

## **EUR**

### **Regional Aviation Safety Plan**

### **2019–2023**

**Draft**



ICAO



EASA



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## **1 Introduction**

### **1.1 Objectives and principles**

The main objective of this European Regional Aviation Safety Plan (hereafter EUR RASP) is to create a common focus on regional aviation safety issues as a continuation of the European work to improve aviation safety and to comply with ICAO standards. This approach complements the existing system of developing safety regulations, complying with them and investigating accidents and serious incidents when they occur.

The EUR RASP tries to add a proactive element to the current system by closing the safety management cycle and connecting the safety issues at regional level with the action plans and initiatives launched to mitigate the underlying risks.

The EUR RASP establishes the first layer of priorities which is further complemented at national level by national safety plans and programmes. It builds a network for action, thus coordination and close collaboration are key to keeping it up to date and effective.

The first EUR RASP covers the five-year period between 2019 and 2023 and will be updated on a yearly basis, as required, to cover subsequent 5 year periods. It is a rolling 5-year plan.

The planning activity will be followed up by a reporting activity, in which progress on the actions is evaluated and also documented. This feedback loop ensures that the process to manage risks continuously improves and may contribute to the identification of new safety issues.

### **1.2 The European Plan for Aviation Safety (EPAS) and Global Aviation Safety Plan (GASP)**

The EUR RASP is built upon the experience gathered by EASA, EU and ECAC on development and implementation of the European Plan for Aviation Safety (EPAS). Originally the EPAS was created to support the future growth of aviation while securing a high and uniform level of safety for all Member States. This approach allows the States, the European Commission and EASA to take the necessary actions at the right time so as to ensure safe, secure and environmental friendly implementation of new business models and deployment of new technologies. Later it was agreed that EPAS should also support implementation of the ICAO Global Aviation Safety Plan (GASP).

Like the EPAS, the aim of the EUR RASP is to facilitate the implementation of GASP goals at a broader ICAO EUR regional level covering 56 States. The RASG-EUR is the main body to monitor the EUR RASP implementation and to collect feedback from stakeholders with the assistance of ICAO the Secretariat and EASA.

Due to specific difference in the areas of coverage for EPAS and EUR RASP it was agreed to maintain both documents, but to ensure that they are aligned and not contradicting to each other.

The EUR RASP considers the objectives and priorities of the Global Aviation Safety Plan (GASP) to enhance the level of safety in aviation and to better prepare the Member States for the Universal Safety Oversight Audit Programme (USOAP) audits of their SSPs. ICAO, based on USOAP audit results, identified that States' inability to effectively oversee aviation operations remains a global safety concern. Thus, 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. These 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, they are addressed in EUR RASP in section 4.1.1 Safety management.

In addition to the GASP objectives, ICAO has identified high-risk accident categories (global priorities). These categories were initially determined based on an analysis of accident data, for scheduled commercial air transport (CAT) operations, covering 2006–2011. Feedback from the Regional Aviation Safety Groups (RASGs) indicates that these priorities still applied during the development of the 2017–2019 GASP edition. The global priorities are addressed in the following sections: 4.2.1 Aircraft upset in flight (LOC-I), 4.2.2 Runway safety and 4.2.6 Terrain conflict.

### **1.3 Content and structure of the document**

Chapter 1 provides an introduction and defines the objectives of the Regional Plan as well as its relationship with the GASP and EPAS.

Chapter 2 contains the strategic safety priorities, based on the EASA's Strategic Plan and Safety Risk Portfolios.

Chapter 3 contains the safety metrics and targets agreed by RASG-EUR for the EUR region.

Chapter 4 presents the safety actions. They are grouped into seven categories, each one addressing specific safety areas and presented in the following sections:

- Section 4.1 addresses **systemic issues**. These issues affect the aviation system as a whole. They play a role in accident and incident causation, underlying operational issues; thus their improvement has an implicit effect on operational issues.
- Sections 4.2, 4.3. and 4.4 addresses **operational issues grouped** by category of aircraft and type of operations (commercial air transport (CAT), rotorcraft operations and general aviation (GA)). These issues are closely related to the events that are reported during operation. The relationship between this type of issues and the final outcomes or end states can be supported by data.
- Section 4.5 addresses issues related to the **safe integration of new technologies and concepts**. This area gives some consideration to safety issues derived from operations or regulations that have not been fully deployed and where data is not always available.
- Sections 4.6 and 4.7 are highlighting issues that in addition to the improved efficiency and better harmonization can bring safety benefits as well.

Within each section, the following information is provided:

- rationale behind the safety issue (why it has been identified as an issue);
- what it is to be achieved (objective);
- how we intend to monitor improvement in the future; and
- how we intend to achieve the objective; here, the various actions contributing to mitigate the identified risk in that area are described. The actions include:
  - issuing new or amending existing regulations (RMT); and
  - safety promotion (SPT)

The EUR RASP contains specific tasks for the States to take on-board through their SSPs. These are identified as 'MST' tasks.



## 2 Strategic priorities

The following strategic priorities are based on the [Commissions' Aviation strategy](#). The safety priorities are based on the European Safety Risk Portfolios published in the [Annual Safety Review \(ASR\)](#). The efficiency and level playing field priorities are based on stakeholder feedback.

### 2.1 Systemic safety

#### 2.1.1 Improve safety by improving safety management

Despite the fact that the last years have clearly brought continued improvements in safety across every operational domain, the latest accidents and serious incidents underline the complex nature of aviation safety and the significance of addressing human factor aspects. Aviation authorities and organisations should anticipate more and more new threats and associated challenges by developing Safety Risk Management (SRM) principles. Those principles will be strengthened by SMS implementation supported by ICAO Annex 19, strengthening occurrence reporting, follow-up and the protection of safety information. See Section 4.1.1

#### 2.1.2 Human factors and competence of personnel

EASA monitors data relating to human performance and assesses feedback from stakeholders, through the Human Factors Collaborative Analysis Group (HF CAG) and through other regulatory and oversight activities. As the aviation system changes, it is imperative to ensure that human factors and the impact on human performance are taken into account, both at service provider and regulatory levels.

Human factors and human performance are terms that are sometimes used interchangeably. While 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 processes and physical ones, and the interdependency between the two.
- Human Performance (HP) – the output of human factors is human performance. This term focusses on how people do the things that they do.

The HF CAG prioritised the following safety issues for more in-depth analysis to be performed throughout 2018. These issues are systemic safety issues, while other bodies address safety issues that also have human performance elements:

- Senior Management Knowledge, Competence, & Commitment to HF/HP - Unless senior management takes the lead in implementing human factors, the culture does not permeate throughout the organisation, with consequences for safety and efficiency.
- Human Factors Competence for Regulatory Staff - Without HF competencies, regulators cannot adequately oversee HF implementation of the aviation industry.
- Design and Use of Procedures – It is imperative for procedures to be designed so that they are usable, but this is increasingly difficult in the context of a complex system.
- Organisational and Individual Resilience - Organisational and individual resilience are key factors in successfully managing safety, but there is little regulatory guidance on how to apply the concept.
- Training Effectiveness and Competence - There can be too large a gap between work as imagined and work as done, resulting in ineffective or negative training. Some changes to training regimes may exacerbate the problem.

The results of the in-depth analysis of the above issues may lead to the determination of additional actions for future EUR RASP editions.



As new technologies and new business models or operational concepts emerge on the market and the complexity of the system continues to increase, it is of key importance for aviation personnel to have the right competences and adapt training methods to cope with new challenges. It is equally important for aviation personnel to take advantage of the opportunity presented by new technologies to enhance safety.

The safety actions related to aviation personnel are aimed at introducing competency-based training in all licences and ratings, updating fatigue requirements, and facilitating the availability of appropriate personnel in civil aviation authorities (CAAs). These actions will contribute to mitigating related safety issues, which play a role in improving safety across all aviation domains. Training and education are considered key enablers. The new EASA strategy for technical training takes this into account in the related strategic objective B, i.e. '[to] continuously improve the technical competence of Agency staff and manage the harmonisation of training standards for aviation authority staff within the EASA system'. See Section 4.1.2

### 2.1.3 Impact of security on safety

#### Cybersecurity

Citizens travelling by air are more and more exposed to cybersecurity threats. In order for the new generation of aircraft to have their systems connected to the ground in real time, ATM technologies require internet and wireless connections between the various ground centres and the aircraft. The multiplication of network connections and the surge in digitalisation of aviation systems increases the vulnerability of the whole system. It is essential that the aviation industry shares knowledge and learns from experiences to ensure systems are secure from individuals/organisations with malicious intent.

#### Conflict zones

Since the tragic downing of Malaysian Airlines flight MH17, there is a general consensus that States shall share their information about possible risks and threats in conflict zones. Numerous initiatives have been taken to inform the airlines about risks on their international flights.

At global level, ICAO launched in April 2015 a central repository where each State can notify on a voluntary basis its information about a particular risk in conflict zones.

An EU high-level task force was set up to define further actions to be taken at European level in order to provide common information on risks arising from conflict zones. It contains recommendations for various stakeholders and a proposal to set up a Conflict Zone Alerting System at European Level, through cooperation between States, European institutions, EASA and other aviation stakeholders.

The objective of the alerting system is to join up available intelligence sources and conflict zone risk assessment capabilities in order to enable the publication of information and recommendations on conflict zone risks in a timely manner, for the benefit of all European States, operators and passengers. It complements national infrastructure mechanisms, when they exist, by adding, when possible, a European level common risk picture and corresponding recommendations.

## 2.2 Operational safety

### 2.2.1 Address safety risks in Commercial Air Transport Aeroplanes

During 2017, there were no fatal accidents involving EU AOC Holders performing CAT passenger/cargo operations with aeroplanes having a maximum take-off weight above 5700 kg (hereafter referred to as 'CAT aeroplane operations'). In this category, there were 15 non-fatal accidents, however, the number of non-fatal accidents was lower than the average of the previous 10-year period.

This operational domain remains the greatest focus of the EUR safety activities.

The European SRM process identified the following as the most important risk areas for CAT Aeroplanes:

- aircraft upset in flight (Loss of Control)



Aircraft upset or loss of control is the most common accident outcome for fatal accidents in CAT aeroplanes 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 protections. **See Section 4.2.1.**

— runway excursions, runway incursions and collisions

Runway excursion covers materialised 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-centred or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing. Runway excursions account for 81 high risk occurrences recorded on the period 2013-2017 in CAT aeroplane and NCC (Business) operations.

Runway Incursion refers to the incorrect presence of an aircraft, vehicle or person on an active runway or in its areas of protection. Their accident outcome, runway collisions, account for 28 high risk occurrences recorded in the period 2013-2017. Despite the relatively low number, the risk of the reported occurrence demonstrated to be very real. **See Section 4.2.2.**

## 2.2.2 Address safety risks in rotorcraft operations

This area includes four types of operations:

- offshore operations (part of CAT),
- other CAT operations by holders of an AOC,
- specialised operations/aerial work operations; and
- non-commercial operations (certified helicopters registered in an State or State of Operator).

In the CAT offshore helicopter domain, there were no fatal or non-fatal accidents in 2017 and 2 serious incidents, which is above the 10-year average for serious incidents. Prior to 2017, there has been one fatal accident in 2016 and another fatal accident in 2013.

In other CAT helicopter operations there were 1 fatal accident, 4 non-fatal accidents and 6 serious incidents in 2017, leading to 6 fatalities and 3 serious injuries.

In specialised operations/aerial work operations there were 3 fatal accidents, 12 non-fatal accidents and 5 serious incidents in 2017, leading to 4 fatalities and 5 serious injuries. The number of serious incidents was considerably higher than the average of the preceding 10-year period.

In non-commercial operations there were 3 fatal accidents, 22 non-fatal accidents and 8 serious incidents in 2017, leading to 7 fatalities and 11 serious injuries. The number of fatal accidents decreased in 2017 compared to 2016 and the 10-year average. There were also fewer non-fatal accidents and serious incidents in 2017 compared to 2016 and to the 10-year average.

The European SRM process has identified opportunities to improve risk controls in the following areas so that accident numbers will decrease. Through the offshore helicopter Collaborative Analysis Group (CAG) there has been specific work in this area of helicopter operations that has identified both some additional work to existing actions as well as a small number of specific actions within this domain.

These are identified within each action. The strategic priorities for helicopter operations are:

— helicopter upset in flight (loss of control)

This is key risk area with the highest priority in offshore and CAT helicopter operations. Loss of control for offshore helicopters generally falls into two scenarios, technical failure that renders the aircraft uncontrollable or human factors. In addition it is the second most common accident outcome for aerial work operations.

— terrain and obstacle conflict





This is the second priority key risk area for offshore helicopter operations, although equipment is now fitted to helicopters in this domain that will significantly mitigate the risk of this outcome. Obstacle collisions is the second most common accident outcome in the CAT helicopters domain (4 fatal accidents in the past 10 years). This highlights the challenges of HEMS operations and their limited selection and planning for landing sites. Terrain and obstacle conflict is the most common outcome for aerial work operations (11 fatal accidents in the past 10 years).

In addition to the risk identified above and trying to tackle other safety aspects of Rotorcraft operations, EASA has decided to launch in 2018 an external Task Force to deliver a roadmap with the objective to increase Rotorcraft Safety in the short, medium and long term. This roadmap will be the backbone of the Rotorcraft related actions in EUR RASP for 2019-23. The [EASA Rotorcraft Safety Symposium](#) organised in December 2017 (11th edition) gathered the rotorcraft community around safety issues and provided an opportunity to discuss further initiatives to improve rotorcraft safety. Consequently the roadmap specifies 3 objectives:

- 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

### 2.2.3 Address safety risks in GA in a proportionate and effective manner

In the last years, accidents involving recreational aeroplanes have led to an average of 92 fatalities per year in Europe (based on 2007-2016 figures, excluding fatal accidents involving microlight airplanes), which makes it one of the sectors of aviation with the highest yearly number of fatalities. Furthermore, in 2017, there were 34 accidents causing 62 fatalities in non-commercial operations with aeroplanes and 25 fatal accidents causing 27 fatalities in the domain of sailplane operations (2007-2016 average is 29 fatalities per year in Europe). These two areas present the highest numbers of fatal accidents in 2017. The GA roadmap is key to the EASA strategy in this domain.

Although it is difficult to precisely measure the evolution of safety performance in GA due to lack of consolidated data (e.g. accumulated flight hours), it is reasonable to assume that more initiatives and efforts are needed to mitigate risks leading to these fatalities.

## 2.3 Safe integration of new technologies and concepts

Establishing and maintaining a high uniform level of civil aviation safety remains the highest objective. A more integrated approach will be allowed in the future to the introduction of new technologies and concepts. To continue to maintain the highest possible safety standards in the future to come, such integrated approach considering the total aviation system will be essential.

### 2.3.1 Ensure the safe operation of drones

The number of drones within the EU has multiplied over the last two years. Available data shows the increase of drones coming closer to manned aviation (both aeroplanes and helicopters), thereby confirming the need to mitigate the associated risk — 10 non-fatal accidents were included in the European Central Repository in 2017 and the number of high risk incidents reported significantly increased over the last 5 years.

As technology advances, consistent requirements and expectations in an already crowded airspace will help manufacturers to design for all conditions and make it easier for operators to comply with requirements.

There is a need to establish unmanned traffic management (UTM) systems (named 'U-space' in Europe). There has been a huge development of U-space during the last year and it is expected that this will develop even faster in the years to come. An addendum to the ATM MP was published including details about the integration of UAS in airspace.





### 2.3.2 New operating concepts and business models

Some new business models such as those responding to the increased demand for flying in the cities, ‘Urban Air Mobility’, or those generated by the increased digitalisation in the aviation industry, the introduction of more autonomous vehicles and platforms, single pilot operations and completely autonomous cargo aircraft, will challenge the way authorities regulate and oversee the aviation system.

Until now the air travel over urban areas has been limited to very special operations, such as police operations or helicopter emergency medical services (HEMS). New aviation partners are seeking new business models to provide more services to citizens, ranging from parcel delivery by air within the cities to flying air taxis. These new business models and operations need to be performed in a safe and secure manner to maintain the confidence that citizens have in the air transport system.

### 2.3.3 Enable all-weather operations

The European industry should have the capability to take full advantage of the safety and economic benefits generated through new technologies and operational experience. This represents a widely recognised interoperability subject touching on a wide range of areas, including ADR minima, ADR equipment, and procedures both for CAT and GA.

Aircraft operations have always been influenced by the weather. Whilst modern aircraft design and the availability of weather observations and forecasts contribute to a predominantly very safe flying environment, there remain occasions where severe weather events have been identified as being a contributing factor in the causal chain of accidents and incidents. Such events remain of concern within the aviation community and corresponding safety recommendations have been addressed to EASA by accident investigating authorities.

Since 2015, EASA has increased its focus on weather related challenges and, as part of that work, has sought to identify if the meteorological information available to pilots could be enhanced. Accordingly, EASA organised a first workshop dedicated to ‘Weather information provided to pilots’. Following the workshop and the recognised need to take further action, EASA integrated the ‘Weather Information to Pilots’ project within the ‘All Weather Operations’ (AWO) activities. A project team launched in April 2016 resulted in the ‘Weather Information to Pilots Strategy Paper’ issued in January 2018<sup>1</sup>. The EASA Strategy Paper focuses on the weather phenomena that introduce risk to aviation, describes the current mitigation measures, the deficiencies and how to overcome them. The scope of the paper is focusing on CAT aeroplanes. In the near future similar work will be undertaken to address weather information to pilots in General Aviation and Rotorcraft operations.

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<sup>1</sup> <https://www.easa.europa.eu/sites/default/files/dfu/EASA-Weather-Information-to-Pilot-Strategy-Paper.pdf>



### 3 EUR Safety Metrics and Targets

	Metric	Target
ST1 – Accident rate in commercial air transport	Moving five-year regional average accident rate ( <i>for aircraft of a maximum certificated mass of over 5700 kg in scheduled operations</i> ) Moving five-year regional average for absolute number of accidents ( <i>for aircraft of a maximum certificated mass of over 27000 kg in scheduled operations</i> )	Reduce by end 2019 compared with the average regional accident rate for the 2013-2017 period
ST2 – CAA resources	Yearly regional average EIs for PQs related to the financial and human resources of the CAAs	Increase by end 2019 compared with the average regional EI level for these PQs for 2017
ST3 – Certification, surveillance and resolution of safety concerns	Yearly regional average EIs for PQs related to CE-6, CE-7 and CE-8 in the PEL, OPS, AIR, ANS and AGA areas	Increase by end 2019 compared with the average regional EI level for these PQs for 2017
ST4 – SSC resolution	1. Number of unresolved SSC in the Regions 2. Number of new SSCs not resolved within 2 years from publications in ICAO Electronic Bulletin	1. 0 • 2. 0
ST5 – SSP implementation	Yearly results from State's SSP gap analysis – using tool published by ICAO on the ISTAR SPACE website	All States to have implemented SSPs by end 2019 ( <i>as per information uploaded by States on ICAO ISTAR SPACE website, with the pre-requisite that the State should have an average EI above 60%</i> )
ST6 – Accident investigations	Yearly regional rate of accidents, as reported to ICAO, in commercial air transport for which an investigation has been launched by the State of occurrence according, or delegated by that State to another State or to a Regional Accident Investigation Organisation	Improve by end 2019 compared with the regional rate for 2017

**Table:** Safety metrics and targets as defined by RASG-EUR.



## 4 Safety Actions

The actions in this section are driven principally by the need to maintain or increase the current level of safety in the EUR region and reflect the strategic priorities identified.

### 4.1 Systemic enablers

This area addresses system-wide problems that affect aviation as a whole. In most scenarios, these problems become evident by triggering factors and play a significant role in the final outcome of a safety event. They often relate to deficiencies in organisational processes and procedures.

#### 4.1.1 Safety management

##### Issue/rationale

Management of safety in a systematic and proactive way enables authorities and organisations to set up management systems that take into consideration potential hazards and associated risks before aviation accidents occur. This global move is at the core of ICAO Annex 19. This safety area will enable further work to improve reporting processes, occurrence investigation at organisational level, and also the continued development of integrated data collection taxonomies.

##### What we want to achieve

Work with authorities and organisations to implement safety management.

##### How we monitor improvement

Regulatory framework requiring safety management is in place across all aviation domains, and organisations and authorities are able to demonstrate compliance.

##### How we want to achieve it: example actions

##### Rulemaking

	<b>Embodiment of safety management system (SMS) requirements into applicable State's legislation</b>
<b>RMT.0251</b>	With reference to ICAO Annex 19, the objective is to set up a framework for safety management in the initial and continuing airworthiness domains
	<b>Assessment of changes to functional systems by service providers in ATM/ANS and the oversight of these changes by CAAs</b>
<b>RMT.0469</b>	Development of the necessary requirements and guidance material for the service providers and the CAAs.
	<b>Update of State Safety Programme including requirements to the safety management systems of service providers</b>
<b>RMT.0706</b>	Address relevant elements of the ICAO Annex 19 considering the latest revision status of the document and ensure appropriate horizontal harmonisation of the requirements across different domains taking on board lessons learned.
	<b>Implement requirements and guidance material on occurrence reporting</b>
<b>RMT.0681</b>	Development of the necessary requirements and guidance material for the service providers and the CAA personnel on establishing and effective operation of the mandatory and voluntary reporting systems in line with A19 Chapter 5 and Appendix 3 and considering applicable legislation.



## Safety Promotion

**MST.  
001**

### **States to give priority to the work on SSPs**

In the implementation and maintenance of the SSP, States shall in particular:

- ensure effective implementation of the Annex 19 Requirements and address deficiencies in oversight capabilities, as a prerequisite for effective SSP implementation,
- ensure effective coordination between State authorities having a role in safety management,
- ensure that inspectors have the right competencies to support the evolution towards risk- and performance based oversight,
- ensure that policies and procedures are in place for risk- and performance based oversight, including a description of how an SMS is accepted and regularly monitored,
- establish policies and procedures for safety data collection, analysis, exchange and protection,
- establish a process to determine safety performance indicators at State level addressing outcomes and processes,
- ensure that an approved SSP document is made available and shared with other States,
- ensure that the SSP is regularly reviewed and that SSP effectiveness is regularly assessed.

**MST.002**

### **Promotion of SMS**

States should encourage dissemination and implementation of safety promotion material developed by the Safety Management International Collaboration Group (SMICG) and other relevant sources.

### **States should maintain a regular dialogue with their national aircraft operators on flight data monitoring (FDM) programmes**

States should maintain a regular dialogue with their operators on flight data monitoring (FDM) programmes, with the objectives of:

**MST.003**

- promoting the operational safety benefits of FDM and the exchange of experience between subject matter experts,
- encouraging operators to make use of good practice documents produced by EOFDM, IE-FDG and similar safety initiatives.

**MST.026**

### **SMS Assessment**

States should make use of the available tools (for example, EASA Management System assessment tool, CANSO Standards of Excellence in Safety Management Systems, etc) to support risk- and performance based oversight. States should provide feedback to the tool developers on how it is used, for the purpose of standardisation and continual improvement of the assessment tool. States should regularly monitor status of compliance with SMS requirements of their industry.

**MST.028**

### **States to establish and maintain a National Aviation Safety Plan (NASP)**

States should ensure that a NASP is maintained and regularly reviewed.

States should identify in SPAS the main safety risks affecting their national civil aviation safety system and shall set out the necessary actions to mitigate those risks.

In doing so, States should consider the pan-European safety risk areas identified in EUR RASP for the various aviation domains as part of their SRM process and, when necessary, identify suitable mitigation actions within their NASP. In addition to the actions, NASP shall also consider how to measure their effectiveness. States should justify why action is not taken for a certain risk area identified in EUR RASP.

The pan-European safety risk areas in the current EUR RASP edition are as follows:

- For CAT by aeroplane: aircraft upset in flight, runway safety, airborne conflict, ground safety, terrain collision, and aircraft environment
- For rotorcraft operations: helicopter upset in flight and terrain and obstacle conflict
- For General Aviation: staying in control, coping with weather, preventing mid-air collisions and managing the flight

NASP should:



- describe how the plan is developed and endorsed, including collaboration with different entities within the State, with industry and other stakeholders (unless this is described in the SSP document),
- include safety objectives, goals, indicators and targets (unless these are included in the SSP document),
- reflect the EUR RASP actions as applicable to the State,
- identify the main safety risks at national level in addition to the ones identified in EUR RASP.

**SMS international cooperation**

**SPT.057**

States should promote the common understanding of safety management and human factors principles and requirements in different countries, share lessons learned and encourage progress and harmonisation, through active participation in the SMICG, RASG-EUR and other safety groups and fora.

**FDM precursors of main operational safety risks**

**SPT.076**

States in partnership with EASA, industry, other regional and international organizations should complete the good practice documentation which supports the inclusion of main operational safety risks such as RE, RI, LOC-I, CFIT and MAC into operators' FDM programmes.

**Good practices for the integration of operator's FDM data with other safety data sources**

**SPT.077**

States in partnership with EASA, industry, other regional and international organizations should establish good practices that help an operator in integrating its FDM data with other safety data sources.

## 4.1.2 Human factors and competence of personnel

### Issue/rationale

Human factors and competence of personnel are a strategic priority. As new technologies emerge on the market and the complexity of the system continues increasing, it is of key importance to have the right competencies and adapt training methods to cope with new challenges. It is equally important for aviation personnel to take advantage of the safety opportunities presented by new technologies.

The safety actions related to aviation personnel are aimed at introducing competency-based training in all licences and ratings, updating fatigue risk management (FRM) requirements and facilitating the availability of adequate personnel in CAs. These actions will contribute to mitigating safety issues such as personal readiness, flight crew perception or CRM and communication, which play a role in improving safety across all aviation domains.

### What we want to achieve

Ensure continuous improvement of aviation personnel competence.

### How we monitor improvement

Measurable improvement in aviation personnel competence at all levels (flight crews, ATCOs and CAAs).

### How we want to achieve it: example actions

#### Rulemaking

**Extend competency-based training to all licences and ratings and extension of Threat and error management (TEM principle to all licences and ratings)**

**RMT.0194**

The principles of CBT shall be transferred to all licences and ratings, and the multi-crew pilot licence (MPL) should be reviewed in order to address the input from the ICAO MPL symposium and the European MPL Advisory Board. Some action items for the GA, such as modular training and CBT, should be addressed as well.

**Improve flight simulation training devices (FSTDs) fidelity**

**RMT.0196**

An ICAO harmonisation issue, as the main purpose is to include in the applicable legislation elements from ICAO Doc 9625 for the use of FSTDs in flight training. The task will also address three safety recommendations (SRs) and aims at including results and findings from the loss of control avoidance and recovery training (LOCART) and other working group results. Harmonisation with the Federal Aviation Administration (FAA) should be considered.

Subtask 1 –increase the fidelity of the provisions to support the approach-to-stall training, as well as of the new upset prevention and recovery training (UPRT) requirements



Subtask 2 - review the technical requirements for training devices to reflect their actual capability and technology advancement.

Subtask 3- address any relevant and appropriate emerging issues including the feasibility for developing FSTD requirements for Power-lift/Tilt rotor aircraft.

**RMT.0486 Align with ICAO SARPs on ATCO fatigue management provisions**

Align with ICAO SARPs on the subject provisions.

**Implement preventive measures in the field of aircrew medical fitness**

- RMT.0700** (1) carrying out a psychological assessment of the flight crew before commencing line flying;  
(2) enabling, facilitating and ensuring access to a flight crew support programmes; and  
(3) performing systematic drug and alcohol (D&A) testing of flight and cabin crew upon employment.

**RMT.NEW Addressing human factors in SMS**

**01** Develop regulatory requirements and guidance material on how to address human factors issues as part of safety management, in particular while performing management of change and analysing safety data

**RMT. Ensure English Language Proficiency (ELP)**

**NEW02** Review and improve existing regulatory requirements and guidance material for assessing the ELP for relevant categories of licence holders

### 4.1.3 Aircraft tracking, rescue operations and accident investigation

#### Issue/rationale

Safety investigation authorities have frequently raised the issue of lack of data to support investigations of light aircraft accidents. This is also related to the fact that light aircraft are not required to carry a flight recorder. As regards large aircraft, the advent of new technologies, as well as findings during safety investigations highlight the need to update the installation specifications for flight recorders.

The safety actions in this area are aimed at introducing normal tracking of large aircraft, improving the availability and quality of data recorded by flight recorders, assessing the need for in-flight recording for light aircraft and the need to introduce data link recording for in-service large aircraft.

#### What we want to achieve

Increase safety by facilitating the recovery of information by safety investigation authorities and thus helping to avoid future accidents.

#### How we monitor improvement

Number of investigated accidents or serious incidents in which flight data is not recovered

#### How we want to achieve it: example actions

#### Rulemaking

**RMT.0400 Amendment of requirements for flight recorders and underwater locating devices**

Amend applicable regulations to comply with latest ICAO requirements for flight recorders and underwater locating devices

**RMT. Provision of Search and Rescue services**

**NEW03** Review and improve existing regulatory requirements and guidance material for the establishment and safety oversight of Search and Rescue services

### 4.1.4 Impact of security on safety

#### Issue/rationale

The safety actions in this area are aimed at mitigating the security related safety risks.

The safety actions in this area also include the mitigation of the risks posed by flying over zones where an armed conflict exists.

Managing the impact of security on safety is a strategic priority.

#### What we want to achieve



Increase safety by managing the impact of security on safety and mitigating related safety risks.

**How we monitor improvement**

Continuous assessment and mitigation of security threats.

**How we want to achieve it: actions**

**Rulemaking**

**RMT.0720 Cybersecurity risks**

Create a regulatory system which efficiently contributes to the protection of the aviation system from cyber-attacks and their consequences. To achieve this objective it is proposed to introduce a regulation covering all the aviation domains (design, production, maintenance, operations, aircrew, ATM/ANS, ADRs), which include high-level, performance-based requirements, and which is supported by AMC/GM material and Industry Standards.

**Safety Promotion**

**Strategy for Cybersecurity in Aviation**

Citizens travelling by air are more and more exposed to cybersecurity threats. The new generation of aircraft have their systems connected to the ground in real time. Air traffic management technologies require internet and wireless connections between the various ground centres and the aircraft. The multiplication of network connections increase the vulnerability of the whole system.

In order to address those concerns, a Strategy for Cybersecurity in Aviation will be developed. This strategy will include, among others, actions in the following areas:

- Information sharing
- Research and studies
- Event investigation and response
- Knowledge and competence building
- International cooperation and harmonization
- Regulatory activities and development of Industry Standards

**Disseminate information on conflict zones**

Define further actions to be taken at European level in order to provide common information on risks arising from conflict zones.

**Safety Promotion on Disruptive Passengers**

Develop Safety Promotion to support operators with the reduction of the risks associated with Disruptive/ Unruly Passengers.

**4.1.5 Oversight and Standardisation**

**Issue/rationale**

This section includes actions focusing on supporting the implementation of requirements to the establishment of necessary safety oversight capacities by updating inspector qualifications, enabling the implementation of risk-based oversight, supporting and fostering the implementation of cooperative oversight through the sharing of best practices and guidance, dedicated workshops, etc.

The increased complexity of the aviation industry and the number of interfaces between organisations call for improved cooperation between them, their contracted services and regulators.

**What we want to achieve**

A robust oversight system across Europe, where each CAA is able to properly discharge its oversight responsibilities, with particular care to exchange of information and cooperation with other CAAs and to the implementation of management systems in all organisations, as well as to ensure the availability of adequate personnel in CAAs.

**How we monitor improvement**





Significant increase the number of States implementing risk-based oversight as well as increase in the number of States making use of the cooperative oversight provisions for organisations/persons certified by the CAA of another State.

#### **Rulemaking**

##### **RMT.0516 Update of the rules on air operations (Air OPS Regulation — all Annexes & related AMC/GM)**

Improve the CAA organization structure and organisational requirements in the area of the Air OPS Regulation taking into account identified implementation issues;

- Better identify inspector qualifications;
- Take into account new business models, as appropriate;
- Take into account the development of any lessons learned from the implementation of SMS;
- Ensure compliance with the ICAO Standards And Recommended Practices (SARPs);
- Address identified safety issues such as pax seating and briefing;



## 4.2 CAT by aeroplane

During 2017, there were no fatal accidents involving EU AOC Holders performing CAT passenger/cargo operations with aeroplanes having a maximum take-off weight above 5700 kg (hereafter referred to as 'CAT aeroplane operations'). In this category, there were 15 non-fatal accidents, however, the number of non-fatal accidents was lower than the average of the previous 10-year period.

In 2017 the number of serious incidents in this category increased in comparison to the average of the previous 10-year period, with 99 serious incidents recorded in 2017 in comparison to the 10-year period average of 79,2.

This operational domain remains the greatest focus of the EASA safety activities. The collaborative analysis groups (CAGs) and Advisory Bodies will help EASA to learn more about the safety challenges faced by airlines and manufacturers.

### 4.2.1 Aircraft upset in flight (LOC-I)

#### Issue/rationale

Loss of control usually occurs because the aircraft enters a flight regime which is outside its normal envelope, usually, but not always, at a high rate, thereby introducing an element of surprise for the flight crew involved. Loss of control is a strategic priority.

#### What we want to achieve

Continuously assess and improve risk controls to mitigate the risk of loss of control.

#### How we monitor improvement

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT airline and NCC business aeroplane operations (ref: ASR 2018, Section 2.1).

#### How we want to achieve it: example actions

#### Rulemaking

##### RMT.0581

#### Loss of control prevention and recovery training

Review of the provisions for initial and recurrent training in order to address upset prevention and recovery training (UPRT). The review will also address the implementation of the ICAO provisions (namely Annex 1, Annex 6 part I, PANS-TRG, Doc 9868, Doc 10011, Doc 9625). Other aspects to be covered are manual aircraft handling of approach to stall and stall recovery (including at high altitude), the training of aircraft configuration laws, the recurrent training on flight mechanics, and training scenarios (including the effect of surprise).

#### Safety Promotion

##### SPT.012

#### Promote the provisions on pilot training

The objective is to complement the new regulatory package on UPRT with relevant safety promotion material.

### 4.2.2 Runway safety

#### Issue/rationale

This section deals with runway excursions, runway incursions and runway collisions and is a strategic priority.

Runway excursion covers materialised 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-centred or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing. Runway excursions account for 81 high risk occurrences recorded on the period 2013-2017 in CAT aeroplane and business operations.



Runway incursion refers to the incorrect presence of an aircraft, vehicle or person on an active runway or in its areas of protection. Their accident outcome, runway collisions, account for 28 high risk occurrences recorded in the period 2013-2017. Despite the relatively low number, the risk of the reported occurrence demonstrated to be very real.

**What we want to achieve**

Continuously assess and improve risk controls to mitigate the risk of REs and RIs.

**How we monitor improvement**

Continuous monitoring of safety issues identified in the ATM and Aerodrome risk portfolio (currently under development)

**How we want to achieve it: example actions**

**Rulemaking**

**RMT.0296 Review of aeroplane performance requirements for operations**

- Develop regulatory material to provide improved clarity, technical accuracy, flexibility or a combination of these benefits for the operational requirements on aeroplane performance in air operations with the aim of reducing the number of accidents and serious incidents where aeroplane performance is a causal factor; and
- Contribute to the harmonisation of the FAA and EU operational requirements on aeroplane performance in CAT operations.

**RMT.0570 Reduction of runway excursions**

The objective of this task is to increase the level of safety by reducing the number of REs through mandating existing technologies on aeroplane that allow to measure remaining runway left and thus support pilot-decision-making. Put more emphasis on safety objectives against the risk of REs, while providing more flexibility in terms of design solutions. The means to achieve these objectives will be provided in a technical standard developed jointly by industry and CAAs with the support of an international standardisation bodies (like EUROCAE).

**RMT.0703 Runway safety**

European Action Plans for the Prevention of Runway Incursions (EAPPRI) and Excursions (EAPPRE) contain several recommendations to CAAs, aerodrome (ADR) operators and EASA in order to mitigate the risks. Those actions should be reviewed to be included into relevant regulatory provisions. This includes revision and update of relevant regulations and guidance material to incorporate relevant changes of Annex 14 and PANS ADRs.

**RMT.0722 Provision of aeronautical data by the ADR operator**

Revision and update of relevant regulations and guidance material in order to include the provisions of Chapter 2 of ICAO Annex 14 and the provisions of ICAO Annex 15 in regards to the provision of aeronautical data by the ADR operator.

### 4.2.3 Airborne conflict (Mid-air collisions)

**Issue/rationale**

Airborne conflict refers to the potential collision of two aircraft in the air. It includes direct precursors such as separation minima infringements, genuine TCAS resolution advisories or airspace infringements. Although there have been no CAT aeroplane airborne collision accidents in recent years within the EASA States, this key risk area has been raised by a number of States at the Network of Analysts (NoA) and also by some airlines, specifically in the context of the collision risk with aircraft without transponders in uncontrolled airspace. This is one specific safety issue that is a main priority in this key risk area. The risk scoring of accident and serious incidents highlights the continued risk of this type of accident..

**What we want to achieve**

Continuously assess and improve risk controls to mitigate the risk of mid-air collisions.

**How we monitor improvement**

Increase safety by continuously monitoring safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC business aeroplane operations (see ASR 2018, Section 2.1).

**How we want to achieve it: example actions**



## Safety Promotion

### **MST.024 Loss of separation between civil and military aircraft**

Several States have reported an increase in losses of separation involving civil and military aircraft and more particularly an increase in non-cooperative military traffic over the high seas. The States should consider implementation of the following recommendations :

- endorse and fully apply Circular 330;
- closely coordinate to develop, harmonise and publish operational requirements and instructions for state aircraft to ensure that 'due regard' for civil aircraft is always maintained;
- develop and harmonise civil/military coordination procedures for ATM at EU level, as minimum;
- report relevant occurrences to the authorities ; and
- facilitate/make primary surveillance radar data available in military units to civil ATC units. The States are called to follow-up on the recommendations and provide feedback on the implementation.

## 4.2.4 Design, production and maintenance improvements

### **Issue/rationale**

Design, production and maintenance improvements may limit the probability and or severity of technical failures. Many fatal accidents involve some sort of technical failure, in many cases not properly managed during flight, thus making it a precursor of other types of accident. This does not necessarily mean that the technical failure was the direct cause of the accident, but that a system component failure was identified in the sequence of events of 1 of the 5 fatal accidents in CAT Aeroplanes during the past 10 years (out of a total of 11). This could be an engine failure, an avionics system failure or some other recoverable technical failure. The cause of the accident is usually the result of a combination of circumstances and events that can only be understood after reading the investigation report. Specific analysis work is ongoing to identify the systemic safety issues that may be present in the domains of design, production and maintenance . Non-accident data will be used for the analysis.

### **What we want to achieve**

Continuously assess and improve risk controls related to design, production and maintenance

### **How we monitor improvement**

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC Business aeroplane operations (see ASR 2018, Section 2.1).

### **How we want to achieve it: example actions**

#### **Rulemaking**

##### **RMT.0097 Functions of B1 and B2 support staff and responsibilities**

Introduce principles for increased robustness of the maintenance certification process eliminating potential 'safety gaps' by clarifying the roles and responsibilities of certifying staff, support staff and 'sign-off' staff, both in line and base maintenance.

##### **RMT.0276 Technical records**

Clarification of criteria for preventing incomplete records. Incomplete records may lead to a wrong assessment of the airworthiness status of the product with a consequent safety risk, development of back-to-birth concept, components traceability, and use of radio frequency identification devices (RFID).

##### **RMT.0393 Maintenance check flights (MCFs)**

Establish operational requirements and crew competence criteria for the performance of maintenance check flights to reduce the probability of incidents and accidents of this type of flights. This will apply not only for AOC holders, but also for any operator performing these flights.

## Safety Promotion



**SPT.104**

**Develop new Safety Promotion material on high profile maintenance safety issues**

Develop new Safety Promotion material on high profile safety issues in the maintenance domain. Such high profile safety issues are to be determined from important risks identified from the Safety Risk Management process, accidents/ serious incidents and inputs from EASA stakeholders.

## 4.2.5 Ground safety

**Issue/rationale**

This risk area includes all ground-handling and apron management-related issues (aircraft loading, de-icing, refuelling, ground damage etc.) as well as collision of the aircraft with other aircraft, obstacles or vehicles while the aircraft is moving on the ground, either under its own power or being towed. It does not include collisions on the runway. While it was not the accident outcome for any fatal accidents in the past years, the risk score warrants its inclusion as a key risk area in this domain.

**What we want to achieve**

Continuously assess and improve risk controls to mitigate the risks in the area of ground safety.

**How we monitor improvement**

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC Business aeroplane operations (ref: ASR 2018 Section 2.1)

**How we want to achieve it: example actions**

**Rulemaking**

**RMT.0728**

**Development of requirements for ground handling**

Develop a regulatory framework and guidance for the safety of ground handling. This shall consider operational requirements, organisational requirements and authority requirements, as deemed necessary. Detailed objectives and actions will be defined by a GH Roadmap that will be subject to a focused



**SPT.102**

**Develop new Safety Promotion material on high profile aerodrome and ground handling safety issues**

Develop new Safety Promotion material on high profile safety issues for aerodromes and ground handling. Such high profile safety issues are to be determined from important risks identified from the Safety Risk Management process, accidents/ serious incidents and inputs from EASA stakeholders.

#### 4.2.6 Terrain collision

**Issue/rationale**

This risk area includes the controlled collision with terrain together with undershoot or overshoot of the runway during approach and landing phases. It comprises those situations where the aircraft collides or nearly collides with terrain while the flight crew has control of the aircraft. It also includes occurrences which are the direct precursors of the fatal outcome, such as descending below weather minima, undue clearance below radar minima, etc.

**What we want to achieve**

Continuously assess and improve risk controls to mitigate the risk of controlled flight into terrain.

**How we monitor improvement**

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC Business aeroplane operations (ref: ASR 2018, Section 2.1).

**How we want to achieve it: actions**

**Rulemaking**

**RMT.0371 TAWS operation in IFR and VFR and TAWS for turbine-powered aeroplanes under 5 700 kg MTOM able to carry six to nine passengers**

Develop a regulatory framework for:

- mitigation of the risks of accidents categorised as CFIT in turbine-powered aeroplanes having a maximum certified take-off mass (MCTOM) below 5 700 kg or a maximum operational passenger seating configuration (MOPSC) of more than five and not more than nine; and
- improvement of the terrain awareness warning system (TAWS) efficiency in reducing CFIT accidents.

#### 4.2.7 Miscellaneous

**Issue/rationale**

This section gathers the actions too broad to be classified in only one category because they impact multiple aviation domains while involving different types of actions. The need of having such category was driven by the constant development of EUR RASP towards new safety areas.

**What we want to achieve**

To increase safety with a combination of actions that addresses more than one issue.

**How we monitor improvement**

RASG-EUR members and partners will give feedback on the effectiveness of the activities.

**How we want to achieve it: actions**

**Safety Promotion**

**SPT.101**

**Develop new Safety Promotion material on high profile commercial flight operations safety issues**

Develop new Safety Promotion material on high profile commercial flight operations safety issues. Such high profile safety issues are to be determined from important risks identified from the Safety Risk Management process, accidents/ serious incidents and inputs from stakeholders.



**SPT.103**

**Develop new Safety Promotion material on high profile ATM safety issues**

Develop new Safety Promotion material on high profile safety issues for ATM. Such high profile safety issues are to be determined from important risks identified from the Safety Risk Management process, accidents/serious incidents and inputs from stakeholders.





## 4.3 Rotorcraft operations

### Issue/rationale

This area includes four types of operations:

- offshore operations (part of CAT),
- other CAT operations by holders of an AOC,
- specialised operations/aerial work operations; and
- non-commercial operations (certified helicopters registered in an State or State of Operator).

In the CAT offshore helicopter domain, there were no fatal or non-fatal accidents in 2017 and 2 serious incidents, which is above the 10-year average for serious incidents. Prior to 2017, there has been one fatal accident in 2016 and another fatal accident in 2013.

In other CAT helicopter operations there were 1 fatal accident, 4 non-fatal accidents and 6 serious incidents in 2017, leading to 6 fatalities and 3 serious injuries.

In specialised operations/aerial work operations there were 3 fatal accidents, 12 non-fatal accidents and 5 serious incidents in 2017, leading to 4 fatalities and 5 serious injuries. The number of serious incidents was considerably higher than the average of the preceding 10-year period.

In non-commercial operations there were 3 fatal accidents, 22 non-fatal accidents and 8 serious incidents in 2017, leading to 7 fatalities and 11 serious injuries. The number of fatal accidents decreased in 2017 compared to 2016 and the 10-year average. There were also fewer non-fatal accidents and serious incidents in 2017 compared to 2016 and to the 10-year average.

The European SRM process has identified opportunities to improve risk controls in the following areas so that accident numbers will decrease. Through the offshore helicopter Collaborative Analysis Group (CAG) there has been specific work in this area of helicopter operations that has identified both some additional work to existing actions as well as a small number of specific actions within this domain.

These are identified within each action. The strategic priorities for helicopter operations are:

- helicopter upset in flight (loss of control)

This is key risk area with the highest priority in offshore and CAT helicopter operations. Loss of control for offshore helicopters generally falls into two scenarios, technical failure that renders the aircraft uncontrollable or human factors. In addition it is the second most common accident outcome for aerial work operations.

- terrain and obstacle conflict

This is the second priority key risk area for offshore helicopter operations, although equipment is now fitted to helicopters in this domain that will significantly mitigate the risk of this outcome. Obstacle collisions is the second most common accident outcome in the CAT helicopters domain (4 fatal accidents in the past 10 years). This highlights the challenges of HEMS operations and their limited selection and planning for landing sites. Terrain and obstacle conflict is the most common outcome for aerial work operations (11 fatal accidents in the past 10 years).

### What we want to achieve

Continuously assess and improve risk controls in the above areas.

### How we monitor improvement

Continuous monitoring of safety issues identified in the specific safety risk portfolios established for offshore helicopter operations, for other CAT helicopter operations, for specialised helicopter operations and for non-commercial helicopter operations (ref: ASR 2018, Sections 3.1.2, 3.2.2, 3.3.2 and 3.4.2 respectively).

### How we want to achieve it: example actions

#### Rulemaking

##### RMT.0325 HEMS performance and public interest sites

To properly address the issues stemming from non-implementation or deviation from OPS regulatory requirements and public interest sites (PIS) provisions, in particular performance in high mountains considering review of HEMS flights at night safety level following a UK Safety Directive.



- RMT.0708    Controlled flight into terrain (CFIT) prevention with helicopter terrain avoidance warning systems (HTAWS)**  
Mandating HTAWS is expected to prevent between 8.5 and 11.5 CFIT accidents with fatalities or severe injuries within 10 years (medium safety improvement). This task will consider mandating the installation of HTAWS on board the helicopter for certain operations. This should only mandate HTAWS to be retrofitted to the current fleet if HTAWS standards are improved. An appropriate impact assessment for retrofit will need to be further developed. The cost effectiveness analysis should be performed to identify operations that should not to be considered for the mandate.
- RMT.0724    Rotorcraft Flight Crew Operating Manuals (FCOMs)**  
The objective of this task is to improve the operating information provided to rotorcraft flight crew in the aircrew manuals. This could be achieved by standardising the structure and approach used to present operational information in Rotorcraft Manuals, thereby improving the clarity of this information.

### **Safety Promotion**

- MST.015    Helicopter safety events**  
CAAs, in partnership with industry representatives, to organise helicopter safety events annually or every two years. The IE-HOST, EHEST, IHST, CAA, Heli Offshore or other sources of Safety Promotion materials could be freely used and promoted.
- SPT.082    Support the development and implementation of FCOM for offshore helicopter operations**  
To provide support to manufacturers, if needed, in the development of Flight Crew Operational Manuals (FCOM) for different helicopter types and support/encourage operators in their implementation.
- SPT.093    Develop new Safety Promotion material on high profile helicopter issues**  
In cooperation with the IHST, develop new Safety Promotion material (leaflets, videos, applications, etc.) on subjects such as performance based navigation, Point in Space, low level IFR, bird strike, operational and passenger pressure management aimed at non-pilot owners of private helicopters.
- SPT.094    Helicopter safety and risk management**  
Review existing helicopter safety & risk management material to check consistency and update (when applicable) material to new rules, standards and international good practice coming for example from IHST and SM-ICG.



## 4.4 General Aviation: Aeroplane- leisure flying

This section covers General Aviation (GA) Non-Commercial Operations involving aeroplanes of mass groups below 5700 kg registered in an EASA State. Addressing safety risks in GA in a proportionate and effective manner is a strategic priority.

In the last years, accidents involving recreational aeroplanes have led to an average of nearly 80 fatalities per year in Europe (excluding fatal accidents involving microlight airplanes), which makes it one of the sectors of aviation with the highest yearly number of fatalities. Furthermore, in 2017, there were 34 accidents causing 62 fatalities in non-commercial operations with aeroplanes and 25 fatal accidents causing 27 fatalities in the domain of sailplane operations. These two areas present the highest numbers of fatal accidents in 2017. The GA roadmap is key to the EASA strategy in this domain.

Although it is difficult to measure precisely the evolution of safety performance in GA due to lack of consolidated data (e.g. accumulated flight hours), it is reasonable to assume that step changes in the existing safety level are not being achieved at European level, despite all initiatives and efforts.

### 4.4.1 Systemic enablers

#### Issue/rationale

This section addresses system-wide or transversal issues that affect GA as a whole and are common to several safety risk areas. In combination with triggering factors, transversal factors can play a significant role in incidents and accidents. Conversely, they also offer opportunities for improving safety across risk domains.

#### What we want to achieve

Reduce the number of fatalities in GA through the implementation of systemic enablers.

#### How we monitor improvement

Increase safety by continuously monitoring of safety issues identified in the GA fixed wing NCO Safety Risk Portfolio and the sailplane Safety Risk Portfolio (ref: ASR 2018, Section 5.1.2). **How we want to achieve it: example actions**

#### Safety Promotion

##### MST.025 Improve the dissemination of safety messages

Improve the dissemination of Safety Promotion and training material by authorities, associations, flying clubs, insurance companies targeting flight instructors and/or pilots through means such as safety workshops and safety days/evenings.

##### MST.027 Develop Just Culture in GA

CAs should include in their SSPs provisions for Just Culture in GA to encourage occurrence reporting and foster positive safety behaviours.

##### SPT.083 Flight instruction

Develop Safety Promotional material aimed at making more effective use and maximising the safety benefits of biennial class rating revalidation check flights with examiners and refresher training with flight instructors, including differences between aircraft types.

##### SPT.084 Promoting safety by improving technology

Encourage the installation and use of modern technology (e.g. weather information, moving maps, envelope protection, tablet applications, avoidance systems, angle of attack indicators, etc.).

### 4.4.2 Staying in control

#### Issue/rationale

This section addresses subjects such as flying skills, pilot awareness and the management of upset or stall at take-off, in flight, or during approach and landing, flight preparation, aborting take-off and going around. Staying in control prevents loss of control accidents. Loss of control usually occurs because the aeroplane enters a flight regime outside its normal envelope, thereby introducing an element of surprise for the flight crew involved. Loss of control accidents are both frequent and severe.



With 409 higher risk occurrences recorded in the period 2015 to 2017 aircraft upset including loss of control is the most significant key risk area for EASA States non-commercial operations with aeroplanes of mass groups below 5700 kg with an EASA State of Registry.

**What we want to achieve**

Reduce the risk of Loss of Control accidents.

**How we monitor improvement**

Continuous monitoring of safety issues identified in the GA-related safety risk portfolios (ref: ASR 2018). **How we want to achieve it: example actions**

**Safety Promotion**

**SPT.086 Campaign on staying in control**

Launch a campaign on staying in control covering topics such as aircraft performance, flight preparation and management, role of angle of attack, Threat and error management (TEM), upset and stall avoidance and recovery, and startle and surprise management.

The following Safety Promotion deliverables available on the EASA website:

- Loss of Control (LOC-I)
- Loss of Control (LOC-I) in Approach and Landing
- Loss of Control (LOC-I) at Take-Off
- Crosswind final turn

**4.4.3 Coping with weather**

**Issue/rationale**

This section addresses subjects such as entering IMC, icing conditions, carburettor icing, and poor weather conditions. Weather is an important contributing factor to GA accidents, often related to pilots underestimating the risks of changing weather conditions prior to take-off and during the flight, as weather deteriorates. Dealing with poor weather may increase pilot workload and affect situation awareness and aircraft handling. Decision-making can also be impaired, as a plan continuation bias may lead pilots to press on to the planned destination despite threatening weather conditions.

**What we want to achieve**

Reduce the number of weather-related accidents.

**How we monitor improvement**

Continuous monitoring of safety issues identified in the GA-related portfolios (ref: ASR 2018).

**How we want to achieve it: example actions**

**Safety Promotion**

**SPT.087 Weather awareness for pilots**

Produce safety promotion material (video) addressing subjects such as weather awareness, flight preparation, management and debrief, the use of flight information services (FIS), the benefits of using modern technology including cockpit weather information systems (including GPS integrated, mobile/4G connected apps, etc.), communication with ATC, inadvertent entry into IMC, TEM, and Human Factors (HF).

**SPT.088 Launch a Safety Promotion campaign promoting instrument flying for GA pilots**

Promote easier access of GA pilots to instrument flight rules (IFR) flying in order to ensure that the safety and efficiency benefits materialise across Europe.



#### 4.4.4 Preventing mid-air collisions

##### **Issue/rationale**

This section addresses subjects such as airspace complexity, airspace infringement and use of technology. Statistics show that MACs affect both novice and experienced pilots and can occur in all phases of flight and at all altitudes. However, the vast majority of them occur in daylight and in excellent meteorological conditions. A collision is more likely where aircraft are concentrated, especially close to aerodromes. Airspace infringements by GA aircraft into controlled airspace is an important related safety risk.

##### **What we want to achieve**

Reduce the risk of airspace infringement for GA.

##### **How we monitor improvement**

Continuous monitoring of safety issues identified in the GA-related portfolios (ref: ASR 2018).

##### **How we want to achieve it: actions**

##### **SPT.089 European Safety Promotion on Mid-Air Collisions (MAC) and airspace infringement**

Develop and implement a pan-European Safety Promotion campaign on preventing airspace infringement and reducing the risk of MAC including awareness of airspace complexity and the use of technology such as ADS-B out.

#### 4.4.5 Managing the flight

##### **Issue/rationale**

This section addresses subjects such as navigation, fuel management, terrain and obstacle awareness, and forced landings. Most accidents are the result of the pilot's actions, including decisions made while preparing the flight or due to changing circumstances during the flight. Pilot decisions including their ability to prioritise workload affect safety and survival of the aircraft and its occupants.

##### **What we want to achieve**

Reduce the number of fatalities in GA.

##### **How we monitor improvement**

Continuous monitoring of safety issues identified in the GA-related portfolios (ref: ASR 2018)

##### **How we want to achieve it: example actions**

##### **Safety Promotion**

##### **SPT.090 Fuel management for pilots**

Compile and disseminate to the community available material on fuel management.



## 4.5 Safe integration of new technologies and concepts

This section addresses the introduction of new technologies and innovative solutions, to support their safe integration into the aviation system.

While many of the technologies and innovations emerging in the aviation industry bear significant potential to further improve the level of safety, EPAS gives due consideration to the safety issues derived from new technologies, new operational concepts or novel business models.

In the ATM domain SESAR covers the development of new technologies for a better management of Europe's airspace and contributing to the Single European Sky goals and safety targets.

### 4.5.1 Civil drones (Unmanned Aircraft Systems)

#### Issue/rationale

Most of EU Member States adopted national regulations to ensure safe operations of UASs below MTOM of 150 kg. There are currently no harmonised rules at EU level, and UAS operations still depend on an individual authorisation from every MS, which is a burdensome administrative process that stifles business development and innovation. The New Basic Regulation extends the scope of the EU competence to regulate UAS below the MTOM of 150 kg, also to allow free circulation of UAS throughout the EU.

This task has multiple drivers due to its very nature. There are also very strong efficiency and level playing field aspects.

In order to ensure safe drones operations, it is extremely important to manage safe integration of drones in the airspace. SESAR Joint Undertaking (SJU) has worked together with support of EASA and all relevant stakeholders in the development of what is named U-space. U-space is a set of new services and specific procedures designed to support safe, efficient and secure access to airspace for large numbers of drones. In 2017 SJU prepared the U-space Blue Print describing the vision for U-space. In addition the European Roadmap for safe integration of drones in all airspace classes<sup>34</sup> was also prepared by SJU with EASA support and adopted by the EC.

#### What we want to achieve

To create a level playing field in all EU Member States, using an operation centric concept, which is proportionate and risk and performance-based, so that all companies can make best use of the UAS technologies to create jobs and growth while maintaining a high and uniform level of safety.

#### How we monitor improvement

In the latest edition of the EASA Annual Safety Review, a new safety risk portfolio for civil drones was created. This will be used to monitor the evolution of the safety issues in this area

#### How we want to achieve it: example actions

#### Rulemaking

##### RMT.0230 Introduction of a regulatory framework for the operation of drones

Development of regulatory framework for the three categories of RPAS defined:

- Open category: Low-risk operation not requiring authorisation or declaration before flight
- Specific operation category: Medium-risk operation requiring authorisation or declaration before flight
- Certified category: High-risk operation requiring certification process

Development of adequate rules to enable U-space implementation

#### Safety Promotion

##### SPT.091 European Safety Promotion on civil drones

Coordinate European activities to promote safe operation of drones to the general public.



#### 4.5.2 New business models

##### **Issue/rationale**

This section addresses risks related to new and emerging business models arising from the increased complexity of the aviation industry, the number of interfaces between organisations, their contracted services and regulators. Some new business models such as the increased demand for flying in the cities, Urban Air Mobility; the increased digitalisation in aviation systems, the introduction of more autonomous vehicles, platforms starting for single pilot operations and completely autonomous cargo aircraft will challenge the way authorities regulate and oversee the aviation system. CAA should work better together to evaluate whether the existing safety regulatory system adequately addresses current and future safety risks arising from new and emerging business models. EASA have established a working group of CAAs to assess airlines' emerging 'new' business models and to identify related safety risks posed to the aviation system.

Managing current and future safety risks arising from new and emerging business models is a strategic priority.

##### **What we want to achieve**

Increase safety by continuously assessing and mitigating risks posed by new and emerging business models.

##### **How we monitor improvement**

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

##### **How we want to achieve it: actions**

##### **Safety Promotion**

###### **MST.019 Better understanding of operators' governance structure**

CAAs to have a thorough understanding of operators' governance structure. This should in particular apply in the area of group operations.

Aspects to be considered include:

- extensive use of outsourcing,
- the influence of financial stakeholders, and
- controlling management personnel, where such personnel are located outside the scope of approval.

#### 4.5.3 New products, systems, technologies and operations

##### **Issue/rationale**

This section addresses the introduction of new designs, technologies or types of operation for which regulatory updates are needed, and highlights some of the most relevant trends that will influence aviation in the years to come.

##### **What we want to achieve**

Manage the safe introduction of new products, systems, technologies and operations and continuously assess and mitigate safety risks related to new designs, technologies or types of operation.

##### **How we want to achieve it: actions**

##### **Safety Promotion**

###### **MST.020 Loss of radar detection**

On 5 and 10 June 2014, there were several occurrences of radar losses from ATC displays in central Europe. These events resulted in reduced capacity in some of the affected ATC sectors, in introduction of flow measures and in delays. As this type of events may also have a serious impact on safety, EASA was mandated by the EC to perform a technical investigation and propose recommendations.

The technical investigation concluded that the source of the interference was a system or installation which over-interrogated the transponders on board aircraft not only at rates beyond their requirements but also beyond design limits.

States are encouraged to implement the recommendations of the technical report and to consider implementation of other mitigation techniques against loss of detection of aircraft as a result of secondary surveillance radar (SSR) over-interrogation.





#### 4.5.4 All Weather Operations (AWO)

##### Issue/rationale

AWO are currently addressed by regulations in the following aviation domains: airworthiness, air operations, aircrew, aerodromes, air traffic management (ATM)/air navigation services (ANS) as well as in the standardised European rules of the air (SERA). The existing rules in these domains have a number of deficiencies that need to be addressed. Work on AWO will allow to sufficiently address technological advancements, align with the ICAO SARPS (e.g. ICAO Annex 6 amendments introducing lower category (CAT) II and CAT III minima and the concept of operational credits in particular for operations with vision systems), increase consistency of rules across different domains, carry out cross-domain risk assessments, ensure that better weather information is provided to pilots, as well as harmonise with the FAA and other regulators.

##### What we want to achieve

Manage the safe introduction of new products, systems, technologies and operations and continuously assess and mitigate safety risks related to new designs, technologies or types of operation. The European industry should be enabled to take full advantage of safety and economic benefits generated through new technologies and operational experience.

##### How we monitor improvement

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

##### How we want to achieve it: actions

##### Rulemaking

##### RMT.0379 All Weather Operations

Review and update the all-weather operations (AWO) rules in all aviation domains, as regards:

- possibility of applying safety performance principle in redrafting of current rules with the aim of allowing a better integration of new and future technologies supporting AWO operations, as e.g. enhanced flight vision systems (EFVS), synthetic vision systems (SVS), synthetic vision guidance systems (SVGS), combined vision systems (CVS), head-up displays (HUD);
- conventional low visibility operations (LVO), such as instrument landing system (ILS)-based CAT II and CAT III approach operations or low visibility take-offs;
- other than AWO, such as CAT I operations using ILS, GLS or SBAS, or approach operations to higher minima using area navigation (RNAV)(GNSS), non-directional beacons (NDBs) or VHF omnidirectional ranges (VORs);
- miscellaneous items, such as the improvement of existing rules text and the transposition of the new ICAO approach classification;
- harmonisation with bilateral partners (e.g. FAA) to the extent possible;
- introduction of operations with operational credits not being yet part of ICAO regulatory system.

## 4.6 Efficiency/proportionality

Even if for some of the actions under this heading the link to safety is not immediately evident, at the end they will translate, directly or indirectly, into safety improvements.

#### 4.6.1 Aerodrome design and operations

##### Issue/rationale

Development of a framework commensurate with the complexity of ADR activities and management of potential risks.

##### What we want to achieve

Ensure safety with sufficient flexibility for ADR operators to adjust to local conditions.

##### How we monitor improvement

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

##### How we want to achieve it: example actions

##### Rulemaking

##### RMT.0638 Certification requirements for VFR heliports located at the international ADRs



**RMT.0705**

Ensure a high uniform level of safety at ADRs by aligning applicable regulations with ICAO Annex 14, Volume II, Heliports; develop necessary certification standards and guidance material for design and, if necessary, for operation and oversight of visual flight rules (VFR) heliports co-located at the international ADRs.

**Addition of a new requirement for the handling of dangerous goods at aerodromes**

Establish relevant regulatory requirements for ADR operators to designate appropriate areas for the storage of dangerous goods, establish methods for the delivery storage, dispensing and handling of dangerous goods at the ADR. Include requirement for ADR operators to train their personnel in the handling of dangerous goods, in the case that the ADR operator is acting as sub-contractor (handling agent) of air-operators.

## 4.6.2 ATM/ANS

### Issue/rationale

If ATM/ANS systems and their constituents are not successfully designed, manufactured, installed and put into operation, they may fail to support the provision of services to aircraft, as equipment may not deliver the necessary performance nor be operated as expected. In some cases, systems and constituents may not ensure the required interoperability with the aircraft segment either.

### What we want to achieve

To enable a cost-efficient conformity assessment of ATM/ANS systems and constituents that is harmonised with the requirement for changes to functional systems and that ensures interoperability. These procedures should contribute to ensure that ATM/ANS systems and constituents are fit for their intended purpose and guarantee fair competition, while facilitating the free movement of goods, persons and services.

After the adoption of the new rules, implementation issues associated with ATM/ANS systems and constituents should decrease, especially those related to lack of interoperability and performance that may have an impact on operations.

### How we monitor improvement

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

### How we want to achieve it: actions

### Rulemaking

**RMT.0445 Technical requirements and operating procedures for airspace design, including flight procedure design**

Development of the necessary organisational and technical requirements on airspace design, thus ensuring that the specific safety objectives of the Basic Regulation are met. Basically, the scope of the task is to establish the requirements for the design of flight procedures and ATS routes, to support the implementation of PBN operations and evaluate the need for extension to other airspace structures and flight procedure design. This will include an analysis of the need to include procedures for airspace design in the ATM/ANS certification scheme.

**RMT.0464 Requirements for air traffic services**

Transposition of the relevant ICAO provisions on ATSS contained in Annex 11 and other applicable ICAO Annexes and documents. The objective is to establish a sufficient level of harmonisation throughout the EUR, based on mandatory and flexible requirements, and to define proportionate and cost-efficient rules.

**RMT.0477 Technical requirements and operational procedures for aeronautical information services and aeronautical information management**

Development of the necessary harmonised requirements and guidance material for the provision of aeronautical information and data, mainly based on the transposition of ICAO Annex 15 and ICAO Annex 4.

## 4.6.3 Airlines (AOC holders in CAT)

### Issue/rationale

Passenger and cargo transport by airlines generate producer, consumer and wider economic benefits. Regulatory and administrative burden reduce these benefits and need therefore to be fully justified by corresponding safety benefits.

### What we want to achieve

Ensure an efficient regulatory framework for airlines.



#### **How we monitor improvement**

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

#### **How we want to achieve it: actions**

##### **Rulemaking**

##### **RMT.0190 Requirements for relief pilots**

Address the provisions for the use of relief pilots as regards experience, training, checking and crew resource management.



- RMT.0352 Non-commercial operations of aircraft listed in the operations specifications (OpSpecs) by an AOC holder**
- Identify the categories of flights considered to be non-commercial flights conducted by air operator certificate (AOC) holders;
  - Standardise the unofficial terms used in order to have a clear understanding of the different categories of non-commercial flights;
  - Specify standards for non-commercial operations of AOC holders related to the preparation, programme and operational framework, as appropriate;
  - Establish the minimum requirements for qualifications and training of the crews for each type of non-commercial flights conducted by AOC holders, as appropriate;
  - Harmonise implementation.

#### 4.6.4 General Aviation

##### **Issue/rationale**

GA is a high priority for EUR and EASA. EASA is dedicating effort and resources towards creating simpler, lighter and better rules for GA. Recognising the importance of GA and its contribution to a safe European aviation system, EASA in partnership with the EC and other stakeholders has created the GA roadmap.

##### **What we want to achieve**

Reduce the regulatory burden for GA.

##### **How we monitor improvement**

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

##### **How we want to achieve it: actions**

##### **Rulemaking**

**RMT.0654 Balloon and sailplane licensing requirements**

Address topics identified by the industry balloon and sailplane experts on the aircrew and on the medical side with regards to the balloon and sailplane operations licensing requirements

**RMT.0698 Operational rules for sailplanes and balloons**

Establish a set of rules covering Air Operations with sailplanes and balloons as the only regulatory reference for such operations, which addresses the specificities and associated risks in an efficient and proportional manner

#### 4.6.5 Maintenance training organisations

##### **Issue/rationale**

Development of principles and criteria commensurate with the competency needs in the field of aircraft maintenance staff.

##### **What we want to achieve**

Ease processing of converted aircraft maintenance licences and improve efficiency of examination.

##### **How we monitor improvement**

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

##### **How we want to achieve it: actions**

##### **Rulemaking**

**RMT.0281 New training/teaching technologies for maintenance staff**

Set up the framework for:

- e-learning and distance learning;
- simulation devices or STDs;
- specialised training such as human factors, FTS, continuation training; and
- blended teaching methods.



## 4.7 Level playing field

The actions in this section are driven principally 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 fair competition and free movement of persons and services. This is considered of particular importance for technological or business advancement where common 'rules of the game' need to be defined for all actors. This also includes the need for international harmonisation as well as the need to keep pace with ICAO amendments. These projects will also contribute to maintaining or even increasing the current level of safety.

### 4.7.1 Airlines (AOC holders)

#### Issue/rationale

Regulations may need to be harmonised within the EUR as well as with the main international trade partners in order to either ensure fair competition or facilitate the free movement of goods, persons and services.

#### What we want to achieve

Harmonise requirements where this ensures fair competition or facilitates the free movement of goods, persons and services.

#### How we monitor improvement

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

#### How we want to achieve it: actions

##### Rulemaking

##### **RMT.0573 Fuel planning and management**

Review and update the fuel management regulations, taking into account ICAO amendments and a related SR, and providing for operational flexibility.

##### **RMT.0577 Extended diversion time operations**

To harmonise extended diversion time operations (EDTOs) regulation with the related ICAO SARPS and modernise the extended-range twin-engine operational performance standards (ETOPS) regulations.

##### **RMT.0601 Transposition of provisions on electronic flight bag from ICAO Annex 6**

Transpose ICAO SARPS in applicable regulations and update them in line with the latest EFB developments

##### Safety Promotion

##### **SPT.097 Promote the new provisions on fuel planning and management**

The objective is to complement the new regulatory package on fuel planning and management with relevant safety promotion material.

### 4.7.2 Operators other than airlines (AOC holders)

#### Issue/rationale

Rules may need to be harmonised within the EUR as well as with the main international trade partners in order to either ensure fair competition or facilitate the free movement of goods, persons and services.

#### What we want to achieve

Harmonise requirements where this ensures fair competition or facilitates the free movement of goods, persons and services.

#### How we monitor improvement

The RASG-EUR members and partners will give feedback on the effectiveness of the activities.

#### How we want to achieve it: actions

##### Rulemaking

##### **RMT.0300 Operations with airships**

Development of regulations for the operation of airships

##### **RMT.0318 Single-engine helicopter operations**



Review the applicable regulations and guidance material in order to re-evaluate:

- Restrictions on piston engine helicopters to operate over hostile environment;
- Restrictions on single-engine helicopters to operate over congested environment.

**RMT.0492 Development of FTL for CAT operations of emergency medical services (EMS) by aeroplanes and helicopters**

Establish harmonised and state-of-the-art rules for EMS

**RMT.0493 Update and harmonisation of FTL for CAT by aeroplane for air taxi operations and single-pilot operations taking into account operational experience and recent scientific evidence**

Develop harmonised and state-of-the-art-rules for air taxi and single-pilot operations.

**RMT.0494 FTL requirements for helicopter operations**

Establish harmonised and state-of-the-art rules for helicopter operations (CAT, specialised operations, business aviation).

**RMT.0495 FTL requirements for aeroplane commercial operations other than CAT**

Establish harmonised and state-of-the-art rules for aeroplane commercial operations other than CAT.

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