MILES/DISTANCE
TO TOUCHDOWN

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Do you think such practice (if widened) would support you during approaches on vectors?



TRACK MILES - A way forward for a new policy?

d) CLEARED FOR (type of approach) APPROACH
RUNWAY (number);

e) REPORT ESTABLISHED ON LOCALISER (or ON
[GLS/RNP/MLS] [FINAL] APPROACH [COURSE]);

FAF

MAP

Specific slido
question on
TRACK MILES

TRACK MILES/DISTANCE
TO TOUCHDOWN

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slido.com

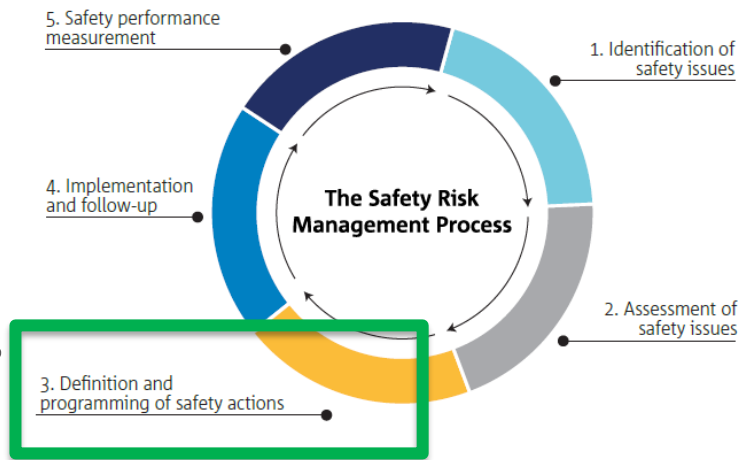
#SAFE360





Next steps

- Discussion today and answers to Slido are inputs to finalise an EASA proposal on APM risk mitigation
- Draft BIS report for EASA Management
- Consultation of EASA Advisory Bodies
- EASA ABs members will liaise with the members of their organisations to collect feedback
- Feedback will enable to finalise the EASA decision, new actions if any will be in the EPAS



Conclusion



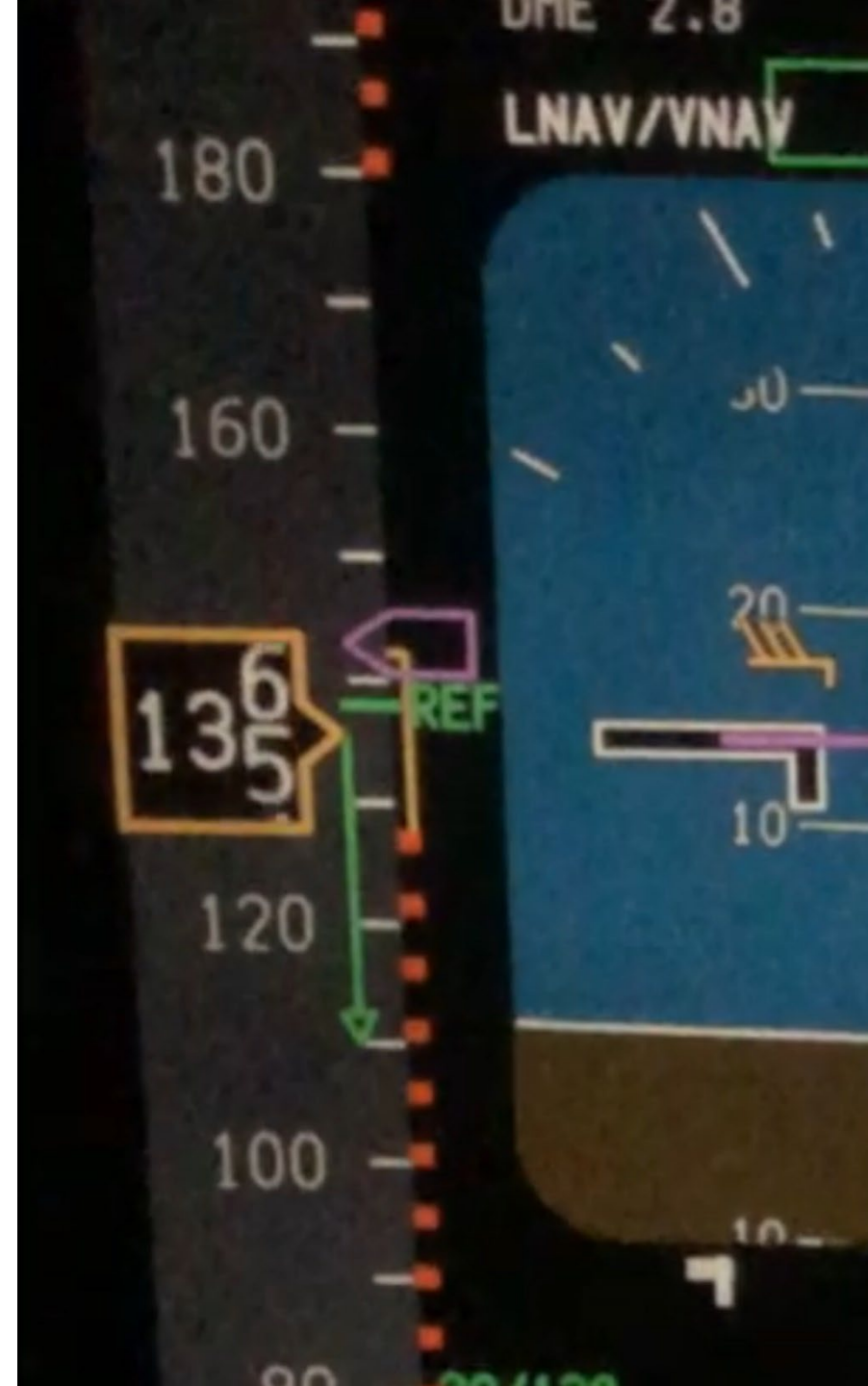
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THANK YOU !

Anatomy of an approach and go-around at Sao Paulo (GRU), Boeing 777-300

Martin Nijhof,
Sr Flight Safety Investigator



AMS - GRU incident flight, March 2021

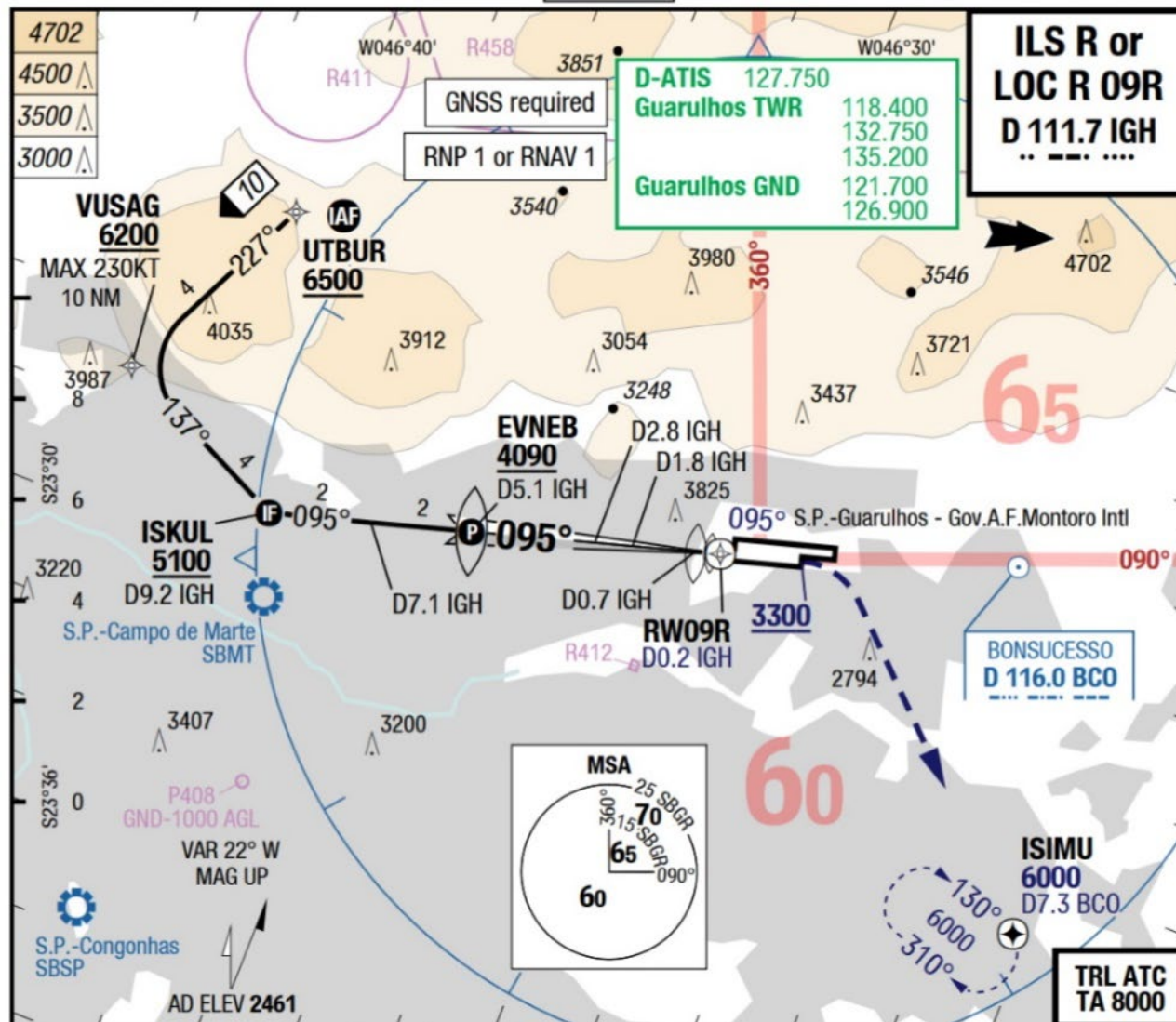
- Three crew, uneventful flight
- ATIS Broken clouds 4500 ft, vis 10 km, no thunderstorms
- ILS approach RWY09R
- Approaching from the north, direct to IAF “UTBUR”
- CB moving westwards near the IF “ISKUL”

GRU-SBGR

Brazil **Sao Paulo** Guarulhos - Gov.A.F.Montoro Intl

7-70

ILS R or LOC R 09R



Changes: new

The approach

- In concert with ATC hdg 170 to stay clear of CB
- ATC: descent to 5000 ft, reduce to FAS
- Hdg 130 to intercept ILS

Flightpath

Legend



The approach (cont'd)

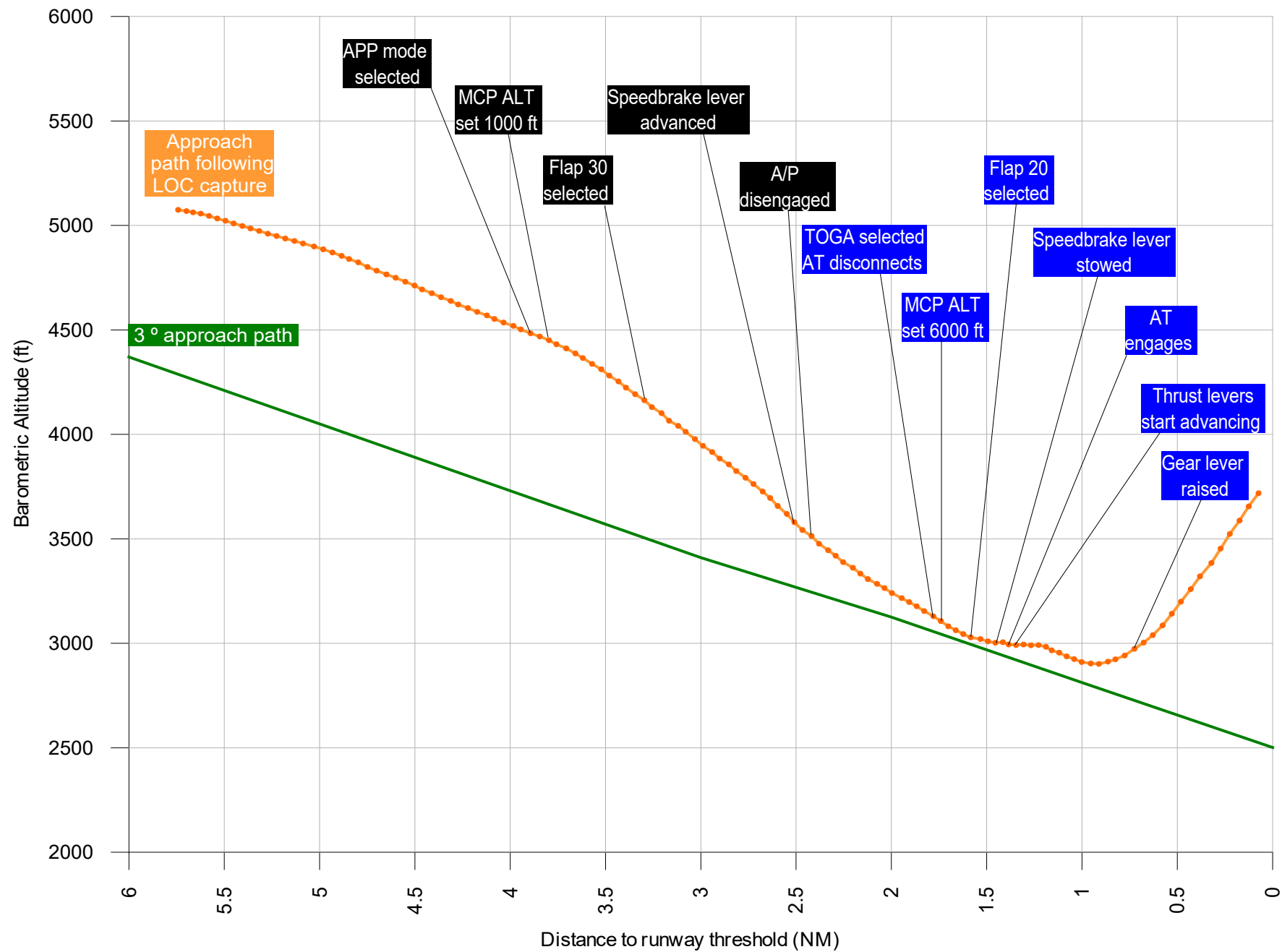
- Aircraft ends up (1) above the glideslope and (2) behind a slower Airbus A320 also on approach to 09R
- AC fully configured for landing, SPD BRK extended, closing in on the glideslope, thrust at idle
- FO disconnects AP, SPD BRK lever inadvertently not fully stowed

The go-around

- Crew anticipates a go-around, which is then instructed by ATC
- When pressing TO/GA switches: **autothrottle disconnects**
- PF pitches up, PM reconfiguring MCP altitude and flaps

The go-around (cont'd)

- S/O observes SPD BRAKE lever not fully down
- **AIRSPEED LOW aural**, followed by AT re-engaging in THR mode
- Remainder of GA is uneventful



Investigation scope: the go-around

- During go-around the PM has a higher workload, which adversely affects the PM's monitoring role
- This is induced by the operating procedure.
- Go Around Training is mainly focused on the PF
- Better prepare crews to cope with real-world challenges which can be experienced during all engine go-arounds

Thank you

martin.nijhof@klm.com

SAFE360

MANAGING THE APPROACH PATH



VICTOR ZE WALD

LEAD FLIGHT OPERATIONS SAFETY CAPTAIN

easyJet

SAFE 360 — MANAGING THE APPROACH PATH

EASYJET NETWORK

Fleet: Europe's largest Airbus A320 Family operator

Network: 160 destinations / 1200+ routes

CAT C Aerodromes: 10



easyJet

SAFE 360 — MANAGING THE APPROACH PATH

OVERVIEW — MANAGING THE APPROACH PATH



EASYJET POLICIES ON APPROACH PATH MANAGEMENT



APPROACH INSTABILITY: COMMON CONTRIBUTORS



CHANGING BEHAVIOUR

EASYJET POLICIES

- Stable Approach Policy
- Best use of Automation / Equipment
- Operating Instructions / Restrictions

APPROACH INSTABILITY: COMMON CONTRIBUTORS

- Environmental conditions
 - Operational environment
 - Human Factors
- Underestimation of risk – *I can “fix” this*
 - Anticipatory awareness – *VMC vs IMC*
 - Cognitive lock-up & continuation bias – *Goal orientated*
 - Social pressures- *First Officers may struggle to challenge Captains*

CHANGING BEHAVIOUR — MONITORING & INTERVENTION

- PM Training
 - Prompt
 - Direct
 - Intervene



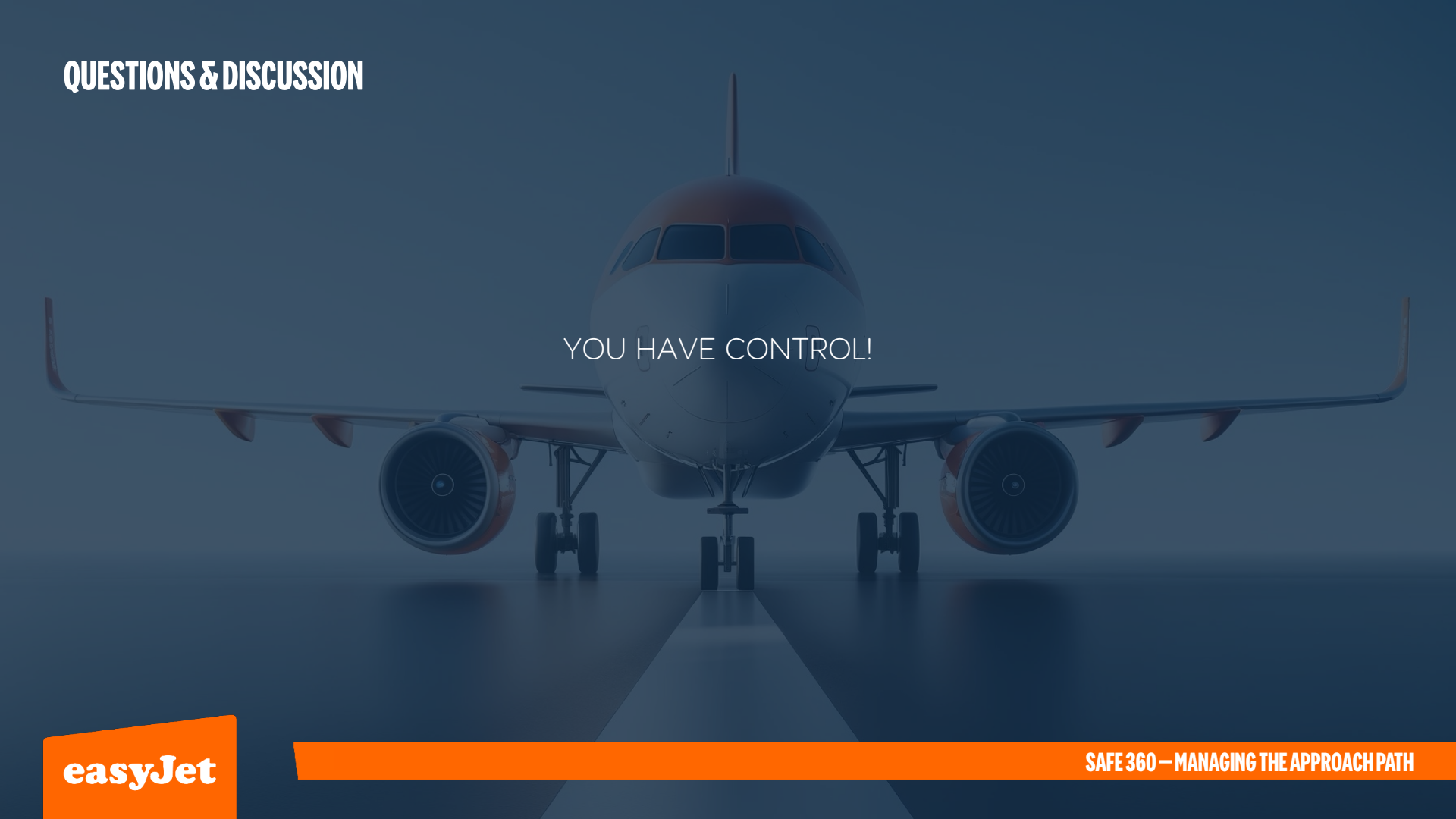
CHANGING BEHAVIOUR — EVENT MANAGEMENT

- Managing individual events
 - Pressing 'Pause'
 - Understanding Causal Factors
 - Application of Just Culture
 - Confident and Proficient return to line

CHANGING BEHAVIOUR - SAFETY PROMOTION



QUESTIONS & DISCUSSION

A front-facing view of a large commercial airplane, likely an Airbus A320, positioned on a runway. The aircraft is centered, with its wings spread wide and landing gear visible. The background is a dark, gradient blue, suggesting a clear sky or a studio setting. The overall tone is professional and focused.

YOU HAVE CONTROL!



PREVENTING MID-AIR COLLISIONS

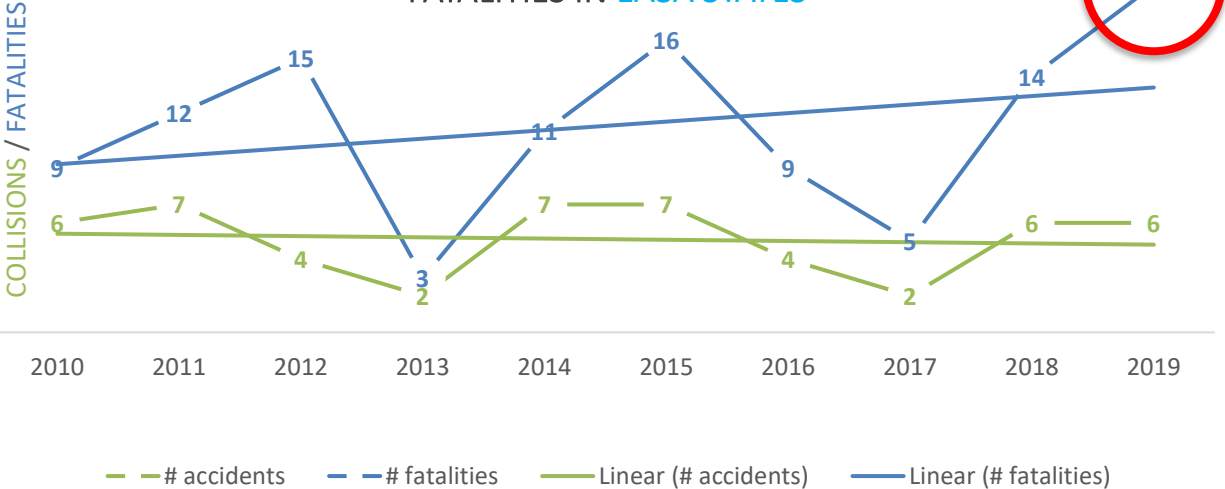
SAFE 360° Discussion, 1 October 2025

Vladimír Foltín

GA Flightpath 2030+ Manager
iConspicuity Project Manager

Safety data 2009 - 2019

FATAL AIRBORNE COLLISIONS / AIRBORNE COLLISION FATALITIES IN EASA STATES



60 FATAL COLLISIONS
~
6 PER YEAR

137 FATALITIES
~
13 PER YEAR

ALL UNCONTROLLED TRAFFIC

ALL SMALL AIRCRAFT

Strategy 2025-2028



“Your safety is our mission”

SAFE



Maintain a safe,
resilient aviation
ecosystem

GLOBAL



Enhance global
standards and
interoperability

GREEN



Achieve net zero
emissions in
aviation by 2050

INNOVATIVE



Integrate
innovative
technologies

RESILIENT



Equip EASA for
the next decade



Safety Risk Management

Efficient SRM process that develops mitigations for the top safety issues through EPAS (focus on safety).



Risk Based Oversight

DOA mechanism designed & endorsed. Principles for other organisations harmonised. Maturity model for NCAs.



ATM & Aerodromes

Certification and oversight of ATM DPO, ATM/ADR ground equipment.



Implement SMS & ISMS across Industry

Full integration into organisation oversight & standardisation.
Competence building for NCA/EASA.



Flightpath 2030+

Deliver Programme Objectives related to e-conspicuity and prevention of mid-air collision.



Maintain a safe, resilient aviation ecosystem

Ensure that European safety and oversight standards effectively mitigate all risks affecting safety.

Approve safe products that perform as expected in the system as part of a competitive industry.

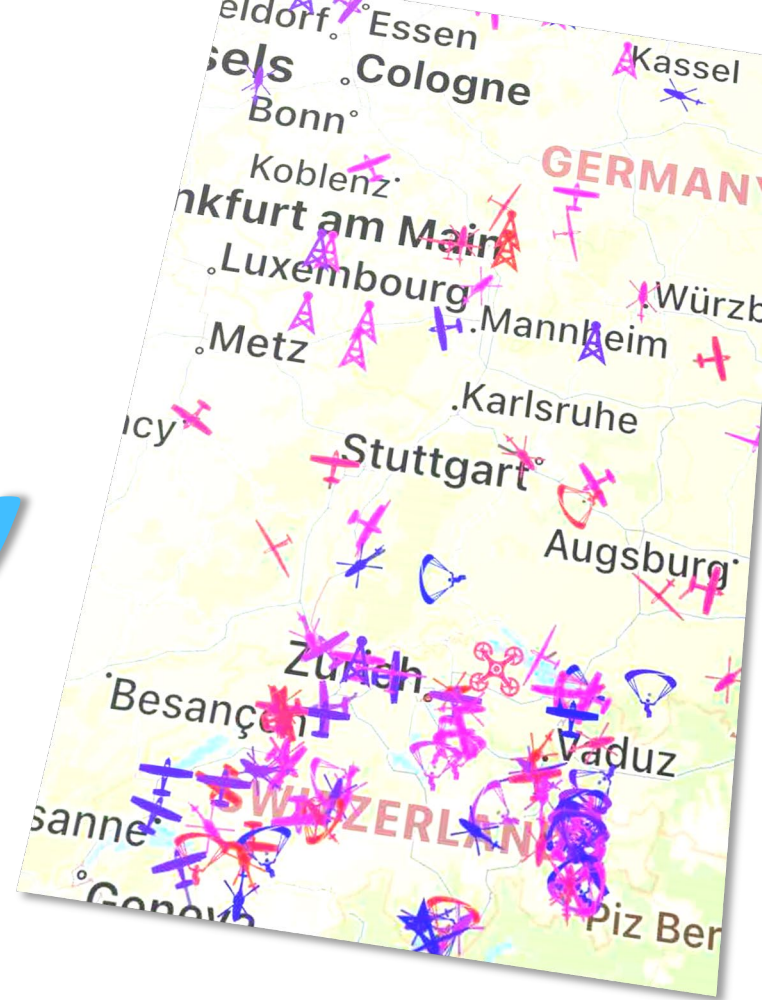
Promote a human-centered approach to maintaining safety.

U-space compatible ✓

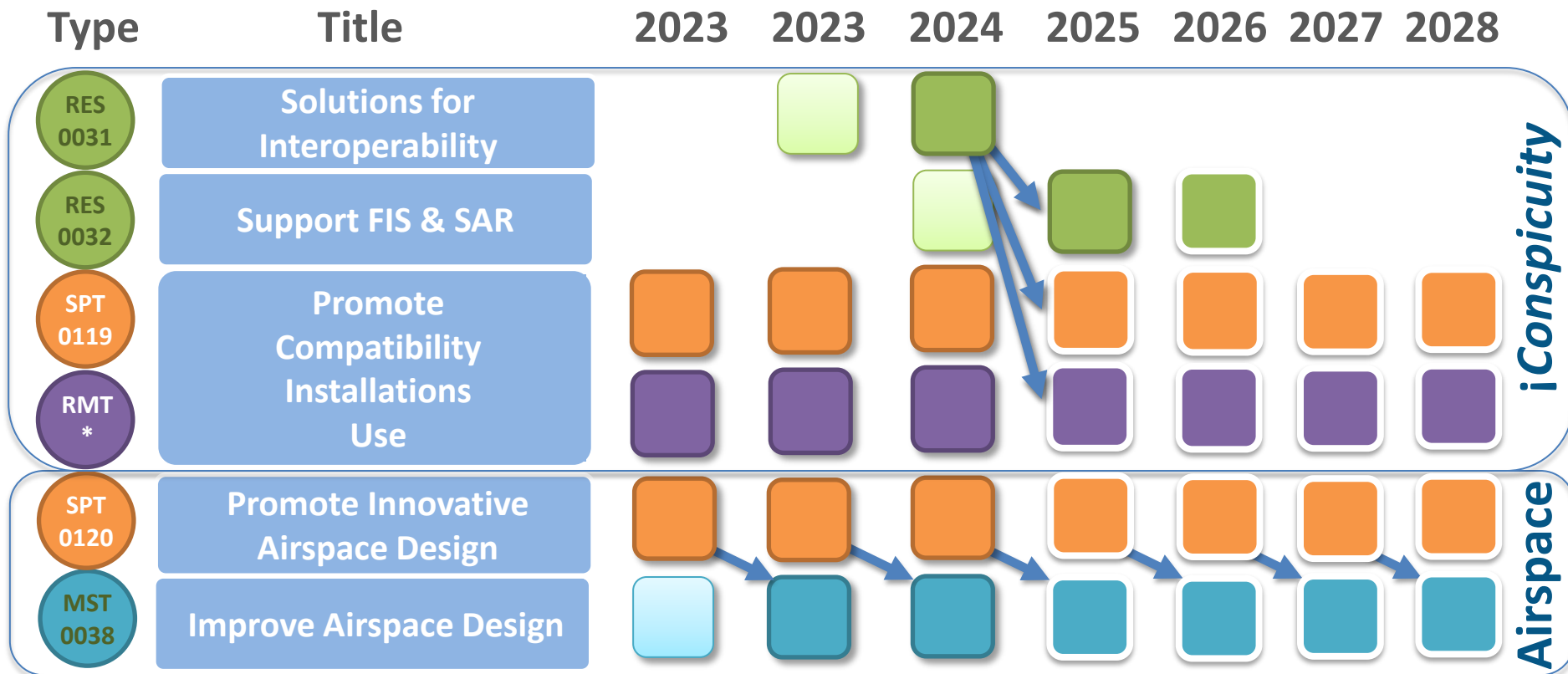
Conspicuity

Connected aircraft ...

... for better situational awareness



EPAS – iConspicuity



SERA.6005 (c)

*Manned aircraft operating in airspace designated by the competent authority as a **U-space airspace**, and not provided with an air traffic control service by the ANSP, shall continuously make themselves **electronically conspicuous to the U-space service providers***

One Language ✓

(light)

ADS-L

*Affordable
Interoperable
GNSS based
Privacy & Security*



To be seen in U-space - SERA.6005(c)

ADS-B Out (1090 MHz)



For certified aircraft, using the **existing certified technology** already installed on board



ADS-L 4 SRD-860



Non-certified devices transmitting at low power on the licence-free band SRD-860, in compliance with ADS-L specifications



ADS-L 4 MOBILE (telephony)



Mobile telephony application transmitting in compliance with ADS-L specifications

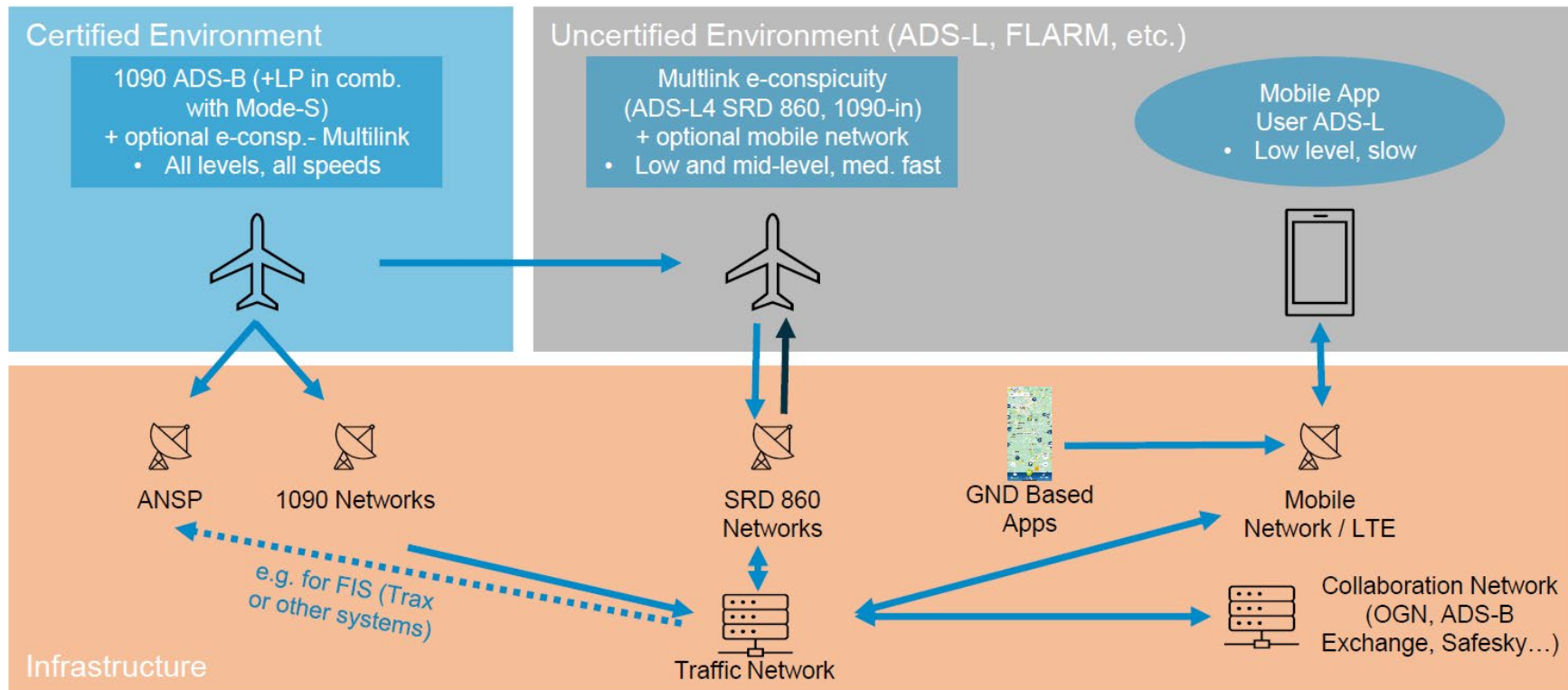


2022



2026
(draft)

Future *iConspicuity* according to RES.0031*



Work in Progress

ADS-L

4 SRD860

Issue 2*

Aviation

Traffic

Status

Uplink

NEW

Traffic

FIS-B

Drones

NEW

RemoteID

Advice from Sunny Swift

A FRIEND WANTS TO INSTALL SUCH A SYSTEM IN HIS PRIVATE AIRCRAFT. HE'S NOT SURE WHICH SYSTEM TO CHOOSE.

I SUGGEST BUYING AN ADS-L SYSTEM WITH DIRECT RADIO LINE OF SIGHT CAPABILITY, COMPLEMENTED BY MOBILE NETWORK CONNECTIVITY.



iConspicuity Declaration

Introduction

This iConspicuity¹ Declaration is a voluntary policy statement, jointly established by participating aviation authorities and other entities², specifically addressed to the **General Aviation (GA)** sector. Its primary objective is to facilitate and encourage the use of iConspicuity devices and data (including ADS-B out³, ADS-L⁴, surveillance data, and similar information) by all stakeholders with the shared aim of improving operational safety and enhancing safety culture in GA⁵.

The adoption of this iConspicuity Declaration does not affect the application of Regulation (EU) No 376/2014 regarding the reporting, analysis and follow-up of occurrences in civil aviation and any other applicable European Union or national legislation⁶.

Commitment

By adopting this iConspicuity Declaration we, the signatories, express our commitment to foster the development of iConspicuity devices and their use and utilisation of related data with the intention of improving aviation safety, fostering innovation and enhancing operational efficiency through collaborative analysis. We pledge to adhere to the following:

Key Principles:

1. **Promoting Safety Culture:** The initiative aims to facilitate and promote safety culture in GA in order to foster positive safety behaviours.
2. **Voluntary nature:** The initiative is a partnership that signatories join on a voluntary basis.
3. **System-wide insights:** Analysis of iConspicuity data will focus on system-wide insights (big data approach) rather than the actions of specific situations. This encourages broad participation and fosters a safe aviation environment.
4. **360-Degree Collaboration:** All relevant stakeholders will be involved in the analysis of iConspicuity data, ensuring a holistic and trusted approach to safety and operational improvements⁷. The collaborative analysis will lead to **jointly agreed actions** that will benefit all participants.
5. **Transparent Monitoring:** The process for analyzing and acting upon iConspicuity data must be transparent, allowing all stakeholders to track progress and ensure alignment with safety improvement goals.
6. **Data protection:** The use of data and information derived from the initiative will comply with the EU's General Data Protection Regulation⁸ (GDPR), which governs how the personal data of individuals in the EU can be processed and transferred.

¹ iConspicuity [website](#)

² Associations representing airspace users and relevant industry

³ ADS-B stands for Automatic Dependent Surveillance-Broadcast. It's a technology that enables aircraft to broadcast their position, speed, and other data to other aircraft and ground stations, enhancing situational awareness and safety. ADS-B comes in two main types: ADS-B Out and ADS-B In.

⁴ ADS-L is a lighter version (subset) of the ADS-B message content, originally developed to make manned aircraft electronically conspicuous when operating in U-space airspace.

⁵ European Plan for Aviation Safety, Volume II, 2024 Edition, task MST.0027 - Promotion of safety culture in GA

⁶ Manned aircraft are not required to be electronically conspicuous, except when operating as uncontrolled traffic in U-space airspace

⁷ This can serve as preparation for future inclusion in the [DataSafety](#) programme.

⁸ Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data.





SKYRECON



NAAAs supporting *iConspicuity* Declaration



EASA



Czech Republic



France



Greece



Latvia



Lithuania



Netherlands



Republic of North Macedonia



Romania



Slovenia



Spain



Switzerland

iConspicuity



JOINT HIGH-LEVEL ROADMAP



Use Cases

Reduce collisions

and other airborne hazards by
enhancing situational awareness of
their surroundings



Access U-space

through **affordable and interoperable electronic conspicuity** for manned aircraft operating without ATC services



Additional benefits*

Complement FIS and SAR without
requiring changes to existing
ATM/ANS principles and/or
operational practices



Approach



Consider

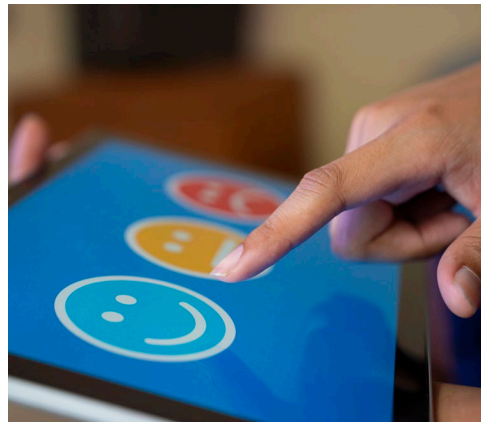
Key criteria

U-space **mandate**

Voluntary elsewhere

Different needs (IFR vs glider)

Dual use cases (e.g. ADS-B for ATC and U-space)



Communicate

Throughout the process

A clear **strategy and communication** campaign to get stakeholders to implement the right solutions

Address

Use Cases

Pilots' **situational awareness**, Europe-wide at all altitudes

U-space conspicuity, initially geographically limited & low altitude



Assess

Candidate technologies

'One link' based on a **comparison of options** considering **assessment of ground-based operations** and the **business case for all users** (airborne and on the ground)



Timeline & Implementation Milestones





Before 2020

Non-interoperable or private solutions available for GA, no solutions for drones, iConspicuity concept developed by EASA

2020-2023

EASA teamed up with industry in development of ADS-L as a solution for GA in U-space airspace

2024-2027

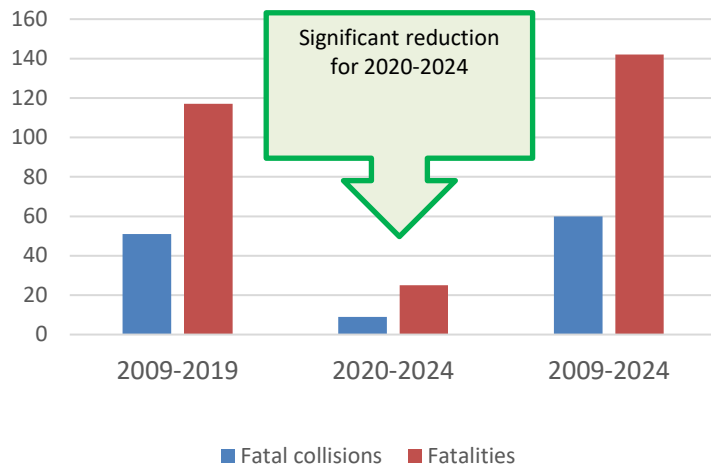
Interoperable (ADS-L) protocol developed tested for air-to-air, U-space and selected ATM use cases. Required spectrum needs finalised.

2028 onwards

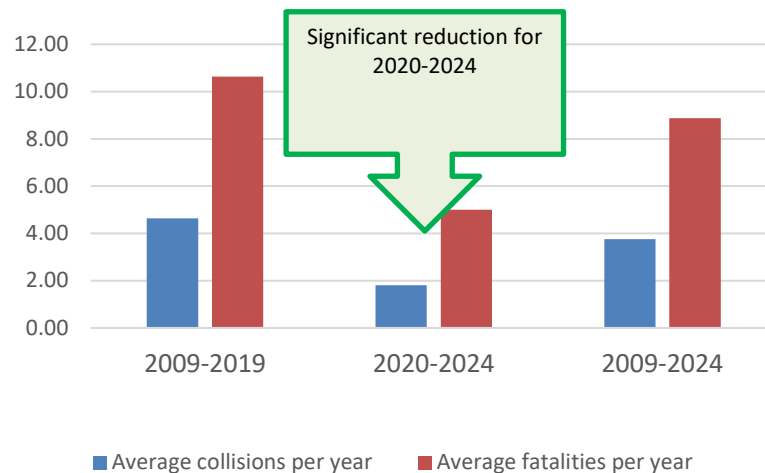
Any pilot or operator can choose an interoperable and affordable solution to benefit from enhanced situational awareness in any airspace.

Safety

Number of fatal collisions and related fatalities
EASA MS - 2009 - 2024



Annual fatal collisions average and average collision fatalities, EASA MS - 2009 - 2024



Next in 2024 – i*Conspicuity* for FIS and SAR

RES.0032 Use of iConspicuity devices/systems in flight information services

EASA will investigate the use of iConspicuity devices/systems in air traffic management flight information services (ATM FIS), considering the 'net safety benefit' and the 'operational safety assessment' principles for the assessment of implementation issues and of possible benefits for Search and Rescue (SAR).

Status Not started

SI SI-0043 Deconfliction of IFR and VFR traffic

SRs n/a

Reference(s) European Action Plan for Airspace Infringement Risk Reduction (EAPAIRR)
EASA BIS 'Airborne Collision Risk'

Dependencies RES.0031

Affected stakeholders Pilots, Aircraft operators - all, NCAs, ANSPs, industry (e.g. avionics and ATM systems manufacturers)

Owner EASA ED.4 Air Traffic Department

PLANNING MILESTONES

Starting date

2024-Q4

Interim report

~~2025-Q1~~



2026-Q1

Final report

~~2025-Q2~~



2026-Q2

FIS enhancement

Improve the quality and safety of existing FIS by providing enhanced situational awareness for the FIS Officers or ATCOs (to similar level of information as is available to pilots) without the need to change existing rules, procedures or operational practices.

A few ANSPs are already engaged in this topic.

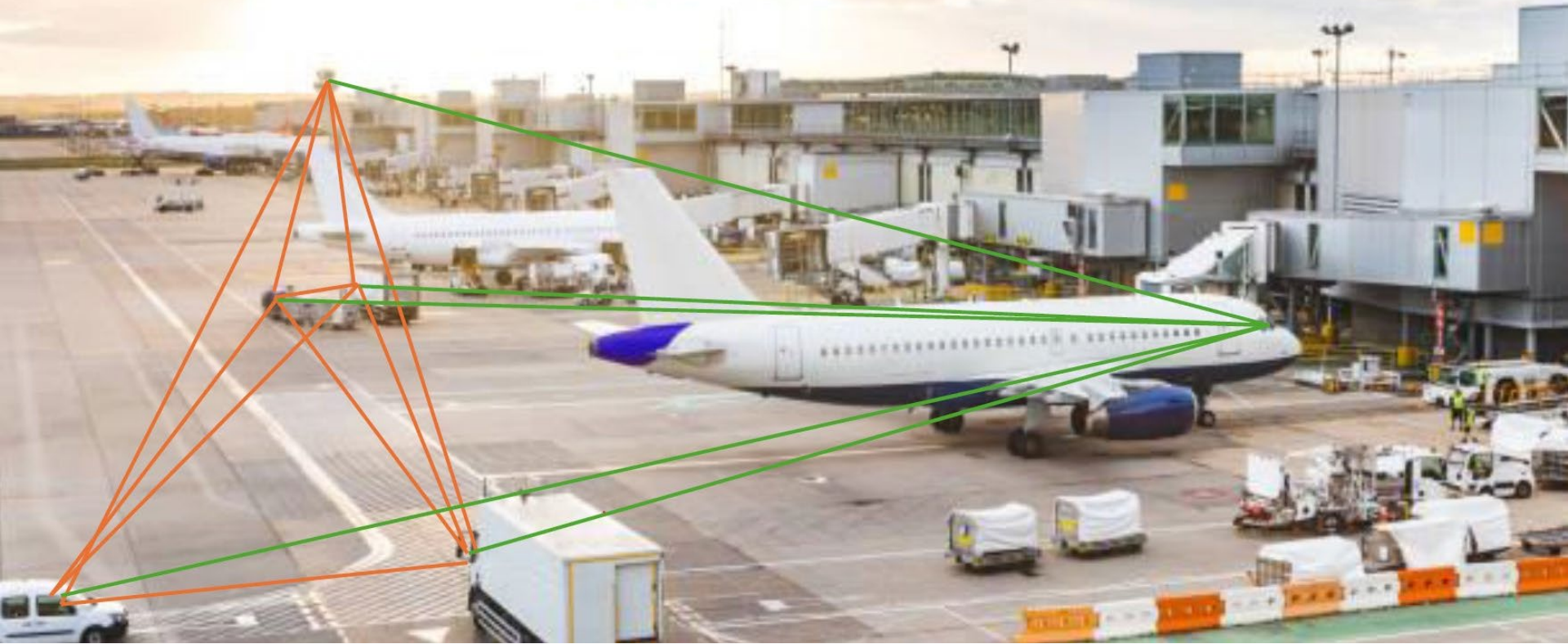


SAR enhancement

To help SAR teams distinguish between real and false alarms and minimize search times, e.g. through a single web portal that provides real-time and historical positions of aircraft and other aircraft such as gliders, paragliders and hang-gliders.

Pilot project in preparation (led by FOCA).

And what about Digital Towers or Airside / Runway Safety?



What is RES.0032 ?

- Desktop research
- Industry led (ANSPs, OEMs, associations)
- Explore how electronic conspicuity could help to enhance situational awareness in ATM
- Without changing existing rules or operational practices
- EASA role is to coordinate research activities and assist in drafting research objectives

Expected Deliverables*

Use Cases

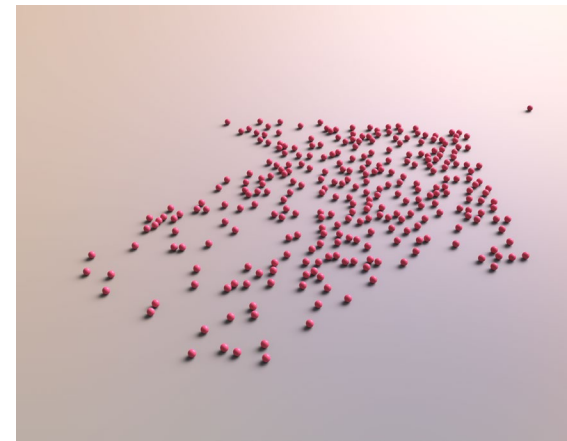
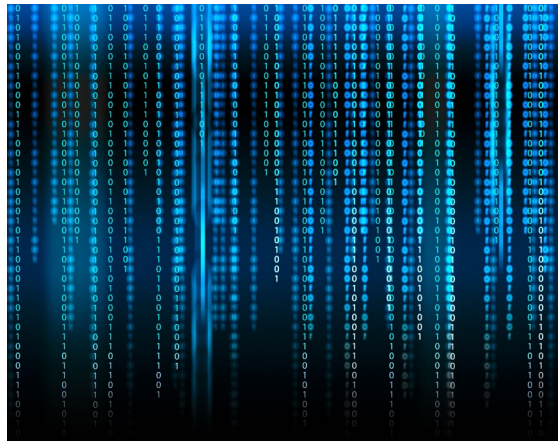
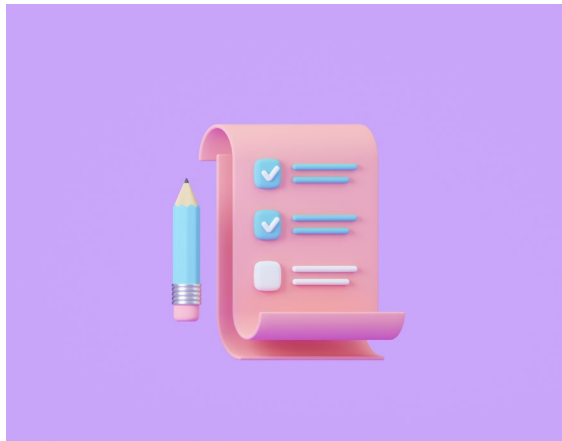
List and description of use cases where electronic conspicuity could help to improve situational awareness in ATM operations

Information Items

List of mandatory and optional information to be transmitted from aircraft in relation to a specific ATM use case

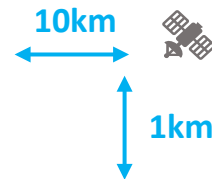
Regulatory clarifications

List of areas for further development/clarification by regulators to support the use of electronic conspicuity in ATM



EASA station





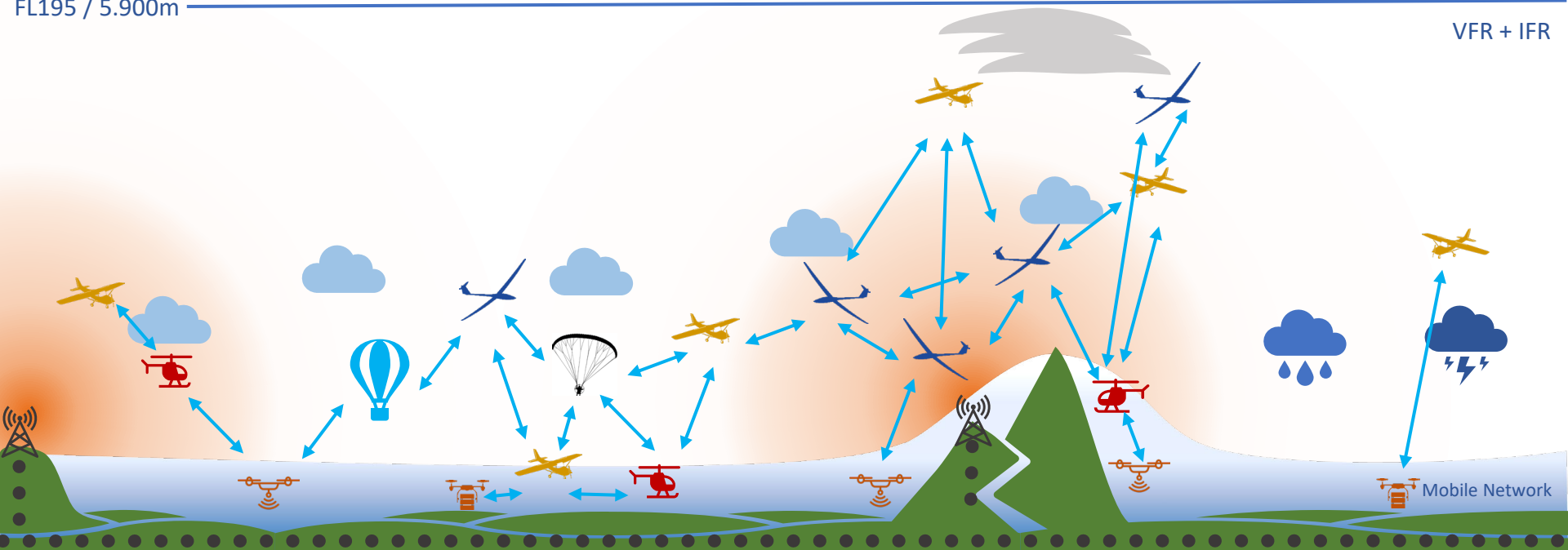
ADS-L for General Aviation and Drones



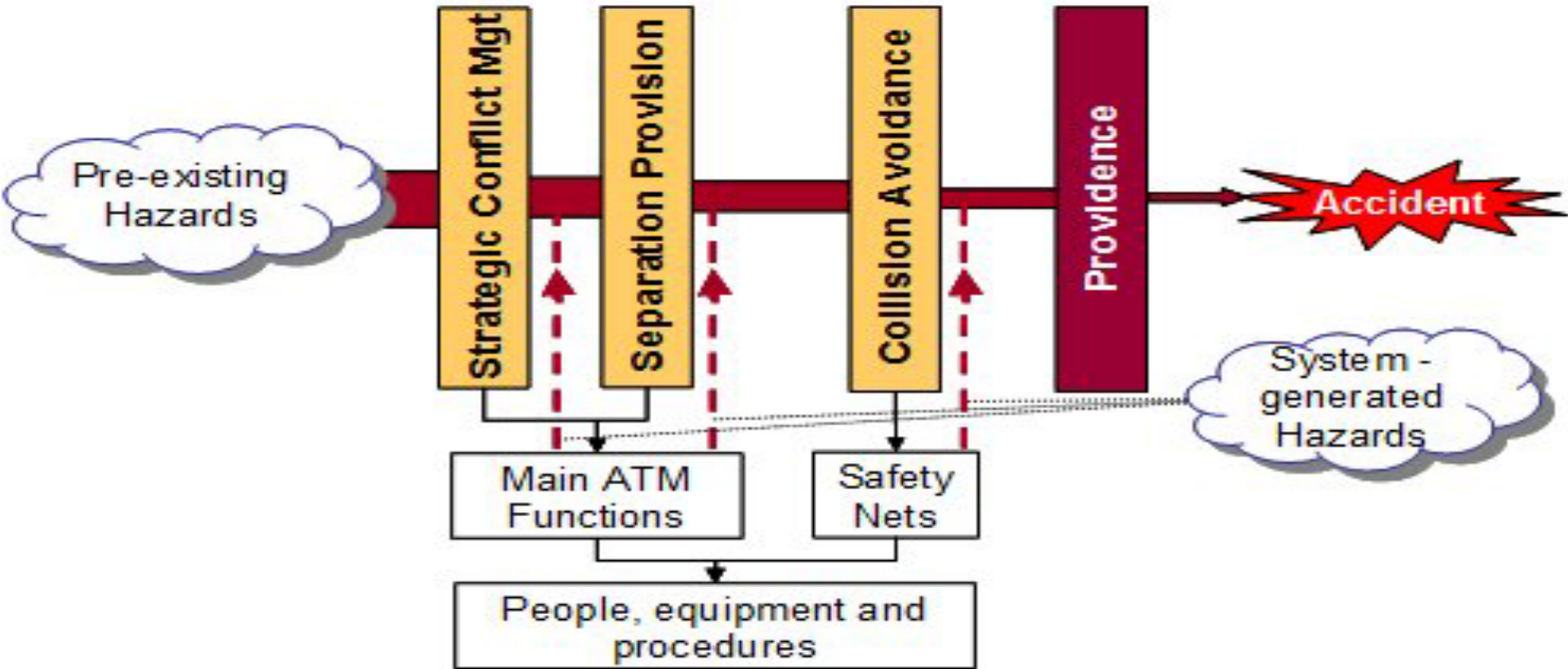
IFR

FL195 / 5.900m

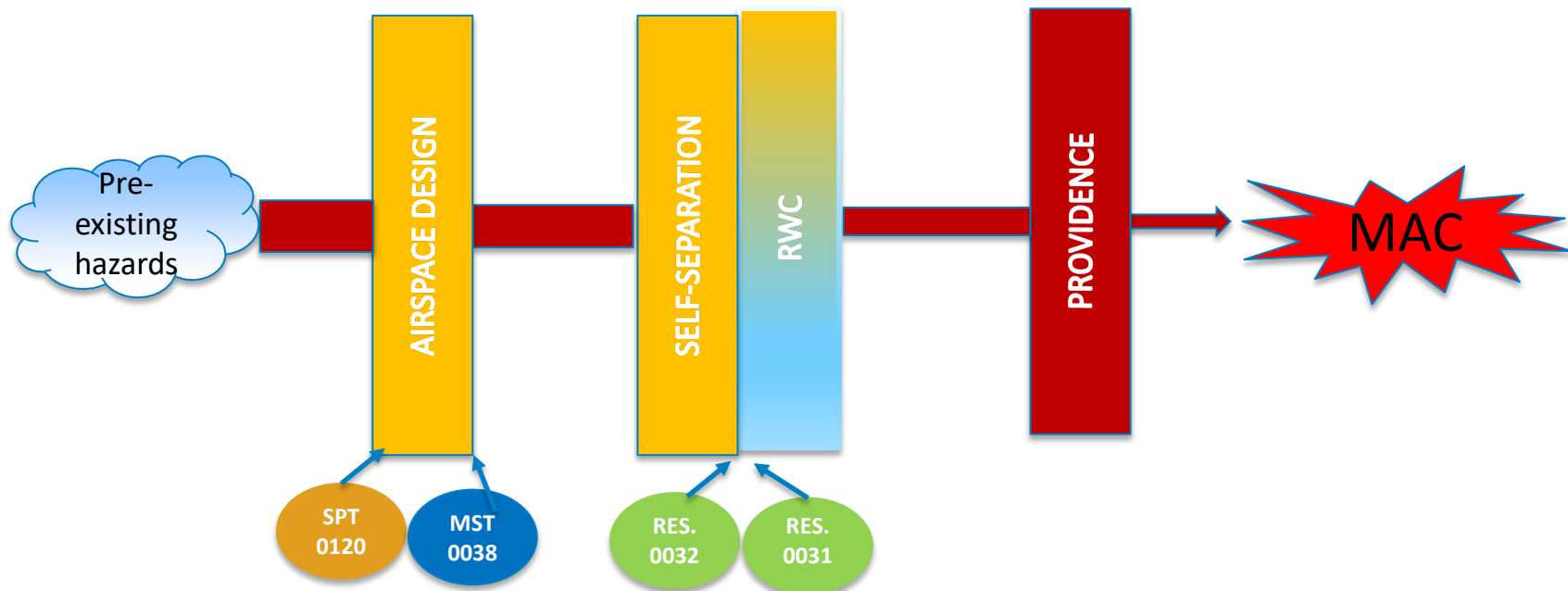
VFR + IFR



Simple ATM Barrier Model per ICAO Global ATM Concept for controlled traffic



Simple ATM Barrier Model per ICAO Global ATM Concept for uncontrolled traffic





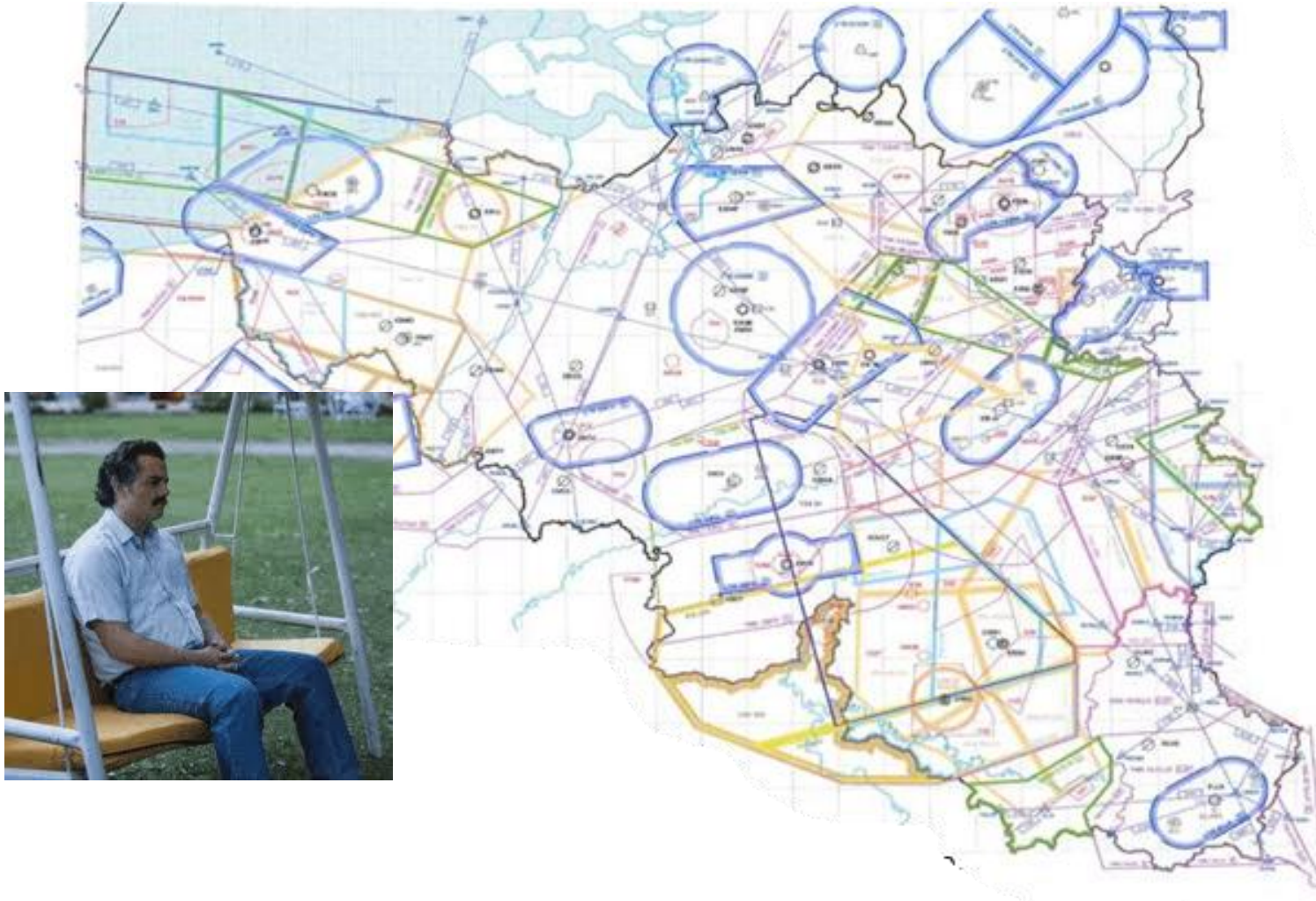
PREVENTING MID-AIR COLLISIONS

Collaborative solutions :
The perspective of GA in the discussion

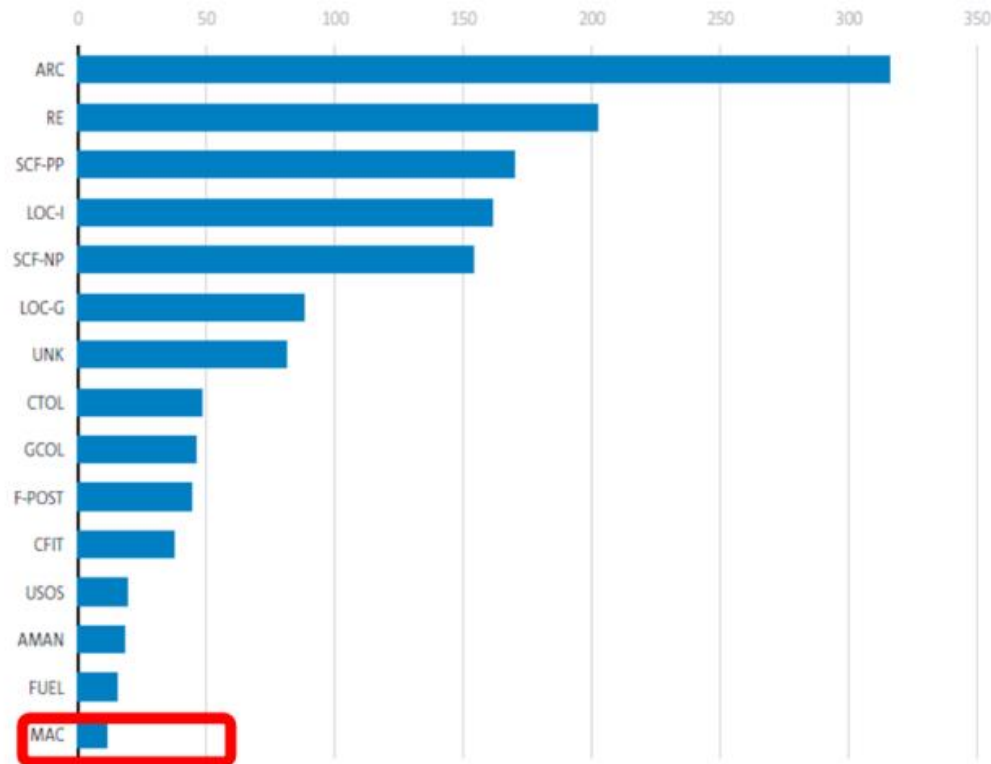
Cate Brancart

General Aviation Manufacturers Association

Airspace Complexity



EASA's Annual Safety Review 2025



ARC: Abnormal runway contact; RE: Runway excursion; SCF-PP: powerplant failure or malfunction; LOC-I: Loss of control - Inflight; SCF-NP: System/component failure or malfunction [non-powerplant]; LOC-G: Loss of control - ground; UNK: Unknown or undetermined; CTOL: Collision with obstacle(s) during take-off and landing; GCOL: Ground Collision; F-POST: Fire/smoke (post-impact); CFIT: Controlled flight into or toward terrain; USOS: Undershoot/overshoot; AMAN: Abrupt manoeuvre; FUEL: Fuel related; MAC: Airprox/ACAS alert/loss of separation/(near) midair collisions.

Figure 2.32 Numbers of occurrences by occurrence category involving non-commercial other than complex aeroplanes

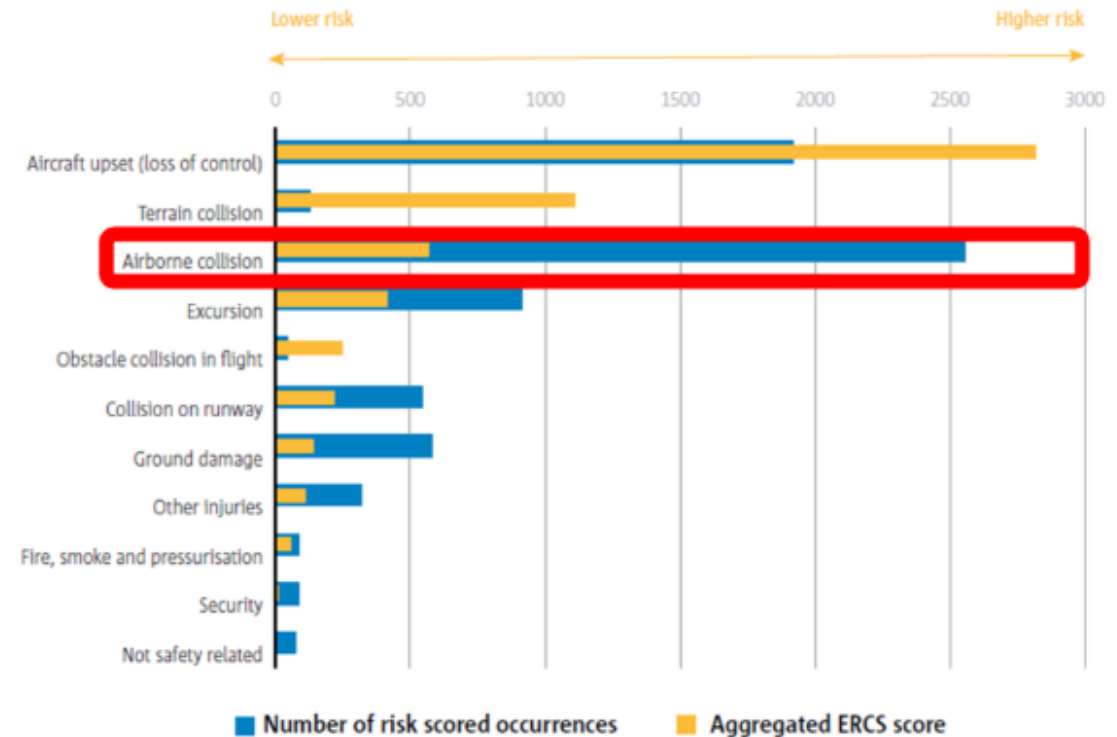


Figure 2.40 KRAs by aggregated ERCS score and number of risk-scored occurrences involving NCO aeroplanes

The importance of data

DATA: To manage the risks, we must understand the risks, and we are working with very **incomplete data**.

- Accidents
- Occurrence Reports
- Exposure / Flight Hour
- Identify high risk areas

GAMA fully supports the EASA-
EUROCONTROL Electronic Conspicuity
Roadmap
&
EASA's iConspicuity declaration

Data 4 Safety to include General Aviation in
2026



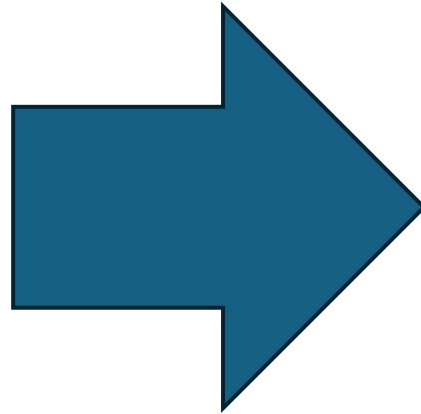
Electronic Conspicuity Solutions

✈ 1090 ADS-B

✈ UAT

✈ SRD860

✈ Mobile telecom



We need inter-operable, reliable, and affordable solutions covering the full spectrum of airspace user and activities, including:

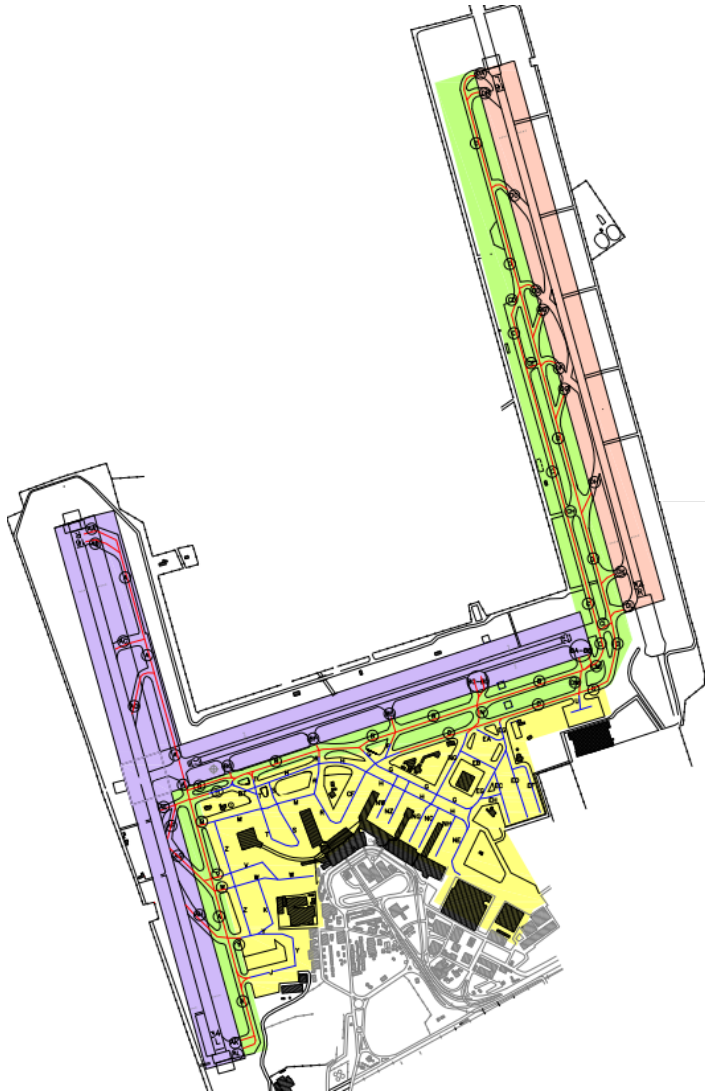
- VFR + IFR
- Controlled + Uncontrolled Airspace
- Certified CS-23 aeroplanes
- Certified Helicopters
- Microlights/ULM + Gliders + balloons
- Drones (in shared airspace)

Triple One – Safe 360°

Ivan Satriano – Safety & Compliance Monitoring Manager

01/10/2025

FCO – starting situation



	TWR – Freq. 118.700/127.625*
	MANOEUVRING AREA SERVICE PROVIDED ATC
	TWR – Freq. 118.700
	MANOEUVRING AREA SERVICE PROVIDED ATC
	GROUND Freq. 121.900/122.125**
	MANOEUVRING AREA SERVICE PROVIDED ATC
	Ground Freq. 121.900/122.125**
	FIUME Ramp Freq. 121.725
	APRON AREA – SERVICE PROVIDED
"Orderly Movement of Aircraft on Aprons" (ref. ENR 1.1 Ground Movement Control Service and AD2, tab 20, Item 2 Apron)	

- 3 RWYs (16R/34L – 07/25 – 16L/34R)
- 07/25 and 16R/34L are intersected, sharing the same frequency
- 2 TWR manoeuvring area frequencies and 2 ground frequencies

RUNWAY PREFERENCIAL USE:

- RWY 07/25 for take-off
- RWY 16L/34R for landing
- RWY 16R/34L is used for some heavy aircraft and as parallel runway for landing on ATC discretion

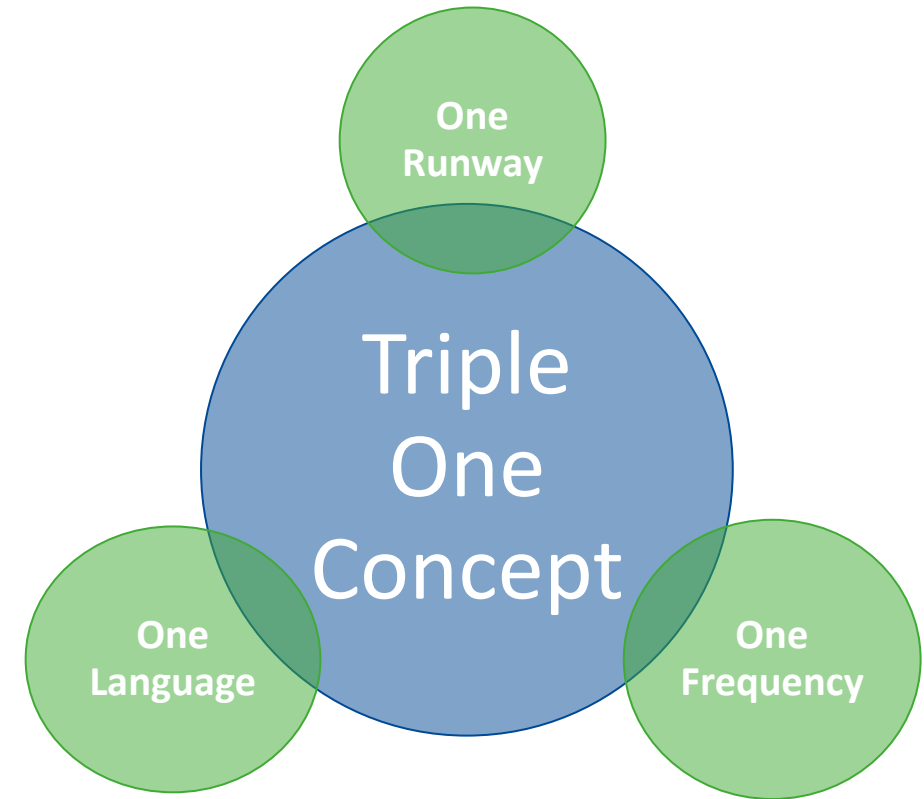
RWY	n. TAKE OFFS (2024)	n. LANDINGS (2024)
07	-	-
25	136 101	109
16L	592	107 211
34R	189	21 960
16R	16 400	23 423
34L	4 322	4 617

Triple One concept

The Triple One concept affirms, in layman terms, that while working on a Runway, all operators should communicate on a single frequency in a single language.

Why we believe in this project

We believe in **Triple One** for its positive effects on Safety: Triple One implies an increase in situational awareness of all the stakeholders involved and thus an increase in the Safety of operations on RWYs.



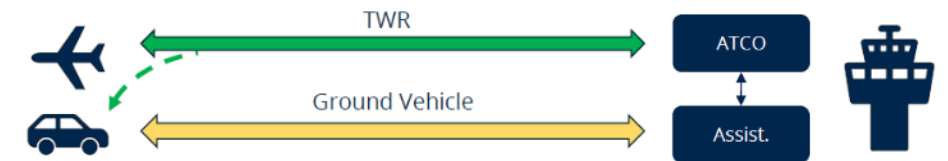
Two consequences:

- A. Aircraft operations on runway engaged by operations vehicle.
- B. Vehicle operations on a runway engaged by aircraft.

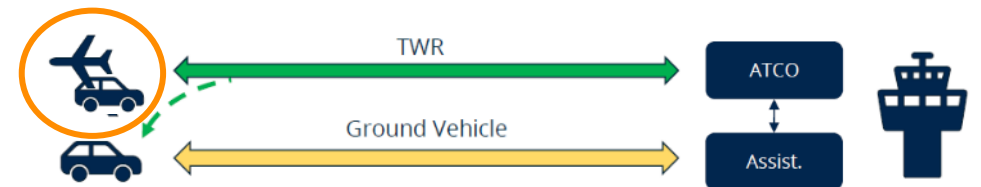
Hazards and change

Hazard	Undesirable Event
HZ.001 More transmission on TWR frequency	Frequency overload
HZ.002 More stakeholders on TWR frequency	Too much information and/or information overload
HZ.003 Insufficient English language skill	Miscommunication
HZ.004 Higher training/qualification requirements	Lack of aerodrome personnel operating on RWY
HZ.005 Inability to follow communication regarding traffic on dependent RWYs	Loss of situational awareness (concerning dependent RWYs)
HZ.006 Higher number of used frequencies/areas of responsibility	Ineffective and inefficient coordination and use of frequencies

Before the implementation



During the implementation



SPI – Runway Incursions



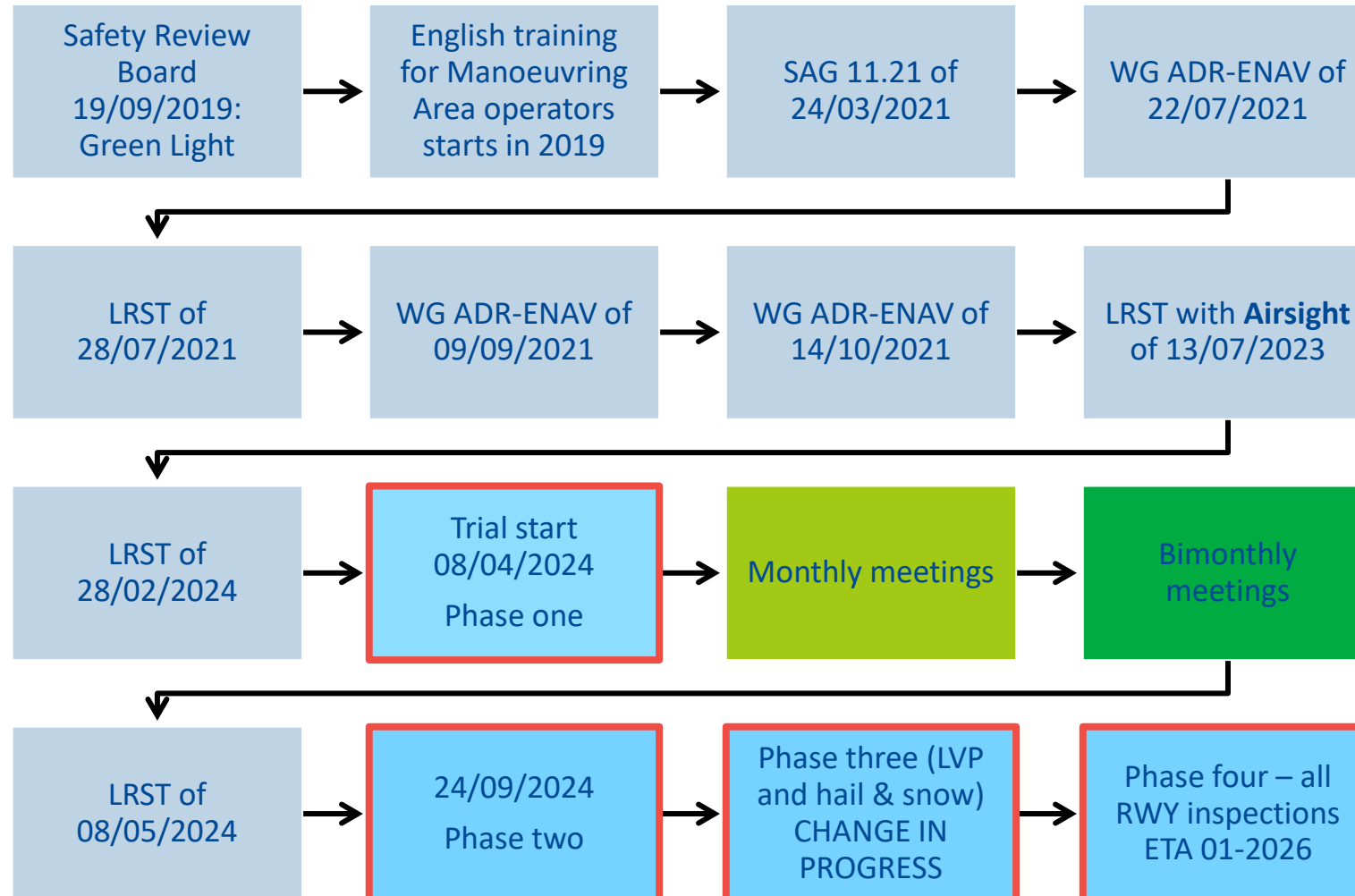
An estimated **50%** of Runway incursions in the 2018-2025 timeframe involving a vehicle, could have been prevented/mitigated thanks to the Triple One concept. Two examples are shown below.

By allowing the Safety car to communicate on the TWR-Pilots VHF frequency in English, the previously authorized vehicle could have been aware that an aircraft was entering the runway during an inspection on RWY 07/25. At the same time, the pilot could have realized that a runway inspection was in progress.

During a scheduled inspection on RWY 16R/34L, the Safety car misunderstood a communication and believed it was authorized to cross the intersecting RWY 07/25, while an aircraft had already initiated takeoff on RWY 07/25. By allowing the Safety car to communicate on the TWR-Pilots VHF frequency, the vehicle could have realized that an aircraft was already on the runway.

Timeline of the trial implementation

Working group [WG] to share Change and Safety Assessments with the ANSP (ENAV) and other stakeholders



ADR – ANSP

Bimonthly meetings to assess feedbacks received from ADR operators, Pilots and TWR controllers.

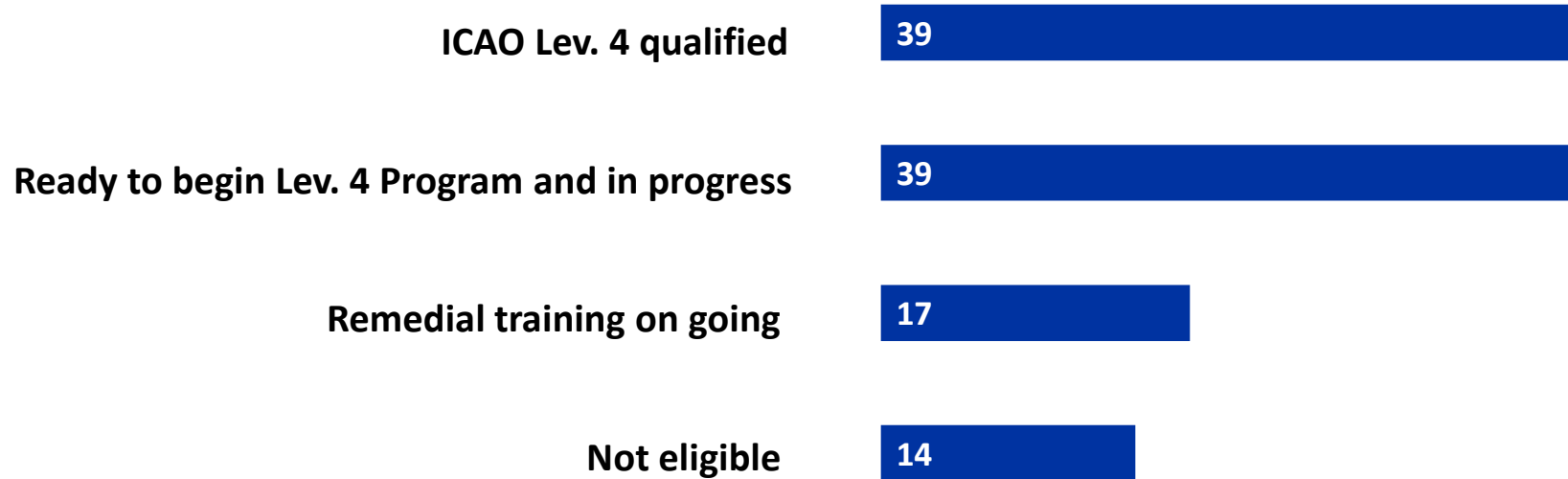
ADR – ANSP – CAA

Monthly meetings to evaluate the development of the trial.

Challenges: Aviation English proficiency

Aviation English Training Programs for Ground operators: 2019 - to date

Over 100 participants (*) involved



(*) ADR employees holding an Airside Driving Certificate for the manoeuvring area: Ground safety (SAR) and Airport lighting aids Maintenance Staff at FCO.

Trial evolution

Milestones

First inspection on RWY 07/25 on the 08th of April 2024

On the 13th of May 2024, the trial was extended to the second RWY (16R/34L)

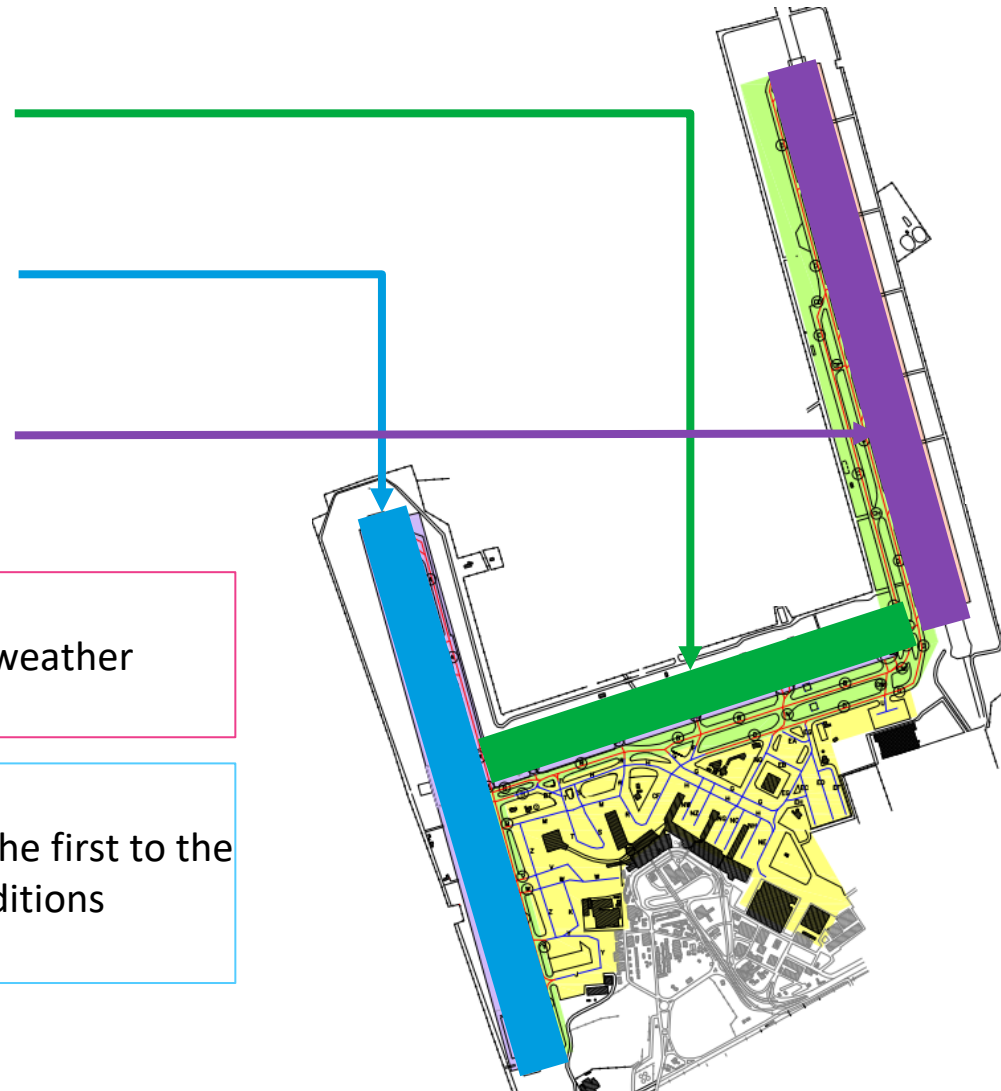
Finally, on the 19th of June 2024 the trial was extended to the third RWY 16L/34R.

First Phase

One scheduled inspection per day per runway, no adverse weather conditions.

Second Phase

On the 24th of September 2024, the trial has moved from the first to the second phase: all scheduled inspections, including rain conditions excluding snow, hail and LVP.



Pre-trial Communications and Feedback

Before the start of the trial, several actions were taken to inform pilots:

- Issue of a **NOTAM**
- Information shared during the **Pilots' Conference**
- Information shared during **LRST**
- Issue of a **Pilot Safety Notice**

ON TRIAL BASE AND TO IMPROVE SITUATIONAL AWARENESS, AD OPERATOR WILL CARRY OUT VEHICLE RWY SAFETY INSPECTION PERFORMING GROUND TO GROUND COMMUNICATION ON TWR FREQ ASSOCIATED WITH OPS FOR EACH RWY.

RMK: RADIOTELEPHONY CALL SIGN ASSIGNED TO AD WILL BE "SAR" FOLLOW BY TWO DIGIT NUMBERS.

To assess and evaluate the trial efficacy, surveys were created to gather feedbacks from ADR inspectors, flight commanders and TWR controllers.

Furthermore, there is the issue of a monthly report, with identification of any actions.

ADR
AEROPORTI DI ROMA

SAFETY NOTICE
FLIGHT CREW WARNING MESSAGE

REV 0
Date: 02/04/2024

ENAV

N. 01/2024 FCO – LIRF

WARNING

Trial of the Triple-One concept at FCO-LIRF airport

Please be informed that Aeroporti di Roma in cooperation with ENAV will start the trial of the Triple-One concept (one runway, one language, one frequency) from 8th April 2024. Runway inspection will be carried out by operational safety personnel and will be conducted in English on VHF tower frequency (i.e. 118.700 Mhz, 127.625 Mhz).

The following notam is going to be released for the trial:

"ON TRIAL BASE AND TO IMPROVE SITUATIONAL AWARENESS, AD OPERATOR WILL CARRY OUT VEHICLE RWY SAFETY INSPECTION PERFORMING GROUND TO GROUND COMMUNICATION ON TWR FREQ ASSOCIATED WITH OPS FOR EACH RWY."

RMK: RADIOTELEPHONY CALL SIGN ASSIGNED TO AD WILL BE "SAR" FOLLOW BY TWO DIGIT NUMBERS."

Aeroporti di Roma requests to all pilots who fly over FCO-LIRF airport in conjunction with the runway inspection (having heard ground to ground frequency communications) to provide feedback by filling out a form.

Frame the following QR code to fill out online the form starting from 8th April 2024.

Aeroporti di Roma S.p.A.
Safety & Compliance Monitoring Manager
Marcello Marzulli

Feedback to date (19/09/2025)



1657 total feedbacks recorded from the start of the trial to date:

- 565 on RWY 07/25
- 560 on RWY 16R/34L
- 532 on RWY 16L/34R

Feedback throughout the trial is **positive**.

In one case the frequency was so crowded that the Runway Inspectors were unable to promptly report “runway vacated”. In other situations, there were radio anomalies (e.g. disturbed signal, negative radio checks, radio calibration/configuration), promptly resolved after technical intervention.



In general, pilots stated that when heard on frequency, communication was good, and conversations did not overlap.

In total, **28 feedbacks** have been recorded from the start of the trial:

- 5 take offs from RWY 07/25
- 1 landing and 2 take off from RWY 16R/34L
- 20 landings on RWY 16L/34R

Feedback throughout the trial is **positive**, with some highlights:

Landing aircraft could switch to TWR-VHF frequency after a Runway Inspector vacated the runway without being aware that an inspection had been performed.

Departing aircraft, could still be in GROUND frequency during an inspection (and not on TWR freq.).

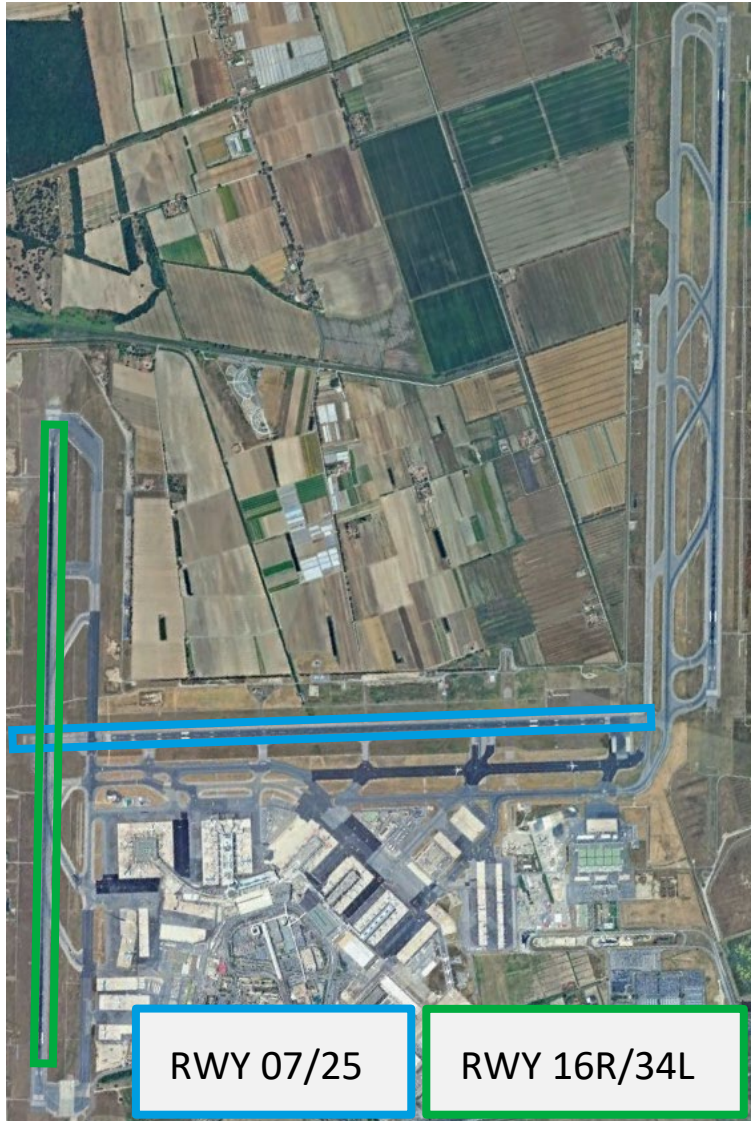
One particularly positive feedback reported “**We felt we had better Situational Awareness as ATC shared a runway inspection was taking place and speaking in English meant we knew when the runway was clear. very important in low visibility**”.

The communication at LIRF was professional so we didn’t have the impression that a trial was in progress.



ANSP controllers’ representative gave **positive feedback** during the trial.

Runway Incursions – Triple One as a barrier



An estimated **50%** of Runway incursions in the 2018-2025 timeframe involving a vehicle, could have been prevented/mitigated thanks to the Triple One concept. Two examples are shown below.

By allowing the Safety car to communicate on the TWR-Pilots VHF frequency in English, the previously authorized vehicle could have been aware that an aircraft was entering the runway during an inspection on RWY 07/25. At the same time, the pilot could have realized that a runway inspection was in progress.

During a scheduled inspection on RWY 16R/34L, the Safety car misunderstood a communication and believed it was authorized to cross the intersecting RWY 07/25, while an aircraft had already initiated takeoff on RWY 07/25. By allowing the Safety car to communicate on the TWR-Pilots VHF frequency, the vehicle could have realized that an aircraft was already on the runway.

The drivers, during an authorized inspection, while monitoring the frequency, listened that an aircraft was entering the runway, and promptly vacated it.

Future development

Next steps



Extension to other
scheduled RWY
inspections

Adverse weather
conditions

Maintenance operators

Other stakeholders
operating on runways

We are going to extend the trial to all scheduled RWY inspections including LVP, hail and snow conditions.

Our Triple One team

All ADR - SAR staff who passed the exam at the end of the “TRIPLE ONE” training received a pin to wear on their uniform while working in FCO airside.





RUNWAY SAFETY ALERTS

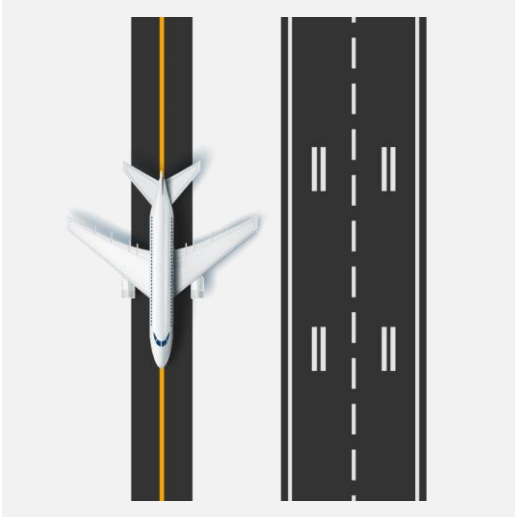
SURF-A INTEGRATION WITH EGPWS SMART-X

October 1, 2025

thea.feyereisen@honeywell.com

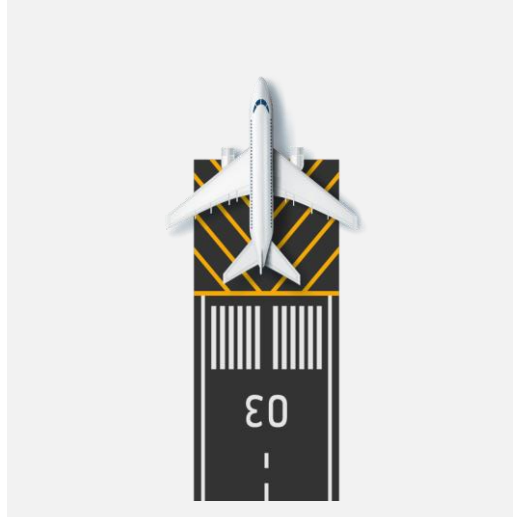
RUNWAY SAFETY AREAS OF CONCERN

Wrong Surface



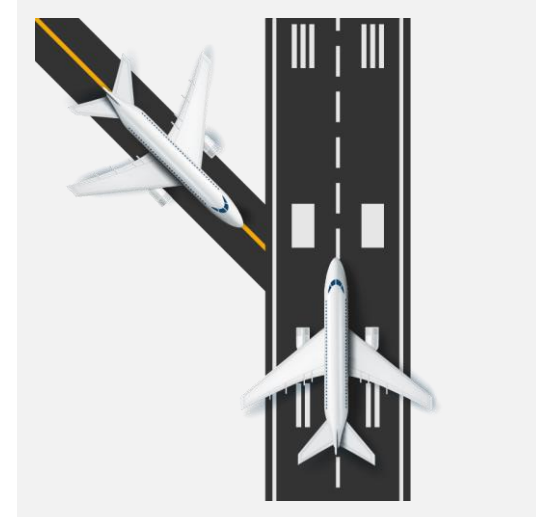
Takeoff or land on a taxiway, on the wrong or too short runway

Runway Excursions



Aircraft runs off or veers off a runway (too high, too fast)

Runway Incursions



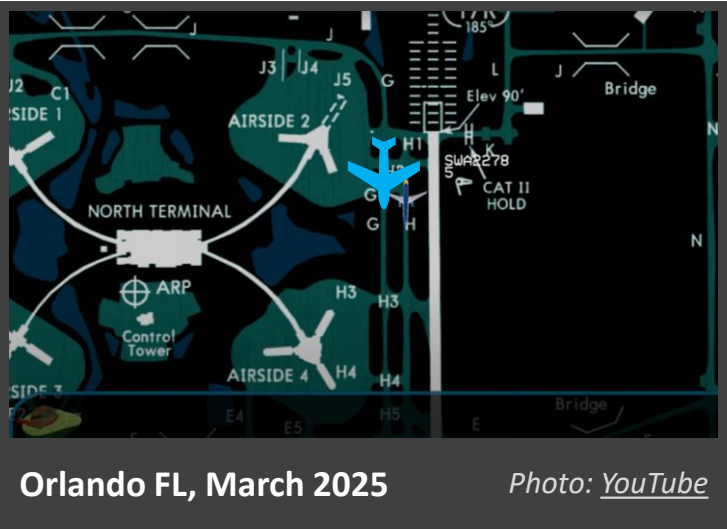
Collision with another aircraft or vehicle on the runway

Runway Awareness Alerting
RAAS vs SMART-X

Runway Collision Alerting System
SURF-A

WRONG SURFACE SMART-X

Onboard direct alert for pilots of taxiway takeoff / landing, or too short runway takeoff / landing



Taxiway Takeoff

B737 mistakenly tried to take-off on a parallel taxiway instead of the runway

Aircraft reached ~70kts prior to rejecting takeoff



Taxiway Landing

A320 mistakenly tried to land on a parallel taxiway instead of the runway

Last moment go-around initiated at 89' above the ground, narrowly avoiding disaster with 4 aircraft on taxiway

EXAMPLE



Taxiway Takeoff

Aural and Text alert provided by EGPWS when ground speed >40kts and not on a runway

 **Caution on Taxiway!**

Available Today

RUNWAY EXCURSIONS SMART-X

Onboard direct alert for pilots of stabilized approach monitor, long landing, and altimeter monitor

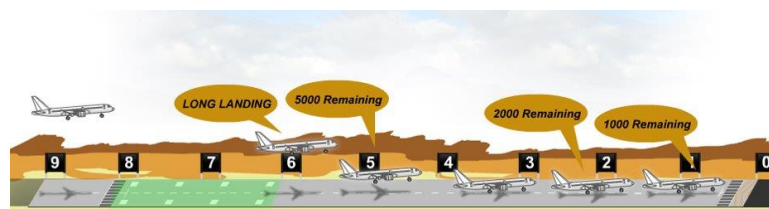
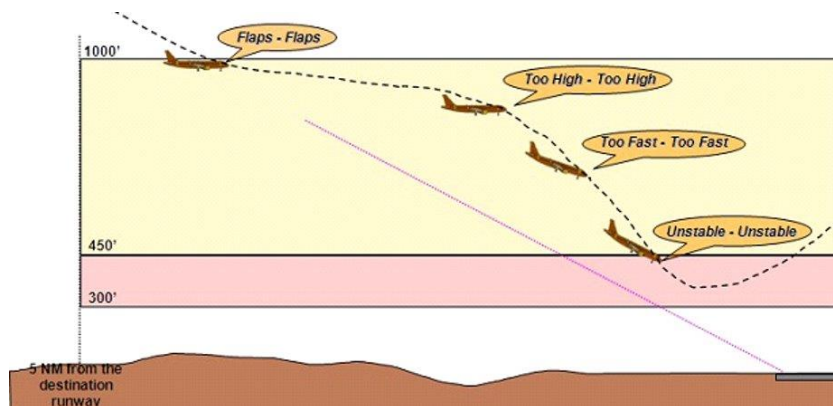


Overrun on Landing

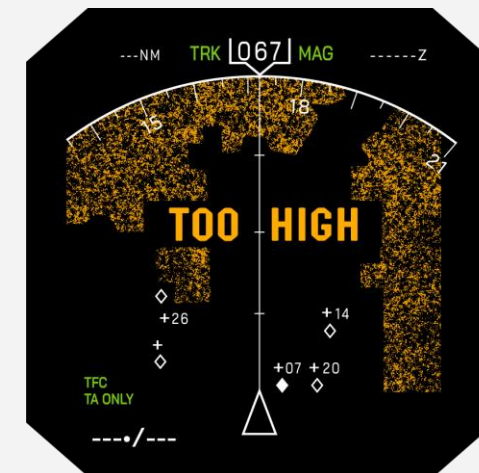
Excessive approach angle (7° vs. 3°)

Excessive speed (~180+ kts approach vs 138)

Touchdown at 182kts



EXAMPLE



RAAS Alerts

- **Flaps - Flaps!**
- **Too High - Too High!**
- **Too Fast - Too Fast!**
- **Unstable!**
- **Long Landing!**
- **3000 Feet Remaining**

Available Today

RUNWAY INCURSIONS **SURF-A**

Onboard direct alert for pilots of a potential runway collision

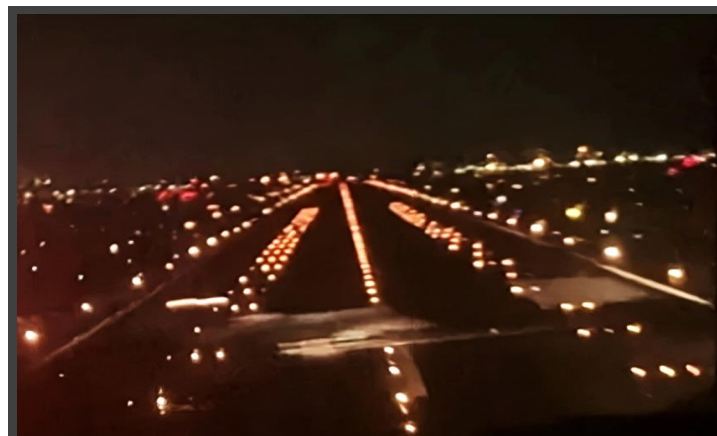


Chicago IL, March 2025

Photo: [YouTube](#)

Traffic on Runway

B737 on final approach executes a last moment go-around as intruder business jet taxied across landing runway.



Boston MA, Feb 2023

Photo: [NTSB](#)

Intersecting Runway

Traffic

E190 on final approach executes a last moment go-around as intruder regional jet takes off on intersecting runway.

Available 2026

EXAMPLE



SURF-A Alerts

- ★ **Traffic on Runway!**
- **Traffic on Final!**
- **Traffic Behind!**
- **Traffic Intersecting Runway!**

AUS ✈

06:40:34
2 sec TTC
Go-Around

TRAFFIC
ON RUNWAY

06:40:13
15 sec TTC
200 ft

TRAFFIC
ON RUNWAY

06:39:59
30 sec TTC
420 ft

1.5 nm

✈ B767

B737 ✈

SURF-A = 28 sec additional time to collision
alert

06:40:13
15 sec TTC

TRAFFIC
ON FINAL

06:39:59
30 sec TTC

TRAFFIC
ON FINAL

06:39:14
45 sec TTC

TRAFFIC
ON FINAL

Note: Simulated based upon publicly available data if equipped with SURF-A

JFK ✈

TRAFFIC
ON RUNWAY

20:44:45
14 sec TTC

TRAFFIC
ON RUNWAY

20:44:36
23 sec TTC

✈ B777

B737 ✈

20:44:45
14 sec TTC

TRAFFIC
ON RUNWAY

20:44:55
4 sec TTC

"Cancel
Takeoff
Clearance"

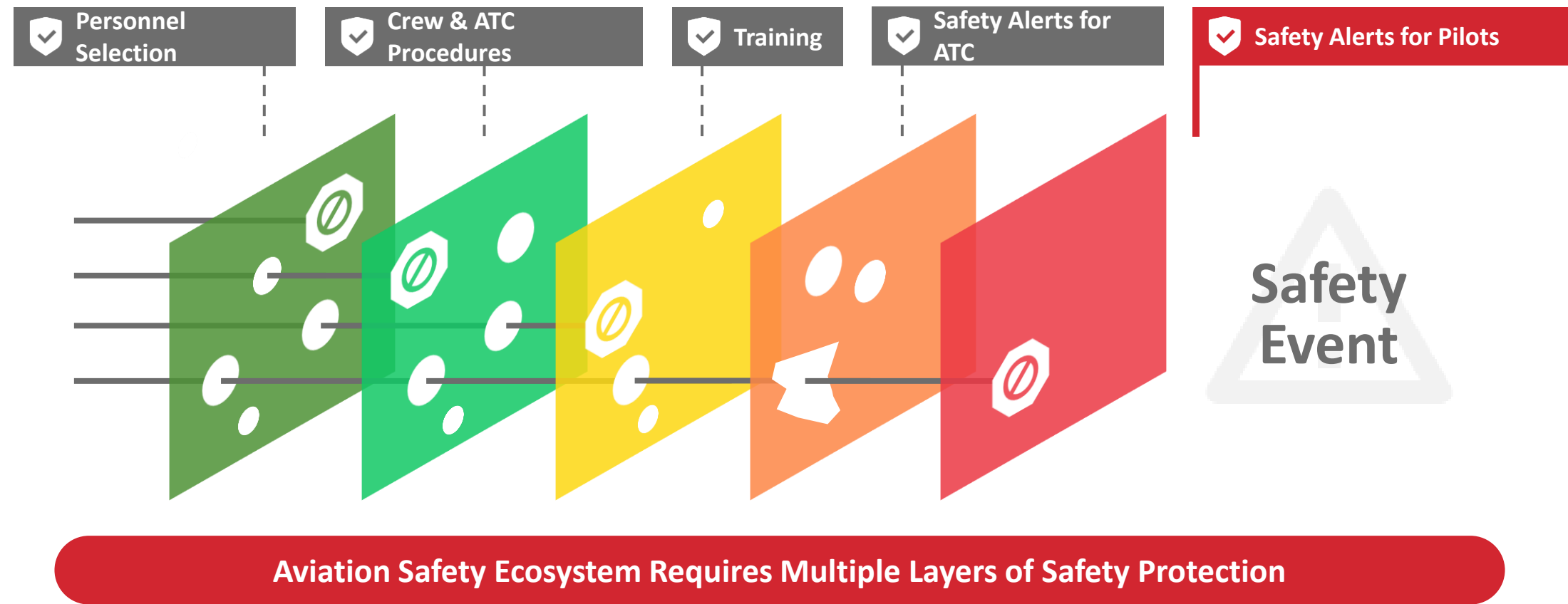
SURF-A = 10 sec additional time to collision
alert

Note: Simulated based upon publicly available data if equipped with SURF-A

SWISS CHEESE MODEL FOR ACCIDENT CAUSATION

Multiple layers of defense are required to maintain safety in air transportation system

SURF-A & SMART-X provide pilots with the most impactful layer of defense to help mitigate potential runway disasters



🕒 EVERY SECOND COUNTS!

- **Runway safety incidents & accidents** pose significant risks to passengers, crew, and aircraft
- **Smart-X (Runway Awareness Alerting System aka RAAS) and SURF-A** provide direct alerts to pilots of potential wrong surface events, runway excursions, and runway incursions
- **Pilots are our last line of defense!** - automated runway safety alerts in the cockpit can give pilots precious time they need to recognize hazards and take corrective action

FLYING

is still one of the **safest** travel methods



We all must act to prevent future runway incidents and accidents

**THANK
YOU**

Honeywell



SUPPORTING
EUROPEAN
AVIATION

A-SMGCS & SMAS

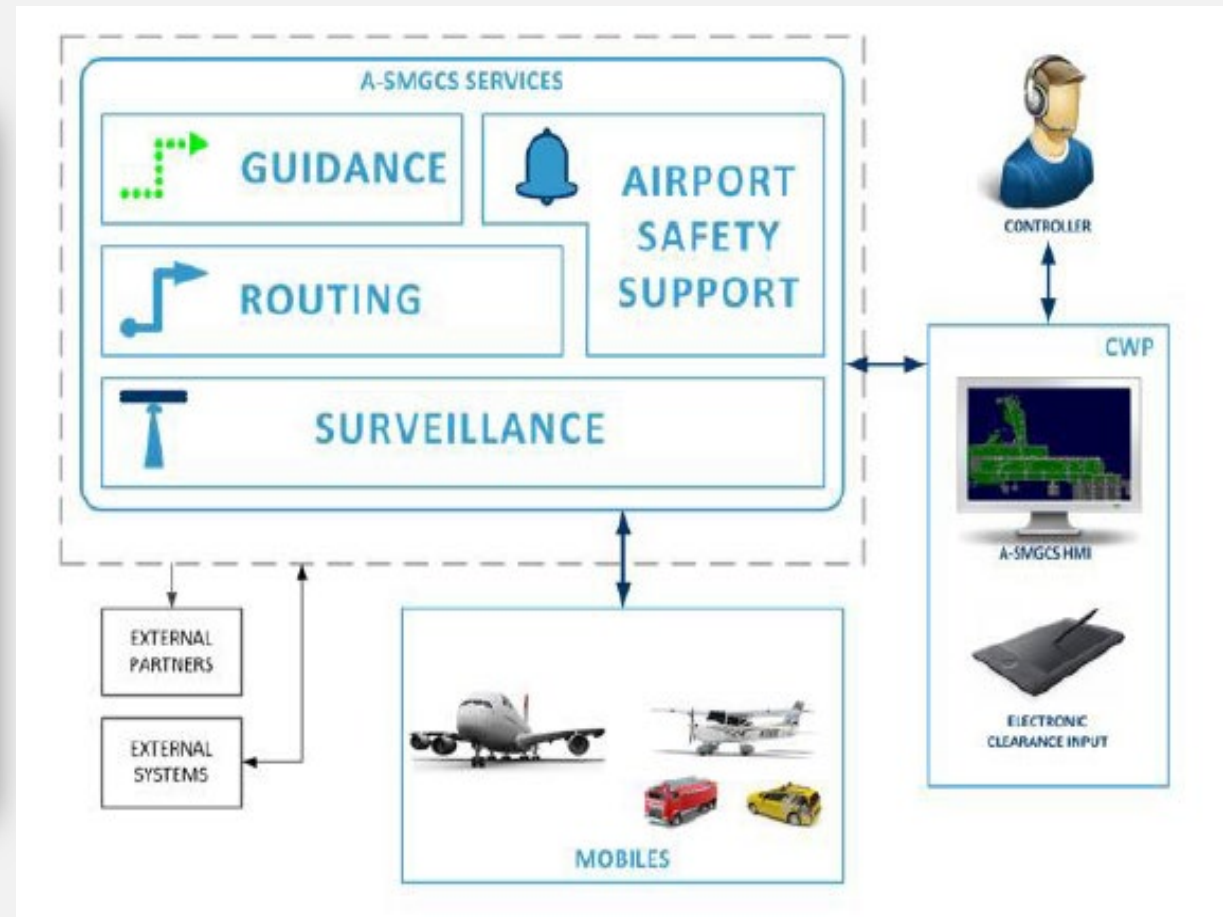


Advanced surface movement guidance and control system

improve airport throughput, whilst maintaining the required level of **safety**. By improving the way aircraft and vehicles are **managed** on the ground, it makes aerodrome surface movement operations **more efficient** in all weather conditions

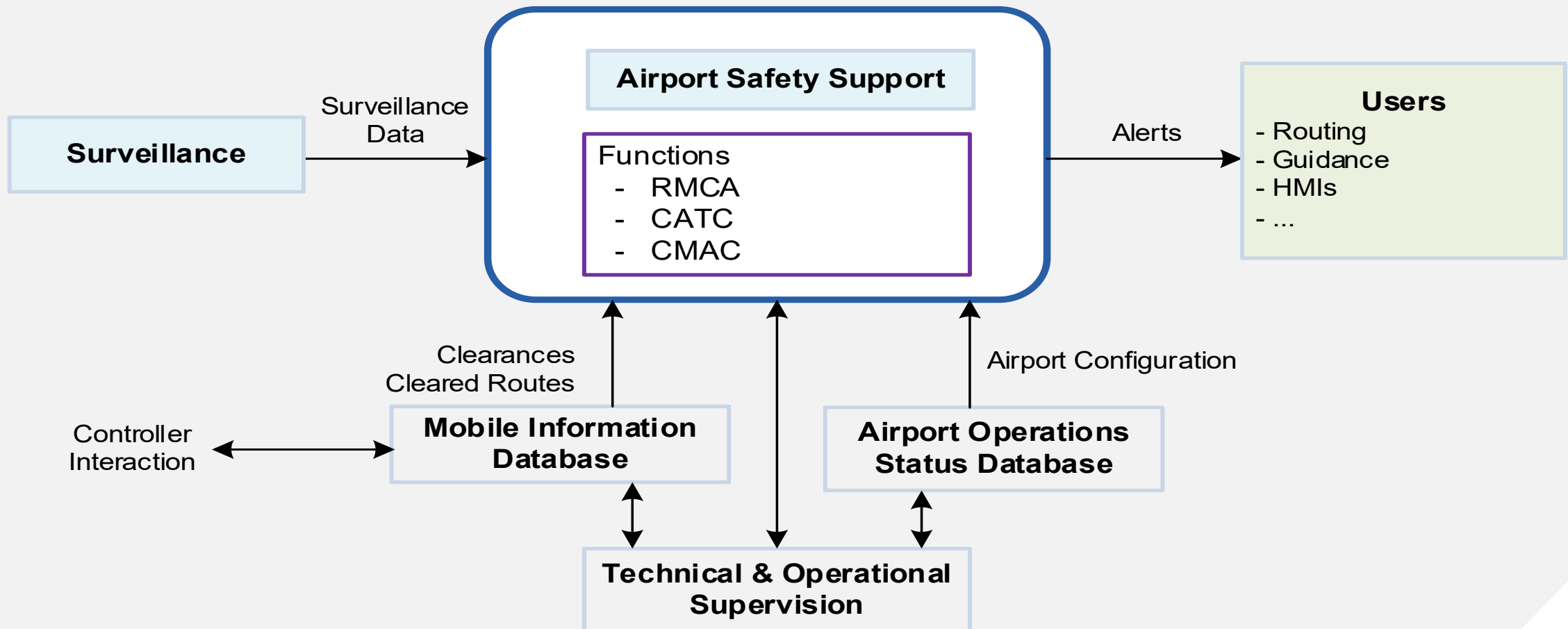


A-SMGCS Services



Airport Safety Support Service

- Runway Monitoring and Conflict Alerting (RMCA).
- Conflicting ATC Clearances (CATC).
- Conformance Monitoring Alerts for Controllers (CMAC)



CATC & CMAC

LUXEMBOURG– 21/1/2010 B744 lands on Vehicle



OSLO – 25/2/2010 AFL A320 Departs from TWY M



- Not all airports have RMCA
- The ones with RMCA are still having incidents
- RMCA is a Short Term Conflict Detection tool, triggers at the last moment.
- Based only on surveillance. Tuning has proved to be a challenge at many airports.
- CATC and CMAC serve to be more predictive tools

Example of CATC

Conflicting ATC clearances (CATC)

Based on incorrect inputs made on the Electronic Flight Strips and the position of the mobiles, examples 2 aircraft given cleared to land/line up/take off/cross on the same runway



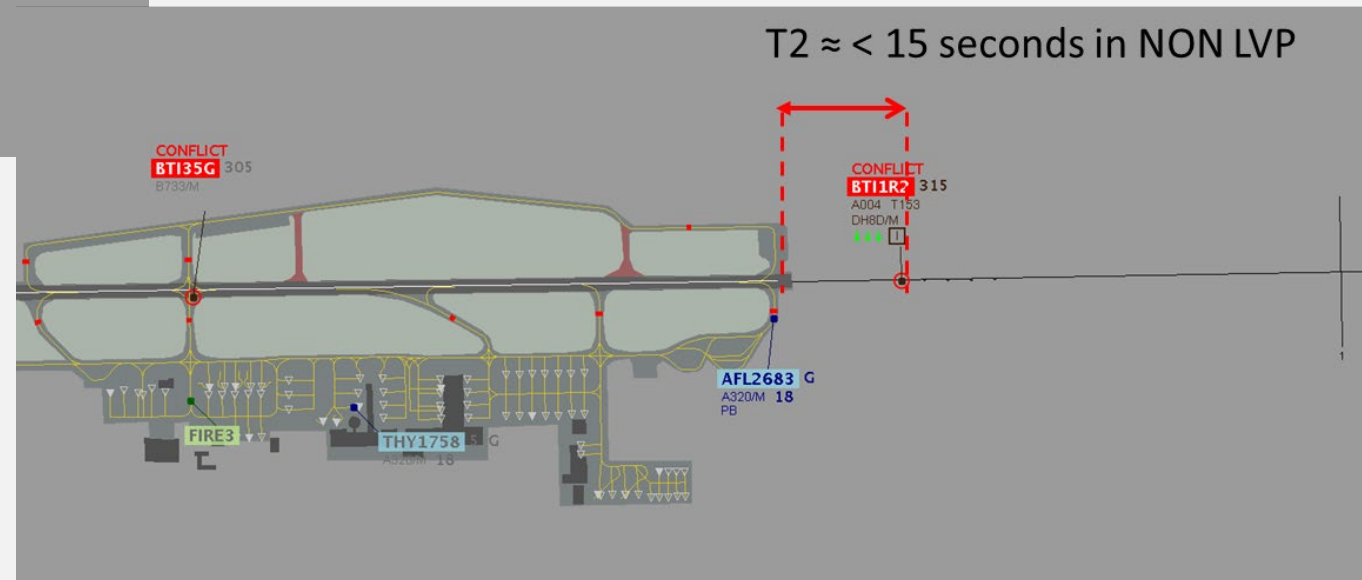
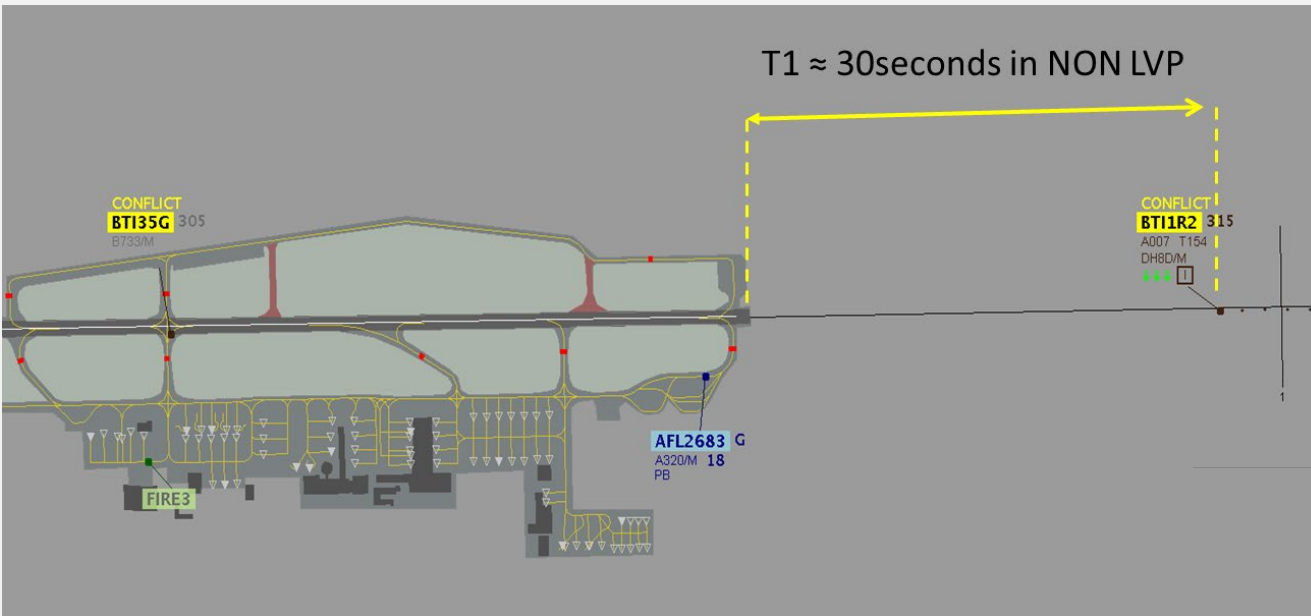
Identify the need for CATC

LOS ANGELES 1 Feb 1991 – US Air B737 lands and hits a Metroliner because the ATCO was distracted and forgot that she had lined up the Metroliner.

35 Died



Stages of Alert



Examples of Alerts with an Arrival Conflicting with a Vacating Aircraft.

Airport Safety Support Service

RMCA

Runway Monitoring and
Conflict Alerting.
(aka RIMS or Level 2)

CONFLICT
CONFLICT

CATC

Conflicting ATC
Clearances

LINE-UP	LINE-UP, CROSS, ENTER, TAKE-OFF, LAND
CROSS or ENTER	LINE-UP, CROSS, ENTER, TAKE-OFF, LAND
TAKE-OFF	LINE-UP, CROSS, ENTER, TAKE-OFF, LAND
LAND	LINE-UP, CROSS, ENTER, TAKE-OFF, LAND
PUSH-BACK	PUSH-BACK, TAXI
TAXI	PUSH-BACK, TAXI, CROSS
CROSS	TAXI

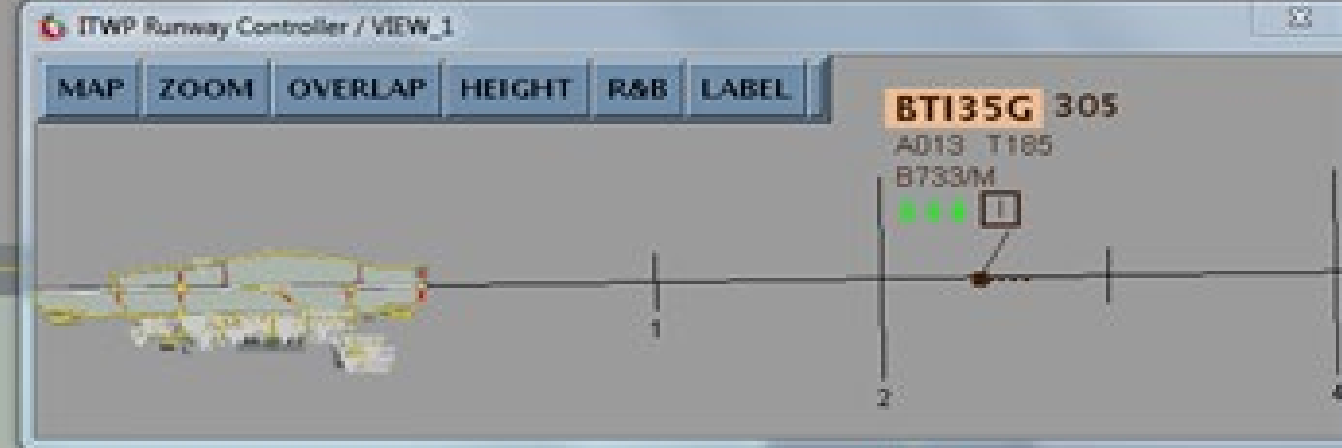
CMAC

Conformance Monitoring Alerts for Controllers
(R)=Routing Service Required)

ROUTE DEVIATION (R)
NO PUSH / NO TAXI CLEARANCE (R)
STATIONARY
NO CONTACT
NO TRANSFER
NO TAKE-OFF CLEARANCE
NO LANDING CLEARANCE
LANDING ON THE WRONG RUNWAY
LINING-UP ON THE WRONG RUNWAY
RUNWAY TYPE
TAXIWAY TYPE (R)
RUNWAY CLOSED
TAXIWAY CLOSED (R)
HIGH SPEED
STAND OCCUPIED

ROUTE DEVIATION (R)
STATIONARY
NO TAKE-OFF CLEARANCE
NO LANDING CLEARANCE
LANDING ON THE WRONG RUNWAY
RED STOP BAR CROSSED
LINING-UP ON THE WRONG RUNWAY
RUNWAY INCURSION
RUNWAY TYPE
TAXIWAY TYPE
RUNWAY CLOSED
TAXIWAY CLOSED
RESTRICTED AREA INCURSION
HIGH SPEED

CONFLICTING ATC CLEARANCES (CATC) – If the ATCO inputs the clearance then there is an additional warning window asking to confirm their intention. Cancelling closes the window.



CONFIRM CLEARANCE

RW18 AFL2683 BTI35G LUP/LND

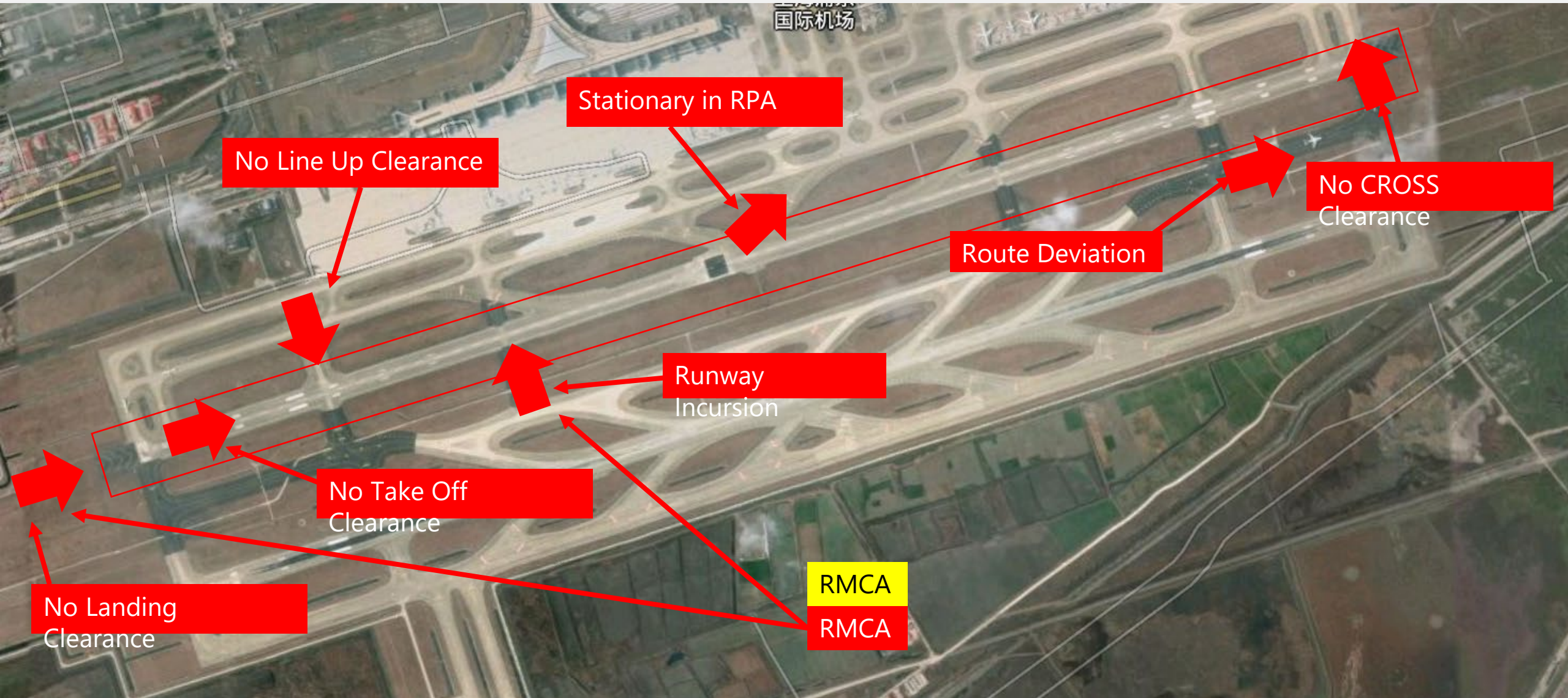
ACCEPT CANCEL

PENDING ARR RW18					
☐	E1013	UZE102	B762/H		ROF ▼
☐	E1010	GTI8223	B744/H		ROF ▼
☐	E1007	WZZ147	A320/M		ROF ▼
☐	E1005	RYP48ZZ	B738/M		ROF ▼
FINAL RW18					
☐	02:59	BTI1R2	DH8D/M	[I]	LND ▼
(TD 320/020) RW18 (SE 320/20)					
☐	00:59	BTI35G	B733/M	[I] [Green dots]	GO ▼

AFL2683 G
A320M 18 SID_1
TX

HOLDING POINT RW18					
☐	T1000	AFL2683	A320M	G	TX LUP ▼

RPA – Runway Protected Area and Some Associated Alerts



Why combining CMAC & CATC : Nice Use Case (21/09/2025)



ATCO Clear Nouvel Air To Land 04R

ATCO Clear Easy Jet Line Up 04R

=> CATC: Land/Line UP



ATCO Clear Nouvel Air To Land 04L

Nouvel Air detected On 04R ILS

=> CMAC: Land On Wrong RWY

=> Than RMCA

Surface Movement Awareness System

Product scope and objectives

“SMAS SPECS PRESENT MINIMUM REQUIREMENTS TO ENSURE AIRPORT SAFETY AND IF IMPLEMENTED FULLY, THE COMPLIANCE IS ACHIEVED”

REGIONAL AIRPORTS

**BASED ON
COOPERATIVE
SURVEILLANCE**

**2 SERVICES:
SURVEILLANCE
(MANDATORY)

ALERTING
(OPTIONAL)**

Surface Movement Awareness System

Operational Tool

Surveillance Service (+ Alerting Service)



Controller's tactical tool

Surveillance Service (+ Alerting Service) + **Additional means**



Controller's tactical tool

To use SMAS as a tactical Controller's tool, additional technical and/or procedural means to control non-cooperative mobiles within the Coverage volume, shall be implemented.

Note: Examples of technical means – magnetic loops, flight strips, closed-circuit television; example of procedural means – follow me car, specific taxi routes, designated sectorization of aerodrome for non-suitably equipped mobiles, communication protocols.

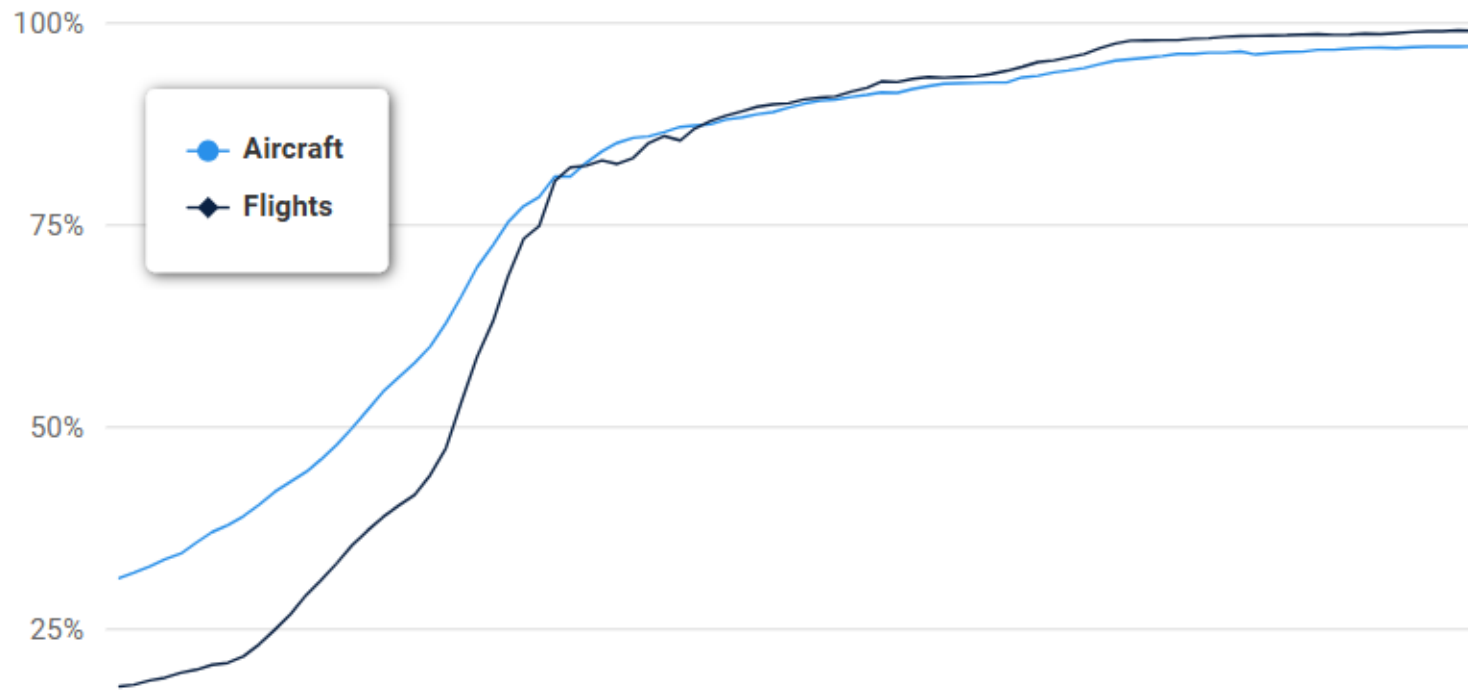
CMAC Alerts

Alert Name	Brief description
STATIONARY	A mobile doesn't move within a certain time period in the RPA.
LANDING ON THE WRONG RUNWAY	An arriving aircraft is about to be aligned to a runway that differs from the designated active runway.
LINING-UP ON THE WRONG RUNWAY	A departing aircraft is about to be lined-up on a runway that differs from the designated active runway.
RUNWAY TYPE	Runway is not suitable for the aircraft type e.g. runway is too short.
RUNWAY CLOSED	An aircraft is about to enter a closed runway.
TAXIWAY TYPE	An aircraft is about to enter a taxiway that is not suitable for the aircraft type.
TAXIWAY CLOSED	An aircraft is about to enter a closed taxiway.
HIGH SPEED	An aircraft taxis with speed exceeding x knots (x=parameter).

STATIONARY	A mobile doesn't move within a certain time period in the RPA.
LANDING ON THE WRONG RUNWAY	An arriving aircraft is detected to be aligned to a runway that differs from the designated active runway.
LINING-UP ON THE WRONG RUNWAY	A departing aircraft is lined up on a runway that differs from the designated active runway.
TAKING-OFF FROM THE WRONG RUNWAY	A departing aircraft is detected taking-off from a runway that differs from the designated active runway.
RUNWAY TYPE	An aircraft is on a runway that is not suitable for the aircraft type.
TAXIWAY TYPE	An aircraft is on a taxiway that is not suitable for the aircraft type.
RUNWAY CLOSED	An aircraft has entered a closed runway.
TAXIWAY CLOSED	An aircraft has entered a closed taxiway.
RESTRICTED AREA INCURSION	An unauthorised mobile is detected entering, or predicted to enter, a restricted area.
HIGH SPEED	An aircraft taxis with speed exceeding y knots (y=parameter).

aircraft equipage with ADS-B version 2

ADS-B v2 equipage



Current equipage by
May 2025

AIRCRAFT

96.9%

FLIGHTS

98.9%

Validation of SMAS

- Live trial in Liepaja from 18th to 21st of August
- Live trial in Gdansk (date to be confirmed with PANSA and Aptech)
- RTS in EUROCONTROL Innovation Hub 4th to 7th of November:
Objective to evaluate the Ops procedures for the mix between equipped and not equipped

Liepaja validation

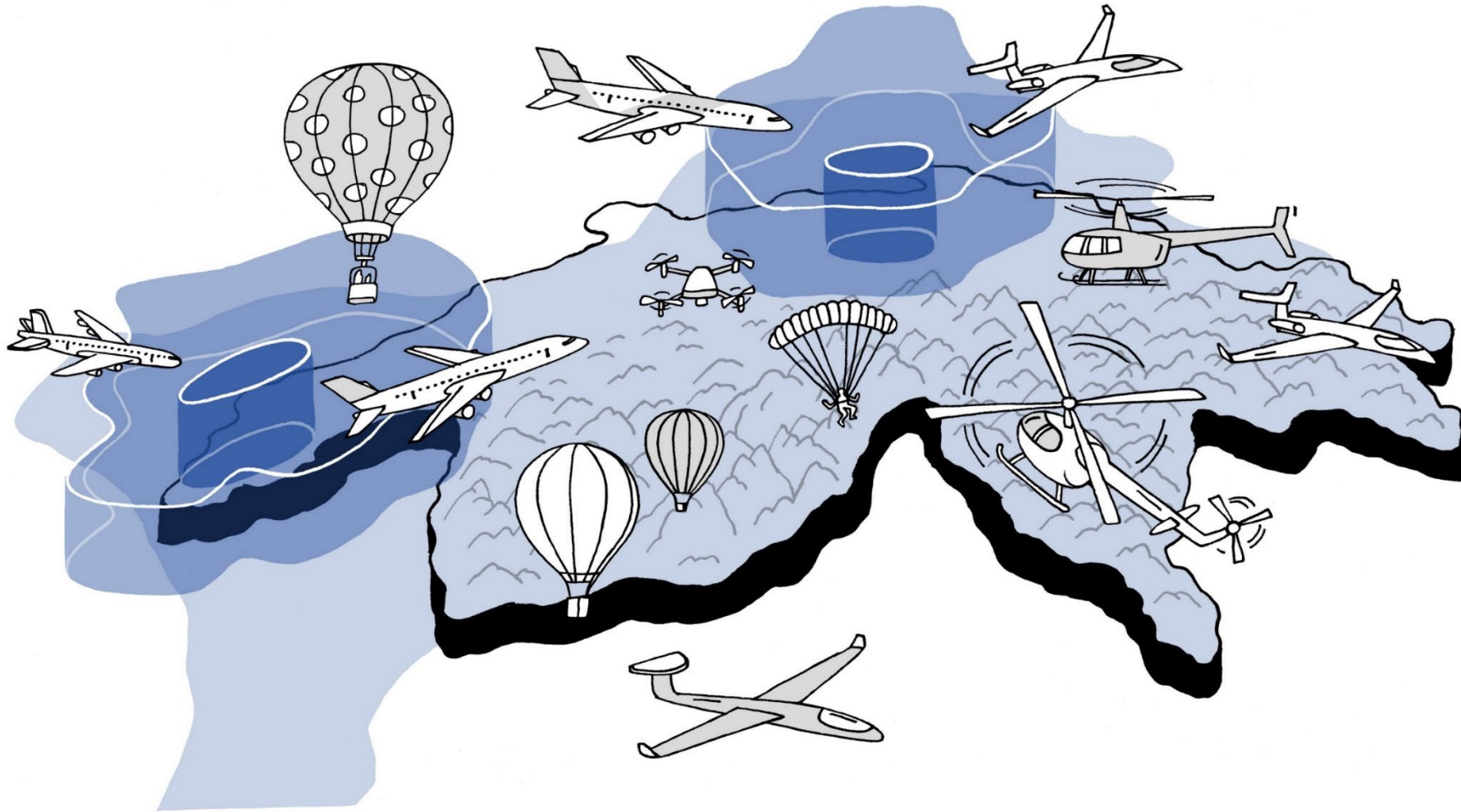


Continuous Stop Bar Use

Best practices: LSZH, LSZG

Switzerland – in a nutshell

- The inner circle: international airports services (Geneva & Zurich)
- The outer circle: regional approach & ATM supporting services (Alps Radar, FIS)



Understand our environment

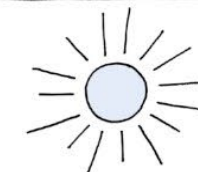
Build resilient
services on solid foundations

Optimise & improve

THE OL JOURNEY

beyond horizons

Virtual Centre

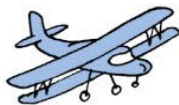


Vision 2035

Maintain a high Level of safety
Reduce unit costs
Ensure quality of service
Ensure service continuity
Reduce environment footprint.

FIS

ALPS
RADAR



LFN
PINS

Super TMA

GVA

ZRH

A&D
grouping

@alps
radar

stripless

Central
regio
app

Delta & FIC
move

HB-SKY
a.035
VFR Hdi

AoRΔ

PBN LSZR
& LSZS

PBN EDNY

GENEVA 2020-2030+

GVA
TWR APP

PAGE
1
TWR

FATO & North
stop bars

PBN LSGG

new
AOS

ARSI

NRH

AMAN
PAGE
2
APP

R-TWR

2030+

<2020

@TWR

robustness

2025

Partial
Compliance

WAM-CH

SKYCAT

2027

AOP

LORD

Skyscope

new TWR

LADY

ZURICH 2020-2030+

ZRH
TWR APP

CROPS

e-coordination
AMAN

RNAV

TRACE
perf. plan

TMA redesign

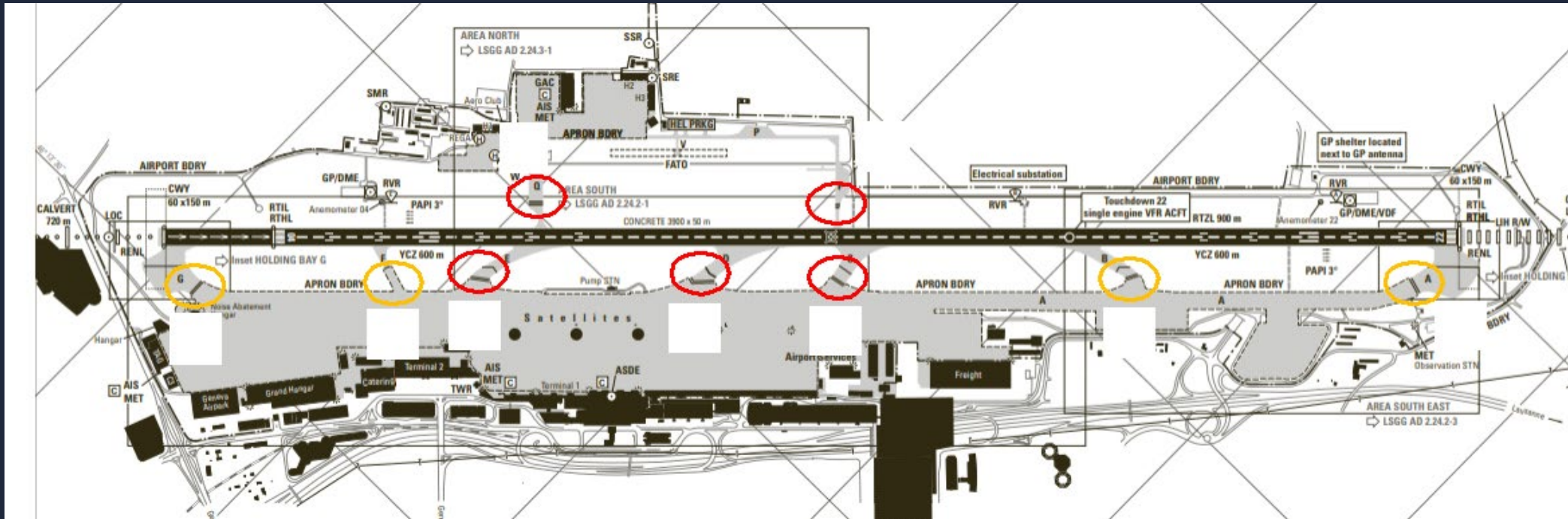
Reducing
Complexity

new DARTS

OL Strategy

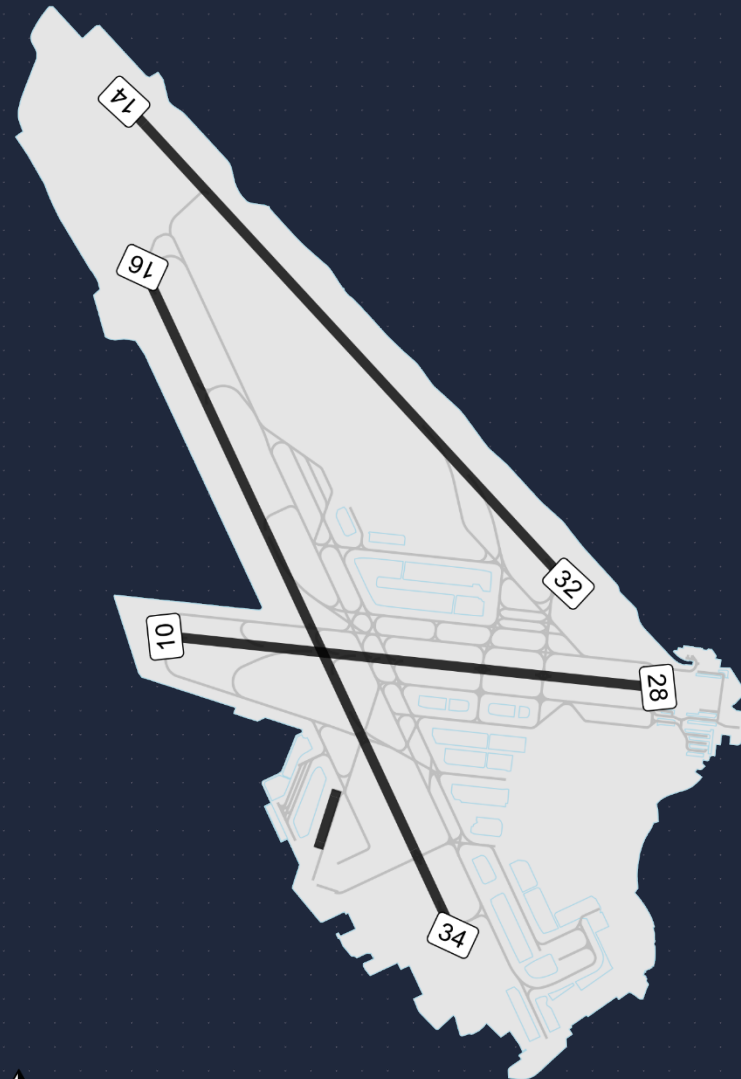
operational excellence in lower airspace
focus on international airports
synergies with upper airspace





- RWY22/04 single runway ops
- Main TARMAC in the south, GA/BA in the north
- CAT I or II/III not collocated
- No of RWY crossings <5 per day

- Implementation OCT 24
- Red = H24 stop bar, orange = only under LVP
- OCT23 – OCT 24 = 11 RWY incursions
- NOV24 – SEPT25 = 0 RWY incursions



- RWY14 = main landing RWY
- RWY28 = main departure RWY
- No of RWY crossings (mainly RWY28) = **~400 per day**
 - Aircraft
 - Towed aircraft
 - Several trucks and cars
 - Rescue service
- ALL runways protected by H24 stop bars
- Stop bars CATI/II/III collocated



- Introduction before in 1996
- Since 2000 – stop bars operated 24h

Working style ATCO:

1. talk – 2. push stop bar button

- Introduction e-strip system

Working style ATCO:

1. talk – 2. push stop bar button – 3. click action on E-strip

- 2004 Introduction RIMCAS
- 2008 RIMCAS advanced with 32 RUs
- collocate CAT I/II/III stop bars
- 2014 Introduction ARSI



Working style ATCO:

1. talk – 2. click action on E-strip

- Stop bar ON/OFF
- Alert for conflicting clearance (e.g. Cross RWY vs. Take-Off clearance)
- Marks RWY (partially) blocked

Additional system features:

- Handling of aircraft, vehicles, towed aircraft
- Conditional clearances
- Overrun alerts (magnetic and SMR based)

H24 stop bar use in LSZH – workflow

28	M A20N	SWR757W	V4W ^D LASUN	5000	SEP	SWR374P ovhd		A2	⋮		⋮
16	M BCS3	SWR374P	V4S ^D ROTOS	5000	SEP	SWR3YA + 0.5	TAXI	FS	⋮		⋮
28	M E295	SWR3YA	D3W ^D MINGA	5000	SEP	SWR3CX + 1.0		B2	⋮		⋮

28	M A20N	SWR757W	V4W ^D LASUN	5000	SEP	SWR374P ovhd		A2	⋮		⋮
16	M BCS3	SWR374P	V4S ^D ROTOS	5000	SEP	SWR3YA + 0.5	TAXI	FS	⋮		⋮
28	M E295	SWR3YA	D3W ^D MINGA	5000	SEP	GAC624H + 1.0		B2	⋮		⋮

skyguide

“SWR374P, hold short of RWY28”

“SWR374P, on TWY F cross RWY28”



- Use of 24h stop bar part of ATCO training from the very beginning
- All procedures and systems based on the 24h use of stop bars
- In case of system failure = contingency case with fallback scenarios

Stop bars and 24h usage = part of our DNA



THANK YOU