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Portuguese Civil Aviation Authority

SSp 2019-2021

European Plan for Aviation Safety (EPAS) 2019-2023

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29 Janeiro 2019

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EPAS 2019-2023

European Plan for Aviation Safety (EPAS) 2019-2023

including the Rulemaking and Safety Promotion Programmes

Mission

Ensure the highest common level of safety protection for EU citizens

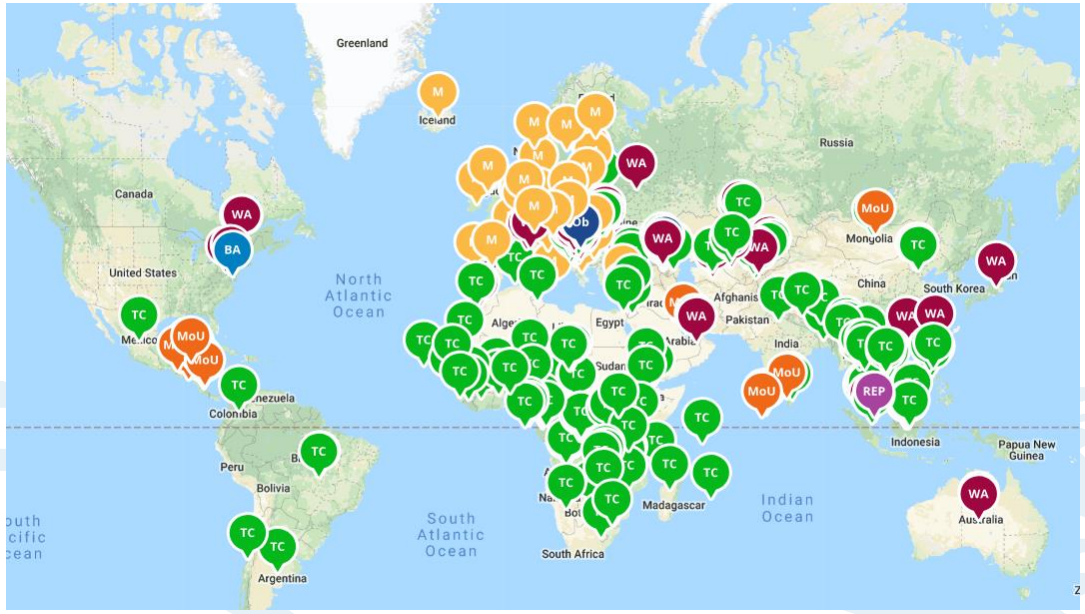
Ensure the highest common level of environmental protection

Single regulatory and certification process among Member States

Facilitate the internal aviation single market & create a level playing field

Work with other international aviation organizations & regulators

MS – 28+4 = 32



European Aviation Safety Agency, 22nd November 2018

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The Global Aviation Safety Plan (GASP)

- Objectives and priorities of the GASP - to enhance the level of safety in aviation and to better prepare the MSs for the USOAP audits of their SSPs
- The GASP objectives call for States to put in place robust and sustainable safety oversight systems that should progressively evolve into more sophisticated means of managing safety
- The objectives are aligned with ICAO Standards and Recommended Practices (SARPs) for the implementation of SSP by States and safety management systems (SMS) by service providers

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GASP – High risk categories

- ICAO has identified high-risk accident categories (global priorities)
  - controlled flight into terrain (CFIT);
  - loss of control in-flight (LOC-I);
  - mid-air collision (MAC);
  - runway excursion (RE); and
  - runway incursion (RI).

These categories were initially determined based on an analysis of accident data, for scheduled commercial air transport (CAT) operations

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Since 2017 - ICAO Regional Office for the EUR/NAT region and EASA have been working together to develop a Regional Aviation Safety Plan (RASP) based on EPAS, thus allowing all States that are part of the EUR/NAT region to benefit from this approach

EUR/NAT region - With a geographical area of responsibility stretching from the North Pole to the Sahara and from the Eastern Coast of North America to the Bering Strait (i.e. across 14 time zones), 56 MS.

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The ATM MP and the GANP

- The ATM MP is the European planning tool for setting ATM priorities
- The ATM MP ensures that the Single European Sky ATM Research (SESAR) 'Target Concept', aligned with the ICAO GANP, becomes a reality
- SESAR 'Target Concept' aims at achieving a high-performing ATM system by enabling airspace users to fly their optimum trajectories through effective sharing of information between air and ground. The ATM MP is evolving and is built in collaboration with and for the benefit of all ATM stakeholders

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The alignment between EPAS and the ATM MP requires two actions

- Firstly, that the ATM MP identifies solutions that can mitigate related safety risks identified by the European aviation safety system, and
- Secondly that EPAS makes references to those solutions from the ATM MP that are actually mitigating those identified safety risks

The **GANP** represents a rolling, 15-year strategic methodology which leverages existing technologies and anticipates future developments based on State/industry agreed operational objectives. It offers a long-term vision that will assist ICAO, States and industry to ensure continuity and harmonization among their modernization programmes

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Figure 1. European SRM process

Identification of safety issues - It is performed through analysis of occurrence data and supporting information from the Collaborative Analysis Groups (CAGs)

Assessment of safety issues - The assessment process is led by EASA and is supported by the NoAs (Network of Analysts) and the CAGs. The result of the assessment is the production of scenario-based bow tie models that help to identify weak controls for which potential actions can be identified

Definition and programming of safety actions - Using the combined (safety issue assessment) SIA/(preliminary safety assessment) PIA process, formal EPAS action proposals are then made

Implementation and follow up - Implementation and follow-up of the actions that have been included in EPAS

Safety performance measurement - Serves two purposes, firstly to monitor the changes that have resulted from the implementation of safety actions, and secondly, it serves to monitor the aviation system so that new safety issues can be identified. To ensure that there is a systematic approach to the work in this step of the SRM process, a safety performance framework has been developed that identifies different tiers of outcome-based SPIs. Tier 1 transversally monitors all the domains and provides the overview of the performance in each domain. Tier 2 then covers the key risk areas at domain level, whilst Tier 2+ monitors the safety issues

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‘Strategic Priorities’

- Systemic safety
- Operational safety
- Safe integration of new technologies and concepts (addresses the need to facilitate the safe implementation of emerging technologies and innovation)
- Environment

‘Strategic enablers’

- Safety promotion
- International cooperation
- Digitalization
- Technical training
- Oversight

‘Better regulation’
‘New Basic Regulation’

Safety

- The actions are driven by the need to increase or maintain the current level of safety in the aviation sector

Efficiency/proportionality

- The actions are primarily driven by the need to ensure that rules are cost-effective in achieving their objective, as well as proportionate to the risks identified. The effects on efficiency and proportionality prevail over those on safety

Level playing field

- The actions are mainly driven by the need to ensure that all players in a certain segment of the aviation market can benefit from the same set of rules, thereby promoting innovation, supporting fair competition and ensuring free movement of persons and services. Actions will directly contribute to maintaining or even increasing the current level of safety

MSTs

- EPAS actions based on safety priorities identified in collaboration with MSs and owned by MSs. Most of them are continuous actions to ensure continuous monitoring of the underlying safety risks and regular reporting on progress of those MS actions
- Results are discussed with MSs during the regular Safety Management Technical Body (SM TeB) meetings. Different implementation approaches, difficulties or best practices are brought up and discussed to enhance the collaboration amongst MSs and between MSs and EASA

For each EPAS action, the following information is provided as a minimum:

- the objective and main timelines (task schedule); and
- the rationale as well as basic information related to responsibility for the action and affected stakeholders.

Reporting on State actions (MSTs)

- In 2019-2020, EASA will focus on providing implementation support to facilitate compliance with the new requirements of NBR Chapter II. **States are required to develop a State Plan for Aviation Safety (SPAS),** taking into consideration the actions they own in EPAS and providing justifications when such actions are not considered relevant to them.
- **SPAS will be the primary tool for MSs to report on action implementation.** States are expected to provide **an up-to-date SPAS at least annually** or, where the SPAS is not updated annually, a report on the implementation of EPAS actions. EASA will make available an online platform for MSs to upload their SSP, SPAS and any other relevant material. The online platform is also intended to facilitate the exchange of information amongst States on EPAS and SSP implementation.

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Strategic priorities

- Systemic safety
- Operational safety

Systemic safety

Improve safety by improving safety management

The latest accidents and serious incidents underline the complex nature of aviation safety and the significance of addressing human factor aspects. Aviation authorities and organizations should anticipate new emerging threats and associated challenges by developing SRM principles. Those principles will be strengthened by **SMS implementation** supported by ICAO **Annex 19** and **Regulation (EU) No 376/2014 on occurrence reporting**, **follow-up** and the **protection of safety information**

Key actions

- Support States in **implementing State Safety Programmes and States Safety Plans**
- Encourage international harmonization of SMS implementation, and human factor principles
- Ensure that national aviation authorities have the ability to evaluate and oversee the operator's management system
- Incorporate safety management requirements in initial and continuing airworthiness

Human factors and competence of personnel

- EASA monitors data relating to human performance and assesses feedback from stakeholders and through other regulatory and oversight activities
- Both human factors and human performance examine the capabilities, limitations and tendencies of human beings, they have different emphases:
  - Human factors (HF) – this term focusses on why human beings function in the way that they do. The term incorporates both mental and physical processes, and the interdependency between the two
  - Human performance (HP) – the output of human factors is HP. This term focuses on how people do the things that they do

Impact of security on safety

Cybersecurity

- The multiplication of network connections and the surge in digitalization of aviation systems increases the vulnerability of the whole system

Key actions

- Develop and implement a strategy for cybersecurity in aviation
- Implement a regulatory framework for cybersecurity covering all aviation domains
- Introduce new cybersecurity provisions in the certification specifications

Operational safety

Address safety risks in CAT aeroplane operations and NCC business operations

- During 2017, there were no fatal accidents involving European air operator certificate (AOC) holders performing CAT passenger/cargo
- No fatal accidents occured in NCC business operations with aeroplanes having a maximum take-off weight above 5 700 kg

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The European SRM process identified the most important risk areas for CAT aeroplane (Commercial Air Transport Operations) and NCC business operations (Non Commercial Operations with Complex Motor-Powered Aircraft)

Loss of control is the most common accident outcome for fatal accidents in CAT aeroplane operations

It includes uncontrolled collisions with terrain, but also occurrences where the aircraft deviated from the intended flight path or aircraft flight parameters, regardless of whether the flight crew realised the deviation and whether it was possible to recover or not. It also includes the triggering of stall warning and envelope protecttions

Key actions:

- Review and promote training provisions on recovery from upset scenarios
- MSs to address loss of control in flight by taking actions at national level and measuring their effectiveness

Runway excursions, Runway incursions and Collisions

Runway excursion covers materialized runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centered or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing

Runway incursion refers to the incorrect presence of an aircraft, vehicle or person on an active runway or in its areas of protection

Key actions:

- Require on-board technology to reduce runway excursions
- Improve aircraft performance in CAT operations
- Promote and implement the European Action Plan for the Prevention of Runway Incursions (EAPPRI) and Excursions (EAPPRE)
- MSs to address runway safety by taking actions at national level and measuring their effectiveness

Rotorcraft safety

- Improve overall rotorcraft safety by 50 % within the next 10 years
- Make positive and visible changes to the rotorcraft safety trends within the next 5 years
- Develop performance-based and proportionate solutions that help maintain competitiveness, leadership and sustainability of European industry
- Helicopter training improvement initiative

Key actions:

- Improve the certification specifications and standards relating to the certification of rotorcraft hoists
- Improve specifications on the use of vibration health monitoring (VHM) systems to detect imminent failures of critical rotor and rotor drive components
- Improve mitigation of risks relating to restricted pilot vision
- Introduce requirements for rotorcraft terrain avoidance warning system

Address safety risks in GA in a proportionate and effective manner

Based on 2007-2016 figures, accidents involving recreational aeroplanes have led to an average of 92 fatalities per year in Europe

EASA introduced, in 2018, the GA Community website

Key actions:

- Improve the dissemination of safety promotion and training material by authorities, associations, flying clubs, insurance companies targeting flight instructors and/or pilots
- Encourage the installation and use of modern technology
- Address airspace infringement risks through an EU-wide promotion campaign

Ensure the safe operation of drones

- The introduction of new airspace users should not degrade the level of safety
- Rules should ensure that all risks are identified and appropriately mitigated
- The lack of harmonized rules at EU level makes unmanned aircraft system (UAS) operations dependent on an individual authorization by every MS
- Need to develop the relevant regulatory material
- Need to establish unmanned traffic management (UTM) systems (named ‘U-space’ in Europe)

Key actions:

Recent work:

- An opinion and draft AMC & GM were published in February 2018 and the draft implementing/delegated acts are being processed
- A first set of standard scenarios is planned to be adopted in 2019 to facilitate the obtainment of authorisations for well-defined operations
- For the fully-certified drone category, EASA opinions and decisions will be issued between Q2/2019 and Q2/2023. In the meantime: Certification of large drones could be done using Part 21 and Special Conditions

Future work:

- Drafting the necessary standards to support the performance-based rule in cooperation with standardisation and industry
- Developing the necessary actions to ensure a uniform implementation of rules in cooperation with MSs, including promoting the safe operation of drones to the general public
- Developing the regulatory framework for the safe integration of drones in the airspace

Strategic enablers

- **Safety promotion**
- **International cooperation**
- **Digitalization**
- **Technical training**
- **Oversight**

Safety promotion

- New safety promotion strategy - domain-based approach

  - Operational domains such as aircraft operations, aerodromes and ground handling,
  - General Aviation,
  - Rotorcraft and
  - Drones

International cooperation

- Strive, through international cooperation, that citizens' interests for safety and environmental protection are being met at global level
- Ensure a global level playing field for European industry
- Enable the European approach

Digitalization

Define a roadmap to digitalization in order to determine the following:

- changes needed in the regulatory system to accompany and benefit from industry digitalization
- actions needed to keep abreast of digitalization issues, in particular in relation to product certification and operations
- key EASA digitalisation activities needed, both for external purposes (e.g. e-licence for pilots) or internal purposes (e.g. digitalisation of processes); and
- actions needed to implement EU's digital agenda and e-government action plan

The roadmap will have due regard to digitalization-induced cybersecurity issues and related EPAS actions

Technical training

Annex 19

- qualified technical personnel is a critical element (CE-4) of the State safety oversight system
- stipulates that States shall establish minimum qualification requirements for the technical personnel performing safety-related functions and provide for appropriate initial and recurrent training to maintain and enhance their competence at the desired level

Oversight

- Having proper oversight capabilities is a key prerequisite for the SSP as well as EPAS actions' implementation

Better regulation

- Rules are evidence-based, where appropriate performance-based, proportionate, fit for purpose, simply written and contribute to the competitiveness of the industry
  - a transparent and streamlined regulatory process that is supported by an efficient stakeholder consultation
  - a plain and easily understandable language also for non-native English speakers
  - communication and IT platforms that give stakeholders easy access to consulted deliverables and regulatory material, including soft law
  - a regulatory approach that is performance-based where appropriate and respects the principles of subsidiarity and proportionality; and
  - actors involved in the drafting of regulatory material that have been appropriately trained in drafting performance-based rules.

New Basic Regulation

https://www.easa.europa.eu/document-library/regulations/regulation-eu-20181139

NBR Chapter II

- 'Aviation safety management' creates a solid legal foundation for EPAS and transposes ICAO Annex 19 SARPs for State safety management
- 'Aviation safety management' - Article 7 - requires States to establish and maintain an SSP in accordance with international SARPs (ICAO Annex 19) and with the European Aviation Safety Programme (EASP); - Article 8 - requires States to complement their SSP with a SPAS. Such a plan shall include the risks and actions identified in EPAS that are relevant for the MSs concerned

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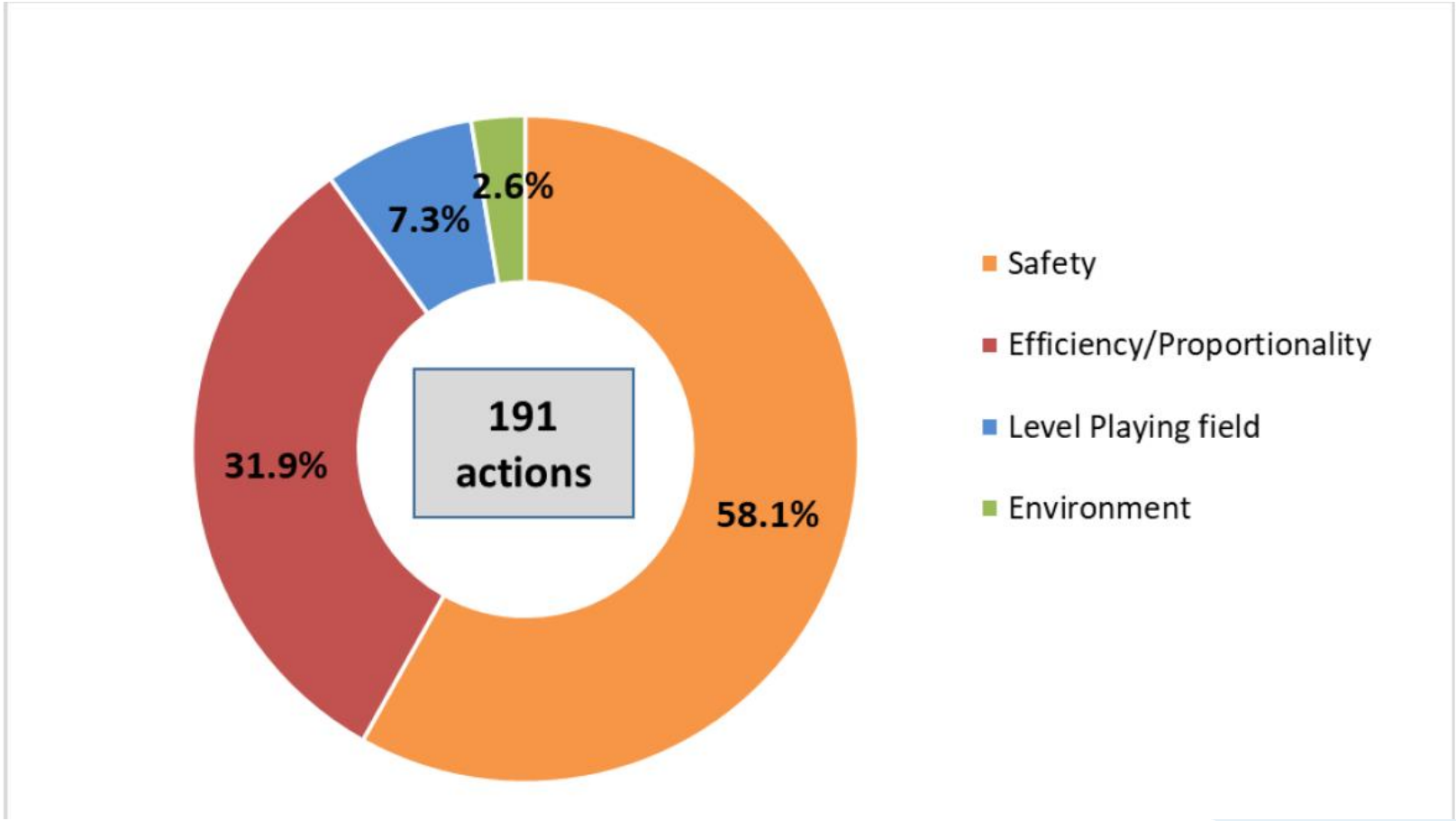
Key indicators in terms of EPAS actions



Safety performance

Outcome-based indicators shall consider as main inputs:

- number of fatal accidents
- number of fatalities; and
- number of non-fatal accidents and serious incidents

This is aligned with the high-level ICAO safety metrics

Outcome-based indicators

- **Tier 1** - transversally monitors all the domains and the overview of the performance in each domain. Tier 1 considers the number of fatal accidents and fatalities in the previous year compared with the average of the preceding decade. In addition to this, for Commercial Air Transport aeroplanes, detailed statistical indicators have been developed to identify the accident and serious incident rates over a four-year period. These will be updated periodically to monitor performance against the 2011-2014 baseline
- **Tier 2** - covers the priority key risk areas at domain level. Tier 2 provides the number (and where available the rate) of fatal accidents and the ERCS (European Risk classification Scheme) risk level for each domain in the ASR (Annual Safety Review), divided by key risk areas

Monitoring systems and processes

- Monitoring will be based on the EASA Standardisation rating, as an alternative to the ICAO USOAP Effective Implementation (EI) indicator
- EASA will collect relevant documentation from States (SSP and SPAS)
- Monitoring the implementation of SMS in industry should focus on compliance with relevant requirements and effectiveness of SMS key processes

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SAFETY MANAGEMENT

SAFETY MANAGEMENT

Safety Promotion

- MST.001 - Member States to give priority to the work on SSPs (All)
- MST.002 - Promotion of SMS (All, Human Factors)
- MST.003 - Member States should maintain a regular dialogue with their national aircraft operators on flight data monitoring (FDM) programmes (CAT)
- MST.026S - SMS assessment (Air Operations, Aircrew, Medical, Aerodromes)
- MST.028 - Member States to establish and maintain a State Plan for Aviation Safety (All)

RUNWAY SAFETY

Safety Promotion

- MST.029 - Implementation of SESAR runway safety solutions

AIRBORNE CONFLICT (MID-AIR COLLISIONS)

Safety Promotion

- MST.024 - Loss of separation between civil and military aircraft
- MST.030 - Implementation of SESAR solutions aiming to reduce the risk of mid-air collision en-route and TMA

ROTORCRAFT OPERATIONS

Safety Promotion

- MST.015 - Helicopter safety events
- MST.031 - Implementation of SESAR solutions aiming to facilitate safe IFR operations

GENERAL AVIATION: NON-COMMERCIAL OPERATIONS

Safety Promotion

- MST.025 - Improve the dissemination of safety messages
- MST.027 - Develop just culture in GA

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DELIVERABLES IN 2019

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	1	RMT.0708	Controlled Flight into Terrain (CFIT) prevention with Helicopter Terrain Avoidance Warning Systems (HTAWS)	1.0
	3	RMT.0127	Pilot compartment view	1.0
	3	RMT.0194	Modernising the European pilot training system and improve the supply of competent flight instructors	1.0
	3	RMT.0376	Anti-collision systems on aircraft other than aeroplanes in excess of 5 700 kg or 19 pax	1.0
	3	RMT.0709	Prevention of catastrophic accidents due to rotorcraft hoists issues	1.0
	3	RMT.0710	Improvement in the survivability of rotorcraft occupants in the event of a crash	1.0
	3	RMT.0724	Rotorcraft FCOM	1.0
	3	RMT.0725	Rotorcraft chip detection system	1.0
	3	RMT.0727	Implementing NBR into Part 21	1.0
	4	RMT.0711	Reduction in accidents caused by failures of critical rotor and rotor drive components through improved Vibration Health Monitoring Systems	1.0
Efficiency / Proportionality	1	RMT.0509	Regular update of CS-FC	1.0
	1	RMT.0729	Regular update of Regulation 2019/xxxx (drones in the open and specific category)	1.0
	1	RMT.0730	Regular update of the AMC/GM to Regulation 2019/xxxx (drones in the open and specific category)	1.0
	2	RMT.0714	Enable the safe introduction of rotorcraft Fly-by-Wire technology	1.0
	3	RMT.0508	Regular update of CS-CC	1.0
	3	RMT.0682	Implementation of the regulatory needs of the SESAR common projects	1.0
Level Playing field	2	RMT.0728	Organisation requirements for Groundhandling service providers / Development of requirements for Groundhandling operations	1.0

Appendix E

Policy on Safety Management Systems

- General
- Applicability and consistency
- Proportionality and flexibility
- Implementation
- General aviation and small organizations
- International harmonization

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Domain	Fatalities 2008-2017	Accidents 2008- 2017	Average accidents 2008-2017	Average fatalities 2008-2017	Accidents 2017	Fatalities 2017
CAT Aeroplanes	0	3	0,3	0	0	0
CAT Helicopters	0	0	0,0	0	0	0
SPO Aeroplanes (includes firefighting)	3	10	1,0	0,3	0	0
SPO Helicopters (includes firefighting)	2	10	1,0	0,2	2	1
General Aviation	51	78	7,8	5,1	7	7
Total	56	101	10,1	5,6	9	8

Table 1 – Summary of accidents and fatalities

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AÇÕES

A ANAC através das auditorias/inspeções de supervisão aos SMS, assegurará

- **LOC-I**
  - Percursores **LOC-I** são incluidos (CAT)
  - Formação dada aos tripulantes técnicos é adequada (CAT)
- **RE**
  - Percursores **RE** são incluidos (CAT, ANSPs, Aeródromos)
  - Formação dada aos tripulantes técnicos é adequada (CAT)
  - Formação de refrescamento inclui simulação em RE (ANSPs)
  - Existência de um Comité de Segurança de Pista, eficaz e, em conformidade com o EAPPRE (Aeródromos)

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- **RI**
  - Ações recomendadas pelo Regulamento Nacional nº 8/2018 **(RI)** são implementadas (Aeródromos, CAT, ANSPs)
  - Desenvolvidos procedimentos Operacionais “Standard” para reforçar as defesas contra as **RI** (CAT, ANSPs)
  - Formação de refrescamento inclui a simulação de medidas preventivas de incursões de pista (ANSPs)
  - Existência de uma equipa de segurança de pista (Aeródromos)

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- **MAC**
  - Ações previstas no Plano de Ações Europeu para a Redução do Risco de Violação de Espaço Aéreo são implementadas (CAT, ANSPs)
  - Ações de identificação de barreiras e desenvolvimento de Procedimentos Operacionais "Standard", para redução das principais causas que levam à perda de separação (ANSPs)
  - Regras de prioridade para separação de aeronaves civis dos voos de Tráfego Aéreo Operacional, incluindo as missões de defesa aérea estão acordadas com as entidades militares (ANSP)
  - "Eurocontrol Specifications for harmonized Rules for operational Air Traffic (OAT) under Instrument Flight Rules (IFR) inside controlled Airspace of the ECAC Area (EUROAT) estão implementadas (ANSP)
  - Simulação da aplicação das regras do EUROAT e das regras de prioridade para separação de aeronaves civis dos voos de Tráfego Aéreo Operacional, incluindo as missões de defesa aérea estão incluidas (ANSPs)

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- **SCF (NP+PP)**
  - Percursores SCF (System/Component Failure) são monitorizados (CAMO, AMO)
- **RAMP**
  - Auditorias às atividades RAMP na área de movimento de um aeródromo estão incluidas (CAT, Aeródromos)
- **CFIT**
  - Melhoria contínua do conhecimento e perceção pelas tripulações técnicas das medidas preventivas de CFIT, incluída no SMS (CAT)

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- **F-NI**
  - As ações com a finalidade de reduzir os riscos de ignição e propagação de fogo na fuselagem estão implementadas (CAT)

- **Vida selvagem (Wildlife)**
  - Medidas de prevenção e manutenção para minimizar ou eliminar perigos relacionados com a presença de “Wildlife” na descolagem, aterragem ou de circulação na área de movimento – DOC OACI 9137- são adoptadas (Aeródromos)
  - Promoção e incentive à comunicação deste tipo de ocorrências (CAT, Aeródromos, ANSPs)

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PLANO DE AÇÃO ANNUAL

- Comunicar à ANAC – 2/ano – Apêndice 4 (resultados dos SMS)

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Obrigada.