Im Browser ansehen

Waypoints

VEREINIGUNG COCKPIT

Newsletter zu Flight Safety Themen der Vereinigung Cockpit Nr. 09 2018

Liebe Mitglieder und VC-Aktive,

die Urlaubszeit neigt sich dem Ende zu und die Hitze klingt auch so langsam ab - das ist doch der richtige Zeitpunkt um im neuen Waypoints zu lesen. Viel Spaß beim Lesen der wichtigen Informationen, die wir für Sie zusammengestellt haben.
Die heutige Ausgabe beinhaltet neben den lieb gewordenen Links zu den Veröffentlichungen der IFALPA, der ECA und der EASA folgende Themen:

- Guideline der IFALPA zum Thema Drone Sighting. Diese Thematik beschäftigt die VC bereits seit geraumer Zeit auch im Zusammenhang mit den Safe Sky Kampagnen der letzten Jahre
- Sicherheitshinweis zum Streik der Controller in Äthiopien
- Aus dem Bereich Flight Time Limitation eine Guideline der ECA
- Competency Based Training and Assessment

Mit diesen Informationen wünsche ich Ihnen allen Erfolg beim Stöbern - möge jeder den Teil finden, der ihn am brennendsten interessiert und betrifft.

Um unseren Waypoints noch weiter zu verbessern sind wir natürlich auf Ihren Input und Ihr Feedback angewiesen - sollten Sie Hinweise, Wünsche oder Verbesserungsvorschläge haben, schreiben Sie uns gerne eine E-Mail an flightsafety@vcockpit.de oder benutzen Sie einfach die Antworten-Funktion Ihres Mailprogramms. Wir werden den Waypoints auch weiterhin für Sie so informativ und interessant wie möglich gestalten!

Herzliche Grüße

Ihr Technical Director Flight Safety

IFALPA: Drone Sighting Guidelines

Allein an deutschen Flughäfen wurden dieses Jahr über 100 ungenehmigte Drohnensichtungen registriert. Immer mehr kommerziell operierende Flugzeuge melden Drohnen in nächster Nähe. Einige Flugplätze wurden aufgrund von Drohnenmeldungen geschlossen. Viele Länder haben noch keine Standardabläufe oder Strafen, wenn Drohnen unerlaubt in kontrollierten Luftraum einfliegen oder in Flughafennähe gemeldet werden. Diese Veröffentlichung kann Piloten unterstützen bis Standards etabliert wurden, wenn Drohnen gemeldet wurden. Des Weiteren ist der Informationsaustausch zwischen Fluglotsen und Piloten bei einer Drohnensichtung sehr wichtig. Drone Sighting Guidelines

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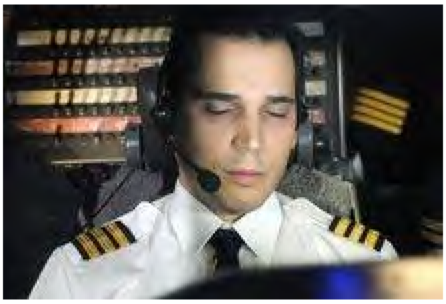
Äthiopischer Fluglotsenstreik ist beendet

Seit dem 5. September sind einige der streikenden Fluglotsen in Äthiopien wieder an ihren Arbeitsplatz zurückgekehrt. Am 27. August legte eine große Zahl von Fluglotsen ihre Arbeit nieder, sodass im Luftraum Äthiopiens, der Addis Abeba FIR, ein erhöhtes Sicherheitsrisiko bedingt durch defizitäre Flugsicherung bestand. Das Flight Service Bureau hat die Ereignisse in mehreren Artikeln aufgearbeitet: Artikel des FSB und Chronologie der Ereignisse.
Die IATA hat in einer offiziellen Operations Notice davor gewarnt, dass Flüge keine geeigneten ATC Instruktionen mehr erhalten und empfahl deshalb, in der Addis Abeba FIS das dort sonst nicht mehr verwendete Inflight Broadcast Procedure anzuwenden.

EASA FTL - Commander's Discretion



Die ECA hat ein neues Spot-on Papier herausgebracht zum Thema ORO.FTL.205 (f) "Commander's Discretion. Airlines sollten sicherstellen, dass ausreichende Margen in die Planung der Flugpläne einfließen, sodass Kommandantenentscheide nicht routinemäßig erwartet werden. Das vollständige Papier der ECA finden Sie hier: ECA Guidance / Position.

IFALPA Position Paper: Competency Based Training and Assessment

Betreiber und Aufsichtsbehörden verfolgen zur Zeit einen Ansatz für Trainingsprogramme, der auf dem "Competency Based Training and Assessment" - kurz CBTA - beruht. Die

IFALPA glaubt, dass dieses Konzept eine sinnvolle Alternative sein kann, aber nur wenn es richtig entwickelt, implementiert und stetig aktualisiert wird. Das Positionspapier kann auf der IFALPA-Seite heruntergeladen werden: Competency Based Training and Assessment.

News von IFALPA, ECA und EASA

Auf folgende Positionen & Veröffentlichungen möchten wir Sie besonders hinweisen:

IFALPA:

- Position Paper: Hot Spots
- Position Paper: Tailwind Operations
- Position Paper: Cold Weather Altimetry

ECA:

- Crew Interoperability - the bigger picture
- Pilot insight into recent maintenance works

EASA:

- Annual Safety Review 2018
- EASA welcomes new rules on mental fitness of air crew
- European Plan for Aviation Safety 2018 - 2022

 Impressum Datenschutz Abbestellen

IFALPA
The Global Voice of Pilots

Air Traffic Services
Briefing Leaflet

18ATSBL01 29 August 2018

Drone Sighting Guidelines

INTRODUCTION

The objective of this joint document for pilots and air traffic controllers is to improve the information flow between the two groups and to coordinate the response when a drone is reported.

Drone sightings by commercial aircraft are on the rise. There have been numerous cases of airspaces and aerodromes being closed due to reports of drones in the vicinity. Many countries do not yet have standard procedures to deal with drone sightings near aerodromes or violations of controlled airspace by drones. These guidelines are not a one-fits-all solution due to the dynamic and unpredictable nature of drone encounters but can be used to support the implementation of standard procedures and help pilots and air traffic controllers handle drone reports until such procedures are in place.

SPEED

A drone strike can be much more severe than a bird strike due to their solidity. Tests have shown that relatively small drones can penetrate aircraft windows and cause significant damage to aircraft structures. It is essential to slow down to reduce the kinetic energy of a potential drone impact.

Impact energy is proportional to the speed squared, so the safest thing is to SLOW DOWN!
In particular, it is recommended to:

- Reduce speed to minimum clean during climb and descent.
- Reduce speed during approach as feasible.

While even small drones have been observed above 10,000 feet, pilots are more likely to encounter a drone at lower levels, during departure and approach phases.
Any speed reduction should be coordinated with ATC.

INFORM

If a drone is seen, pilots must report the sighting to ATC and provide as much accurate information as possible. It is particularly important to pass sufficient information to ATC to positively identify it as a "drone" (to distinguish it from a balloon, bird, etc.):

- Location
- Altitude
- Lateral and vertical separation
- Moving or stationary?
- Size, shape, appearance (e.g. quadcopter, camera underneath, colour, etc.)

ATC must in turn inform supervisors, neighbouring sectors and pilots already on and joining the frequency. Supervisors will take appropriate action, liaise with other units and, if deemed necessary, inform the authorities and police. Prosecution of unlawful interference with flight operations can only happen if authorities are informed promptly and react quickly.

ATC should continue to inform pilots joining the frequency for 30 minutes after the initial drone sighting or any subsequent sighting. Associated contingency procedures are likely to remain active for, at least, 30 minutes or until confirmation is obtained that the situation has been resolved.

DELAY

Although operational impact should be kept to a minimum, drone sightings could lead to the closure of airspace or ultimately an aerodrome for a considerable time. Pilots should expect delays and plan for an early adjustment of the flight profile and consider diversion options.

Pilots should take into account the lower speeds and the increased track miles due to aircraft ahead flying more slowly and possibly being vectored away from areas of reported drone activity.

A drone sighting and the potential delays and airspace or aerodrome closures can increase radio-telephony usage (e.g. minimum fuel calls and diversion requests). Pilots and controllers should be prepared for possible frequency congestion, use standard phraseology throughout and make efficient use of the frequency.

AVOIDANCE

Due to the nature of drone operations, its exact position can change rapidly, making it difficult to request or provide effective avoidance instructions. In addition, due to the traffic situation, it may not always be possible to vector aircraft away from the area where the drone was originally seen.

Pilots may request alternative vectors if deemed necessary. However, in order to maintain safety and a steady flow of air traffic it is essential to follow ATC instructions.

Air traffic controllers have no precise information about the location and direction of travel of the drone, so an attempt to vector aircraft around the affected airspace may be counterproductive. Air traffic controllers are advised to consider the safety of the operation and avoid the area of reported drone activity if deemed necessary.

REPORT

After the event, pilots and controllers must file the corresponding safety report so the appropriate post-incident analysis or safety investigation can be carried out. Please include as much detail as possible about the drone, the risk to aircraft and the effect on the safety of the operation.

Detailed information is particularly important in order to satisfy the criteria national authorities use in their assessment of risk.

It is only by enhancing awareness among the general public that society will become more aware of the problems and risks associated with unlawful use of drones.

GUIDELINES

SPEED

Pilots: if a drone is reported, coordinate a speed reduction with ATC:

- Initially to minimum clean, including during departure.
- On STAR, initial or intermediate approach, request speed reduction to minimum clean or less, as feasible.
- On final approach observe ATC speed constraints to maintain separation.

ATC: expect pilots to request a speed reduction.

INFORM

Pilots: if a drone is seen, inform ATC immediately and pass as much accurate information as possible about the drone sighting:

- Location
- Altitude
- Lateral and vertical separation
- Was it moving or stationary?
- Size, shape and appearance (e.g. quadcopter, camera underneath, colour, etc.)

ATC: inform supervisors, neighbouring sectors and pilots on and joining the frequency.

DELAY

Pilots: expect possible delays or diversions
ATC: manage airspace and consider possible delays/diversions as a result

AVOIDANCE

Pilots: request alternative routings or radar vectors if deemed necessary
ATC: consider the safety of the operation and avoid the area if deemed necessary

REPORT

Pilots: file the appropriate safety report as established with your airline/aviation authority.
ATC: file the appropriate safety report as established with your ANSP/aviation authority.

In the event of imminent threat to the aircraft, none of the above prevents pilots from declaring an emergency, taking avoidance action, etc.

INTERNATIONAL OPS 2018

Flight Service Bureau | OPSGROUP

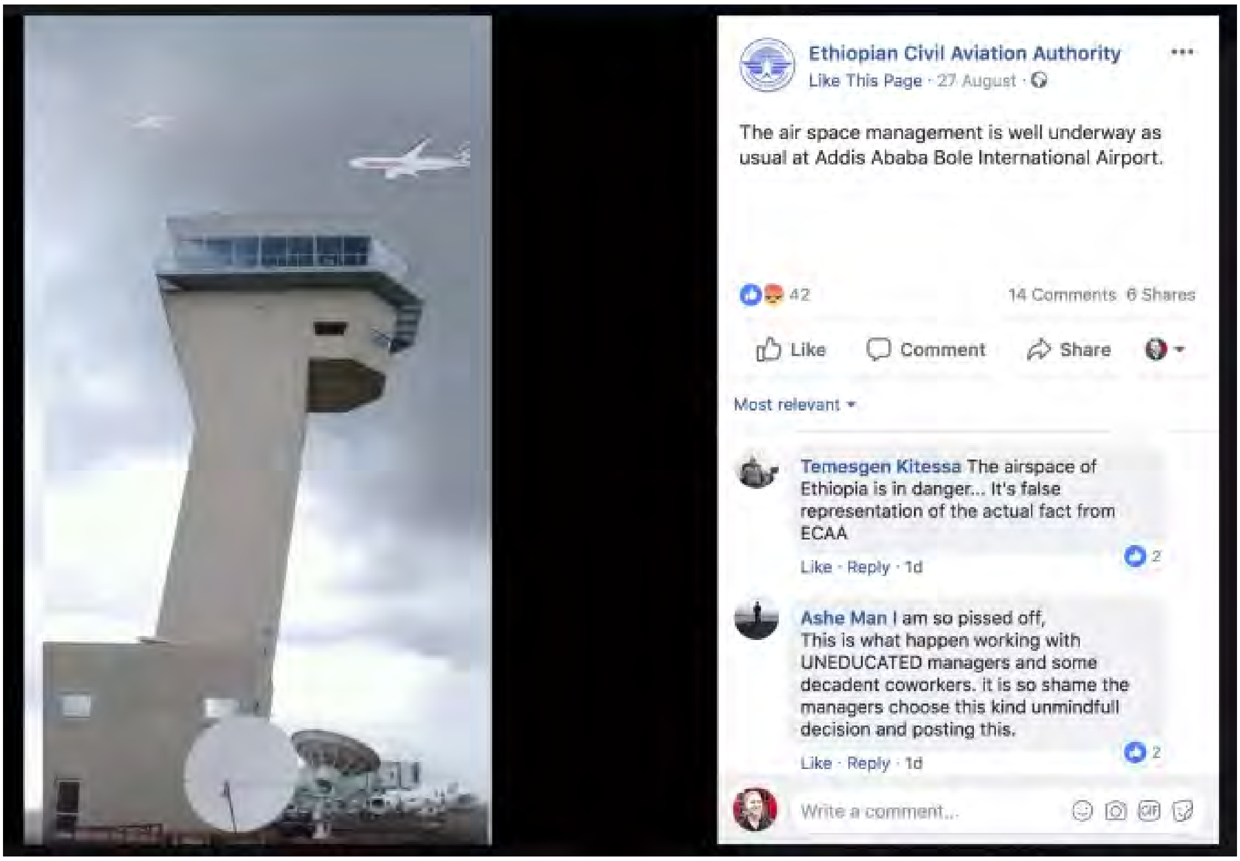
Ethiopia risking flight safety to cover up ATC strike

29 AUGUST, 2018 / MARK ZEE /0 COMMENTS

- **Ethiopian ATC on strike, no Notams, government hush up**
- **OPSGROUP alert for the Addis Ababa FIR**
- **Airspace risk – unrated controllers, some foreign and unfamiliar**

Air Traffic Controllers are on strike in Ethiopia, and Ethiopia would prefer that you don't know this. We, as OpsGroup, would prefer that you do.

Ethiopia would also prefer that it has no impact on the flight operations of its national carrier, Ethiopian Airlines. Therefore, they have drafted in foreign controllers to replace the strikers, issued no Notams, hushed any publicity, and proactively declared 'operations normal' (complete with bizarre, hand drawn airplanes).



European airlines – and frustrated passengers – will watch with great interest, thanks to their own ATC strike woes: regular stoppages by French, Italian, and Greek controllers have this summer, once again, been the source of massive cancellations, reroutes, and delays. Has Ethiopia found the golden elixir, the magic solution to a long-running problem? **Is this how to handle a strike by your nations' Air Traffic Controllers?**

It absolutely is not. It is a catastrophic misjudgement, creating a safety risk in the Addis FIR and at Ethiopian Airports for pilots and passengers alike. Ethiopian airspace, this week, is most definitely not 'operations normal' – it is unpredictable and unsafe, staffed by unrated, inexperienced controllers, many from abroad – evidenced already by alarming reports of close calls from adjacent Area Control Centers – read on.

The facts are this: faced with an upcoming strike by ATC, Ethiopian Airlines – now Africa's largest airline – formed what in the boardroom might have seemed a workable plan: Recruit a bunch of controllers from other countries, fly them in to Addis, and have them do the work of the striking staff.

Planned Air Traffic Controllers Strikes Will Have No Effect on Ethiopian Airlines Operations

Addis Ababa, August 25, 2018

Ethiopian Airlines would like to inform its esteemed customers that the planned strike by Ethiopian Civil Aviation Authority Air Traffic Controllers (ATCs) in Addis Ababa on Monday August 27, 2018 will have no effect on its operations.

The airline has made provisions for adequate alternative measures enabling smooth conduct of its operations with no delays or flight disruptions, should the planned ATCs strike take place.

Ethiopian will ensure that, above all else, the interests of its esteemed customers are protected and their flights operate smoothly and on-time.

The first batch of foreign controllers came from the Democratic Republic of the Congo, a small group described by the local controllers, unsurprisingly, as mercenaries. When the strike started at 7am this past Monday morning, they were ready to go. Not content with stopping there, the requests from ECAA – the Ethiopian Civil Aviation Authority – for more external controllers went out thick and fast, like an Ambien fuelled shopping spree on Amazon. 30 requested from Sudan, 24 from Kenya. More from Zimbabwe, Malawi. Finding those requests rejected, and resistance from other ATC agencies, the biggest request yet: 120 controllers from ASECNA.

The plan, commercially, is understandable. The wish to keep their airplanes flying is not endemic to Ethiopian Airlines. British Airways, Ryanair and Easyjet, have all made very public their frustrations with ATC strikes. An association, A4E, was formed to fight the problem at European level.

But here's why the Ethiopian solution doesn't work.

And as a former Air Traffic Controller, and Airline Pilot, I can tell you why.

Air Traffic Control is complex. That's not a secret. On average, it takes a controller three months to gain a 'rating', or qualification, for a specific piece of airspace; that's how long it takes to become comfortable with the 4D picture in front of you to provide a flawless ATC service. More complex airspace could take six months.

You have to learn each corner of your bit of sky. Learn the rules of the sector, learn the agreements you have with other centres about how you will receive and present traffic at the boundary. But the most important thing you learn is **how the traffic flows**.

ATC is not an aerial traffic battle whose landscape changes each day. It is not a web of complex contrails that, seen from the ground, appear to merge and diverge at random. The traffic flow is a largely predictable set of events, where the same airlines are operating on the same routes – providing a basis for us, as controllers, to learn the patterns of the flow, and to learn a trick for every trajectory.

This is key. It's been 15 years since I worked the North Atlantic flow in Shannon, but I remember the callsigns, the flows, and how to handle them, like an indelible challenge and response game in my mind.

"*Shamrock 37J*, airborne Shannon" : "direct to Strumble, climb him to 270".
"Belfast departure for Tenerife" : "stop him low, get him under the NAT traffic".
"Two converging at LIFFY" : "Drop the Speedbird, he's for Manchester".

Humans learn patterns. This is how ATC works. We fill a bucket full of "stuff we've seen before", leaving us free to concentrate on the few things we haven't. This is the flow. If you watch 737's fly up the Hudson on a hot summer morning, this is the La Guardia flow. Not an inch left or right. Heading into Amsterdam? "Direct to Pampus, down to FL70". One after another.

This is why we need three months to learn the airspace. For the flow. And this is why, when I found myself in New Zealand, learning to operate as an Air Traffic Controller far away from Shannon, I was floundering, like one of those dreams where you running but standing still. **I am a controller, but I can't control**. I don't know the airspace, and I don't know the flow. Slowly, over the months, geography takes shape, traffic patterns show themselves, situations become seen. I start to get a sense of distance and time on my scope – or scopes, because New Zealand is long and thin I have to reorientate my thinking north-south, rather than east-west, as in Shannon. Out of the mist of training, I am a controller again, but it takes time. A lot of time.

Ultimately, I can reach the point where I can do my job – the real job of an Air Traffic Controller – to be familiar enough with the airspace and traffic that I have "the picture". The full situational awareness, with most climbs, descents, speeds, and vectors being routine and familiar, means I can spot the something that's off, wrong, going to develop into a conflict, and do so intuitively, like a sixth sense. Air Traffic Control is an art, it's a dance. You don't do it by complex calculations in your head, you don't need a computer. It's the visual in front of you – radar or tower – coming to life in your brain, you feel it, and the solution becomes instinctive.

And this is why you can't bus in a set of replacement controllers, shuffle them down the corridor into the radar room, and up the stairs to the tower, and expect a safe, efficient, and orderly flow of traffic.

Controllers know the power of the strike. In most countries, it is used rarely, and fairly. They understand the impact on airlines and passengers. There are many other forms of industrial action a controller can take – like a training ban, an overtime ban – before reaching the point of actually stopping work.

Commerce will always find a way to continue. **Safety is different, and delicate**. It must be nurtured and protected. When the two collide head on – the commerce of keeping an airline flying, vs. the safety of an established, effective Air Traffic Control system – safety must take precedence. Here, safety means accepting the strike, as is – and working with the controllers, quickly, to find a solution. Let them be heard.

We'll keep this page updated with the latest situation on the Ethiopian ATC strike. Reports that we have received so far are as follows:

- Controllers in adjacent ACC's are reporting lack of adherence to Letters of Agreement – seeing aircraft with 4 minutes instead of 10 minutes separation.
- RA reported by Kenya ATC between two airlines on Wednesday.
- Kenya and Sudan reported loss of separation and poor coordination and transfer of traffic at their FIR boundaries with Ethiopia.
- Retired and Management controllers, who appear to have never rated or validated in position, are also being used, though unqualified for Addis.

We were first alerted to this issue by **a Fox**. Many of you know that we are Fixing Notams. The lack of Notams in this situation, is an exceptionally clear example of point 1 in the "Why" of the Notam Problem. Sometimes, we can't trust the state to tell the truth. And this is a clear example.

Thankfully, our network of Foxes – undercover ATCO's, pilots, and dispatchers – is growing, and reporting on things just like this, so that we can tell you what's really going on. Keep reporting.

Further reading

- Tell us anything additional we should know – **news@ops.group**
- Monitor #ops-alerts in your member Dashboard, and Slack.
- Contact the author: Mark Zee.

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ADDIS ABABA FIR · ATC STRIKE · ETHIOPIA · ETHIOPIAN AIRLINES · HAAA · HAAB

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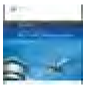

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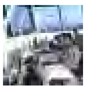
ATC Strike over, but nine Ethiopian Air Traffic Controllers remain in jail



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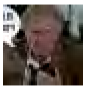

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ATC Strike over, but nine Ethiopian Air Traffic Controllers remain in jail

5 SEPTEMBER, 2018 / DEAN CONSTANTINIDIS /0 COMMENTS

f 233 | 233 SHARES

5th September, update:

As of this morning, most controllers have **returned to work**. Some concessions made by ECAA. Addis ACC and TWR are again staffed with qualified controllers, so the safety situation, for now, is restored. However, 9 remain in jail. Returning controllers were forced to sign an 'admission' of illegal strike action in return for amnesty. IATA In Flight Broadcast Procedure requirement for Addis FIR remains in place, meaning you must broadcast on 126.9 as in other areas of concern in Africa. Further as we get it.

4th September:

Last week we were one of the first to expose the attempted ATC Strike cover up by the Ethiopian Civil Aviation Authority.

As a reminder, **untrained and uncertified foreign controllers, retired and local non-operational ATC personnel are being used to control air traffic over Ethiopia.**

It is a catastrophic misjudgement, creating a safety risk in the Addis FIR and at Ethiopian Airports for pilots and passengers alike.

Here are some more updates since our last article:

- On August 29, The International Federation of Air Traffic Controllers Association (IFATCA) penned a **letter to the Prime Minister** of Ethiopia. You can read it here.
- The neighbouring controllers in **Kenya** warned that flights in and out of Addis Ababa are not safe. You can view their letter here – specifically they warned that **the 'possibility of air misses' is real.**
- The ECAA over the weekend rejected concerns regarding the safety of Ethiopian airspace, specifically calling the claims from Kenya as *"outright lies."* The ECAA has said that ATC are operating *"in accordance with ICAO Annex 1 provisions."* They **did not deny** however that foreign and retired ATC are being used.
- The ECAA also outlined that the national carrier, **Ethiopian Airlines**, has "awarded" **veteran** Air Traffic Controllers, who are performing their **"*national obligation.*"**
- However on Monday, the local state affiliated broadcaster, Fana BC, reported that the Federal Police Commission had detained **nine** individuals on **suspicion** of attempting to disrupt international flights and **coordinating a strike** that began last week. This has been quickly condemned on social media, as many locals called on the government to resolve the issues raised by the ATCs rather than resorting to intimidation.


IFATCA
AIR TRAFFIC CONTROLLERS' ASSOCIATIONS

The ECAA claims that "some" of the striking controllers have returned to work.

Major airlines and uninformed passengers continue to fly into and over Ethiopia and **this continues to be a major safety risk.**

Do you have more to add this story? Please, **let us know**!

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Ethiopia risking flight safety to cover up ATC strike

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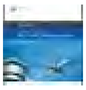

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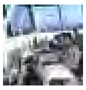

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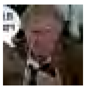

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Operations Notice Number: **ON 005/2018**

Title:	Temporary Expansion of **Operations Notice Number: ON 001/2014**
Applicable to:	All Flight Crew operating through the subject FIR
Effective date:	August 30, 2018
Expiry:	February 28, 2019
Authorized by:	Senior Vice President Safety and Flight Operations (SFO) IATA
Contact e-mail:	**safety@iata.org**

ATC Strike in Ethiopia

This Operational Notice expands the area covered by ON 001/2014 to also encompass the Addis Adaba HAAA FIR. IATA has been informed that an unplanned ATC work stoppage has occurred. As a result, aircraft may no longer recieve appropriate ATC instructions from the respective ACC. Reports from the adjacent ACCs indicate that aircraft are entering the adjacent Khartoum HSSS and Nairobi HKNA FIRs in an uncoordinated manner.

Given the lack of information being made available at the time of the issuance of this Operational Notice, IATA is recommending that; airlines inform flight crews of the current situation; remind flight crews of the IFPB procedures contained within ON 001/2014 which became effective on 9 January 2014; and absent communication or control instructions issued by the HAAA ACC, ensure that Flight Crews comply with IATA In-flight Broadcast Procedures (IFBP's) as a precaution, while operating within the HAAA FIR.

As a reminder, some FIRs in the AFI Region have been identified to have fixed and mobile communication deficienies. Consequently, the AFI Regional Technical Conference decided that the IATA In-Flight Broadcast Procedure (IFBP) should be used within designated FIRs, as an interim measure until such time as communications facilities affecting the FIRs in question have been improved. Although this is a separate action, not necessarily related to the original decision, IATA is recommending that flight crews follow the IFPB, as a precaution.

This Notice should be used for information only and is based on data available at the time of issuance. Airspace users remain responsible for their operations and any decisions related to this notice.

More information is available on the IATA Operational Notice website.

EASA FTL

Commander's Discretion

ORO.FTL.205 (f)

„... is a bet on the future with a high degree of uncertainty"

Commander's Discretion (further referred to as 'CD') must be understood as a very exceptional 'fix' for some of the uncertainties in commercial aviation. Even an operator's most cautious planning of flight pattern cannot cover all circumstances causing delay or excessive fatigue – although good planning can greatly help to reduce such situations.

At this point, the commander, as being the airline's representative on scene, is entitled to evaluate the situation and decide on best judgement as regards flight safety, the customers' need for transport and the crew's health. The regulator's original idea was to entitle the commander to *extend or reduce* an FDP under the aspect of suitability, necessity and proportionality.

However, 'cautious planning' is understood in different ways by different people. To prevent mis-use, EASA has built a requirement for the operator to provide their crews with 'robust' rosters, i.e. rosters that under normal circumstances are realistically achievable in real operations, and to improve the planning when missing this target.

"Operators should ensure that sufficient margins are included in schedule design so that commanders are not expected to exercise discretion as a matter of routine."

EASA FTL FAQ, 12 JUL 2018

This is, where a potential miss-use comes into the picture. Commander's discretion is frequently seen as a welcome extension of the limits. Reasonable buffers to cover uncertainties cost money. At last the wish to reduce cost drifts into the urge to reduce buffers.

Commander's discretion may be safe – but shall never be a must.

Being able to safely exercise CD without exposing oneself to operational or disciplinary criticism becomes ever more important in today's environment. This ECA 'Spot-on' provides guidance on this matter.

At first glance the provision for the use of CD seem to be quite simple. Upon close examination we will discover, that the use CD need's thorough mental preparation. Before we delve in the depths of CD, here a quick bullet-point overview:

PROCEDURE:

- CD may only be used **in case of unforeseen circumstances** which occur **after reporting time.**
- Premise is a **safe operation** through avoiding fatigue as much as possible.
- The CMD may **decide to either go above or even stay below the limits for the FDP or rest period**, (i.e. extend or reduce) as necessary to battle severe fatigue.
- The use of CD shall stay **exceptional** & should be **avoided at home base and company hubs.**
- All **crew members** involved have to be actively **consulted about their fitness** for duty by the commander for the very purpose to base the decision on hands on information and all other relevant fatigue-related circumstances.
- The responsibility and **decision** lies exclusively with **the commander alone.** An established **'non-punitive' company environment** shall guarantee that the management will **refrain from any negative** response related to the outcome of the CD to the crew or its individual crew members.
- The responsibility to avoid situations, where the use of CD is the last way to avoid flight cancellation, is a **shared responsibility**, including all levels within an operator's organization.
- The use of CD is to be **formally reported** by the commander to the operator.

LIMITS:

- The **actual number of sectors and the crew configuration** have to be used for calculations.
- The extension of maximum FDP is **limited by 2h**. This may be increased to 3h if in-flight rest facilities are used.
- The minimum rest period must **not be reduced below 10h** (8h sleep opportunity!), but all fatigue-relevant circumstances must be considered.

The Decision Process

***Fatigue*[1]** *A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety related operational duties.*

Exercising discretion is a complex process and requires the use of a decision-making model (e.g. FORDEC[2]). The option to extend or reduce an FDP shall be checked against the suitability, the necessity and the proportionality.

- ***Suitability – This is the easy part***

When there is already doubt about the alertness level of a crewmember, Regulation EC 965/2012 states clearly that this crew-member shall not perform duties on an aircraft (CAT.GEN.MPA.100 c) (5)). The suitability of reducing the max. FDP through CD is obvious (as per ORO.FTL.205 (f) (2)). Therefore, the commander's margin of discretion in this case is reduced to zero.

Concerning the extension, a CD is the only way to extend a FDP under the specific circumstances as described in ORO.FTL.205 (f) (1) without violating the limits. Therefore, the suitability is given.

- ***Necessity***

The use of a CD to extend a FDP is limited to the general requirement of using the *instrument of least impact*. The extension of a FDP by the use of a CD interferes with the interest of safety defined within the basic regulation. Before using a CD all other means with a lesser impact on safety have to be used. Consequently, the use of a CD at the operator's home base or company hubs is limited to an extraordinary case and has to be avoided (see AMC1 ORO.FTL.205 (f) (a)). Consequently, where no less impacting means are available, necessity is at hand.

- ***Proportionality – This is the most important part.***

The impact of the extension of a FDP using a CD must be in a reasonable relationship to the purpose. Thus, a CD used for extending the FDP might be the right instrument where the safety of passengers and crew is endangered when not using it. Whereas the use of a CD to extend the FDP is not the right method to fulfil overly ambitious flight schedules. Careful assessment is necessary as safety must never be compromised by the pursuit of commercial considerations or scheduling conveniences.

The Cause

Plans frequently have to be adjusted and in regards to flight operation different tools apply at different times. Initially the operator sets the FDPs environment and determines:

- the type of operation (basic FDP or the use of extensions)
- the crew complement (e.g. augmented crew)
- time of reporting

Reporting time sets the border line between the planning and the operating stage. Once this line is crossed, the planning tools are not available anymore and the parameters above are and remain fixed. For example, an extension or split duty that hasn't been planned cannot be applied after reporting.

At this stage the planed duration of an FDP may "grow" and extend up to the applicable FDP limit. Additional sectors must be respected and the length of the succeeding rest potentially adjusted. At last, the *most limiting* FDP limit of the *individual* crew member applies to *all* members of the minimum crew required.

Once the FDP limit is reached, CD is the exclusive option to continue.

However, in practice CD may provide much less flexibility than anticipated since it is to be applied to the basic FDP limits from *ORO.FTL.205(b).* As an example: an additional sector above the first two sectors and with an already planned extended FDP (*ORO.FTL.205(d)*, i.e. +1h), the resulting flexibility is just as little as 30 minutes above the originally planned FDP limit.

The Evaluation

The commander may extend only the applicable <u>non-extended</u> limit (i.e. the limit without a planned extension) by...

"...not more than 2 hours" unless *"...the flight crew has been augmented, in which case the maximum flight duty period may be increased by not more than 3 hours".*

EASA does not stipulate that "plus 2 hours" is safe. EASA allows the commander to investigate whether it could be safe. To do so, EASA provides some guidance in *AMC1 ORO.FTL.205(f).* While this AMC *(acceptable means of compliance)* originally provides guidance to the operator to develop its operating manual provisions, this AMC is a good base already for the commander's decision. Due consideration shall be given to the ...

(1) WOCL encroachment;
(2) weather conditions;
(3) complexity of the operation and/or airport environment;
(4) aeroplane malfunctions or specifications;

[1] ICAO → Fatigue Management Guide for Airline Operators, 2nd Edition 2015

[2] (F)acts – (O)ptions – (R)isk – (D)escision – (E)xecution – (C)ontrol

(5) flight with training or supervisory duties;
(6) increased number of sectors;
(7) circadian disruption; and
(8) individual conditions of affected crew members (time since awake, sleep-related factor, workload, etc.).

The use of the **3 hours extension** as foreseen in the Regulation is based on the augmentation of the **flight crew** alone. The safety risks associated with fatigue-related impairment are different for flight and cabin crew members, and some mitigation strategies may be different. However, to date, flight crew fatigue has received much more scientific, operational, and regulatory attention than cabin crew fatigue. Therefore, until more specific advice on managing cabin crew fatigue will become possible as research and fatigue management experience with cabin crew increases, it seems **not advisable** to apply a 3 hours extension on a **cabin crew** max. FDP if the cabin crew had no possibility to use an in-flight rest facility.

THE DECISION

A thorough evaluation must include speaking to all individual crew members. An assessment of the crews' alertness level constitutes quite a challenge and may become time consuming. Latest for the report it is a good idea to take notes (e.g. on the progress of the FDP, along with the steps through the decision process).

Note that CD is not all about flying longer FDPs. It is also about reducing a planned FDP and to adjust or even terminate flight operations early...

"...In case of unforeseen circumstances, which could lead to severe fatigue ... in order to eliminate any detrimental effect on flight safety".

CD is also about adjusting the succeeding rest period. It may be shortened - but never below 10 hours. Where severe fatigue occurred and additional recovery is required, a planned rest shall be extended by the commander as necessary.

THE LIMITS

A CD always applies exclusively to the duration of a single FDP and/or a single rest period. A CD may never be applied in a way that would cause accumulated limits or accumulated rest requirements to be exceeded. This is not a negligible matter because many other restrictions have to be observed:

- limitation of the number of sectors *CS.FTL.1.205(c)(1) + (4)*
- length of in-flight rest *CS.FTL.1.205(c)(2)*
- accumulation of disruptive schedules *CS.FTL.1.235(a)*
- accumulated duty and flight time limits *ORO.FTL.210*
- split duty restrictions *CS.FTL.1.210*
- standby restrictions *CS.FTL.1.225*
- rest requirements; in particular RecRest[3] *ORO.FTL.235(d)*

THE RESPONSIBILITY

Our task is to fulfil the promise of transporting passengers and goods to their planned destination. However, no matter how much we feel obligated to do so – safety it the key argument.

Flight safety is a shared responsibility between the operator and the commander. An operator shall plan as reasonably and realistically as possible. With reporting the commander takes over the on-scene responsibility.

This however does not set the operator free from taking appropriate action whenever the planning cannot be met anymore.

Once changes to the planing are required, CD is one out of many possible measures to cope with the unplanned. A shared evaluation of the situation and a thorough risk assessment is a good approach to select the best solution. Under no circumstances direct or indirect pressure from central flight ops on the commander or other crew members to extend the FDP is acceptable.

At the end though, CD is the commander's final and exclusive decision.

The crew has to work as a team and as such mitigation measures may be applied where available within the crew among individuals to assure its function. However, the commander's decision is taken for the team to cover the entire team.

„We don't set targets but provide limits "

(EASA – disclosed but competent source)

We will never remain free from fatigue but we will face a high degree of likeliness that we will exceed our abilities when we operate above the legal limits ...

... a "NO" from the commander must always be accepted.

[3] RecRest = recurrent extended recovery rest period

ORO.FTL.205 Flight Duty Period (FDP)

…

(f) Unforeseen circumstances in flight operations — commander's discretion

(1) The conditions to modify the limits on flight duty, duty and rest periods by the commander in the case of unforeseen circumstances in flight operations, which start at or after the reporting time, shall comply with the following:

(i) the maximum daily FDP which results after applying points (b) and (e) of point ORO.FTL.205 or point ORO.FTL.220 may not be increased by more than 2 hours unless the flight crew has been augmented, in which case the maximum flight duty period may be increased by not more than 3 hours;

GM1 ORO.FTL.205 (f)(1)(i) COMMANDER'S DISCRETION

The maximum basic daily FDP that results after applying ORO.FTL.205 (b) should be used to calculate the limits of commander's discretion, if commander's discretion is applied to an FDP which has been extended under the provisions of ORO.FTL.205 (d).

(ii) if on the final sector within an FDP the allowed increase is exceeded because of unforeseen circumstances after take-off, the flight may continue to the planned destination or alternate aerodrome; and

(iii) the rest period following the FDP may be reduced but can never be less than 10 hours.

(2) In case of unforeseen circumstances, which could lead to severe fatigue, the commander shall reduce the actual flight duty period and/or increase the rest period in order to eliminate any detrimental effect on flight safety.

(3) The commander shall consult all crew members on their alertness levels before deciding the modifications under subparagraphs 1 and 2.

(4) The commander shall submit a report to the operator when an FDP is increased or a rest period is reduced at his or her discretion.

(5) Where the increase of an FDP or reduction of a rest period exceeds 1 hour, a copy of the report, to which the operator shall add its comments, shall be sent by the operator to the competent authority not later than 28 days after the event

(6) The operator shall implement a non-punitive process for the use of the discretion described under this provision and shall describe it in the operations manual.

AMC1 ORO.FTL.205(f)

UNFORESEEN CIRCUMSTANCES IN ACTUAL FLIGHT OPERATIONS – COMMANDER'S DISCRETION

(a) As general guidance when developing a commander's discretion policy, the operator should take into consideration the shared responsibility of management, flight and cabin crew in the case of unforeseen circumstances. The exercise of commander's discretion should be considered exceptional and should be avoided at home base and/or company hubs where standby or reserve crew members should be available. Operators should asses on a regular basis the series of pairings where commander's discretion has been exercised in order to be aware of possible inconsistencies in their rostering.

(b) The operator's policy on commander's discretion should state the safety objectives, especially in the case of an extended FDP or reduced rest and should take due consideration of additional factors that might decrease a crew member's alertness levels, such as:

(1) WOCL encroachment;

(2) weather conditions;

(3) complexity of the operation and/or airport environment;

(4) aeroplane malfunctions or specifications;

(5) flight with training or supervisory duties;

(6) increased number of sectors;

(7) circadian disruption; and

(8) individual conditions of affected crew members (time since awake, sleep-related factor, workload, etc.)

Sources (use key words for WEB search)

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Easy Access Rules for Air Operations (IR + AMC + GM; CS+ GM)

CAT.GEN.MPA.100 Crew Responsibilities
Commission Regulation (EU) No 965/2012, October 05, 2012

ORO.FTL. [...] (IR → implementing rules)
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CS FTL. [...] (CS → certification specification)
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AMC1 ORO.FTL. [...] (AMC → acceptable means of compliance)
Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Annex III – Part- ORO / Subpart FTL – Flight Time Limitations (page 197ff)

GM1 ORO.FTL[...] (GM → guidance material)
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IFALPA The Global Voice of Pilots

Position

18POS07 29 August 2018

Competency Based Training and Assessment

BACKGROUND

Operators and regulators are currently developing and implementing a Competency Based Training and Assessment (CBTA) approach to pilot licensing and training programs as an alternative to traditional training methods.

STATEMENT OF POSITION

IFALPA believes that the concept of Competency Based Training and Assessment can be a reasonable alternative training and assessment method. It should be used only when it is properly developed, implemented, maintained, and contains as a minimum the following elements:

Licensing

- Mutual recognition of licenses amongst States is ensured.
- The National Aviation Authority (NAA) is responsible for defining and providing ongoing oversight of the competency framework, including performance criteria, on a state level.
- The issuance of any license or rating remains the responsibility of the NAA.

Participation

- Regulator (NAA), Operator/ATO and pilot representatives are collectively involved in all aspects of CBTA development, implementation and data sharing.

Equivalency

- To maintain overall safety, the level of pilot knowledge, skills and competence achieved must be equal or better with CBTA compared to the traditional system. Regardless of the training system, every pilot should demonstrate the same required competence and flight proficiencies.
- In a CBTA program there should be no reduction in training amounts (hours or training sessions) as compared to traditional training (ICAO Annex 1 (11th Edition, revision 174).

Clear Criteria

- A clear, unambiguous definition of what is considered “competence” is used.
- Competence is achieved when the performance standards of the competencies are demonstrated consistently.
- Performance Criteria are clear, objective, observable and measurable.

Common Understanding

- Each stakeholder in the process including the pilot, instructor, training organization, operator and regulator has a common understanding of the performance criteria.

- The CBTA program is developed in a manner that includes relevant tasks, maneuvers and scenarios under specified conditions as opposed to a prescribed set of tasks or maneuvers. In order to determine the program's ability to achieve this goal, it should be data driven.
- The NAA must ensure that there is an appropriate level of understanding and training on CBTA for anyone involved in providing regulatory oversight and approvals for CBTA programs.

Knowledge

- As knowledge underpins all competencies, the CBTA program uses suitable training methods, tools, and media, for the development and application of knowledge for each competency.

Data

- Data collection, analysis and sharing is part of CBTA program approval and is conducted continuously.
    - The acceptable level of safety performance to be achieved is established by the NAA through data analysis.
    - A continuous systemic evaluation process of the entire CBTA program is used to ensure the effectiveness of training and its relevance to line operations.
    - Data analysis and confirmation of meeting training objectives is a responsibility of the training provider and is shared with the NAA, Operator and pilot representatives.
    - Data analysis is never used for individual evaluation or monitoring.
- The CBTA program is fully integrated into the training provider's SMS and QMS.
- The CBTA program is fully integrated into the operator's SMS and QMS.

Instructors and Evaluators

- Instructors and Evaluators in a CBTA program require specific additional competencies.
    - It is vital that all Flight Instructors and Evaluators receive training specific to CBTA and demonstrate all pilot competencies as well as all instructor specific competencies.
    - Ground Instructors must receive training specific to CBTA and demonstrate relevant pilot competencies as well as all instructor specific competencies.
- All training providers should utilize a relevant, specific and standardized selection process to select instructors and evaluators.
- CBTA instructors should have successfully completed the approved instructor qualification program of the Training provider.
- Conduct, on regular intervals, instructor training and standardization programs that include line operation familiarity programs and a quality assurance program that ensures the suitability of instructors to train candidates.
- Continuous formal oversight of instructor and evaluator performance should be required to ensure that instructor and evaluator quality is maintained.
- Specific to training for the issuance of license or rating, CBTA designed curricula should include real environment exposure and must comply with all the requirements of ICAO Annex 1.

IFALPA
The Global Voice of Pilots

Position

18POS04 29 August 2018

Hot Spots

BACKGROUND

A hot spot is defined by ICAO as *a location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary.* These are included on aerodrome charts along with a description of the hazard(s) to alert pilots of the risk identified.

The ICAO Manual on the Prevention of Runway Incursions (Doc. 9870) recommends that once hot spots have been identified, strategies should be put in place to remove the hazard. Where this is not immediately possible ICAO recommends that they should be mitigated by the following strategies:

a) Awareness campaigns;

b) Additional visual aids (signs, markings and lighting);

c) Use of alternative routings;

d) Construction of new taxiways; and

e) The mitigation of blind spots in the aerodrome control tower.

POSITION

IFALPA supports these strategies and believes that every attempt should be made to remove the cause of the "hot spots" even if temporary strategies have been put in place.

It is IFALPA's view that runway and taxiway hot spots need to be discussed at the aerodrome Runway Safety Team (RST) as a standing agenda item. This will promote the continuous review of any potential runway incursion points or collision risks at the aerodrome and take advantage of the viewpoints of the various stakeholders who use the aerodrome daily to determine appropriate mitigations.

The Aeronautical Informational Publication (AIP) should include hot spots on the aerodrome charts. All identified hot spots should be monitored for short and long-term opportunities for mitigation of or removal of the hazard.

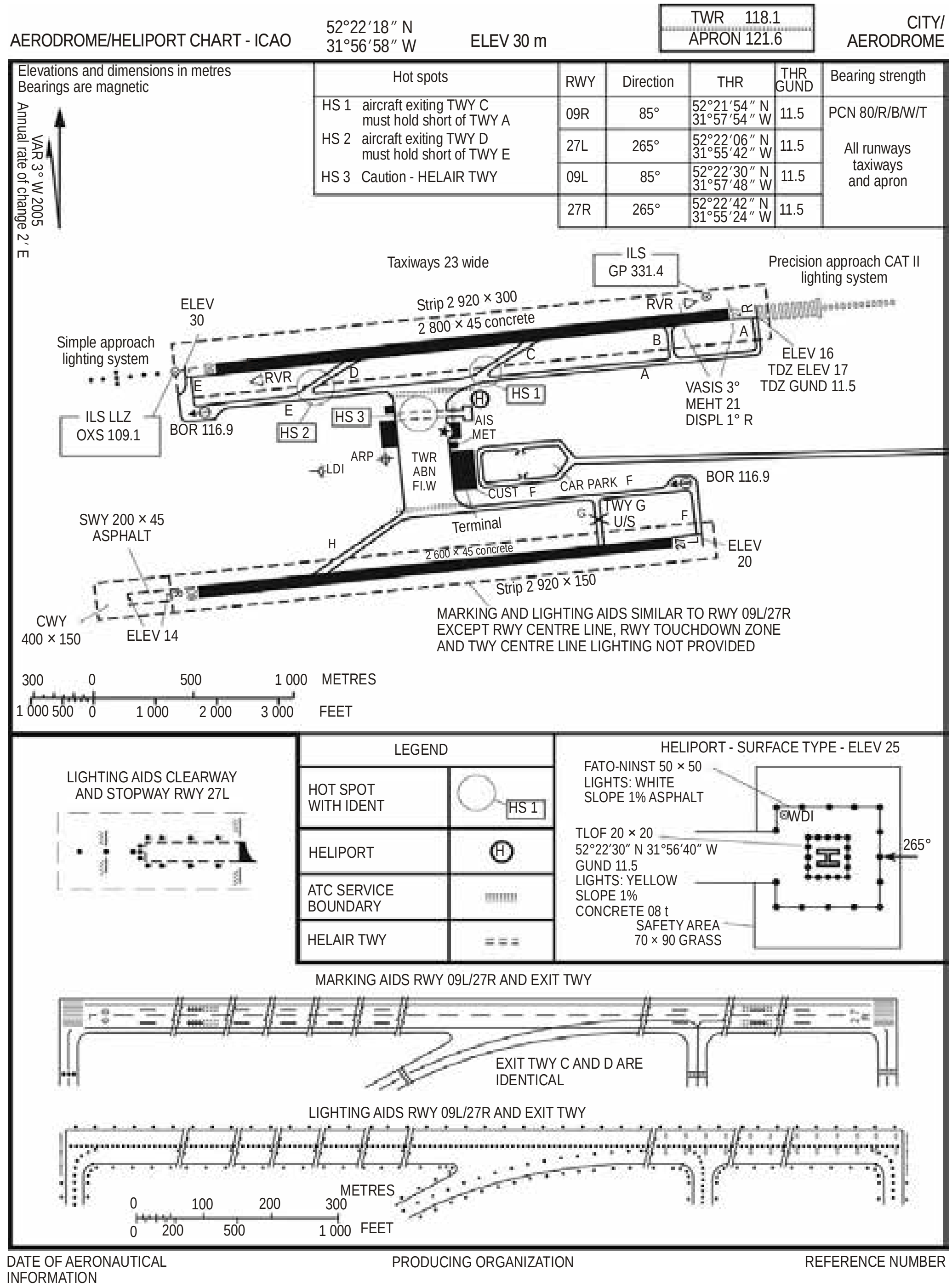

Figure 3-1. Sample Aerodrome/Heliport Chart — ICAO showing ICAO charting method for depiction of hot spots

(Associated provisions in Annex 4 and the PANS-ATM will become applicable on 22 November 2007)

Source: ICAO Manual on the Prevention of Runway Incursions (Doc 9870).

18POS06 29 August 2018

Tailwind Operations

INTRODUCTION

Wind and all associated characteristics such as cross- and tailwind, shear, turbulence, vortices, and gusts are significant to the execution of daily flight operations. Wind influences not only the aircraft's performance but also the aircraft handling characteristics and the piloting task. This position paper focuses on the specific operational risks of flight operations in tailwind.

Variations in wind speed and direction are a fairly common phenomenon whose potential safety hazard must be recognized and subject to appropriate risk mitigations.

To conduct flight safety in tailwind conditions, one should assess the related risks very thoroughly and a robust safety study should be the basis of any tailwind procedure. Potential shortcomings in regulations, wind measurement, and training must be clearly identified to establish and implement the relevant mitigating measures. A conservative approach must be taken because of all variations and uncertainties in the tailwind operation.

DEFINITION

Tailwind operations in fixed wing aircraft are considered to be take-offs, approaches, and landings in actual tailwind conditions. Aircraft manufacturers publish tailwind limitations in the Aircraft Flying Manual and are, in most cases of modern airline aircraft, in the order of 10 to 15 kts. The actual wind is a random phenomenon and varies in time and location. It cannot be described, measured, reported, or dealt with in an exact manner. Wind reports may vary considerably from actual wind values (see section on Shortcomings of Wind Measurement).

BACKGROUND ON SAFETY STATISTICS

Adverse wind conditions (strong crosswind and tailwind) are involved in a significant portion of approach and landing accidents (ref. 4, 5, 6). Ref. 4 shows that in many analysed tailwind related accidents, the actual tailwind exceeded the approved limitations.

Tailwind-related overrun accident data shows that in 70% of the cases, the runway was wet or contaminated. Clearly, the combination of tailwind and a slippery runway is hazardous and should be avoided (ref 4,6).

History tells us that in more than half of tailwind related overrun accidents, floating and/or long or bounced landings took place (ref. 6). A high tailwind on approach may also result in unwanted excessive rates of descent and higher ground speeds and result in unstabilized or rushed approaches (ref 13).

HAZARDS IN TAILWIND CONDITIONS

- Tailwind affects the required take-off and landing field lengths, especially on contaminated runways.
- The touchdown speed and required brake energy and brake temperature is increased.
- Wake vortex separation may be reduced in the presence of a light quartering tailwind.

- Tailwind during approach:
  - increases the rate of descent to stay on the descent path (may exceed 1000-1200ft/min) and may trigger the GPWS "Sink Rate" warning;
  - may cause engine thrust to become as low as flight idle, which increases the engine spool up time for jet engines;
  - makes it difficult to reduce the approach speed and configure the aircraft without exceeding the placard speeds;
  - increases the probability of floating during landing.

SHORTCOMINGS AND IFALPA POSITION

In many tailwind-related accident reports, several contributing factors have been identified: piloting techniques, poor decision making, runway assignment, wind changes, and runway conditions. In all of these contributing factors shortcomings in training, procedures and legislation can be identified, which create a typical risk in the tailwind operation and require a closer look and a mitigating strategy or a conservative approach. These shortcomings are listed in combination with proposed IFALPA solutions.

a) Wind measurement of tailwind

ICAO Annex 3 provides wind measurement and reporting recommendations. Wind measurement and its presentation to the pilot inherently create inaccuracies and uncertainties. Wind measurement is neither done at the right place (the touchdown zone, final approach path), nor at the right time (time lag). Wind data are filtered, and the high frequency content of the wind disturbances is not represented. Not all wind changes in direction or speed are measured and communicated as reporting thresholds are in place.

Accurate and reliable (tail)wind information should be measured and reported to the cockpit, based on anemometers for each runway.

Wind information should not only include the touchdown zone but also be representative for the final approach.

In particular, variations in wind direction can rapidly increase the maximum tailwind component. These variations should be closely monitored.

ICAO Annex 3 states that wind must be measured and may not be mathematically derived or augmented, although this could produce more accurate and consistent wind data for the approach path and touchdown zone.

IFALPA supports the research and development of a mathematically-derived wind value to incorporate the approach path and augment landing zone winds and to improve the anemometer siting. If derived and actual wind values are available in future, usage should be assessed.

IFALPA opposes close-by construction developments that obstruct airflow around the approach path and near the anemometer.

FMS-derived wind information can be of value to the pilot, but current Flight Management Systems do not provide a reliable and accurate wind indication to pilots in gusty and crosswind conditions. Due to flight physics as well as the position of the sensors and the inertial reference system in the aircraft, the wind direction and speed is not always calculated correctly. This is especially true when the aircraft moves around the longitudinal, lateral, or pitch axis and in a side-slip condition. Different wind values might also be presented to pilots when derived from separate data sources or when the inertial reference system positions have become less accurate after long flights.

Pilots should be trained to recognize these limitations to be able to judge the provided indication accordingly.

b) Operations

Approach procedures should be designed in a way that allows pilots to execute safe flights according to stabilized approach criteria. A stable approach reduces the likelihood of a long flare, a long landing and runway excursions, especially during tailwind conditions and in adverse weather and runway conditions.

The touchdown aiming point should be defined as target. Pilots should be trained in following a consistent go/no-go decision-making process based on clear operational criteria for tailwind and long landings, possibly assisted by technological aids.

Operators should be encouraged to refuse land and hold short operations (LAHSO) with tailwinds.

Operators should support not conducting tailwind approaches on Steep Approaches, or GP greater than 3.0 degrees.

Operators should ensure that SOPs include adequate monitoring and cross-checking by all cockpit crew members to support crew co-ordination during approach and landing.

Operators should develop a method to identify unstable approaches from integrated data of flight tracks, wind conditions, navigation procedures, and aircraft parameters. FDM can indicate precursors of unstable approaches with high tailwind and can be used to monitor general SOP compliance, identify critical approaches, runways and airports, and train flight crew in general.

c) Wake vortices and tailwind

Separation criteria for Final Approach are based on Runway Occupancy Time (ROT) on the ground and safe wake vortex separation during approach (see ref. 4). The wake generated by an aircraft will normally descend below its flight path. In a tailwind situation, the wake may be blown back onto the glide slope and a wake encounter is more likely than under normal headwind conditions. This phenomenon may be observed especially when the wind is not strong enough to decay the wake.

In the landing phase, this tailwind condition can move the vortices of an aircraft forward into the touchdown zone and cause a hazard to following landing traffic.

Separation minima on final approach should take wind conditions into account and prevent a hazardous wake encounter for actual wind and tailwind conditions.

d) Simulator training and wind modelling

It is generally recognised that the quality of wind modelling of aircraft simulator software is deficient to simulate accurate wind and aircraft behaviour near the ground. According to NLR research, the quality of the mathematical ground model in combination with the motion and visual ques of a simulator is usually not high enough to allow sufficient confidence in the crosswind or tailwind evaluation results.

Wind models used on training simulators are simplified. Simulators lack sufficiently high response times, proper ground and aerodynamical models, high frequency turbulence, and terrain induced wind effects.

Two-dimensional wind modelling (empirical, wind tunnel, or mathematical) has limited validity for predicting unsafe wind situations. A given complex surface situation requires 3-dimensional modelling and advanced fluid dynamics.

3D-windmodelling may be needed to identify the specific wind conditions at a specific aerodrome and the related hazardous wind phenomena.

The lack of realistic tailwind and gusty wind conditions in simulator training should be further evaluated and may require further consolidation of the pilot's experience during actual flights. Extra attention should be given to the impact of tailwind when landing on slippery runways.

IFALPA supports confirmation of training during exposure flights under supervision for every type or variant.

IFALPA supports training in bounced landing recovery techniques.

e) Landing Performance

Landing distance increases with tailwind. As a rule-of-thumb, the landing distance increases by 21 percent for the first 10 kts tailwind. The runway length may become limiting and other hazards (such as runways other than dry, wind disturbances, no RESA) may become more relevant. The combination of these hazards should be assessed (ref. 12).

A correct landing performance assessment before landing in tailwind conditions is of paramount importance with the following considerations:

- The latest weather data and Runway Condition Report should be assessed before landing.
- Conservative weather and runway data should be used to calculate actual landing distances.
- Margins should be included to account for variations and uncertainties.
- Deteriorating circumstances during approach should be noted.
- Other options with increased safety margins should be considered.
- Select the correct level of automation for the approach and landing.
- Select the proper flap setting, approach speed, autobrake setting, and intended use thrust of reverse.
- Use landing techniques that resemble the assumptions on which the landing performance calculations are based: at the intended touchdown point, firmly to ensure weight on wheels and derotation without delay.
- The correct deceleration technique should be used with all available means, including reverse thrust until one can ensure that the airplane will stop in time.
- Runway end safety areas and any EMAS should be identified.

Pilots should be trained to assess the runway excursion risk due to tailwind, to apply correct landing performance calculations, and to perform correct landing and deceleration techniques in tailwind operations.

Operators should develop and apply procedures for flight crew to assess landing performance during flight before landing based on actual conditions.

Additional safety margins should be added – IFALPA considers that at least a 15 percent margin should be added to the runway length required to allow for uncertainties and variations from assumed conditions.

IFALPA opposes any restrictions on the use of reverse thrust.

f) Take Off Performance

Specific risks are identified for take-off in tailwind conditions.

For Take-Off-Performance calculations, the highest tailwind should be taken into account (and by regulation factored by 150%) and crosschecked with actual wind reading upon take-off. The actual take-off wind should be provided by ATC at the moment of the take-off.

Intersection take-offs are not recommended.

Tail clearance may be an issue and this risk should be addressed during training and in a crew briefing during actual operation.

g) Runway orientation and allocation

Runway orientation and runway allocation have a direct impact on the encountered tailwind.

According to the ICAO Annex 14 recommendation, the primary runway should be directed in the prevailing wind direction. This must be the basic rule in the siting and orientation of all runways, that are needed to allow for the expected number of aircraft movements at a specific aerodrome.

The ICAO defined runway usability factor (Ref. 14) should be as high as reasonably possible and be at least 95 percent. This factor is, among others, determined by the prescribed prevailing crosswind limits.

For runway usability assessment, IFALPA supports the addition of a 5 kts tailwind limitation to the existing 20 kts crosswind limitation (Annex 14 Chapter 3.1.3). These are maximum wind values and should be reduced if safety is compromised due to environmental factors, or topography. See Ref 2, appendix A.

ICAO PANS-OPS I-7-2-1 clearly states that “Noise abatement should not be the determining factor in runway nomination when the tailwind component, including gusts exceeds 5 kts (and crosswind exceeds 15 kts).”

Some States deviate from this ICAO recommendation.

IFALPA supports the current runway assignment criteria (5 and 15 kts) for noise abatement and stresses that gusts should be included.

IFALPA believes that these criteria should equally apply for capacity enhancement or other non-operational considerations.

IFALPA believes that noise abatement runway assignment criteria apply for all landing and take-off runways in case of simultaneous runway use.

IFALPA stresses that the Pilot in Command has the final authority to accept or request a runway for safety reasons and that this request should be granted.

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18POS05 29 August 2018

Cold Weather Altimetry

BACKGROUND

Barometric instruments measure the change in barometric pressure to give altitude information. They are calibrated to ISA condition. Therefore, if there is any deviation from such environment, an error will be induced. If the temperature is higher than the ISA, the error will cause altitude information to be under-read, and will therefore not be of great safety concern. However, if the temperature is lower than ISA, the error will cause the altitude information to be over-read, causing a safety concern, especially regarding terrain clearance. ICAO PANS-OPS recommends cold altimetry correction to be applied when ambient temperature is ISA-15 or lower.

In practice, however, it is not so straightforward. When approaches were categorised by precision and non-precision only, correction application was relatively straightforward. The introduction of new approaches such as GPS, RNAV AR, GBAS, SBAS, and new FMS based approach has complicated matters.

Guidelines to pilots are also unclear. Different regulators have different viewpoints and opinions on what and how corrections should be applied. Manufacturers may have a different view from the regulators. Operators are employing different policies, and their pilots may be applying different mitigations if they deemed their company policy insufficient. Air traffic services providers may be employing a different procedure that is assumed by pilots and operators. Avionics manufactures may have different thoughts as well. Instrument procedural designers may be employing different assumptions during their design processes. This may create an unwanted situation such as traffic in the same airspace adopting different correction strategies thus, the required separation is lost.

POSITION

Many aircraft are currently equipped with instruments that require corrections applied by the flight crew to ensure safe operations in cold weather. Ideally, the latest technologies can be applied to them now. However, the cost and logistics required for retrofitting the world fleet are enormous.

After balancing risk, associated cost, and potential improvement, IFALPA proposed from “a future date that is to be determined (TBD),” that all newly built aircraft should be equipped with flight instrument that is capable of self-temperature-compensation, that works together with the next-generation navigation systems where vertical navigation will not be affected by temperature. Thus, cold weather altimetry correction by flight crew will not be necessary. Such systems should ensure environmental parameters entered by pilots are cross-checked with sensed parameters.

Before such system is in place, ICAO should co-ordinate with aircraft manufacturers, avionics manufacturers, navigation system providers, air traffic service providers, procedural designers, regulators, operators, and pilots to achieve a harmonised approach with regards to cold weather operations, by ensuring a harmonised approach and common procedure in winter altimetry correction.

Menu

Crew Interoperability - the bigger picture

POSITION PAPER | *24 July 2018*

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Crew Interoperability - the bigger picture

Executive Summary

- Crew Interoperability enables the possibility for a flight crew member to fly for two or more AOCs without undergoing an Operator Conversion Course (OCC).
- There are several fields where Crew Interoperability facilitated by EASA rules could create legal challenges and obstacles and entail potential risk. In particular, Social & Legal, Safety, Data

Protection, Anti-Competitive and Oversight & Accountability Aspects could be affected.

- Crew Interoperability being a form of employee sharing, this would be illegal from a Labour law aspect in many EU Member States and can be described as Atypical Employment.
- Transnational interoperability could contribute to social dumping through the facilitation of letter box companies / regulatory forum shopping and the absence of clarity on applicable law to aircrew. It can also be abused to downgrade crews' working conditions.
- Crew Interoperability raises not only legal & social questions, but also many safety issues that need to be addressed in a holistic, consistent manner. These are related to human factors, rostering and fatigue prevention, corporate safety culture, processes and procedures, aircrew training, etc. – as well as the implications for the crew's private and family lives.
- Crew Interoperability poses a strain for operators, crews and national aviation authorities alike as compliance and oversight is complex and can involve several different national laws.
- The use of a single AOC is the only and best solution for the operational challenges like maintaining an adequate level of efficiency and safety in an "interoperational" environment and constraints for the operator concerning e.g. similarity of manuals, procedures and corporate culture.
- The alternative approach is the use of case-by-case exceptions based on AltMoCs with targeted and adequate guarantees of workers' rights and oversight on safety, social and legal aspects.
- Any potential future rulemaking must be done under a dedicated RMT, involving relevant expertise (incl. from the social, legal and social security side), and involve an in-depth Impact Assessment, as the topic is complex and its implications and impacts must carefully and comprehensively be assessed.

1. What is Crew Interoperability

In aviation, 'interoperability' can be considered as the capability of two or more networks, systems, components or applications to exchange information and to be able to use this information for technical or operational purposes, so enabling them to operate effectively together.[1]

Airlines and training schools aim to translate this concept – which in principle is designed for “networks, systems, components or applications“ – to people, and invented the concept of “Crew Interoperability.” Crew Interoperability would refer to the possibility for a flight crew member to fly for two or more AOCs through crediting of training already performed.

This would be a change of the practice that a flight crew member must do an Operator Conversion Course (OCC) each time he/she changes the AOC. It could also imply that a pilot would be asked to work for an airline where he or she is not an employee. It would de facto turn air crew into an interchangeable component that would be ‘plugged’ in and out of different AOCs at a daily, weekly or any time scale.

EASA did an initial assessment of Crew Interoperability set-ups, identifying several important safety hazards and oversight challenges that would need to be addressed to ensure that – if such set-ups are used – they do not result in lower safety levels.[2] The Agency currently deals with this matter in RMT.0599, developing a ‘concept paper’ on the various aspects and repercussions any move to Crew Interoperability would entail.

The main driver behind Crew Interoperability is cost savings and additional flexibility that it would give to only those operators having more than one AOC or to different operators having different AOCs but working together.

This position paper wants to assess several aspects of Crew Interoperability. It mainly focuses on the challenges and the potential risks of the concept. Its aim is to point out questions that need to be answered and risks that need to be mitigated for Crew Interoperability to be beneficial and acceptable for all involved: Crew, Operators and National Aviation Authorities.

2. The current situation

Companies like SAS have already used similar concepts in the past. However, these operations should be placed in a specific context. Historically SAS has a single AOC and are under joint cooperative oversight from three states Competent Authorities/NAA in the same region. The authorisations to use mixed crews were granted individually either by grandfather rights of the companies or via AltMoCs specifying in a very detailed manner, the obligations of the organisations and oversight authorities concerned. Already now, any company wanting to share their crews on multiple AOCs can do so via an AltMoC.

3. The Consequences & Risks of Crew Interoperability

There are several fields where the authorisation of Crew Interoperability in EASA rules could create challenges and obstacles and entail potential risks:

- Social & Legal
- Safety
- Data Protection
- Anti-competitive
- Oversight & Accountability

3.1 Social & Legal Aspects

3.1.1. Labour law

There are serious legal aspects to be considered if the holder of the different AOCs is not the same employer of the pilots:

a.) Crew interoperability in the case of different AOCs and different employers: A worker is defined as a person who, for a certain period of time, performs services for and under the direction of another person in return for remuneration. The relation of subordination is essential for the definition of the employment contract. It is explicitly forbidden by many national laws that an employee is hired out to another employer unless it is through a subcontract agreement or through a formal temporary agency contract. Only some EU Member States allow employee sharing and most of those states would only allow it under specific conditions. For example, in France, Luxembourg and Belgium, it is subject to government authorisation as it is considered as a derogation from the basic principle of prohibition of secondment of staff. Austria and Germany require strategic employee groups as Temporary Work Agencies. Other requirements (maximum number of employees, geographical restrictions, type of workers that could qualify for such employment, etc.) to operate under employee sharing statute might vary between countries.

b.) “Intra-group” Crew Interoperability: Intra-group “mobility” or the situation where contracts provide for the possibility for workers to work in different subsidiaries (units) of the same group having different AOCs is a controversial issue.

Some courts have considered that intra-group mobility can be considered legal, if it is done for technical and organisational reasons responding to the division of work inside a group of companies and if rights of the workers are guaranteed. However, when there is fraud, abuses of rights or of legal personality, the secondment of personnel – even if it is within the same group of companies – should be considered illegal. The question is then if the set-up for sharing employees within a group is not abusive and if the rights of the workers are guaranteed.

A key element is whether the group gets an economic gain through such (forced) mobility practices. It was considered that a group, through internal invoicing, would not have any gain from such use of the staff if the conditions of the workers were not jeopardized. However, recent caselaw has nuanced this by recognising that companies do obtain an economic gain from intra group mobility resulting from an increase of the flexibility in staff management and the cost savings generated by it (French Cour de Cassation, case n° 09-69175 of 18/ July 2011).

c.) When Crew Interoperability requires pilots to operate from a country outside his or her habitual place of work, the rules on posting should be applied.

d.) Potential labour law problems:

1. Which labour law does apply to the pilot?
2. Contract issues: If contracts are different in the different airlines, which contract will the pilot follow at each time, wo will decide about vacation, leave, sickness?
3. Can the pilot reject an assignment?
4. When pilots are transferred to other airlines with lower conditions, is this not giving the employer the possibility to unilaterally change the pilot’s working conditions?
5. Which collective agreements will apply? Are pilots of other units considered for the recognition of company councils? Can a union represent a pilot working in company who is not an employee of that company? Are those pilots recognised for the calculation of

information and consultation rights? Could a pilot in a subsidiary be asked or forced to replace a striking pilot in another company (thereby *de facto* depriving workers from their ability to exercise – in a meaningful manner – their basic right to strike)? Can this pilot refuse the assignment? Can the pilot take part in an industrial action within a company where he or she regularly works but is where he or she is not a formal employee?

6. If the pilot has issues concerning working conditions, where should he or she file his report?
7. If a work accident occurs during work in a company where the pilot is not an employee of that company, who is responsible?
8. Who can initiate and process disciplinary procedures and decide on possible disciplinary measures? Could the different units where the pilot works issue disciplinary measures? What happens in case different units have different rules on disciplinary measures or have different opinions on a specific case?
9. In case of legal dispute, can the employee file a claim only against his or her employer in the contract or should it be filed against the subsidiary where the conflict arose? Can a subsidiary, that is not the official employer start legal proceedings against the pilot who is not an employee of that company?
10. How will the parties determine their responsibilities or liabilities in the event of a dispute?
11. In case of bankruptcy of one of the units: How are the other units involved or even responsible?
12. Can the pilot be assigned to an agency that places pilots to other companies?

3.1.2. Impact on Employee Pay and Working conditions

a.) Collective agreement, social security and income tax: depending on the structure of the co-employment, employees changing from one placement to another could be subject to a different collective agreement and a different wage level. This risks to open the door for companies ‘cherry picking’ where they base their crews and their AOCs (e.g. basing AOCs in the region with lowest wage levels/social security payments/labour right protections, etc.).

b.) The participation of employees in social dialogue structures: employees in employee sharing structures will have difficulties in engaging in collective bargaining and/or be represented at every level.

c.) Commute and frequent relocation has severe impacts on employees

1. In terms of social security, change in placement could be considered as the end of one job and the start of a new one, influencing the worker’s benefit levels.
2. Determination of a real Home Base would become a real challenge.
3. Placement/relocation has costs (both financial & and in terms of time).

4. Significantly increases level of flexibility and adaptability to different work environments (& locations) generates additional stress.
5. Frequent commuting and placements negatively affect workers' work–life balance and ability to combine with family/private life.

3.1.4. Social Security

Crew Interoperability would provide the operator with the possibility of freely rotating crew members around their transnational network, between different bases and countries. Therefore:

a.) EU wide Interoperability would increase the uncertainty on which entity is responsible to determine the Home Base of a crew member.

b.) Frequent changes in Home Base might result in employees losing their rights[3]: where can they receive medical treatment, what about family benefits, losing proof of good conduct, maternity, pension…

c.) Clear rules would be necessary to avoid regulatory 'forum shopping' practices and to fully ensure tax and social security regularity for crew members at all times.

3.1.5. Job quality and job satisfaction

Some aspects of working conditions related to Crew Interoperability that are likely to lead to workers not being satisfied with their working conditions, incl. lack of contact with company management (feeling that you are no longer part of it), feeling that your job and career advancement is at risk because of lack of clarity, perspective and real ties with one employer.

The European Foundation for the Improvement of Living and Working Conditions carries out periodical assessments of the working conditions in Europe. Jobs are placed in a scale going from 'high flying' to 'poor quality'. The last edition of the survey in 2016[4] shows that 23% of jobs qualified as 'poor quality' are temporary agency employees jobs (the second largest type of employment in this category). Jobs are considered 'Poor quality" because:

a.) Jobs rank lowest in terms of skills and discretion as well as in earnings and prospects.

b.) Monthly earnings are about a third of those in the ‘high flying’ profile.

c.) About a third of the workers in this profile fear they may lose their jobs within six months and 45% strongly disagree that their job offers good prospects for career advancement – about twice the proportion of workers on average for both dimensions.

Facilitating interoperability without addressing the effects of describing above, will lead to a new form of precarious and dependent employment and not to quality jobs. Interoperability cannot be considered only on economic and technical basis but taking into consideration the impact on the individuals. A pilot ‘detached’ temporarily to a subsidiary of the same group, which is a form of interoperability even if for the moment an Operator Course is needed, explains that the management of the company in which he is detached has no disciplinary powers on him. What is the effect of such arrangements for the company culture in the hosting airline? Is it durable? Can it be done otherwise without contravening the labour regulations?

3.2. Safety Aspects

3.2.1. Company & Safety Culture

Crew Interoperability creates a number of challenges when it comes to maintaining a consistent company culture.

This applies in particular to the need to create and maintain a consistent and robust safety & reporting culture across operators and AOCs as well as across national boundaries and national cultures. It is widely known that creating and maintaining a functioning safety & reporting culture is a challenge in any airline[5], requiring significant investment, leadership and trust among employees and vis-à-vis their management. Given the highly flexible, transnational and transient nature of Crew Interoperability set-ups and due to the loosening of the traditional links between employees and their company / management, significant efforts and resources would be required to prevent a downgrading of the safety & reporting culture.

For example, differences not just in safety culture but also in general company culture across the different operators, can introduce potential safety challenges. One key aspect is Occurrence Reporting which needs to be very mature within *each* of these AOCs and sharing of data and analysis between these AOC safety departments is crucial, as it the systematic coordination into Operations and training departments.

Further, there is a big risk that there will be poor Peer Support available in this sort of transient set-up. Peer Support has been proven to be the best defence against mental health and medical fitness issues developing into safety risks (see e.g. EASA rulemaking post Germanwings accident). Effective Peer Support will most likely be lacking in an interoperability environment, especially where this environment is misused by management.

3.2.2. Operational & procedural challenges

Besides these issue with safety and company culture, there are a number of related operational challenges and hazards that could translate in to safety risks:

For Crew Interoperability to actually work – from an operational safety management perspective – pilots would need to operate with *identical* Standard Operating Procedures (SOPs) across the different operators. “Almost similar” SOPs will not be enough. Especially emergency checklists and procedures will have to be 100% aligned as will relevant documentation such as OpsManual-A, OpsManual-B and the Quick Reference Handbook (QRH). This includes performance calculation methods, whether software or paper based, should be identical across operators to avoid safety critical errors to happen.

In these documentations, limitations, applicability of weather and other minima and flight procedures (incl. procedures/approvals such as MNPS, ETOPS, RNAVs, etc.) will have to be identical. Additionally, fleet & operating notes will have to be distributed and coordinated across different AOCs to ensure crews are adequately up to date when moving from one AOC to the next. It is unlikely that such Crew Interoperability could be achieved without at least a minimum familiarization programs including line flights.

Currently the Operator Conversion Course (OCC), Part Ops (ORO, TC CC, FC) requires such an OCC not only for Flight Crew but also for Cabin Crew and Technical crew. For a good reason: these procedures have to be identical as well, since they are safety critical and there are important crossovers (e.g. for CC: Emergency and evacuation procedures, for TC: use and application of MEL, use and form of TLB). Also, any attempt to reduce the issue of Interoperability to be one of only OCC Training content is to simplify things to an extreme. OCC training is one part of the Crew Interoperability issue, but neither the solution nor the one single enabler. More generally speaking: to reduce Crew Interoperability to only be a matter of crew training is to oversimplify the hazards and safety related challenges for the respective operators' SMS, as well as for the NAAs' safety oversight (see 3.2.3.).

Finally, there are numerous other issues to be considered, both by the operator(s) and the national oversight authorities, such as:

a.) FTL schemes: e.g. each operator has the obligation to ensure a legal roster for each and every crew member under any combination of 'crew-AOC-hopping', including disruptive early/late duties & transitions etc. For this to function, a very high robustness of rosters must be guaranteed.

b.) Fatigue Risk Management (FRM): apart from 'legal' rosters, Crew Interoperability requires a fully functional, and externally audited, Fatigue Risk Management system encompassing all involved operators and with a centralised Safety Department. Such FRMS must include an effective, non-punitive fatigue reporting system, an operational Fatigue Safety Action Group (FSAG) with crew representatives involved and periodic fatigue surveys among flight and cabin crew. Recommended FSAG actions must be implemented by all operators involved.

c.) Home Base: CS FTL.1.200, requires the pilot's Home Base to be "a single airport location assigned with a high degree of permanence." Crew Interoperability would entail frequent outplacements and relocations. How can 'Home Base' be defined and assigned if a crew member can interoperate to a potentially unlimited extent, especially as Home Base is linked to the place from where a crew member habitually carries out his/her duties?

d.) Fully functioning and mature SMS (incl. reporting schemes) in each operator & robust system in place to combine data, data analysis and take action.

e.) Other issues, such as Radiation (there has to be a 'radiation log' by the operator); CRM issues; Security issues (very different background checks and their acceptance across Europe); Medical issues (data protection/storage; different interpretations of the regulation across Europe; etc.).

3.2.3. Cooperative Oversight

Crew Interoperability requires very good & close cooperation between national competent authorities, via so-called cooperative oversight. And it must always be absolutely clear – to the operator, the crew and the authority – under which AOC each and every flight is operated.

Equally, each NAA involved in overseeing a Crew Interoperability set-up, must have the resources and expertise to oversee such practices to ensure no safety risks are created. This means the ability for in-depth, mature oversight, pooling of expertise, data and information across borders & different NAAs, as well as the ability to cope with different languages, national cultures, and interpretations. While cooperative safety oversight between the Danish, Swedish and Norwegian NAA might be working quite well, such cooperative oversight between e.g. Lithuania, Portugal and Greece (or many other combinations of NAAs) might be a challenge.

Of particular relevance is here that EASA standardisation visits over the past years have demonstrated that several NAAs are not anymore up to standard when it comes to properly overseeing their operators, due to a lack of human & financial resources and adequate expertise. Equally, many NAAs are still ill-equipped to audit operator’s safety risk management and performance-based safety management. Finally, in some key areas – such as FTL – EASA standardisation visits show that up to 70% on NAAs are well below standard. Given the importance of full compliance with FTL rules and of a fully functioning FRM in place, these results are a major hurdle for effective oversight of Crew Interoperability set-ups.

In its “Practical Guide on Management of hazards related to new business models in CAT operations”[6] published in August 2017, EASA clearly identified the need for cooperative safety oversight, as Crew Interoperability will by definition involve multiple NAAs.[7] However, the challenges to make such cooperative oversight happen and effective, are not (yet) addressed.

3.2.4. Safety Hazards identified by EASA

In its "Practical Guide on Management of hazards related to new business models in CAT operations", the Agency identified six hazards related to interoperability where crew training is one of the six. The definition used by EASA in the Practical Guide covers more than Crew Training and the Guide confirms that reducing Crew Interoperability to only be a matter of crew training is to oversimplify the hazards and safety related challenges for the respective operators SMS.

The 6 safety hazards, as identified in the Practical Guide

ServProv 1	When assessing service providers, be aware that their hazard identification measures might not suit the needs of your operator's management system.
ServProv 2	When assessing performance of service providers via compliance monitoring audits, use simple but pertinent indicators, e.g. such as the turnover rate of safety critical personnel. A turnover rate of more than 30% can be considered a significant change in the service provider's organisation and should require a notification from the service provider to the operator.
ServProv 3	In the case of wet lease-in agreements for commercial reasons to increase capacity, assess the reporting culture of the lessor and consider evaluation of data, e.g. average number of reports, e.g. for ground handling agents, refuelling companies. In addition, ensure regular exchange of information between safety managers of the lessor and the lessee.
ServProv 4	Be aware that the outsourced service provider may either be certified themselves or not required to have a certificate, e.g. flight planning, engine servicing, navigation chart providers, de-icing.
ServProv 5	Assess, if there are different levels of sub (sub)-contracting.
ServProv 6	Try to involve the Safety Manager during negotiations with the service provider and before the operator signs the contract with the service provider. In the case of so-called agreed 'service level agreements' between the operator and the service provider, ensure that they include safety elements.
ServProv 7	Where they exist, include an analysis of hazard identification logs and internal audits into the service provider's evaluation.
ServProv 8	Liaise with the compliance, or equivalent, - manager of the service provider.

3.3. Data Protection Aspects

A brief outline of Crew Interoperability was presented to the Data Protection Commissioner of Ireland and concerns were noted about how pilots' data would be circulated among several AOCs (Companies), and a complete case study was requested by the Commissioner for an in-depth assessment.

Systems for accessing Flight Data are company based and often subject to detailed Protocols governing data use. How would a pilot who is not an employee of the company going to be protected against unfair use of flight data? Can a company obtain, store and process data of pilots that are not their employees? How would the pilot be granted the right to access personal data from an airline where he or she is not an employee? How is medical data treated and protected?

Regarding fatigue logs and flight hours, how will this data be shared between the employer company and a third party without breaching the pilot's privacy?

3.4. Anti-Competitive Aspects

A big holding company could have a pool of pilots and move these around several of their smaller operators within their holding group. This could entail the hiring of these pilots in the country of cheapest labour, most lax labour laws, and lowest social security requirements, which, in turn, would provide a significant (unfair) competitive advantage over other single AOC operators. This could create an unlevel playing field within the European aviation market to the detriment to smaller single AOC operators and operators that for other reasons do not wish to use such Crew Interoperability set-ups or cannot do so e.g. for legal or industrial relations reasons.

3.6. Oversight & Accountability

A company with the freedom of Crew Interoperability across Europe could pick and choose which regulatory/oversight authority to 'do business with'. This may put undue pressure on national authorities to retain current or attract new 'business', potentially resulting in authorities competing against each other for this 'business'. A sort of 'forum shopping' for the regulator who interprets legislation in the way a company wants could very occur. Especially if Crew Interoperability legislation is poorly regulated, for example using 'soft-law' Guidance Material and Acceptable Means of Compliance – instead of 'hard-law' Implementing Rules – this 'forum shopping' will become a reality.

Crew Interoperability brings a significant risk of lack of accountability. This is a serious issue, e.g. when a pilot operates for potentially 5 or more AOCs during a week's work. Who is accountable for this pilot? Which CEO, which head of Air Safety, which Chief pilot? And which national authority? If a serious incident or accident occurs: Where does the 'buck' stop? As previous accidents have shown, 'virtual airlines' with multiple, overlapping and unclear lines of accountability present a real safety risk and were therefore banned, due to horrific safety records due to 'lack of accountability'. Allowing for Crew Interoperability risks to 'unlearn' the lessons drawn from previous accidents and would put complex legal challenges in front of the national authorities that are involved in the oversight of such complex set-ups.

4. Proposals & Conclusion

Crew interoperability might be a desired commercial target of certain airlines to obtain enhanced flexibility and a competitive edge over their competitors. In certain limited circumstances, Crew Interoperability might even be desirable and beneficial for the employees involved.

However, the concept is faced with the reality of complex and non-harmonised labour laws throughout Europe and with the reality of complex and specific company cultures in every airline. A single European labour law system would be the solution for the many complex legal issues posed by transnational job-sharing.

There are some, very few cases where airlines are already using Crew Interoperability. Those are specific and exceptional cases, and the legality of these set-ups with regards to labour law, social security legislation or safety rules has not been challenged yet. In any case, where Crew Interoperability exists, several specific measures have been put in place to avoid abuse and to ensure that the authorities concerned have proper monitoring and oversight, both from a safety perspective and from a social & legal perspective.

The European Parliament, Council of the EU and European Commission recalled in their agreement on Better Law-Making[8]: "*the Union obligation to legislate only where and to the* extent necessary*, in accordance with Article 5 of the Treaty on European Union on the principles of subsidiarity and proportionality*." The Three institutions agreed that '*Impact assessments should cover the existence, scale and consequences of a problem and the question whether or not Union action is needed. They should map out alternative solutions and, where possible, potential short and long-term costs and benefits, assessing the economic, environmental and social impacts in an integrated and balanced way and using both qualitative and quantitative analyses."*

It is therefore imperative that, before any rule-making exercise is considered, the European Commission and the Agency:

- demonstrate the need for a new rule or a rule change (be it at hard-law or soft-law level);
- demonstrate that the benefits of such new rule would be greater than the negative impacts it would create;

- take into account not only safety aspects but also social, legal, oversight and other relevant aspects and impacts;
- consider alternative measures to a rule change that would have less negative impacts.

ECA considers that the many issues & problems raised by Crew Interoperability set-ups warrant a thorough review of Crew Interoperability entirely on its own under a separate RMT and a comprehensive Impact Assessment. Such a RMT should involve relevant expertise (incl. from the social, legal and social security side) to see what would be necessary in terms of effective regulation and controls over business set-ups which could be misused by the industry easily, be poorly overseen and be creating liability & accountability issues – with potentially significant negative consequences.

Following our initial examination, the negative safety, social, legal and regulatory impacts of potentially facilitating Crew Interoperability would by far outweigh the commercial benefits it could bring to a very small number of operators. An in-depth study and Impact Assessment on potential effects of such interoperability set-ups and how any related rule change could be misused by the industry if not correctly controlled should confirm or infirm our analysis.

An alternative less complex and disruptive – and hence more realistic – approach would be to continue with case-by-case examinations and exceptions (e.g. based on an AltMoC), providing three basic types of guaranties, i.e. that

- the rights of the employees are fully protected at all times and in all territories where Crew Interoperability is planned,
- all safety concerns are fully addressed to the satisfaction of the authorities, and that
- Effective cooperative oversight is in place, both for the safety aspects and the social / legal aspects involved.

However, in many cases, the use of a single AOC would still be the best solution for the operational challenges like maintaining an adequate level of efficiency and safety in an “interoperational” environment and constraints for the operator concerning e.g. similarity of manuals, procedures and corporate culture.

If EASA insist on pushing ahead with rulemaking, this must take place in a dedicated RMT (see above), and it must be ensured that the criteria which would allow Crew Interoperability to take place are extremely strict and guarantee the safety of the operations, seamless cooperative safety oversight, compliance with labour law systems and that interoperability cannot downgrade working conditions of aircrew (e.g. through its use as an industrial weapon, through regulatory forum shopping etc.).

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[3] Final report at the demand of the European Commission, DG Research on "Social Security, Supplementary Pensions and New Patterns of Work and Mobility: Researchers' profiles" by the expert group on "Social security, supplementary pensions and new patterns of work and mobility: researchers' profiles", September 2010; - Y. Jorens, D. Gillis, L. Valcke & J. De Coninck, 'Atypical Forms of Employment in the Aviation Sector', European Social Dialogue, European Commission, 2015, pg. 250.

[4] Sixth European Working Conditions Survey – Overview report, European Foundation for the Improvement of Living and Working Conditions, 17 November 2016

[5] London School of Economics (LSE) / EUROCONTROL study on pilots' Safety Culture Perceptions within European airlines (2015, see link) shows that there are major challenges with building & maintaining robust safety culture. For example, only one out of three (39%) believes adequate training is provided when new systems and procedures are introduced; Less than half of respondents think they receive timely feedback on the safety issues they raise (45%); Half of the respondents believe there is no good communication in the company about safety; Only one out of three (37%) pilots have a high degree of trust in their airline's management regarding safety; One out of five (20%) is not

satisfied with the level of confidentiality of the safety reporting and investigation processes; etc.

[6]https://www.easa.europa.eu/sites/default/files/dfu/Practical%20Guide%2

[7] ”Interoperability refers to those cases where a holding or parent company wants to streamline its operations across several different AOCs of several Member States belonging to the same holding or parent company and to exchange aircraft and possibly crews freely. Interoperability requires good cooperation between national competent authorities, via so-called cooperative oversight”.

[8] Interinstitutional Agreement of 13 April 2016 between the European Parliament, the Council of the European Union and the European Commission on better law-making, Official Journal of the European Union, 12.05.2016 L123/1.

Crew Interoperability Position Paper, ECA 2018

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Pilot insight into recent maintenance works

Position paper

It is a legal requirement[1] that the commander has a confirmation of the airworthiness of the aircraft before flight. For Commercial Air Transport (CAT) the operator shall use a technical log system to inform the pilot and maintenance certifying staff about each flight, necessary to ensure continued flight safety. Also, the technical log must contain the current aircraft certificate of release to service (CRS), signed by certifying staff (a licensed aircraft engineer).

In this context, ECA fully shares the concerns of AEI (Aircraft Engineers International)[2] with regard to the practice in several EU countries that reduce the release into service by licensed engineers to a mere administrative task without any physical inspection of the work performed.

The technical log shall also contain all outstanding deferred defects rectifications that affect the operation of the aircraft. All this information, together with a statement of planned maintenance due in the nearby future must be checked by the commander before flight.

ECA and AEI position is that, in order to give pilots more background information on the aircraft status, **pilots should be given easy access to information about recent maintenance actions. In addition, all critical maintenance tasks**[3] should be logged in the aircraft maintenance log accessible to the pilots. The (paper or e-) AML should be the prime method to inform about **critical maintenance tasks** and failure rectification.

This **information will assist the flight crew in basic flight and failure management** and anticipate on possible undetected failures or failure modes associated with previous maintenance work. The source of the failure may not have been identified or dealt with, or the maintenance work may have been performed incorrectly or ineffectively.

The original **fault and rectification** of these critical items should be **written down in a plain and unambiguous way** and must be easily accessible by the pilots for all recent flights (for instance 3 flying days).

June 2018

1 Commission Regulation (EU) No 1321/2014 Annex I

2 AEI Press release https://www.srat.se/globalassets/flygteknikerna/dokument/aei/certificate-of-release-to-service-for-pr-news-004.pdf

3 Commission Regulation (EU) No 1321/2014 article 2: 'critical maintenance task' means a maintenance task that involves the assembly or any disturbance of a system or any part on an aircraft, engine or propeller that, if an error occurred during its performance, could directly endanger the flight safety

EASA

European Aviation Safety Agency

ANNUAL SAFETY REVIEW 2018

Disclaimer

 Acknowledgements The authors wish to acknowledge the contribution made by the Member States to thank them for their support in the conduct of this work and in the preparation of this report.

Photocredits

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Foreword by the Executive Director

2017 has been an exceptional year for global airline safety, with fewer fatalities than at any time in the industry's history. Closer to home, we can see that in all aviation domains across the EASA Member States, the number of fatal accidents in 2017 has been lower than the average of the previous decade.

However, a regulator never rests on its laurels to ensure that this trend continues as the aviation system develops to face new challenges such as drones and cyber security risks. Indeed, by the end of January this year, the historically low figures for global airline safety for the whole of 2017 had already been exceeded. In the EASA Member States in 2017, there were fatalities in all non-commercial and specialised operation domains, as well as a fatal accident involving a medical flight that crashed in Italy with the loss of all 6 people on board.

Such accidents demonstrate the need to continuously drive safety improvements across the board, to share lessons learned. This is achieved through the safety actions that are identified in the European Plan for Aviation Safety (EPAS). In partnership with our Member States we are developing a better view of safety and defining a collective response. Additionally, EASA coordinates beyond Europe at a global level in order to help protect our citizens when they travel beyond our borders.

The Annual Safety Review will continue to evolve and with the launch of the Data4Safety, big-data programme, EASA is significantly enhancing the ability of the European Aviation System to be aware of potential safety risks. With this, we can react more quickly and help people to travel in the safest conditions.

Patrick Ky
Executive Director

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Introduction

EASA would like to welcome you to the 2018 version of the EASA Annual Safety Review. The review has been published since 2005 and is now in its 13th year. The analysis presented in this review together with the domain-specific safety risk portfolios provide the data-driven input that supports the decision-making in formulating the European Plan for Aviation Safety (EPAS).

This edition provides safety risk portfolios in 11 of the aviation domains analysed and builds on the work of previous years. As with the previous edition, the ongoing European Safety Risk Management Process, in particular the valuable input from the Network of Analysts (NoA) and Collaborative Analysis Groups (CAGs), means that the analysis in this year's review provides not just a statistical summary of aviation safety in the EASA Member States (MS) but also identifies the most important safety challenges faced in European aviation today. This analysis drives the development of safety actions for the EPAS and harnesses the experience of both the EASA Member States (EASA MS) and industry to connect the data with the current and future priorities of the Agency.

How the Safety Review is Produced

Information Sources

The EASA Annual Safety Review is produced by the Safety Intelligence and Performance Department (SM1) of EASA. The analysis in the review comes from two specific data sources:

- **EASA's Occurrence Database.** The main source of data is the Agency's own database, being accidents and serious incidents reported to the Agency by Safety Investigation Authorities (SIAs) world-wide, which is augmented by information collected by the Agency from other sources. In all domains, the data and its quality is also checked with the EASA MS through the NoA. EASA is grateful for the support of the safety analysis teams in each EASA MS in developing the Review.

- **European Central Repository.** The European Central Repository (ECR) is the central database of all occurrences reported to the competent authorities of the EASA MS, the reporting of which is governed by Reg. (EU) 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation. This is the primary source of information that is used to cross-check the accidents and serious incidents in EASA's own database.

Process for Safety Risk Portfolios

The safety risk portfolios are developed through an iterative process, starting with the data available in EASA's occurrence database and in the European Central Repository. This provides the portfolios with a starting list of the safety issues affecting aviation and an indication of the key risk areas that each safety issue relates to. In addition to understanding what the safety issues are, they are risk assessed using the European Risk Classification Scheme (ERCS), as it is soon to be required under Regulation (EU) 376/2014. EASA has begun applying the ERCS to historical occurrences assessed in this Review and are pleased to provide this additional element in the analysis results. Each occurrence receives an ERCS risk classification and the overall risk level of the safety issue is then calculated. This is then used to define the risk level of the key risk area.

European Risk Classification Scheme

Regulation (EU) 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation introduced the requirement for common occurrence risk classification at national level. The ERCS provides a clear understanding of the true risk of an occurrence leading to a fatal accident. The ERCS methodology measures the risk through a matrix covering 2 dimensions. The vertical axis considers what the severity would have been if the occurrence being scored had escalated into a fatal accident. This is done by considering both the size of the aircraft involved and how severe the accident outcome could have been.

Secondly, the horizontal axis measures how close the occurrence was to that fatal accident outcome based on a weighted barrier model. Therefore the ERCS gives a much better representation of risk that the normal classifiers of accident, serious incident and incident as it provides a proper estimation of the likely risk.

Using this data input, the draft portfolios are then discussed within the collaborative analysis groups. This ensures that the safety issues have been correctly defined and assessed and to add any safety issues that may not yet be present in the data, such as emerging issues.

Collaborative Analysis Groups (CAGs)

The CAGs are expert groups, responsible for analysing the safety of European aviation. Each CAG works on a domain and its membership is derived from key stakeholders in the domain. These stakeholders may come from industry or from EASA's regulatory partners. Each CAG meets up to three times per year to review available safety information, arrange in depth safety issue analyses and to identify emerging issues. They monitor the safety performance of their domain and provide feedback on the effectiveness of actions taken.

Chapter Overview

This document is split into a number of chapters, each of which covers the different operational domains in the European Aviation System. The different domains in each chapter cover the areas for which a specific safety risk portfolio has been developed. The scope of each domain chapter (and corresponding safety risk portfolio) is limited to the EASA MS, either as the state of operator or the state of registry. For the Aerodrome and ATM chapters, this scope is limited to the EASA MS as state of occurrence. The chapters of this review cover the following areas:

Chapter 1 Safety Overview

Review of Global Airline Safety: this provides a review of global safety for large commercial air transport aeroplanes.

Cross-domain Safety Overview for EASA MS: This provides an overview of the most important statistics across all the different domains. It helps to identify which domains are likely to need the greatest focus in the EPAS.

Chapter 2 Aeroplanes

Chapters 2.1-2.3 – Commercial Air Transport: This covers all commercial air transport airline (passenger and cargo operators) operations involving aeroplanes, as well as Non-commercially operated complex aircraft flown for business operations. The airline and business operations have the same safety risk portfolio due to the strong commonalities in their safety issues and key risk areas.

Chapter 2.4 – Specialised Operations: This covers all aerial work/ Part SPO operations involving aeroplanes and involves a wide range of different operational activities including aerial advertising, aerial patrol, agricultural, air shows, parachuting and towing (with glider operations).

Chapter 2.5 – Non-commercial Operations: The chapter covers all non-commercial operations involving aeroplanes and includes analysis of what would be understood within the traditional definition of general aviation. The chapter also includes flight training and other non-commercial activities.

Chapter 3 Rotorcraft

Chapter 3.1 – Offshore Commercial Air Transport: This covers operations in the offshore helicopter domain and includes some initial input on offshore renewable operations in addition to the oil and gas industry.

Chapter 3.2 – Other Commercial Air Transport: This covers all other commercial air transport operations involving helicopters such as passenger flights, air taxi and HEMS.

Chapter 3.3 – Specialised Operations: This covers all aerial work/ Part SPO operations involving helicopters and includes an even wider range of different operational activities than the equivalent aeroplanes chapter, adding Construction/ Sling Load operations and Logging to the categories already mentioned.

Chapter 3.4 – Non-commercial Operations: The chapter covers all non-commercial operations involving helicopters and includes analysis of what would be understood within the traditional definition of general aviation. The chapter also includes flight training and other non-commercial activities.

Chapter 4 Balloons: This chapter covers all operations involving hot air balloons.

Chapter 5 Gliders/ Sailplanes: This chapter covers all operations involving gliders and sailplanes.

Chapter 6 Aerodromes and Ground Handling: This chapter covers aerodrome operations that occur within the EASA MS. Therefore the scope for this chapter is EASA MS as state of occurrence. For the first time a safety risk portfolio is provided for this domain.

Chapter 7 ATM/ANS: This chapter is EASA MS as state of occurrence and covers ATM/ANS operations. An initial safety risk portfolio has also been provided for this domain for the first time.

Typical Structure for Each Chapter

Each of the domain chapters in this Annual Safety Review contains specific information which is useful in understanding the analysis of that domain. The structure of each chapter is as similar as possible, providing the ability to compare information in each domain. Such information includes:

Key Statistics: Every chapter starts with a set of key statistics. This provides information on the Tier 1 SPIs for that domain, which includes details of the number of fatal accidents, non-fatal accidents and serious incidents. It also outlines the number of fatalities and serious injuries in the domain. In all cases, the figures for 2017 are provided followed by comparison with the annual averages over the past 10 years. This helps to provide a reference on how this year's performance relates to historical trends. This information is also provided in a graphical format.

Domain Specific Analysis: As every domain has different facets to it, a further analysis of useful domain specific information is included. For example, within the areas of special operations it is useful to provide information on the type of operation involved in safety events, while some chapters include an analysis of the type of propulsion.

Safety Risk Analysis: The next part of the analysis, and the most important in each chapter, is the domain safety risk analysis. This section provides an overview of the relative risk level of each key risk areas, as well as outlining the high risk safety issues for the domain. The full safety risk portfolio is then provided. These safety risk portfolios show a snapshot in their development, taken at the point where occurrence data and CAG inputs have identified the safety issues, but without further consideration of the potential mitigating effects of forthcoming safety actions or the worsening effects of other circumstances.

The safety risk portfolio tables have 2 axes. Along the top, information is provided on the key risk areas, which are the most frequent accident outcomes or potential accident outcomes in that domain. In the context of the safety performance framework, the key risk areas are the Tier 2 safety performance indicators (SPIs) for the domain. The key risk areas are, in most cases, ordered on the basis of their risk levels, determined using the ERCS. On the left hand axis of the portfolio are the safety issues, which relate to the causal and contributory factors to the key risk areas (accident outcomes). In terms of safety performance, these are the Tier 2+ SPIs. These are prioritised on the basis of their high, medium or low risk using ERCS. The occurrences related to the individual safety issues and are identified by mapping event types in the ECCAIRS taxonomy to each safety issue.

The Connection with the European Plan for Aviation Safety

The European Plan for Aviation Safety

The European Plan for Aviation Safety (EPAS) is a coordinated safety action plan that is prepared by EASA each year with the support and technical inputs from EASA Member States and aviation stakeholders. It seeks to further improve aviation safety throughout Europe. The Plan looks at aviation safety in a systemic manner by analysing data on accidents and incidents. It considers not only the direct reasons, but also the underlying or hidden causes behind an accident or incident. Moreover, the Plan takes a longer term view into the future. Although the Plan is originated from EASA MS, it intends to be a valid reference for all States in ICAO EUR Region.

The EPAS is a key component of the Safety Management System at the European level, and it is constantly being reviewed and improved. As an integral part of EASA's work programme, the Plan is developed by EASA in consultation with the EASA Member States and industry. It is implemented by the EASA Member States on a voluntary basis through their State Programmes and Plans. The current EPAS edition covers the 5-year period from 2018 to 2022.

The Safety Risk Management Process

The EPAS is developed through the European safety risk management (SRM) process, which is defined in 5 clear and specific steps as shown below:

Identification of Safety Issues: The identification of safety issues is the first step in the SRM process and it is performed through analysis of occurrence data and supporting information from the Collaborative Analysis Groups. These candidate safety issues are formally captured by the Agency and are then subject to a preliminary safety assessment. This assessment then informs the decision on whether a candidate safety issue should be included formally within the relevant safety risk portfolio or be subject to other actions. Advice is taken from the Network of Analysts[1] and CAGs. The output of this step in the process are the domain safety risk portfolios. Within the portfolios, both the key risk areas and safety issues are prioritised.

Assessment of Safety Issues: Once a safety issue is identified and captured within the safety risk portfolio, it is subject to a formal safety assessment. These assessments are prioritised within the portfolio. The assessment process is led by EASA and is supported by the NoA and the CAGs. In addition, group members are encouraged to participate in the assessment itself; this external support is vital to achieving the best possible results. The result of the assessment is the production of scenario based bow tie models that help to identify weak controls for which potential actions can be identified. Together this forms the Safety Issue Assessment (SIA), which provides potential actions for the EPAS. This is followed by the Preliminary Impact Assessment (PIA), which assesses the wider implications and benefits of the proposed actions and makes recommendations on the actions to be implemented in the EPAS.

Definition and Programming of Safety Actions: Using the combined SIA/PIA, formal EPAS actions proposals are then made to the advisory bodies. Once discussed and agreed upon, the actions are then included in the next version of the EPAS. Prior to publication, the EPAS is approved by the EASA Management Board.

Implementation and Follow Up: The next step in the process involves the implementation and follow-up of the actions that have been included within the EPAS. There are a number of different types of action within the EPAS. These include focussed oversight, research, rulemaking and safety promotion.

Safety Performance Measurement: The final stage in the process is then the measurement of safety performance. This serves two purposes, firstly to monitor the changes that have resulted from the implementation of safety actions. Secondly, it also serves to monitor the aviation system so that new safety issues can be identified. To ensure that there is a systematic approach to the work in this step of the SRM process, a Safety Performance Framework has been developed that identifies different tiers of Safety Performance Indicators (SPIs). Tier 1

1 See Article 14(2) of REGULATION (EU) No 376/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation

transversally monitors all the domains and the overview of the performance in each domain. Tier 2 then covers the key risk areas at domain level, whilst Tier 2+ monitors the safety issues. The Annual Safety Review is the annual review of the Safety Performance Framework. It identifies safety trends, highlights priority domains, key risk areas and safety issues. From this step the SRM process begins again.

More information on the EPAS can be found here:
https://www.easa.europa.eu/easa-and-you/safety-management/european-plan-aviation-safety

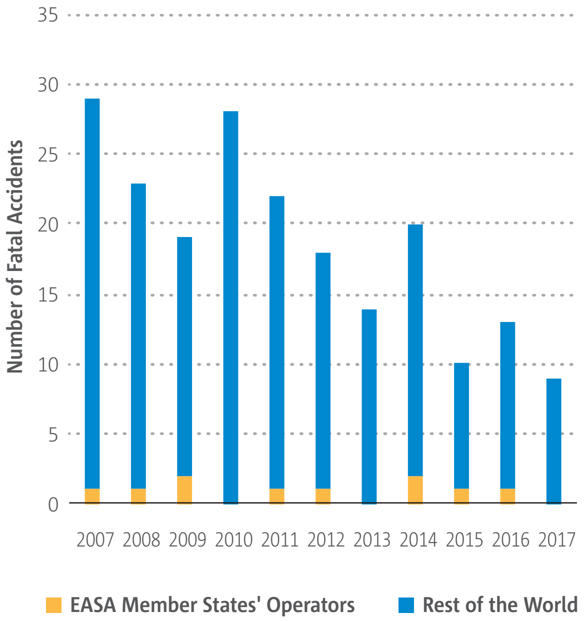
Safety Overview

1

1.1 Global Airline Fatal Accidents

This section covers large aeroplane passenger and cargo operations worldwide. The figures below show the EASA member states' operators contribution to the number of fatal accidents and fatalities. The relative contribution to the number of fatalities is mainly driven by the size of aircraft and nature of flight (passenger or cargo) involved. In 2017, there were 9 fatal accidents and 67 fatalities worldwide, the lowest number of fatal accidents and fatalities since the start of our records in 1970.

Figure 1. Number of Fatal Accidents and Fatalities Involving Large Aeroplane Passenger and Cargo Operations, EASA MS and Rest of the World, 2007-2017



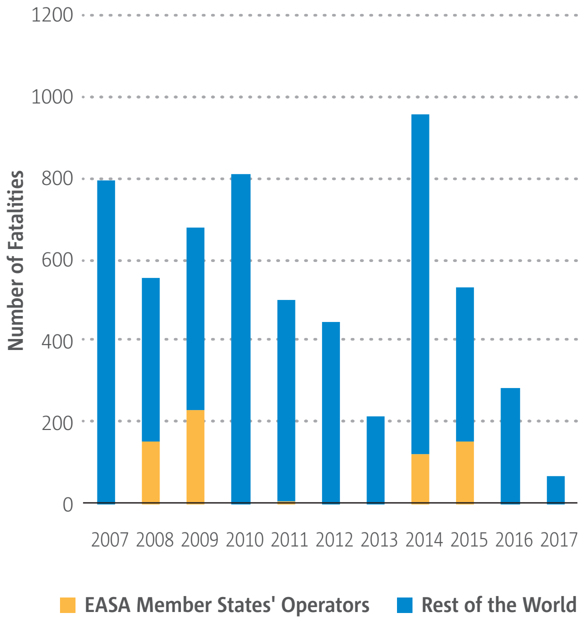
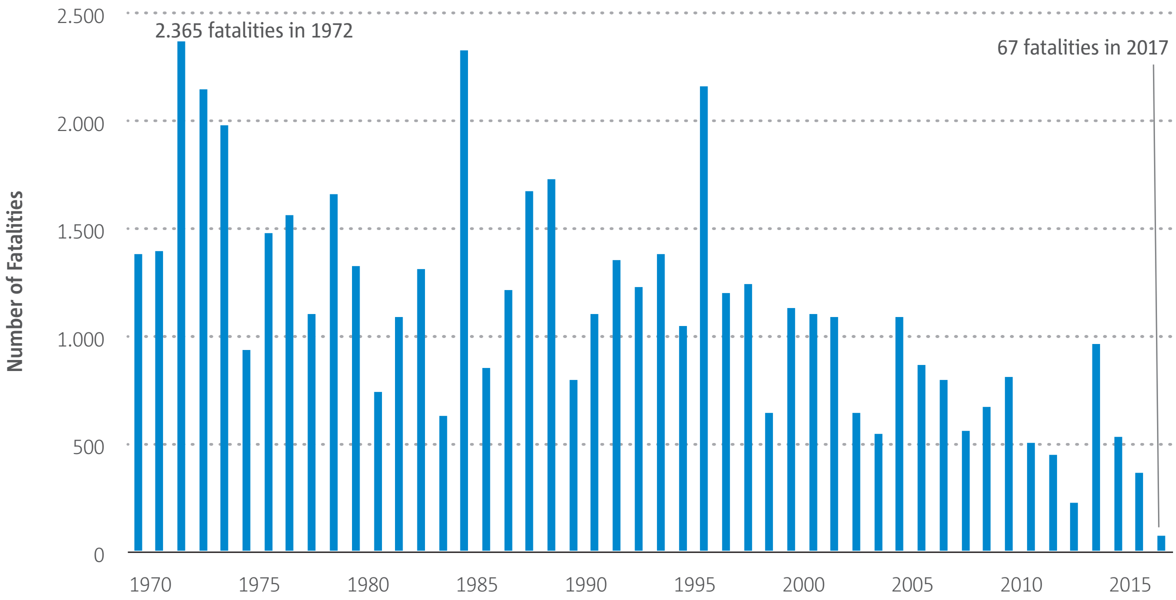


Figure 2. Number of Fatalities Involving Large Aeroplane Passenger and Cargo Operations Worldwide, 1970-2017



One of the reasons that 2017 had a particularly low number of fatalities in comparison with previous years is that the highest number of fatalities in a single accident was 39 and the median number of fatalities was 4 per accident. In comparison, over the previous ten years (2007-2016), the highest number of fatalities in a single accident was 298 and the median was 8.

1.2 EASA Member States Cross Domain Safety Overview

For each domain analysed in this Annual Safety Review, the number of fatal accidents and fatalities for 2017 has been compared with the preceding ten years, 2007-2016. The table reflects the chapter structure and definitions of the Annual Safety Review. For the aircraft chapters (aeroplanes, rotorcraft, balloons, gliders and RPAS), the definition relates to aircraft operated by an EASA member state AOC holder or registered in an EASA member state.

Both the mean average and the median number of fatalities are shown for the period 2007-2016. This is because for some aircraft domains the median provides a better representation of the number of accidents per year. This is typically related to the number of passengers on board aircraft involved in fatal accidents. Gliders usually only have one person on board and the number of fatal accidents and both the mean and median number of fatalities are very similar. By contrast, commercial air transport (CAT) airline accidents may involve one or several hundred fatalities, therefore the annual number of fatalities varies and the mean and median figures are quite different.

It can be seen in Table 1 that the highest number of fatal accidents and fatalities in 2017 occurred in the NCO aeroplane domain. This domain also has the highest mean number of fatal accidents and the highest mean and median number of fatalities over the preceding 10 years. By contrast, there were no fatal accidents in CAT-airlines, NCC-business, and Offshore CAT rotorcraft in 2017. Of these domains, over the preceding 10 years the lowest mean number of fatal accidents per year was in CAT-airlines. NCC-business had the lowest number of fatalities over the decade, followed by Offshore CAT helicopters.

Table 1. Cross Domain Comparison of EASA MS Aircraft Fatal Accidents and Fatalities, 2007-2017

Aircraft Domain	Fatal Accidents 2017	Fatal Accidents 2007-2016 Mean	Fatalities 2017	Fatalities Annual 2007-2016 Mean	Fatalities Annual 2007-2016 Median
Aeroplanes					
CAT - Airlines	0	0.9	0	66.4	4
NCC - Business	0	0.5	0	0.6	0
Specialised operations	3	7.3	4	18.1	16.5
Non-commercial operations	34	50.1	62	92.2	91
Rotorcraft					
Offshore CAT	0	0.4	0	1.3	0
Onshore CAT	1	1.7	6	5.4	4
Specialised operations	3	4	4	7.5	6
Non-commercial operations	3	5.6	7	13.2	12.5

Aircraft Domain	Fatal Accidents 2017	Fatal Accidents 2007-2016 Mean	Fatalities 2017	Fatalities Annual 2007-2016 Mean	Fatalities Annual 2007-2016 Median
Balloons	0	1.2	0	2.1	1
Sailplanes	25	25.4	27	29.5	29.5

A separate table has been used for aerodromes and ground handling and ATM/ANS, reflecting the fact that the definition here is different: it includes all fatal accidents and fatalities that happened at aerodromes or in air-space in an EASA member state. Therefore the infrastructure table not only counts fatal accidents and fatalities that are already in the table for the aircraft chapters, but also some that involve operators or aircraft registered outside of a member state.

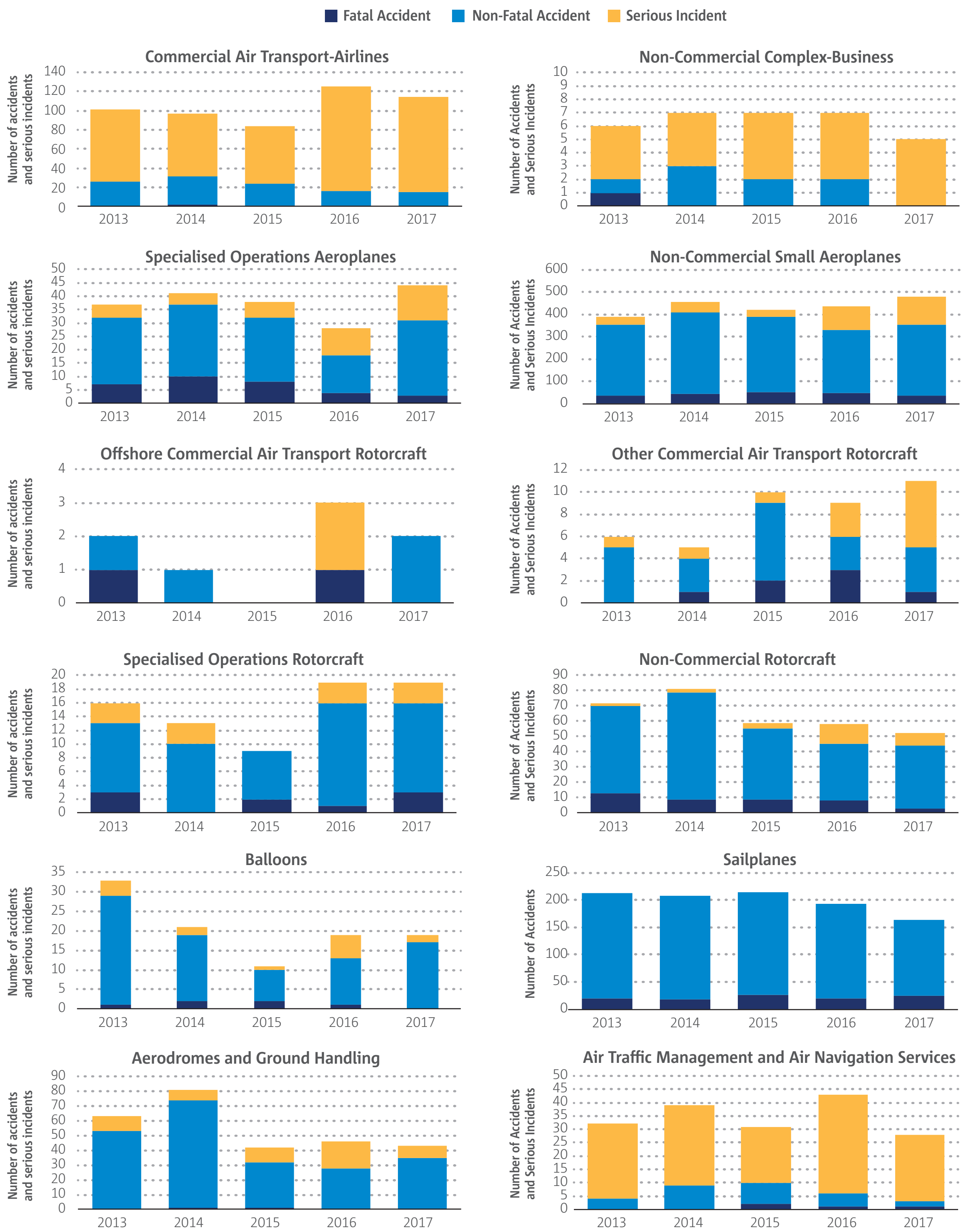
Table 2. Cross Domain Comparison of EASA MS Infrastructure Fatal Accidents and Fatalities, 2007-2017

Infrastructure	Fatal Accidents 2017	Fatal Accidents 2007-2016 Mean	Fatalities 2017	Fatalities Annual 2007-2016 Mean	Fatalities Annual 2007-2016 Median
ADM & GH	0	0.7	0	1.7	0.5
ATM/ANS*	1	0.5	6	1.6	0

*The ATM/ANS figures include both ATM/ANS related and contribution accidents. See chapter 7 for further details.

The graphs below show the number of fatal accidents, non-fatal accidents and serious incidents for each aircraft domain, providing a visual comparison.

➡ **Figure 3.** Number of Fatal Accidents, Non-fatal Accidents and Serious Incidents by Domain, 2013-2017



Aeroplanes

2

This chapter covers all aeroplane operations. The chapter is divided in four main sections:

1. EASA MS Air Operators (EASA MS AOC Holders) of airline passenger/cargo with aeroplanes having a maximum take-off weight above 5700 kg
2. EASA MS registered complex aeroplanes operating non-commercial operations (NCC) not classified as special operations (SPO) and with a maximum take-off weight above 5700 kg
3. EASA MS registered aeroplanes or EASA MS AOC Holder performing special operations (SPO) such as air ambulance, advertisement, photography, etc.
4. EASA MS registered non-complex aeroplanes performing non-commercial operations, having a maximum take-off weight below 5700 kg and not covered in the sections above.

For each section, the key statistics are presented. For sections 1 and 2, a common safety risk portfolio has been developed since, despite of the different type of operations, they both have a large amount of commonalities in terms of risk areas and safety issues. Sections 3 and 4 contains an individual safety risk portfolio covering each domain.

2.1 Commercial Air Transport - Airlines

This section covers the main statistics for the EASA MS Air Operators (EASA MS AOC Holders) of airline passenger/cargo with aeroplanes having a maximum take-off weight above 5700 kg. Data is based on the accidents and serious incidents collected by the Agency as per Annex 13 investigations or by the active search of those events from other official sources.

2.1.1 Key Statistics

The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of the fatalities and serious injuries happened in those accidents between the same timeframe.

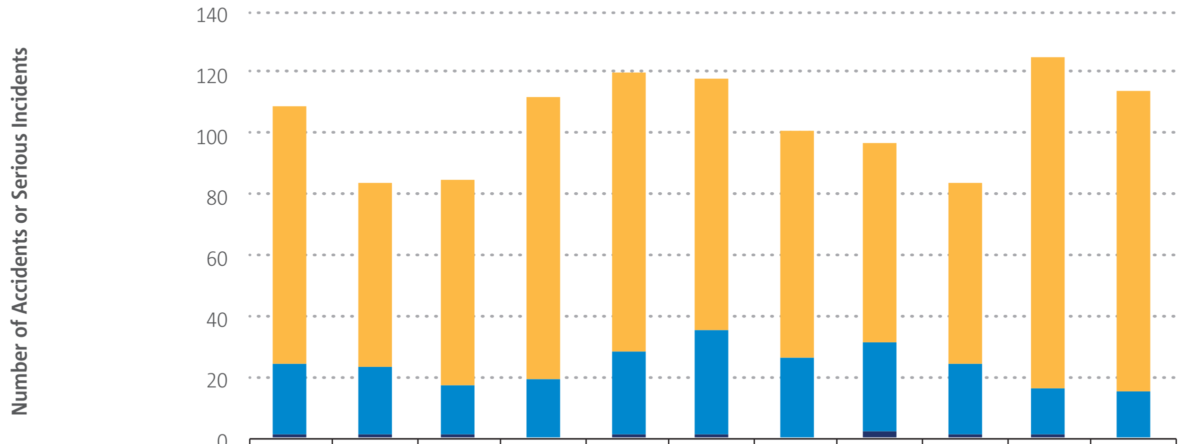
Table 3. Key Statistics for Commercial Air Transport Airlines, 2007-2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	9	235	792
2017	0	15	99

	Fatalities	Serious Injuries
2007-2016 total	664	111
2017	0	10

During 2017, there were no fatal accidents involving European CAT AOC Holders and the number of non-fatal accidents was lower than the average of the previous 10-year period. In 2017, there was an increase in serious incidents in comparison with the average of the previous 10-year period.

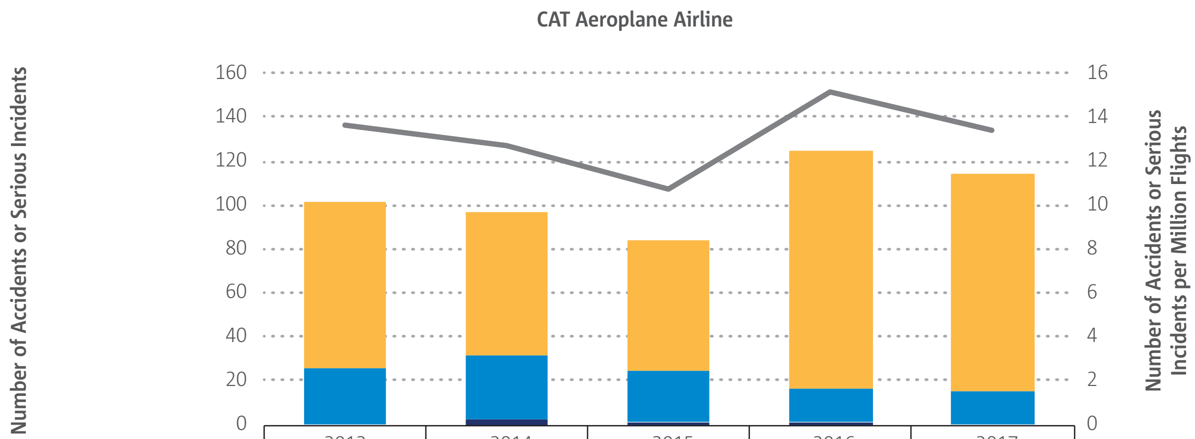
Figure 4. Number of fatal accidents, non-fatal accidents and serious incidents for commercial air transport airlines, 2007 - 2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious Incident	85	61	68	93	92	83	75	66	60	109	99
Non-Fatal Accident	23	22	16	19	27	34	26	29	23	15	15
Fatal Accident	1	1	1	0	1	1	0	2	1	1	0

The rate of accidents has continued to decrease since 2014, although the number of serious incidents remains higher than usual following a peak in 2016. This peak is the result of the more stringent classification of separation minima infringements by the Members States Aviation and Safety Investigation Authorities, after the entry into force of the Regulation (EU) 376/2014.

Figure 5. Number and rate of fatal accidents, non-fatal accidents and serious incidents for commercial air transport airlines, 2013 - 2017

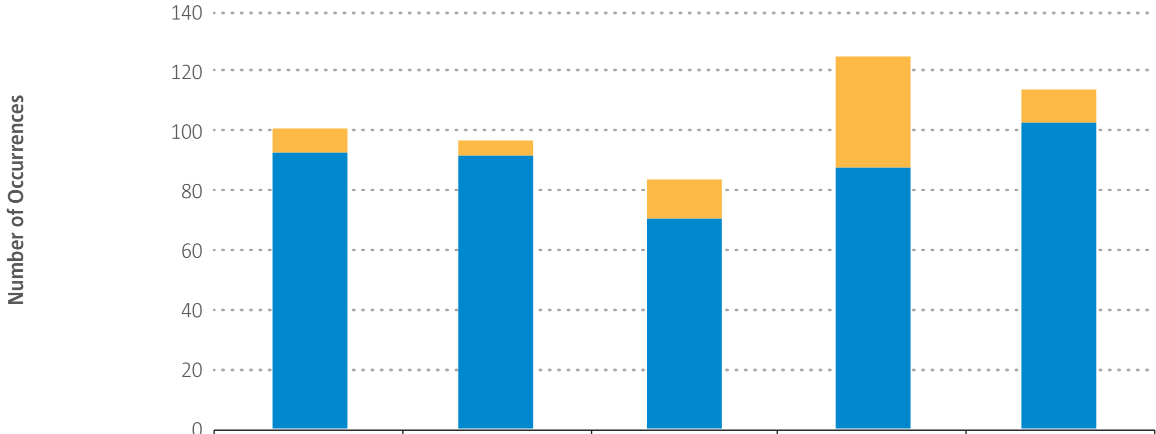


	2013	2014	2015	2016	2017
Serious Incident	75	66	60	109	99
Non-Fatal Accident	26	29	23	15	15
Fatal Accident	0	2	1	1	0
Rate per million flights	14	13	11	15	13

The use of the classification of accidents and serious incidents does not necessarily provide an accurate picture of the risk of those events. As example, a very close near-miss would be classified as a serious incident, while a collision between ground handling vehicle and an aircraft leading to substantial damages of the later would be classified as an accident. It is clear that in terms of risk, the serious incident in this example would be higher than the accident. This is the reason why the Regulation (EU) 376/2014 mandates the development and use of a common risk classification scheme (ERCS) to risk classify all occurrences reported to the European Authorities. The main purpose of this risk score is to be able to discriminate between the occurrences with a high and lower associated risk. EASA, together with an expert group composed by relevant European Risk Experts, has developed the ERCS methodology that will be published by the European Commission in 2018.

Figure 6 shows the intended evolution of the key statistics from the accidents and serious incidents data supporting this section toward higher risk and lower risk occurrences. As it can be seen, the data shows a different pattern than the representation of accidents and serious incidents. This is because of the high risk of the occurrences classified as serious incidents that, in many cases equals or even exceeds the risk of certain accidents.

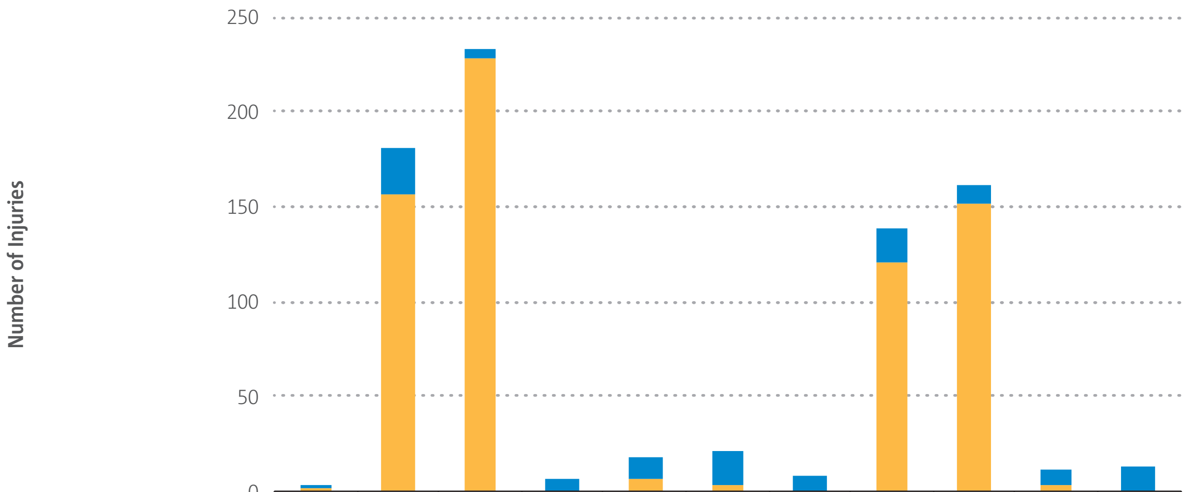
Figure 6. Number of accidents and serious incidents by higher and lower ERCS score for commercial air transport airline operations, 2013 - 2017



	2013	2014	2015	2016	2017
Lower Risk	8	5	13	37	11
Higher Risk	93	92	71	88	103

As can be seen in Figure 7, the number of fatalities per year changes substantially, being dependent on the size and occupancy of the aeroplane that involved in the accident.

Figure 7. Number of fatalities and serious injuries involving commercial air transport airlines, 2007 - 2017

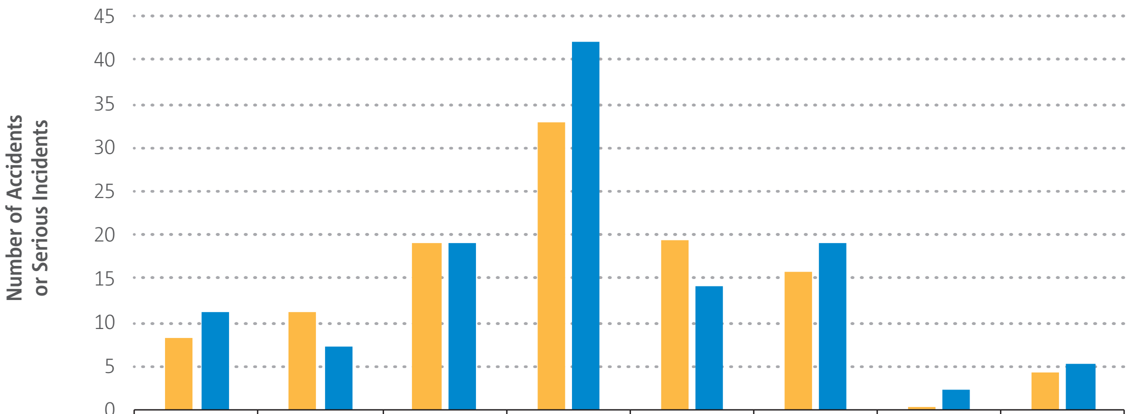


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	2	25	4	6	11	18	8	18	10	9	12
Total Fatalities	1	155	228	0	6	2	0	120	150	2	0

2.1.1.1 Phase of flight

The numbers for 2017 show a decrease of accidents and serious incidents in taxi and approach when compared to the 10 year average. In same period however, accidents and serious incidents occurred during the other flight phases have increased. The "Unknown/blank" flight phase corresponds to those occurrences where no data was available and it normally relates to the second aircraft in some of the occurrences (e.g. a general aviation leisure flight leading to a loss of separation with an airliner, missing information on the specific flight phase for the general aviation flight).

Figure 8. Distribution of accidents and serious incidents by flight phase for commercial air transport airlines, 2007 - 2017

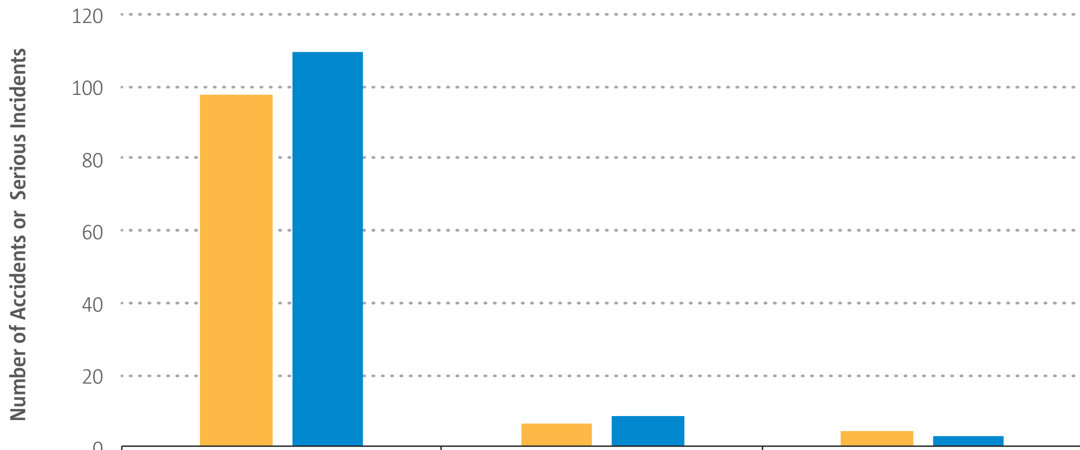


	Standing	Taxi	Take-off	En route	Approach	Landing	Tow	Unknown/ Blank
Average 2007-2016	7.9	11	18.8	32.8	19.1	15.6	0.1	4
2017	11	7	19	42	14	19	2	5

2.1.1.2 Operation type

The numbers for 2017 show a similar distribution between operation types (passenger or cargo) in comparison to the 10 year average, with a slight increase for the figures in 2017. "Unknown/blank" corresponds to those occurrences where no data on the operation type was available and it normally relates to the second aircraft in some of the occurrences (e.g. loss of separation between an airliner and another aircraft).

Figure 9. Distribution of accidents and serious incidents by operation type for commercial air transport airlines, 2007 - 2017

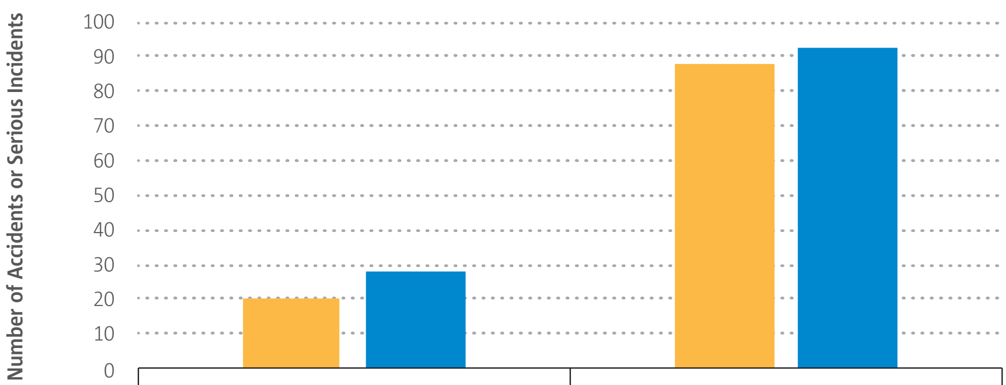


	Passenger	Cargo	Unknown/Blank
Average 2007-2016	97	6	4
2017	109	8	3

2.1.1.3 Propulsion type

The split by propulsion type shows an increase in 2017 of the turbofan and turboprop related occurrences with reference to the 10 year average. The comparison between turbofan and turboprop is in line with the split of aircraft fleet sizes and its different exposure figures.

Figure 10. Distribution of accidents and serious incidents by propulsion type of the aeroplane(s) involved for commercial air transport airlines, 2007 - 2017



	Turboprop	Turbofan
Average 2007-2016	20.2	87.7
2017	28	92

2.2 Non-Commercial Complex – Business

This section covers the safety performance of the EASA MS registered complex aeroplanes operating non-commercial operations (NCC) not classified as special operations (SPO) and with a maximum take-off weight above 5,700 kg. Data is based on the accidents and serious incidents collected by the Agency as per Annex 13 investigations or by the active search of those events from other official sources.

2.2.1 Key Statistics

The key statistics for this domain are in the tables below and include a comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of the fatalities and serious injuries happened in those accidents between the same timeframe.

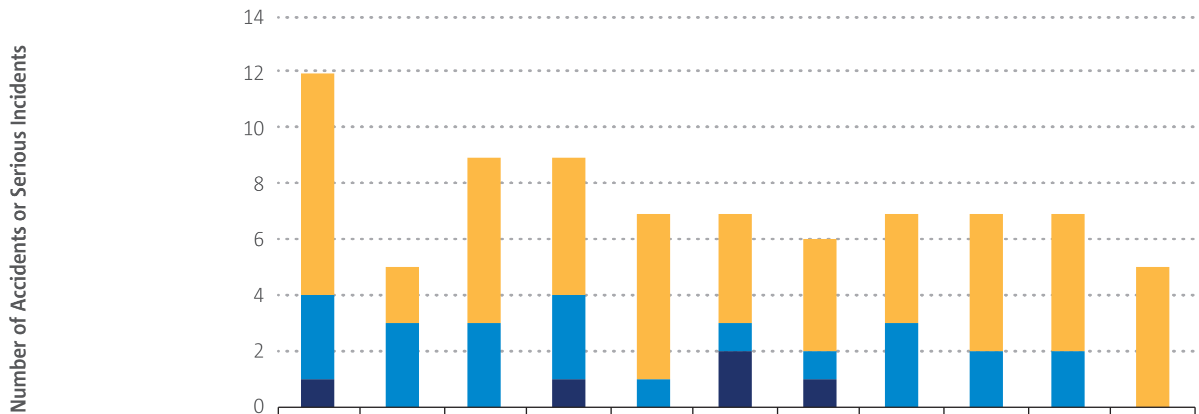
Table 4. Key Statistics for Non-commercial Complex Business Operations, 2007- 2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	5	22	49
2017	0	0	5

	Fatalities	Serious Injuries
2007-2016 total	6	3
2017	0	0

During 2017, there were no accidents involving European registered NCC operated aircraft, therefore there were also no fatalities or serious injuries in 2017. The number of serious incidents remained as the average of the previous 10-year period. The low numbers probably indicate an incomplete dataset, possibly as a result of the lack of reporting of occurrences not classified as accidents.

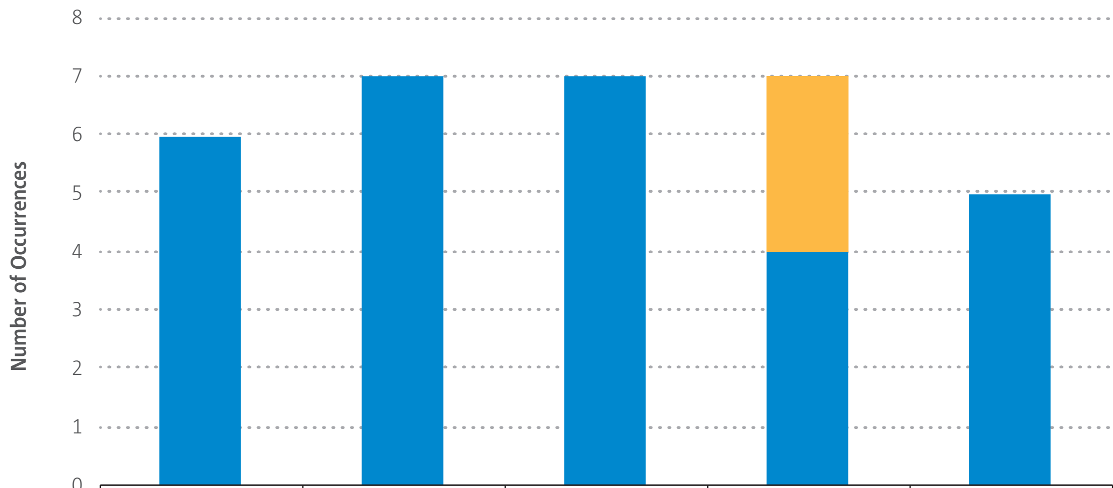
Figure 11. Number of fatal accidents, non-fatal accidents and serious incidents for non-commercial complex business, 2007 - 2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious Incident	8	2	6	5	6	4	4	4	5	5	5
Non-Fatal Accident	3	3	3	3	1	1	1	3	2	2	0
Fatal Accident	1	0	0	1	0	2	1	0	0	0	0

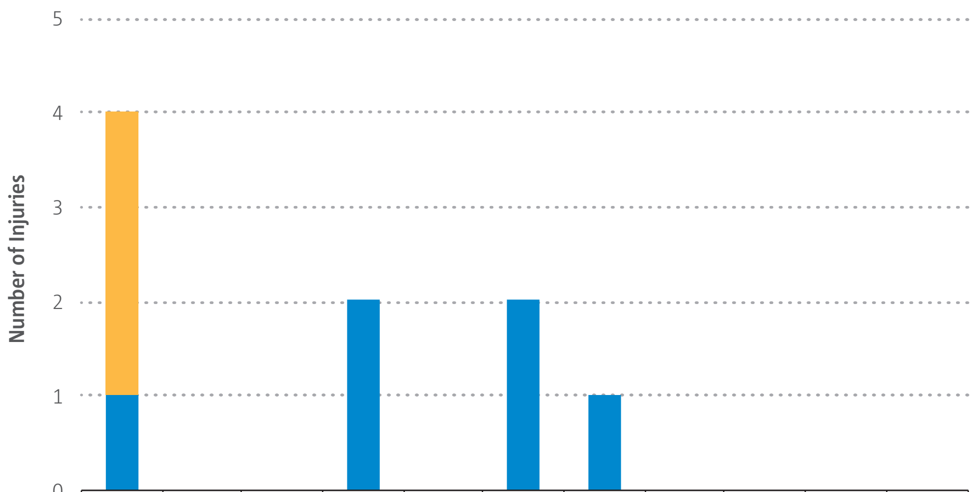
In the same way as in the previous section, Figure 12 shows the split of the accidents or serious incidents by the ERCS score grouped by higher risk and lower risk. This indicator provides an additional view with a proxy to the risk of those occurrences.

Figure 12. Number of accidents and serious incidents by higher and lower ERCS score for non-commercial complex business, 2013 - 2017



	2013	2014	2015	2016	2017
Lower Risk	0	0	0	3	0
High Risk	6	7	7	4	5

Figure 13. Number of fatalities and serious injuries involving non-commercial complex business, 2007 - 2017



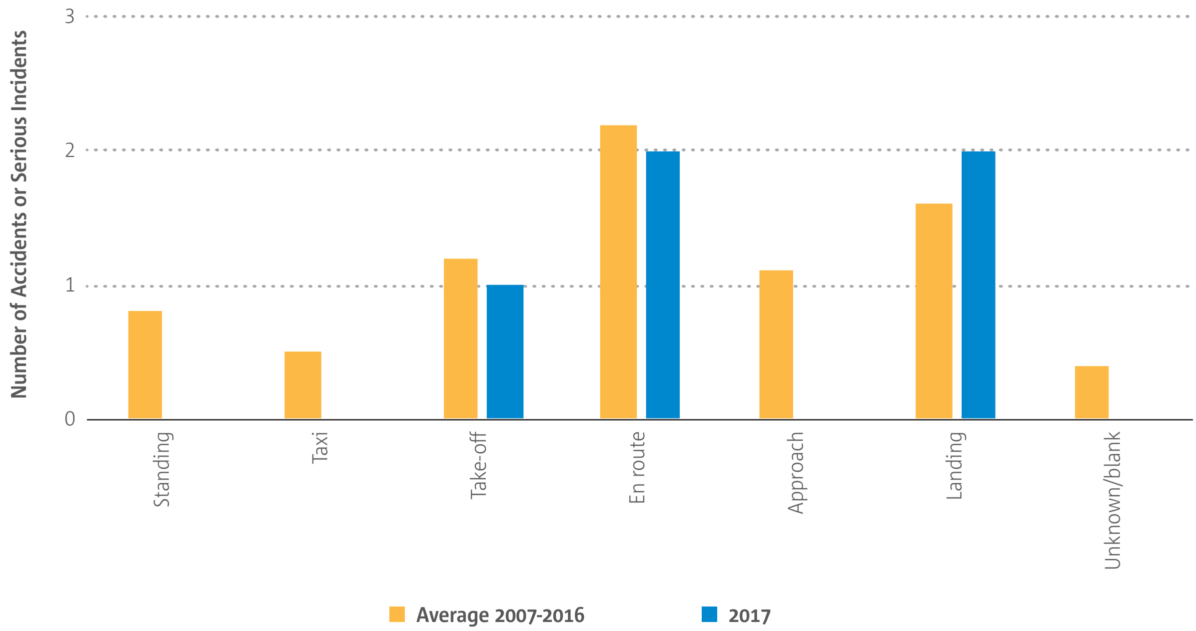
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	3	0	0	0	0	0	0	0	0	0	0
Total Fatalities	1	0	0	2	0	2	1	0	0	0	0

Due to the size of the aeroplanes used for the majority of this type of operation, the number of fatalities is significantly low.

2.2.1.1 Phase of flight

The low numbers in this section prevent any conclusions to be drawn in terms of the flight phase.

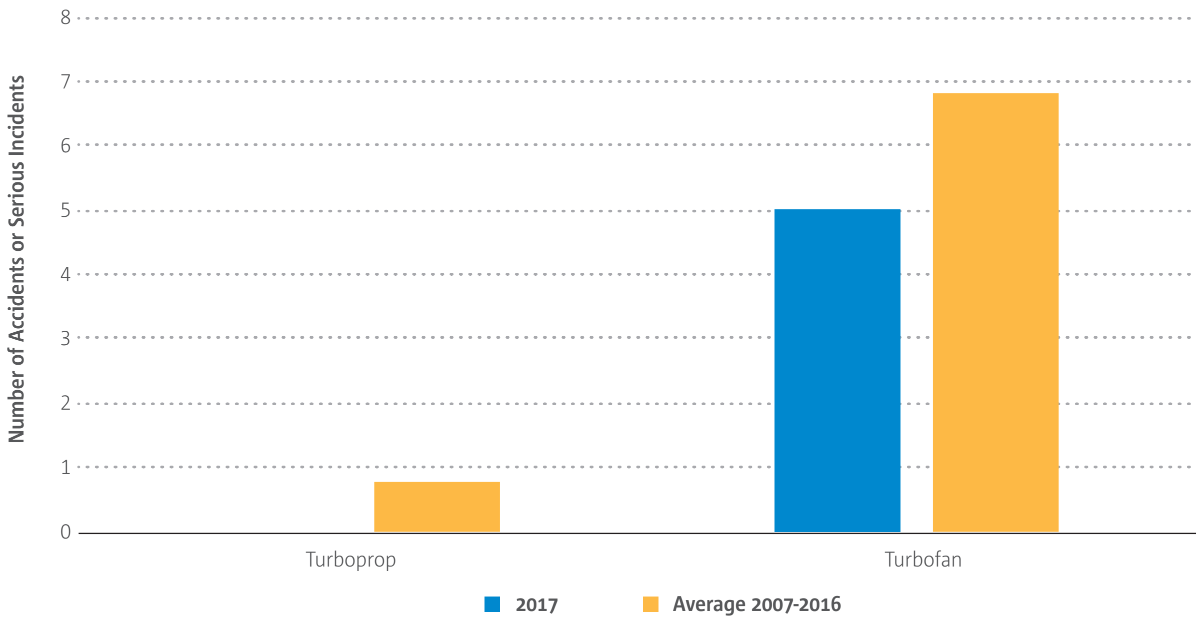
➨ **Figure 14.** Distribution of accidents and serious incidents by flight phase for non-commercial complex business, 2007 - 2017



2.2.1.2 Propulsion type

The split by propulsion type shows that the only propulsion type involved in accidents or serious incidents in 2017 was the turbofan type.

➨ **Figure 15.** Distribution of accidents and serious incidents by propulsion type for non-commercial complex business, 2007 - 2017



2.3 Safety Risk Portfolio for Large Aeroplane (CAT-Airlines and NCC-Business)

CAT Airlines and NCC Business operations are covered by a single Safety Risk Portfolio due to the similarity of the main risk areas and safety issues for both operation types, and to the small dataset available for NCC-Business. Those safety issues which might be only relevant for one of the operation types are highlighted as such when necessary.

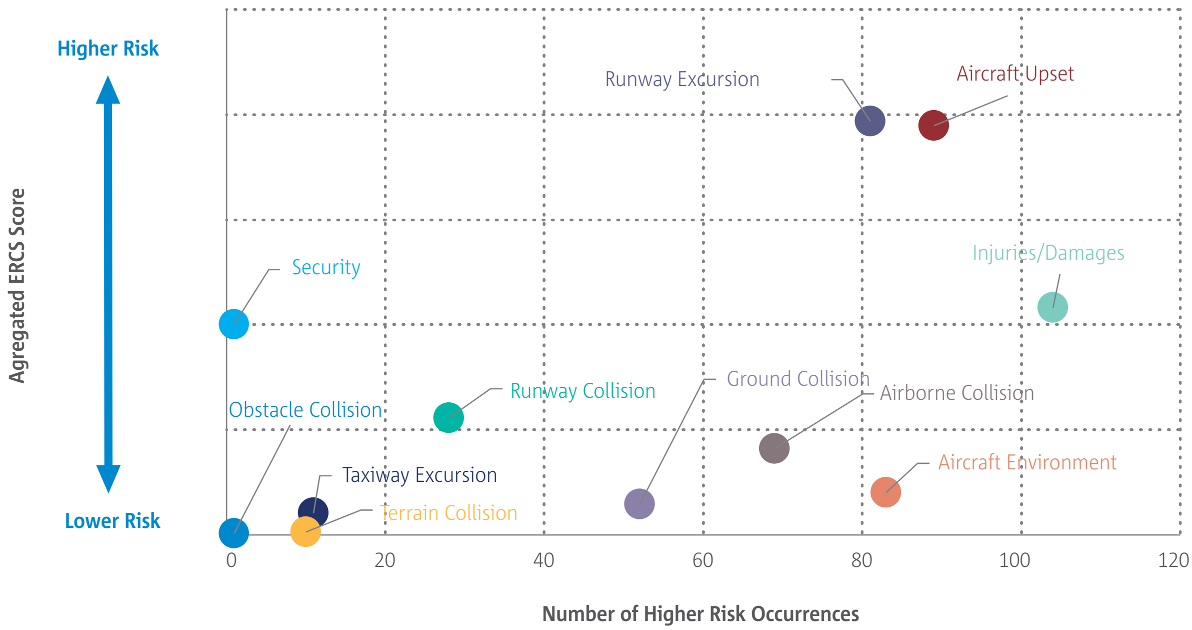
The safety risk portfolio for Airline and NCC-business operation provides a summary of the top risk areas and safety issues of this part of the aviation system. It covers the Tier 2 (Key Risk Areas) and Tier 2+ (Safety Issues) of the performance framework in each domain. The portfolio is used to prioritise the assessment of safety issues, to target analysis activities over key risk areas and to prioritise safety actions.

However, the portfolio presented in this section is not yet that safety risk portfolio referred above but the so-called "data portfolio". This is the result of the yearly review of the relevant occurrence data to establish the link between each individual occurrence and the key risk areas and safety issues already listed in the last year's portfolio. This is considered an intermediate step towards the final Safety Risk Portfolio.

While the information presented in the data portfolio is relevant and provides an indication of the potential areas of concern, it is not yet an indication of the main risk areas or safety issues. The data portfolio is used to identify a reduced number of key risk areas for which an in-depth analysis will be carried out to determine the completeness of safety issues that have contributed to those risk areas and to assess the level of control of over the most relevant safety issues. This assessment would consider the increase/decrease of exposure to the relevant hazard, the effectiveness of existing controls and the expected risk reduction by committed safety actions. This analysis integrates the expertise from the CAGs and the EASA operational departments so as to complement the view provided by occurrence data. The result of this review is the Safety Risk Portfolio that defines the safety priorities for each aviation domain.

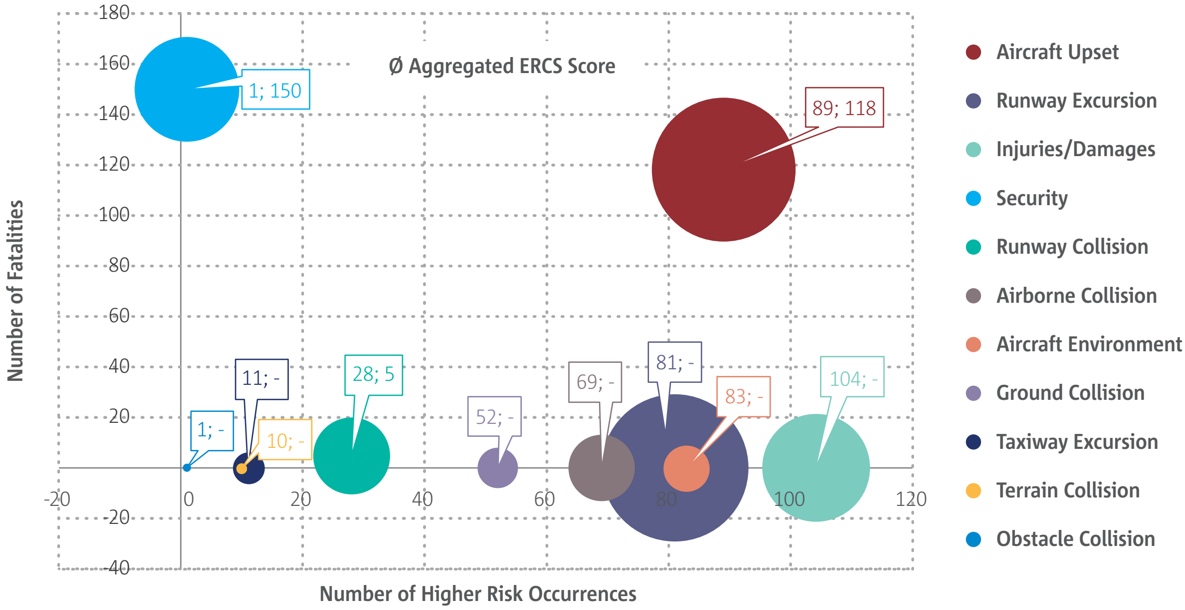
The data portfolio uses the aggregated ERCS score to provide and initial ranking of the key risk areas and safety issue. The figure below plots the high risk occurrences, based on its ERCS risk score, by their associated key risk areas. It draws in the x-axis the number of those high risk occurrences per key risk area and in the y-axis the aggregated ERCS risk score for each key risk area.

➨ Figure 16. Distribution of key risk areas by frequency and aggregated ERCS risk score for commercial air transport airlines and non-commercial complex business, 2013-2017



The figure below provides a similar representation of the key risk areas but it introduces the dimension of fatalities associated to them (y-axis) and shows the aggregated ERCS risk score as the size of the bubbles.

Figure 17. Distribution of key risk areas by fatalities, number of higher risk occurrences and ERCS risk score for commercial air transport airlines and non-commercial complex business, 2013-2017



From these two representations, it can be concluded that the key risk areas accumulating higher risk score, based on the occurrence data used, are Runway Excursion and Aircraft Upset. They concern a high number of higher risk occurrences and aggregating the highest risk score. At a second stage, it lays the key risk areas of Injuries/Damages and Security. The first one occurs often leading to high severity outcomes though to a reduced number of persons (injuries to few crew or passengers). The second one, Security, very much depends on the will and capability to cause harm, considerations not appearing in pure safety risk assessments. Security shows that, while high risk occurrences associated to it are infrequent (only one confirmed in the last 5 years), it becomes of high risk due to the lack of efficient barriers to stop it. Runway Collision and Airborne Collision can be considered at a third stage of importance.

The data portfolio shown here below has been sorted following the risk order given by the aggregated ERCS risk score of the high risk occurrences related to key risk areas or to safety issues. It is acknowledged that this indicator is still a proxy to the risk, but it is evaluated as a better reference than the pure sorting by the number of accidents and serious incidents. This indicator will be complemented by the qualitative analysis to estimate the actual risk by considering the increase/reduction of exposure to the relevant hazards and the expected risk reduction of the ongoing safety actions, for both key risk areas and safety issues. This analysis will provide still a proxy to the risk but it will provide a more consistent ranking.

The safety risk portfolio shows in the upper part, the key risk areas (based on the ERCS score) for the past 5 years. A key risk area includes both the undesired outcome (accident) and the immediate precursors to those outcomes (less severe occurrences, normally). In rows, the safety risk portfolio shows a similar spread by safety issues based on the aggregated ERCS score of those occurrences where those safety issue were present. The dotted grid establishes the relation between safety issues and key risk areas – it identifies which safety issues contribute to which (potential) accident outcomes. Dots come from occurrence data.

Based on the data supporting the portfolio, the following relations between the priority 1 key risk areas and safety issues can be highlighted:

- Aircraft upset:
  - › Monitoring of flight parameters and automation modes
  - › Approach path management
  - › Convective weather
  - › In flight icing
  - › Handling of technical failures

- Runway Excursion
  - › Approach path management
  - › Monitoring of flight parameters and automation modes
  - › Handling of technical failures

The main Key Risk Areas highlighted above are defined by their accident outcome that needs to be prevented and by its immediate precursors.

- Aircraft upset: It includes uncontrolled collisions with terrain following an aircraft upset, but also occurrences where the aircraft deviated from the intended flight path or intended 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.

- Runway excursion: It 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.

The safety issues identified as the main contributors and highlighted above are defined as follows:

- Monitoring of flight parameters and automation modes: It is the inadequate monitoring of the main flight parameters and automation modes, potentially leading to the upset of the aircraft, runway excursion or controlled collision with terrain. It covers the relevant SOPs and trainings of the flight crew. It also includes the considerations related to human factors, especially to the human-machine interface (HMI) of aircraft systems and indications.

- Approach path management: Ineffective or incorrect management of the approach path (i.e. not stable and/or compliant) that may lead to go-arounds, hard landings or runway excursion.

- Convective weather: it is the situation where the aeroplane flies within atmospheric convective phenomena, potentially leading to aircraft upset (uncontrolled collision with terrain) and injuries to passengers or crews. The safety issue covers the main convective phenomena affecting the safe flight, such as convective turbulence, up/down-drafts, wind shear, hail precipitation, lightning and icing. The main threat posed by this safety issue is the loss of control of the aircraft after being forced out of its flight envelope by a severe atmospheric phenomenon or after a system failure not adequately handled by the flight crew. This safety issue may also lead to injuries mainly due to the sudden encounter with turbulences. The safety issue covers the detection, avoidance and flying-in convective weather during the flight, and all the support to flight crews to deal with it before (e.g. flight planning, meteorological information) and during the flight (e.g. on-board detection systems, ATS vectoring). It especially covers the SOPs and training of the flight crew to maintain or recovering the safe flight. The safety issue also considers the robustness of the aeroplane to conduct a flight in convective atmospheric conditions, as per its initial certification and its in-service experience (i.e. continuous airworthiness process).

- Inflight icing: it is the situation where the aeroplane flies within icing conditions, potentially leading to aircraft upset (uncontrolled collision with terrain) due to ice accretion on the aeroplane. The main threat posed by this safety issue is the contamination of aircraft surfaces or systems that may severely impact the performance or controllability of the aircraft. It covers the detection, avoidance and flying-in icing conditions during the flight, and all the support to flight crews to deal with it before (e.g. flight planning, meteorological information) and during the flight (e.g. on-board detection systems, de/anti-icing systems). It especially covers the SOPs and training of the flight crew to maintain or recovering the safe flight. The safety issue also considers the robustness of the aeroplane to conduct a flight in icing conditions, as per its initial certification and its in-service experience (i.e. continuous airworthiness process). This safety issue partially overlaps with the Convective Weather.

- Handling of technical failures: It is the ineffective handling of a non-catastrophic technical failure by the flight crew. Technical failures are those not rendering the aircraft uncontrollable and for which the flight crew are trained to manage them. It includes the human factors playing a role in the realisation and processing of the failure information and the later reaction of the crew to handle the issue. It covers the related SOPs and trainings of the flight crew.

Figure 18. Safety Risk Portfolio for CAT Airline and NCC Business aeroplane operations showing how the 5-year occurrence data 2013-2017 relates to safety issues and their outcomes relative to risk in descending order.

Perception and Situational Awareness		●	•	•		●	●	•	●	•	•	•
Monitoring of Flight Parameters and Automation Modes		●	●	•			•	•			•	
Approach Path Management		●	●	●		•	•				●	•
Convective Weather (Turbulence, Hail, Lightning, ice)		●	•	●			•				•	
Icing in Flight		●		•								
Mental Health					•							
Handling of Technical Failures		●	●	●			•	●		•	•	
CRM and Operational Communication		●	•	•		•	•	•	•			
Braking and Steering			●	●				•	•	●		
Flight Planning and Preparation		●	●	•			•	•	•			
Experience, Training and Competence of Individuals		•	•	•		•			•			
Runway Surface Condition			●	•								
Crosswind		•	•	•		•					•	•
Deconfliction with Aircraft Not Using Transponders							●					
ACAS RA Not Followed							•					
Inappropriate flight control inputs		•	•	•			•					
Taxi Speed and Directional Control			•						•	●		
Knowledge of Aircraft Systems and Procedures		●	•	•				•				
Alignment with wrong runway		•	•	•		•			•	•	•	•
Fatigue			•	•								
Wake Vortex		•					•					
Clear Air Turbulence (CAT) and Montain Waves		•		●								
Entry of Aircraft Performance Data		●	●						•			
Fumes Effects		•		•				●				

Large Aeroplane - Airlines / NCC Business

Bands of Aggregated ERCS Risk Score (2013-2017)		Priority 1		Priority 2		Priority 3		Priority 4				
Number of High Risk ERCS Occurrences		89	81	104	1	28	69	83	52	11	10	1
		Key Risk Areas (Outcomes and precursors)										
Safety Issues	Bands of Aggregated ERCS Score 2013-2017	Aircraft Upset	Runway Excursion	Injuries/Damages	Security	Runway Collision	Airborne Collision	Aircraft Environment	Ground Collision	Taxiway Excursion	Terrain Collision	Obstacle Collision
Aircraft maintenance		●	•	•				●			•	
Decision Making and Planning		•	•	•					•		•	
Icing on Ground		•	•	•				•	•			
Slow Rotation at Take-off		•	•									
Airborne Separation RPAS							•					
Windshear		•	•				•					
Baggage and Cargo loading		•										
False or Disrupted ILS Signal Capture		•	•			•					•	•
Gastrointestinal Illness				•								
Transport of Lithium Batteries				•				•				
Handling and Execution of Go-Arounds		•					•	•			•	
Bird/ Wildlife Strikes		•										
Personal Pressure and Arousal		•	•									
Supporting Information to the Flight Crews												
Tyre pressure condition												
Disruptive Passengers												
Effectiveness of Safety Management												
Fuel Contamination		under evaluation										
Laser Illumination Effects		under evaluation										
Fuel Management		under evaluation										
Non-Precision Approaches		under evaluation										
Safety Culture		under evaluation										
Damage Tolerance to UAS Collisions		under evaluation										

● A significant number of occurrences • A small number of occurrences

2.4 Specialised Operations

This chapter covers Aerial Work and Special Operations (SPO) involving aeroplanes of all mass groups with an EASA MS State of Registry or State of Operator.

2.4.1 Key Statistics

The key statistics for this domain are in the tables below and include a comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of the fatalities and serious injuries happened in those accidents between the same timeframe.

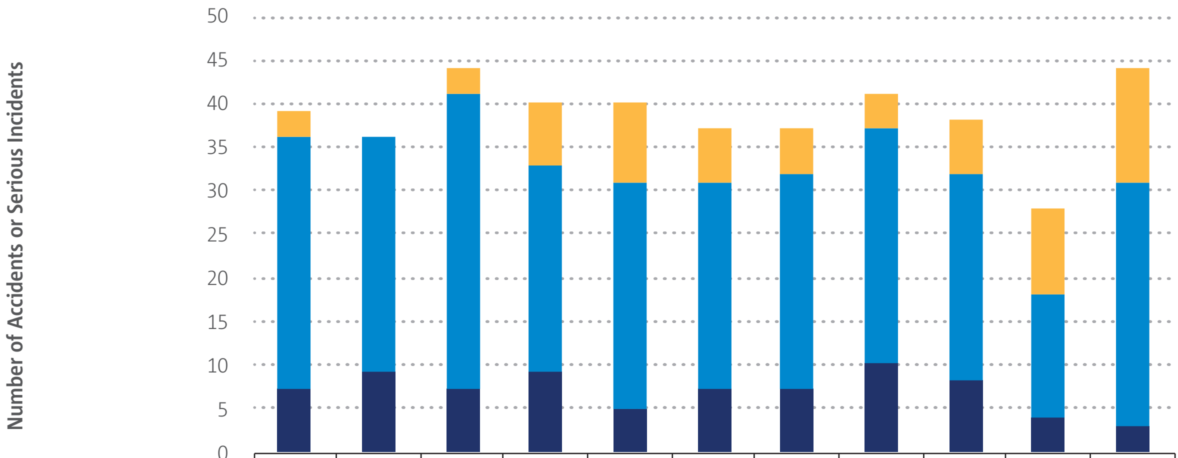
Table 5. Key Statistics for Aeroplane Specialised Operations, 2007-2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	73	254	53
2017	3	29	13

	Fatalities	Serious Injuries
2007-2016 total	181	86
2017	4	11

There were 3 fatal accidents in 2017, lower than the average of the preceding decade. However, at 29 the number of non-fatal accidents was slightly higher than the average of 2007-2016 and the number of serious incidents was considerably higher than the average of the preceding 10-year period. The number of fatalities in 2017 was considerably lower than the preceding decade average, whereas the number of serious injuries was slightly higher than the 2007-2016 average.

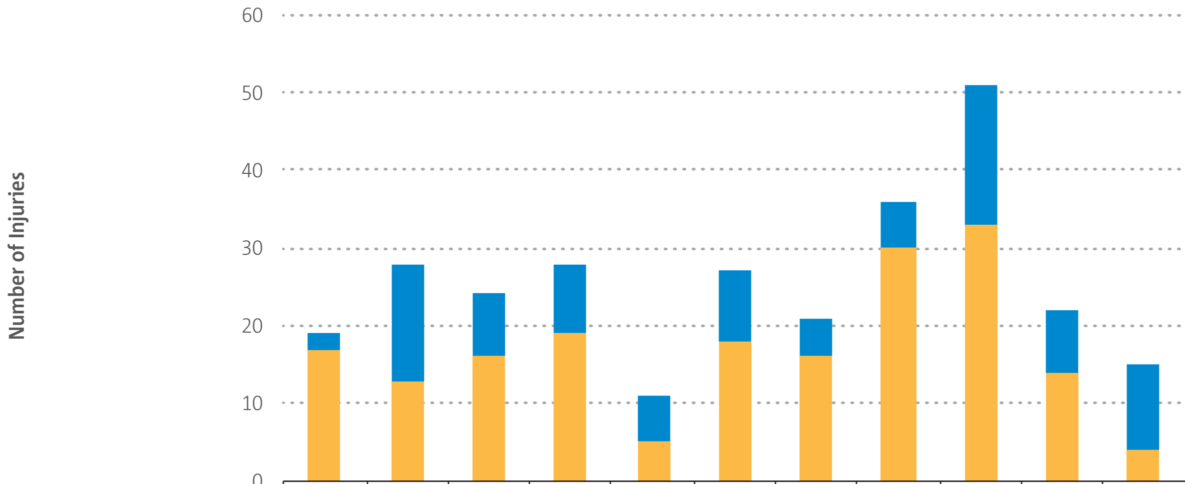
➨ **Figure 19.** Number of fatal accidents, non-fatal accidents and serious incidents for aeroplane specialised operations, 2007 - 2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious Incidents	3	0	3	7	9	6	5	4	6	10	13
Non-Fatal Accidents	29	27	34	24	26	24	25	27	24	14	28
Fatal Accidents	7	9	7	9	5	7	7	10	8	4	3

The number of fatal accidents in 2017 was lower than that of any year in the preceding decade. Contrastingly, the number of non-fatal accidents was higher than all but two of the years (2007 and 2009) in the preceding 10-year period.

➨ **Figure 20.** Aeroplane Specialised Operations Fatalities and Serious Injuries, 2007-2017



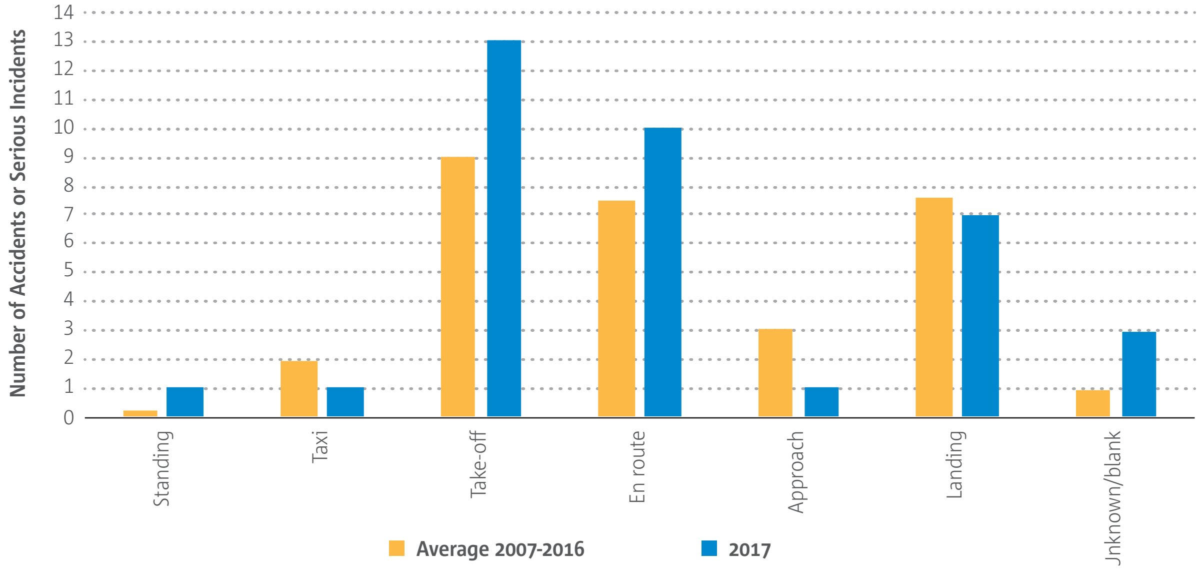
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	2	15	8	9	6	9	5	6	18	8	11
Total Fatalities	17	13	16	19	5	18	16	30	33	14	4

In line with the number of fatal accidents, the number of fatalities in 2017 was also lower than any year in the preceding decade. The number of serious injuries in 2017 was higher than all but two years (2008 and 2015) in the preceding 10-year period.

2.4.1.1 Phase of flight

The number of accidents and serious incidents in the standing, take-off and en-route phases were higher in 2017 than the average of the preceding decade. In 2017 there was only one accident/serious incident in the taxi and approach phases respectively, which was below the average of the preceding decade.

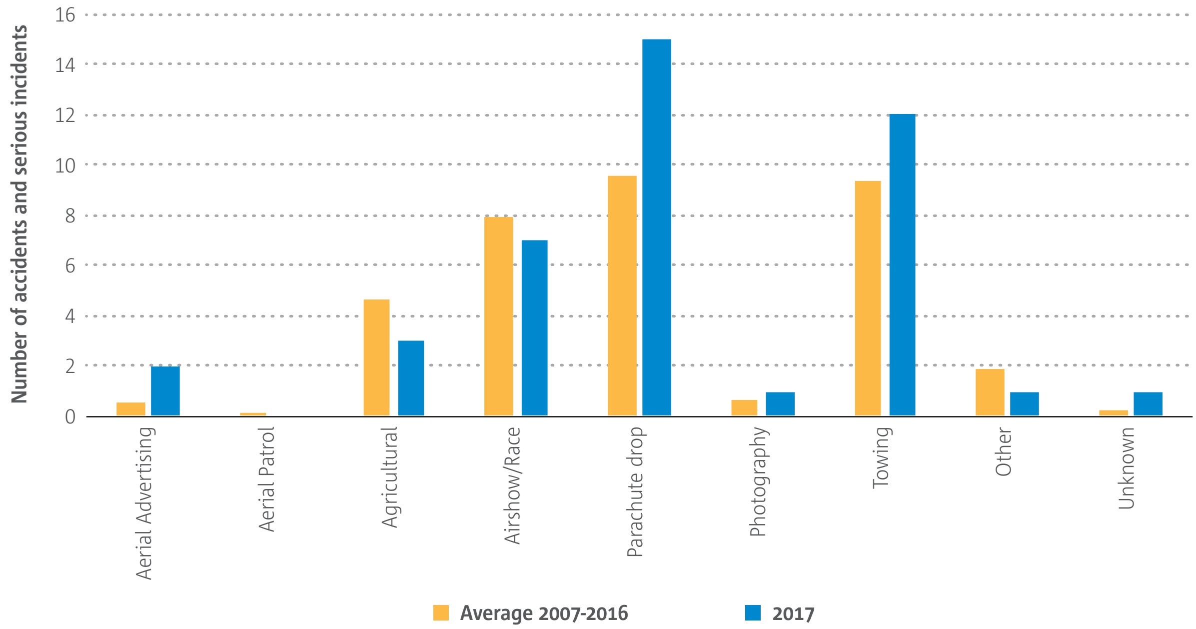
Figure 21. Aeroplane Specialised Operations Accidents and Serious Incidents by Phase of Flight, 2007-2017



2.4.1.2 Operation Type

The number of accidents and serious incidents in aerial advertising, parachute drop, photography and towing was higher in 2017 than the average of the preceding decade. In agricultural and airshow/race the 2017 number was lower than the preceding 10-year period. There were no aerial patrol accidents or serious incidents in 2017.

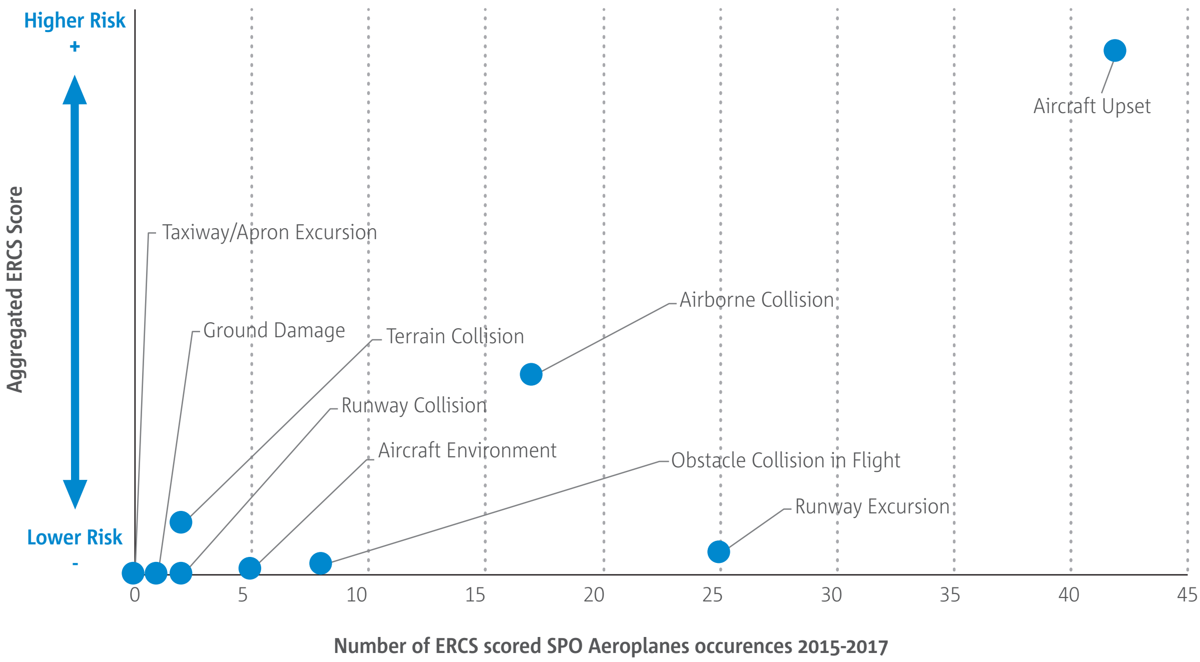
Figure 22. Aeroplane Specialised Operations Accidents and Serious Incidents by Type of Operation, 2007-2017



2.4.2 Safety Risk Portfolio

The key risk areas for Specialised Operations involving aeroplanes are shown in Figure 23. It can be seen that aircraft upset is the highest risk and most common type of accident or serious incident involving this domain.

Figure 23. Distribution of key risk areas by frequency and aggregated ERCS risk score for aeroplane specialised operations, 2015-2017



The Safety Risk Portfolio for Specialised Operations Aeroplanes is based solely on occurrence data, since an SPO Aeroplanes CAG has not yet been established. The Safety Issues and Key Risk Areas are prioritised based on the cumulative ERCS risk score for accidents and serious incidents in the EASA occurrence repository for the 2015-2017 period.

Strikingly, the highest risk safety issues in this domain all relate to human factors. The absence of an SPO aeroplane CAG means that these issues are not yet fully defined, but some examples of the human factors issues are provided here. “Perception and Situational Awareness“, “Human Performance” and “Experience, Training and Competence of Individuals”, all Human Factors-related issues, are among the top priority issues. One example of such an occurrence was a parachute jumper who, upon leaving the aircraft, did not notice that his leg had become entangled with a static line that had been used by one of the previous jumpers. As he jumped out, he was retained by the static line and was hanging approximately four meters below the aircraft, unable to free himself from the static line. The pilot was also not able to cut the line. The airfield fire services laid out a large area of foam on the airfield and the aircraft landed in the foamed area with the jumper hanging from it. The jumper received minor injuries. Another example is relates to the pre-flight/flight planning phase. A glider towing aircraft ran out of fuel shortly after releasing the glider, and the pilot carried out a successful forced landing in a field. It was determined that the fuel starvation was due to the pilot misjudging the amount of fuel needed for carrying out the planned flight.

Figure 24. Safety Risk Portfolio for SPO Aeroplane operations showing how the 3 year occurrence data 2015-2017 relates to safety issues and their outcomes relative to risk in descending order

System Reliability		●	•	•	●	•	•			
Perception and Situational Awareness		•	•	•	•	•		•		
Intentional Low Flying		•				•				
Human Performance		•				•		•		
Experience, Training and Competence of Individuals		•			•	•				
Airborne Separation		•	●							
Flight Planning and Preparation		•	•		•	•				
Handling of Technincal Failures		•		•	•	•				
Aircraft Maintenance		•								
Decision Making and Planning		•	•	•	•	•				
Control of Manual Flight Path		•	•							
Bird and Wildlife Strikes		•								
CRM and Operational Communications		•								
Knowledge of Aircraft Systems and Procedures		•			•					
Personal Pressure and Arousal						•				
Approach Path Management		No data								
Crosswind		No data								
Damage Tolerance to UAS Collisions		No data								
Development and Application of Regulations and Procedures		No data								
Icing in Flight		No data								
Icing on Ground		No data								

2.5 Non-Commercial Operations

This chapter covers General Aviation Non-Commercial Operations involving aeroplanes of mass groups below 5700 kg with an EASA MS State of Registry. Key statistics and an occurrence data based Safety Risk Portfolio (SRP) are presented. The SRP is enhanced with expertise from operators, manufacturers and National Aviation Authorities with the establishment of a GA Aeroplane Collaboration and Analysis Group.

2.5.1 Key Statistics

The key statistics for this domain are in the tables below and include a comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of the fatalities and serious injuries happened in those accidents between the same timeframe.

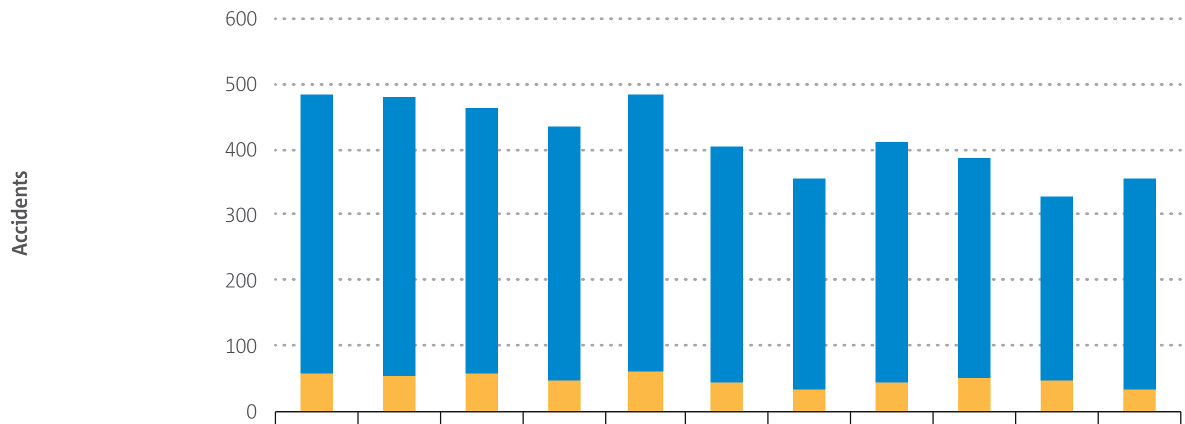
Table 6. Key statistics for non-commercially operated aeroplanes 2007-2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	501	3730	375
2017	34	321	125

	Fatalities	Serious Injuries
2007-2016 total	922	496
2017	62	45

In non-commercial operations with aeroplanes, there were 34 fatal accidents, which continues the downward trend and is lower than the 10-year average. However, looking at non-fatal accidents it can be seen that from 2016 to 2017 there is close to 12% increase in those accidents. Combined with fatal accidents the increase between 2016 and 2017 is 7.3%. When looking at the historical data in Figure 25 for fatal and non-fatal accidents since 2007 it can be observed that the downward trend for the period is 27%.

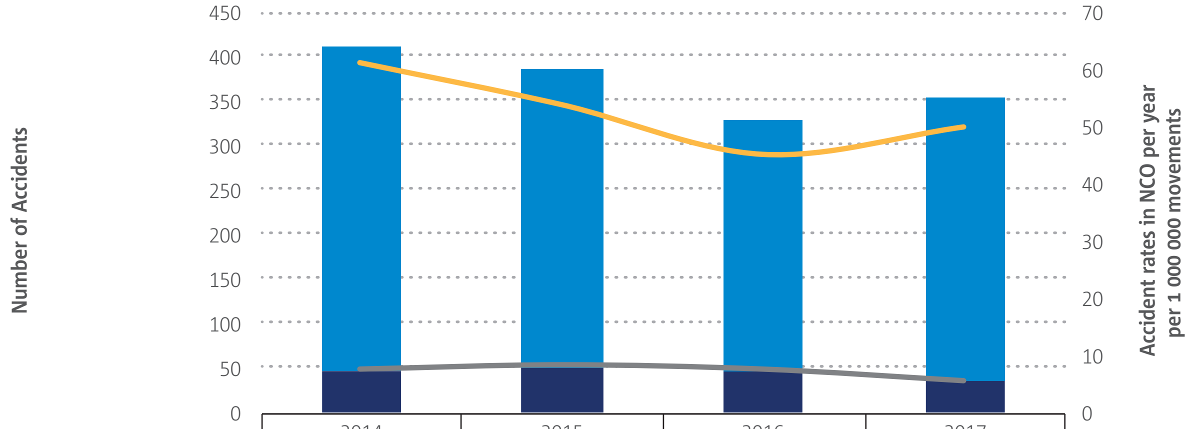
➨ **Figure 25.** Number of fatal accidents, non-fatal accidents and serious incidents for aeroplane non-commercial operations, 2007 - 2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Non-Fatal Accidents	424	428	405	386	423	360	319	365	337	283	321
Fatal Accidents	59	53	59	49	61	45	35	44	50	46	34

Last year EASA published for the first time accidents rates for GA Fixed wing aircraft. These rates were based on responses from 12 NAAs and estimations made for the rest of the EASA MS. EASA has not received the necessary data for exact calculation of the accident rates but instead based the estimation for 2017 on the average EU GDP of 2.6%. This is reflected in Figure 26. The number of movements are estimated to have increased in direct proportion of the GDP as a better economy should affect the whole community and also the pilot's budget for flying. This figure will be updated when reliable data is available.

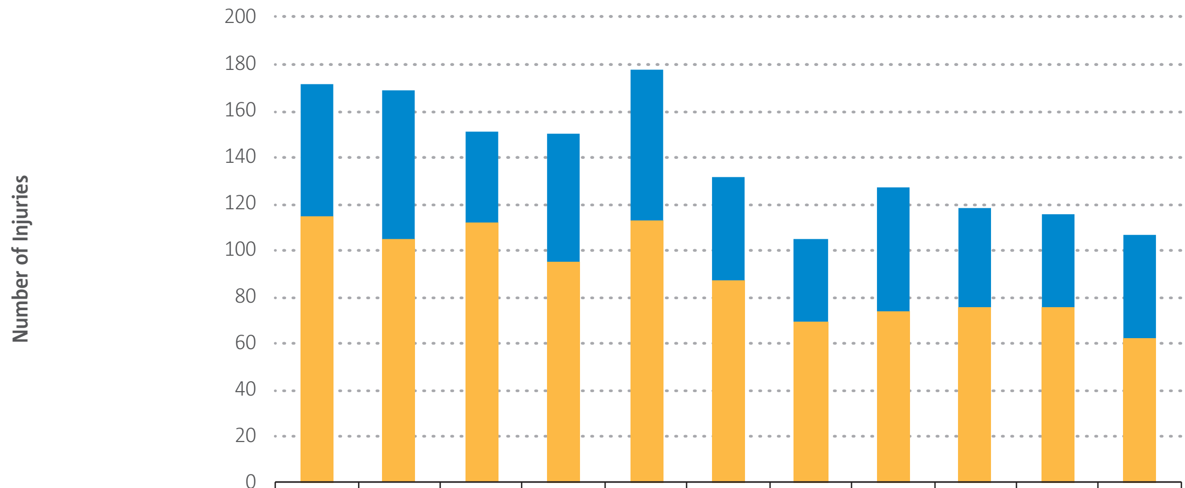
➨ **Figure 26.** Accident rates per year in NCO per 1 000 000 movements



	2014	2015	2016	2017
Non-Fatal Accidents	365	337	283	321
Fatal Accidents	44	50	46	34
Fatal Accident Rate	7.2	7.9	7.2	5.3
Non-fatal Accident Rate	60.8	53.7	45.2	49.9

Number of fatalities have also been significantly reduced compared to the 10-year average but the number of serious injuries shows a slight increase when compared to 2016. When looking at the period 2007-2017, it may be seen that the combined number of fatalities and serious injuries has reduced by 38%.

Figure 27. Number of fatalities and serious injuries for aeroplane non-commercial operations, 2007-2017

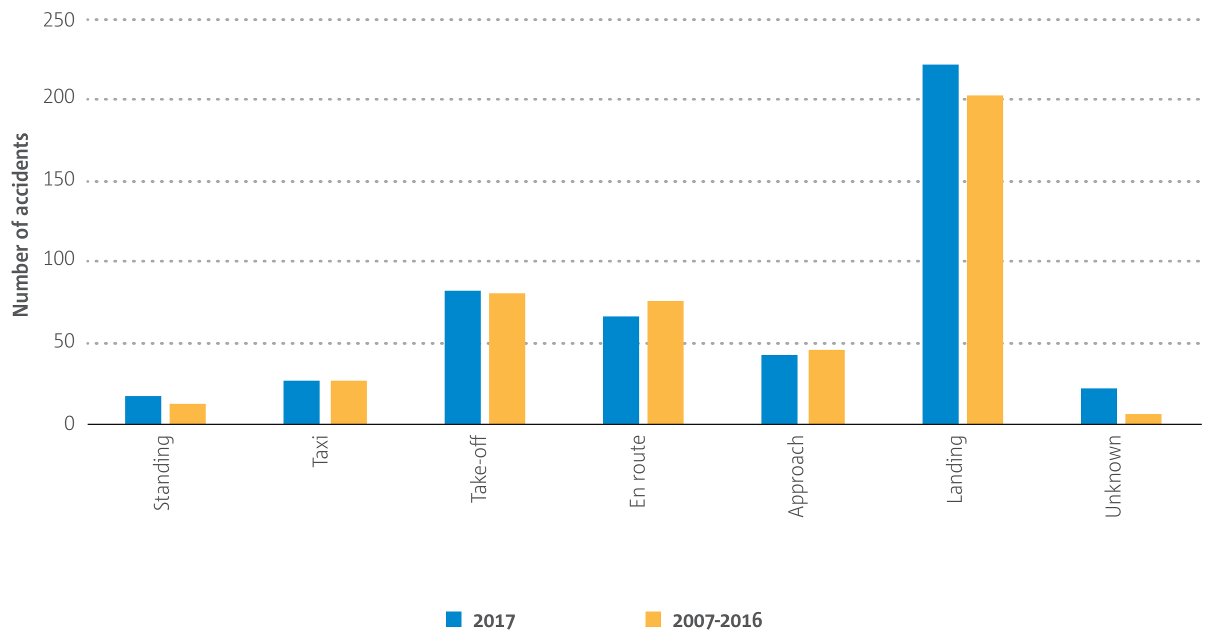


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	57	64	39	55	65	45	36	53	42	40	45
Total Fatalities	115	105	112	95	113	87	69	74	76	76	62

2.5.1.1 Phase of flight

In terms of flight phase in GA FW NCO aeroplanes accidents it can be seen that the most accidents take place during the landing phase of the flight mostly resulting in runway excursions. The take-off and en route phases show that there were fewer accidents last year compared to the 10 year average but the landing phase accidents increased slightly compared to the 10 year average.

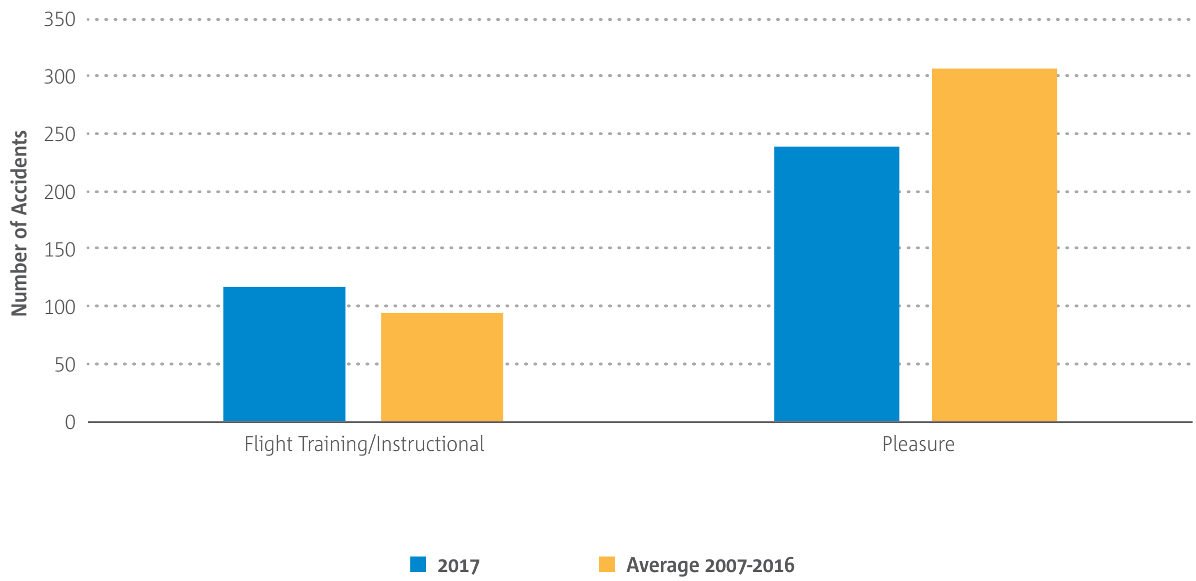
Figure 28. NCO accidents per phase of flight 2007-2017



2.5.1.2 Operation Type

Most of the accidents occurred during pleasure flights, followed by Flight training/Instructional flights. This can be considered to be normal as those operation types are the most common within the domain. Apart from that it should be noted that there is close to 7% increase in flight training accidents compared to the 10 year average.

Figure 29. Main operation types in GA Aeroplane NCO.

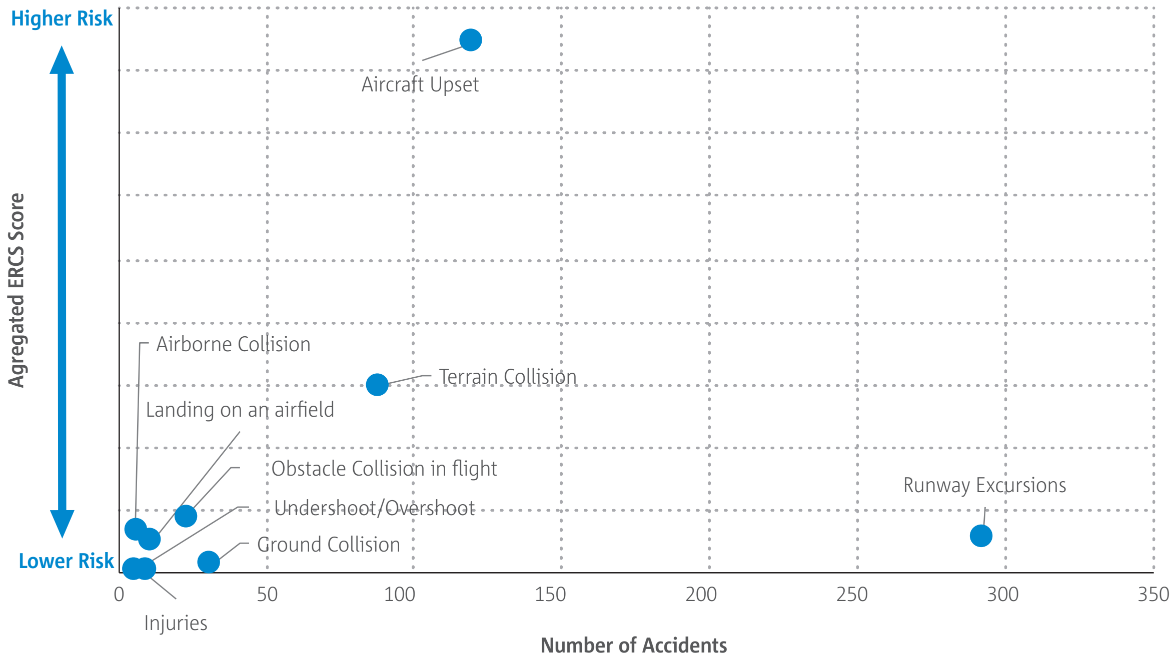


2.5.2 Safety Risk Portfolio

2.5.2.1 Categories and ERCS scores 2016-2017

EASA has now risk assessed the GA FW NCO dataset - both fatal and non-fatal accidents using the European Risk Classification Scheme (ERCS). Figure 30 shows the Key Risk Areas (KRAs) in relation to the number of accidents vs. the aggregated ERCS score. The figure shows clearly that the KRA showing the highest risk is Aircraft upset. Runway Excursions are common but have a lower risk of fatalities or serious injuries. Figure 30 therefore indicates where the efforts should lie in terms of action areas in the EPAS.

Figure 30. Distribution of key risk areas by frequency and aggregated ERCS risk score for aeroplane non-commercial operations, 2015-2017

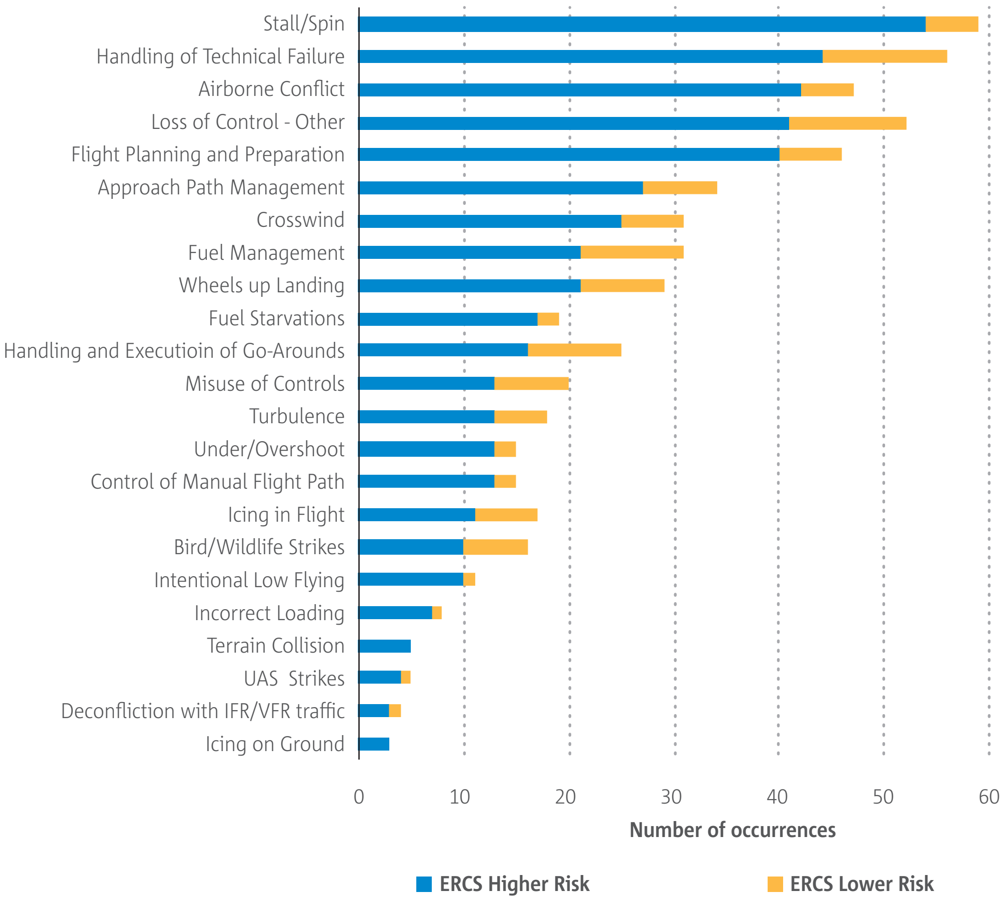


2.5.2.2 Identified Safety Issues and ERCS scores

The identified safety issues for the GA FW Safety Risk Portfolio are shown in Figure 31. It was decided this year to change the presentation of the portfolio and connect the safety issues to the ERCS score.

Figure 31 shows that the safety issue 'Stall/Spin' is the most common one. This supports Figure 30 where we see Aircraft Upset bearing the highest risk. Strongly associated with that safety issue is the 'Handling of Technical Failures' which highlights pilot's actions that are either precursors or resulting actions to salvage the situation. The third issue is 'Airborne Conflict' this issue shows both actual collisions as well as near-misses. Due to the nature of the issue it often bares high risk and is therefore high on the list. The fourth safety issue is 'Loss of control – Other'. This issue relates to other types of control loss and excludes stalls and spins. Directional control, heading, pitch and roll are all part of this safety issue. The fifth safety issue touches the operational side where human factors are often strongly associated with. This is the 'Flight Planning and Preparation' issue. This issue includes events like Flight planning, minimum equipment violation, performance calculation, pre-flight planning, route planning and loading of the aircraft, weight/balance calculations and weather planning.

Figure 31. GA FW NCO Accidents. Safety issues in relation to high and low risk occurrences.



2.5.2.3 The Portfolio

Based on the data above the NCO portfolio can be seen in Figure 31. It should be noted that the portfolio is entirely built upon queries. It should therefore be kept in mind that the data behind the portfolio not fully verified in terms of validity. It is worth noting that two safety issues have been added. Those are Stall/Spin and Loss of control (other). Both of these issues focus on take-off, manoeuvring, approach and landing phases of the flight. It was decided to add these safety issues in, even though the Key Risk Area Aircraft Upset is present as stalls and spins are the most common types of loss of control and have the highest risk score and therefore should be addressed as the top priority. It should be noted that in the Stall/spin row a mark can be seen under the KRA Airborne Collision. This is unavoidable due to the coding of the occurrences as mid-air collisions tend to result in loss of control after impact. When looking at the safety issues it can also be seen that 'Perception and Situational Awareness', 'Decision Making and Planning' and 'Flight Planning and Preparation' affect all four KRAs under Priority 1. Aircraft Upset, Terrain Collision Obstacle Collision and Runway Excursions can all be considered to be scoring high in the risk assessment. System Reliability contains data on both engine failures and other system failures on board the aircraft.

Figure 32. Safety Risk Portfolio for General Aviation fixed-wing aeroplane non-commercial operations showing how the 3 year occurrence data 2015-2017 relates to safety issues and their outcomes relative to risk in descending order

Stall/Spin		●		●		●				
Perception and Situational Awareness		●	●	●	●	●	•	●	•	•
Decision Making and Planning		●	●	●	●	•	•			•
Flight Planning and Preparation		●	●	●	●	•	•	•	•	•
System Reliability		●	•	●	●	●	●	•	•	
Loss of Control (other)		●		●		●		•	•	
Experience, Training and Competence of Individuals		●	•	●	●		•	•	•	•
Intentional Low Flying		•	•	•		•				
Handling of Technical Failures		●	•	•	●	•	•	•		
Airborne Separation						●				
Bird and Wildlife Strikes		•		•	•					
Approach Path Management		●	●	•	●	•				
Control of Manual Flight Path		●		•	●					
CRM and Operational Communications		•	•	•	•	●		•		•
Crosswind		●		•	●	•				
Fuel Management		●		•	•	•				•
Knowledge of Aircraft Systems and Procedures		•		•	●		•	•		
Baggage and Cargo Loading		●		•	•					•
Aircraft Maintenance		●	•	•	•	•	●		•	
Icing in Flight		●	•	•	•		•			
Turbulence		●		•	●	•				
Deconfliction with IFR/VFR traffic						●				
Icing on Ground		•		•						

2.5.4 Safety Issue Assessments

One safety issue assessment is currently being performed. The safety issue 'Deconfliction with IFR/VFR traffic' has been considered to be producing significant risk in the vicinity of smaller aerodromes. These aerodromes are holding substantial amount of mixed traffic and are surrounded with airspace class D/E and G. The risk is found to be too high for omitting it – hence, EASA has launched a safety issue assessment to address the risk. A collision between a commercial airliner and a GA aircraft would most likely end in a catastrophic event causing serious implications for both the GA community as well as the commercial domain. The group will provide a report with proposed actions aimed at mitigating the risk in as efficient way as possible. There are several existing analysis available and the group has been looking at the issue from all angles. The group has used the European Central Repository (ECR) dataset for reference as we fortunately do not have any accidents stored in EASA's accident database between a GA aircraft and a Commercial Airliner. The ECR contains to a large extent incident data from the national authorities. The data for the Deconfliction with IFR/VFR in Figure 31 does therefore not reflect the risk correctly as that figure is based on accidents from the EASA dataset.

Other safety issue assessments have not been launched. However, the information shown above provides a direction on where to focus the Community's efforts.

This chapter covers all rotorcraft operations and it is divided into four sections. The first section covers offshore operations and the second section covers all other commercial air transport helicopter operations. The scope in these two sections being helicopter operations involving an EASA Member State Air Operator Certificate (AOC) Holder. The third and fourth sections cover Specialised Operations (Part SPO)/aerial work operations and Non-Commercial Operations, respectively, involving "certified" helicopters of all mass groups with an EASA MS as State of registry or as State of operator.

Each section provides details on key statistics, an overview of key risk areas and safety risk portfolio and discusses possible safety priorities in support of the European Plan for Aviation Safety.

3

3.1 Offshore Commercial Air Transport Rotorcraft

The key statistics in Offshore rotorcraft operations involving an EASA MS AOC Holder are provided below.

3.1.1 Key Statistics

The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of fatalities and serious injuries happened in those accidents between the same timeframe.

Table 7. Key Statistics for Offshore Commercial Air Transport Helicopters, 2007-2017

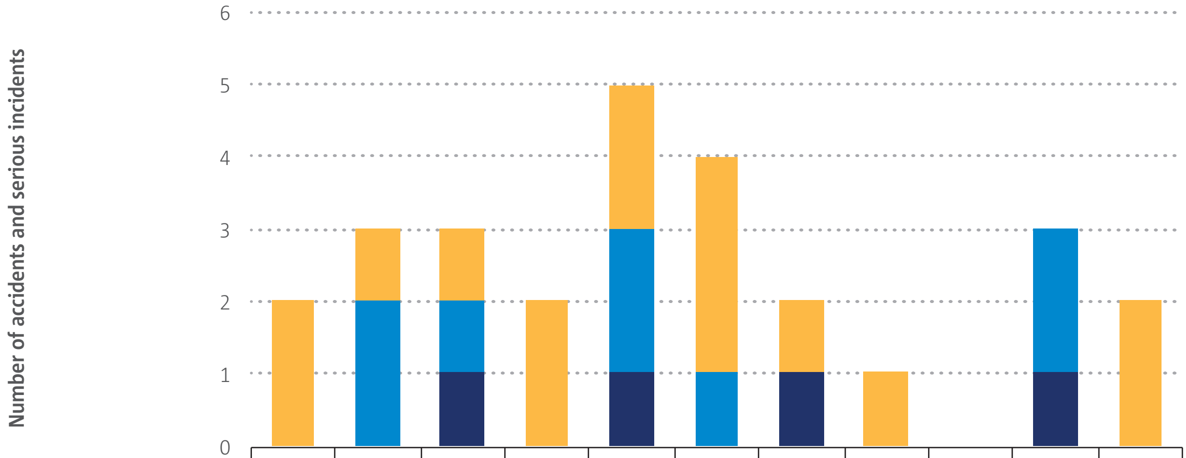
	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	4	8	13
2017	0	0	2

	Fatalities	Serious Injuries
2007-2016 total	13	6
2017	0	0

There have been 2 serious incidents and no fatal or non-fatal accidents in offshore helicopter operations in 2017. The number of serious incidents in 2017 is higher than the average for the 10 year period previous to 2017. Prior to 2017, there have been one fatal accident which involved the loss of an Airbus Helicopters EC225 Super Puma in Norway on 29 April 2016 and another fatal accident in 2013 involving the loss of EUROCOPTER AS332 Super Puma.

The number of fatal accidents, non-fatal accidents and serious incidents is shown below, covering the period 2007-2017. It can be seen that the number of these occurrences has remained relatively stable over the period analysed.

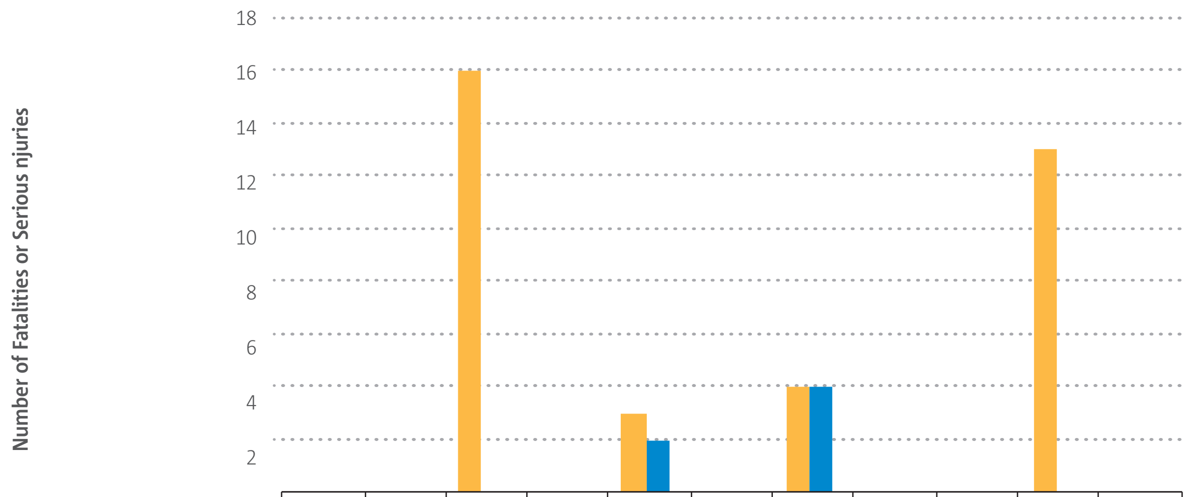
Figure 33. Offshore Commercial Air Transport Helicopters Fatal Accidents, Non-fatal Accidents and Serious Incidents, 2007-2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious incidents	2	1	1	2	2	3	1	1	0	0	2
Non-fatal accidents	0	2	1	0	2	1	0	0	0	2	0
Fatal accidents	0	0	1	0	1	0	1	0	0	1	0

There were no fatalities or serious injuries in offshore helicopter operations in 2017.

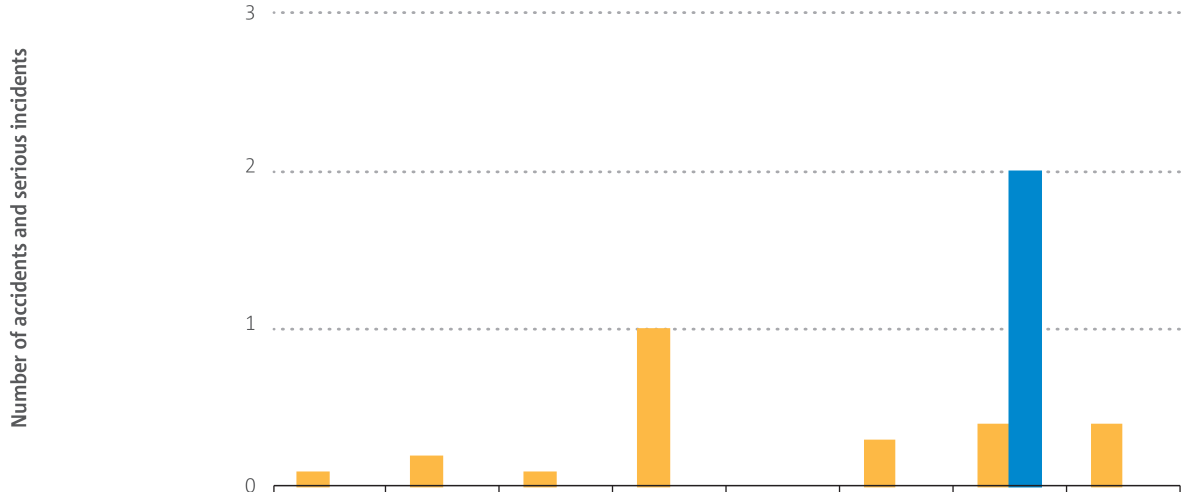
Figure 34. Number of fatalities and serious injuries in offshore commercial air transport, 2007-2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Fatalities	0	0	16	0	3	0	4	0	0	13	0
Total Serious Injuries	0	0	0	0	2	0	4	0	0	0	0

The low number of accidents and serious incidents in this domain prevents any conclusions from being drawn regarding the phase of flight. However, the figures are presented below for information.

Figure 35. Offshore Commercial Air Transport Rotorcraft Accidents and Serious Incidents by phase of flight, 2007-2017

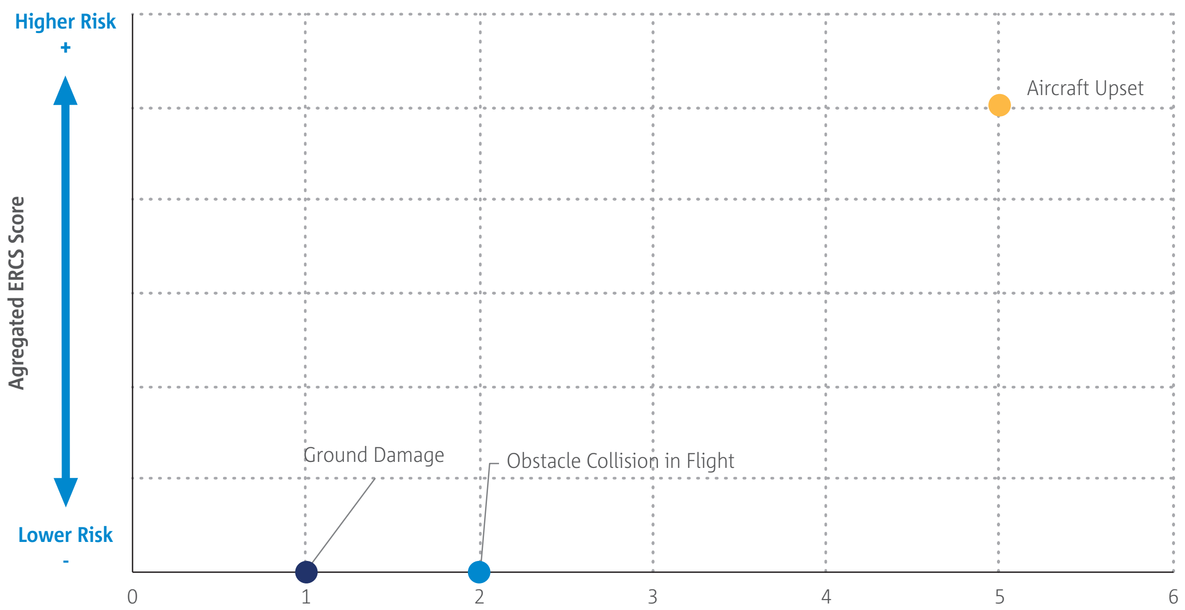


	Standing	Taxi	Take-off	En route	Manoevring	Approach	Landing	Unknown
2007-2016 Avg	0.1	0.2	0.1	1	0	0.3	0.4	0.4
2017	0	0	0	0	0	0	2	0

3.1.2 Safety Risk Portfolio

The safety risk portfolio for offshore helicopter has been developed with the support of the Offshore Helicopter Collaborative Analysis Group (CAG). The safety risk portfolio provides a summary of key risk areas and associated safety issues identified in accidents and serious incidents that happened from 2013 and 2017 in offshore operations.

Figure 36. Offshore commercial air transport rotorcraft Key Risk Areas plotted in relation to the European Risk Classification Score (ERCS) methodology



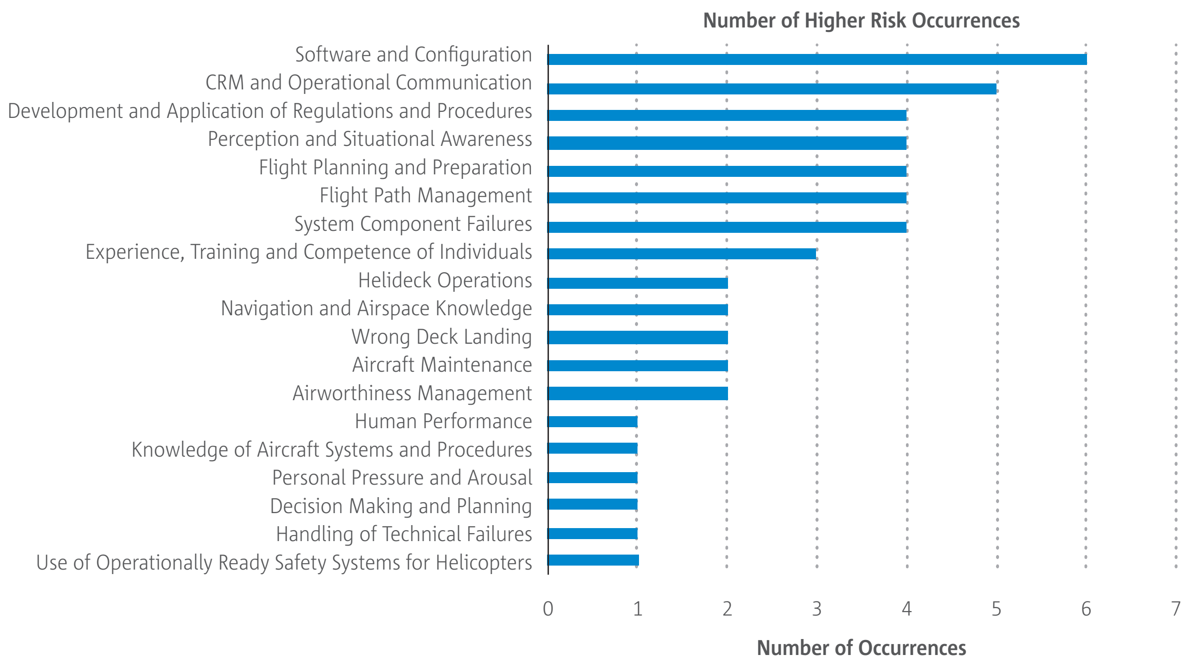
The main key risk areas in offshore helicopter operations are Aircraft Upset, Obstacle Collision in Flight and Ground Damage. Aircraft Upset (Loss of Control) is the largest key risk area for offshore operations and includes two fatal accidents and 17 fatalities, 1 non-fatal accident and 2 serious incidents. Obstacle Collision in Flight is the second largest key risk areas for offshore and has been identified in 2 serious incidents reported in 2017 associated with landing on a wrong deck. Ground Damage key risk area includes a non-fatal accident during taxi where the helicopter main rotor blades hit the side of a parked truck.

The safety risk portfolio lists the safety issues that contribute to the key risk areas, based on the number of high risk occurrences and their aggregated risk score. The key risk areas are listed at the top of the safety risk portfolio and prioritised based on the number of high risk occurrences.

For each safety issue listed in the safety risk portfolio information is provided on the number of high risk occurrences and their aggregated risk score, which is further distributed by the key risk areas to which the safety issue had contributed in terms of both number of high risk occurrences and aggregated risk score.

In this way, it can be easily assessed to which key risk area a safety issues is more relevant for, as well as to prioritize safety issues within a key risk area.

Figure 37. Offshore commercial air transport rotorcraft safety issues.



Based on the data supporting the portfolio, the following relations between the priority 1 key risk areas and safety issues can be highlighted:

- Aircraft Upset
  - Software and Configuration
  - Systems Failures
  - Flight Path Management
  - Perception and Situational Awareness
  - Experience, Training and Competence of Individuals

- Obstacle Collision
  - CRM and Operational Communication
  - Software and Configuration
  - Flight Planning and Preparations
  - Wrong Deck Landings
  - Helideck Operations

The safety issues listed in the safety risk portfolio that were not identified in high risk occurrences are included for safety performance monitoring purposes as they were identified during the meetings of the Offshore CAG.

Figure 38. Safety Risk Portfolio for Off-shore Helicopter operations showing how the 5 year occurrence data 2013-2017 relates to safety issues and their outcomes relative to risk in descending order

Software and Configuration	6		●	•							
CRM and Operational Communication	5			●			•				
System Component Failures	4		●								
Flight Path Management	4		●								
Flight Planning and Preparation	4		•	●							
Perception and Situational Awareness	4		●				•				
Development and Application of Regulations and Procedures	4		●	•			•				
Experience, Training and Competence of Individuals	3		●								
Airworthiness Management	2		●								
Aircraft Maintenance	2		●								
Wrong Deck Landing	2			●							
Navigation and Airspace Knowledge	2			●							
Helideck Operations	2			●							
Use of Operationally Ready Safety Systems for Helicopters	1		●								
Handling of Technical Failures	1		●								
Decision Making and Planning	1		●								
Personal Pressure and Arousal	1		●								
Knowledge of Aircraft Systems and Procedures	1		●								
Human Performance	1		●								
Emergency/Crash Locator Devices	0										
Damage Tolerance to UAS Collisions	0										
Intentional Low Flying	0										
Airborne Separation	0										
Downwash	0										
Icing in flight?	0										
Helicopter Obstacle See and Avoid	0										
Degraded Visual Environment	0										
Bird/Wildlife Strikes	0										
Safety Culture	0										
Effectiveness of Safety Management	0										
Ground handling	0										

3.2 Other Commercial Air Transport Helicopters

The key statistics are provided below for operations involving commercial air transport rotorcraft other than off-shore operations and with an EASA MS AOC.

3.2.1 Key Statistics

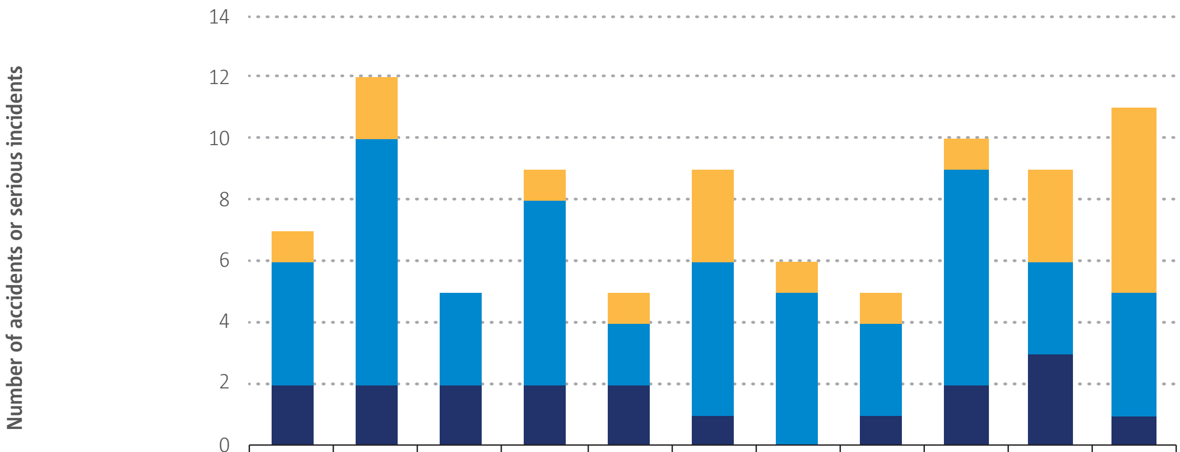
The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of fatalities and serious injuries happened in those accidents between the same timeframe.

Table 8. Key Statistics for Other Commercial Air Transport Helicopters, 2007-2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	17	46	14
2017	1	4	6

	Fatalities	Serious Injuries
2007-2016 total	54	39
2017	6	3

Figure 39. Other Commercial Air Transport Helicopters Fatal Accidents, Non-fatal Accidents and Serious Incidents, 2007-2017

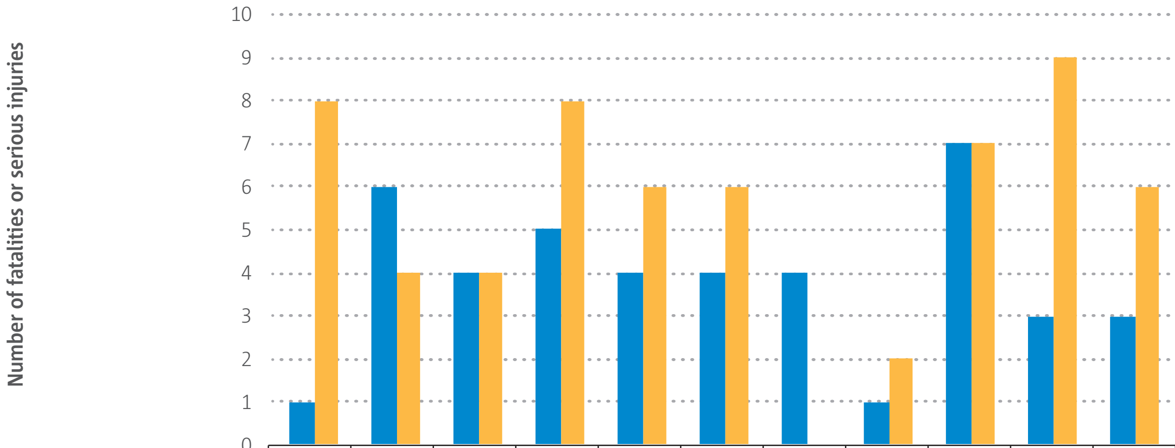


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious incidents	1	2	0	1	1	3	1	1	1	3	6
Non-fatal accidents	4	8	3	6	2	5	5	3	7	3	4
Fatal accidents	2	2	2	2	2	1	0	1	2	3	1

There was one fatal accident in 2017, the AW139 accident in Campo Felice, Italy during HEMS operations. Overall, the number of fatal accidents in 2017 had decreased compared to 2016 and 10 year average. The number of non-fatal accidents have increased slightly in 2017 compared to 2016 but it is below the 10-year average. For serious incidents, the numbers doubled in 2017 compared to 2016 but they are well below the 10-year average.

The number of fatalities in other CAT helicopter operations are slightly above the median for 2007-2016 whereas the number of serious injuries have decreased. Overall, the number of fatalities and serious injuries have not changed substantially between 2007 and 2017.

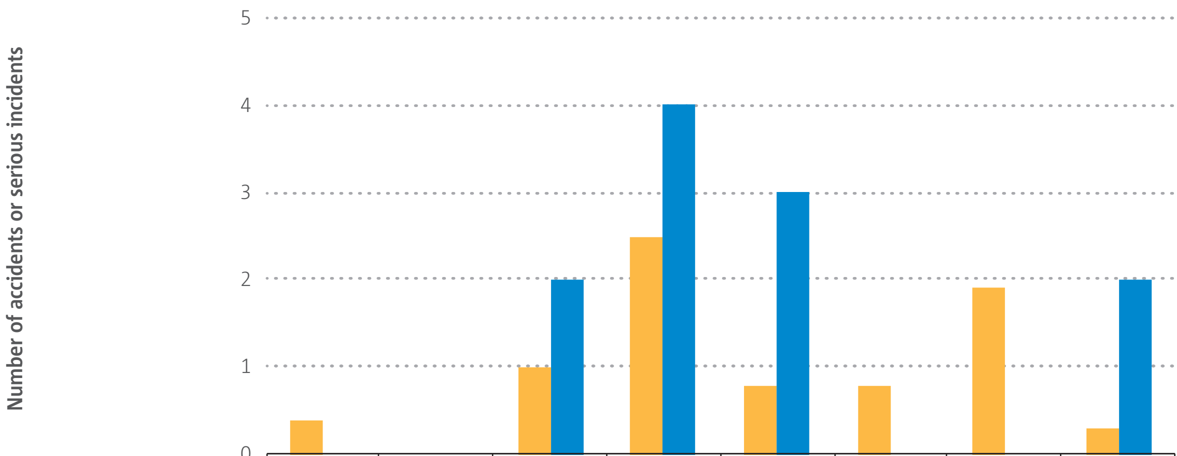
➨ **Figure 40.** Number of fatalities and serious injuries for rotorcraft other commercial air transport, 2007-2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious injuries	1	6	4	5	4	4	4	1	7	3	3
Fatalities	8	4	4	8	6	6	0	2	7	9	6

3.2.1.1 Phase of flight

➨ **Figure 41.** Other Commercial Air Transport Helicopters Accidents and Serious Incidents by phase of flight, 2017 and 2007-2016

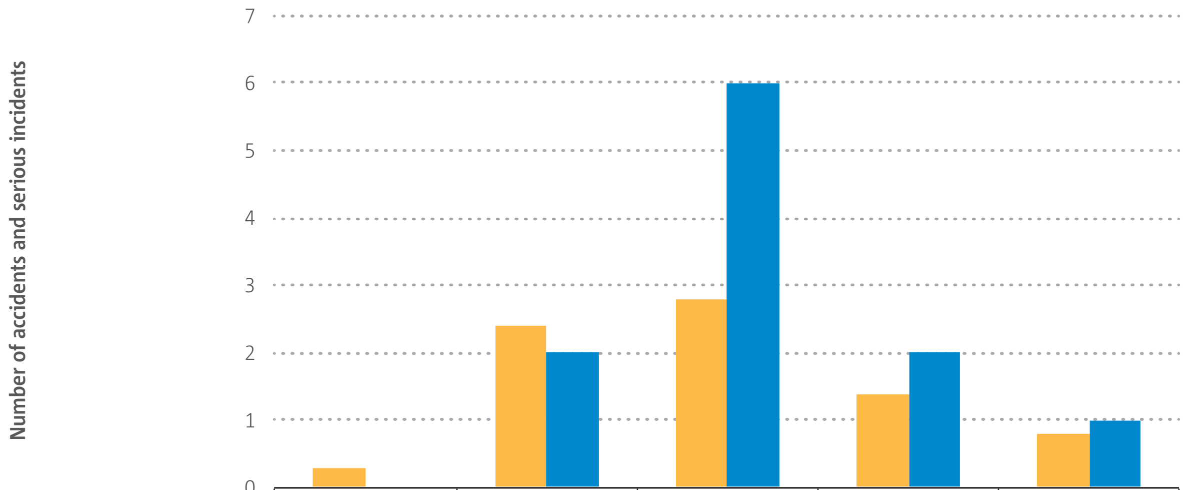


	Standing	Taxi	Take-off	En route	Manoevring	Approach	Landing	Unknown
2007-2016 average	0.4	0	1	2.5	0.8	0.8	1.9	0.3
2017	0	0	2	4	3	0	0	2

Most of the accidents and serious incidents in 2017 happened during the en route and manoeuvring phases of flight, and in comparison with 10 year average the numbers are well higher.

3.2.1.2 Operation type

Figure 42. Other Commercial Air Transport Helicopters Accidents and Serious Incidents by type of operation, 2017 and 2007-2016



	Airline	Air Taxi	HEMS	Sightseeing	Other/ Unknown
2007-2016 Average	0.3	2.4	2.8	1.4	0.8
2017	0	2	6	2	1

The highest number of accidents and serious incidents in 2017 have been in HEMS followed by Air Taxi and Sightseeing types of operation.

Figure 43. Other Commercial Air Transport Helicopters type of operation and aggregated ERCS risk score, 2007-2017

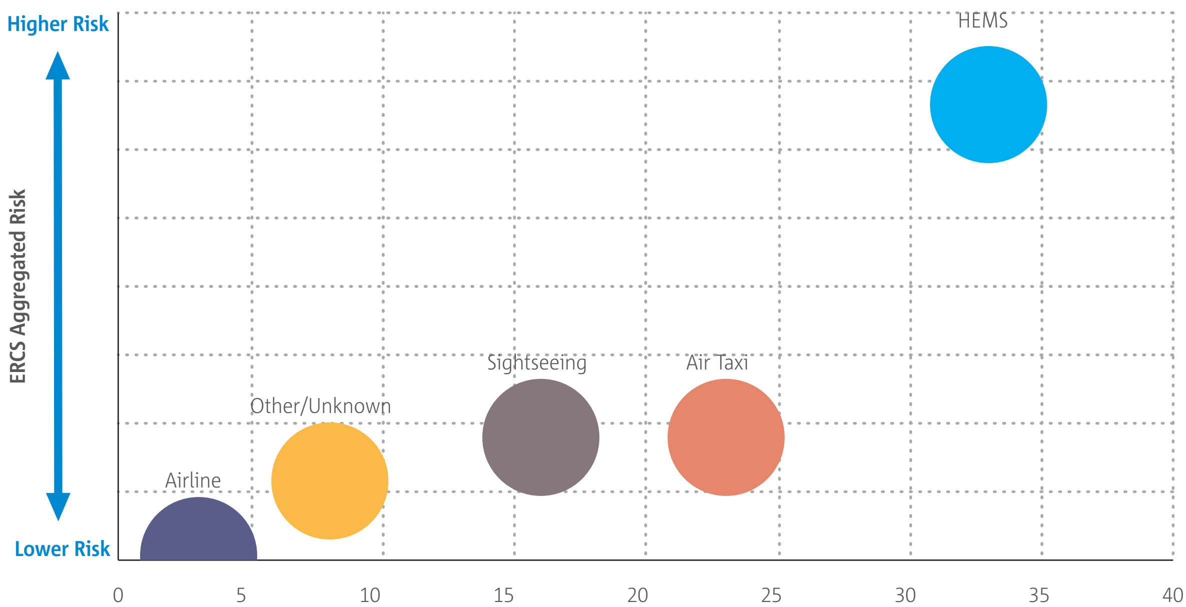
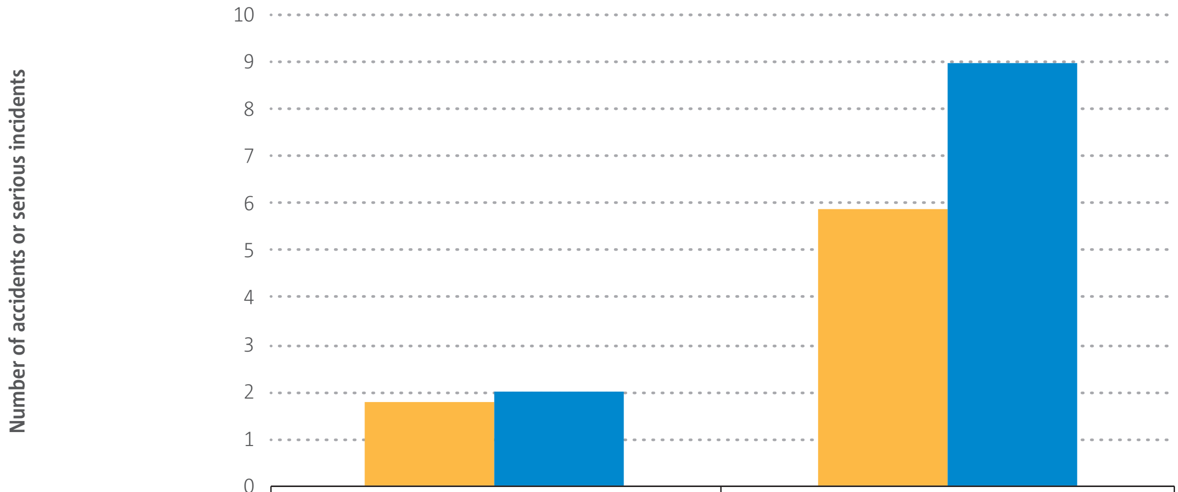


Figure 43 provides information regarding the aggregated risk score of high risk occurrences of the different operation types falling in the scope of this section that happened from 2007 – 2017. As it can be observed HEMS operations have the highest aggregated risk score and highest number of high risk occurrences too, followed by Air Taxi and Sightseeing operation types.

EASA has already started an analysis activity into HEMS operation in collaboration with industry and Network of Analysts to support decision-making in the context of the SRM process.

3.2.1.3 Rotorcraft Type/ Propulsion Type

Figure 44. Other Commercial Air Transport Helicopters Accidents and Serious Incidents by Propulsion type, 2017 and 2007-2016



	Reciprocating engine	Turboshaft
2007-2016 Average	1.8	5.9
2017	2	9

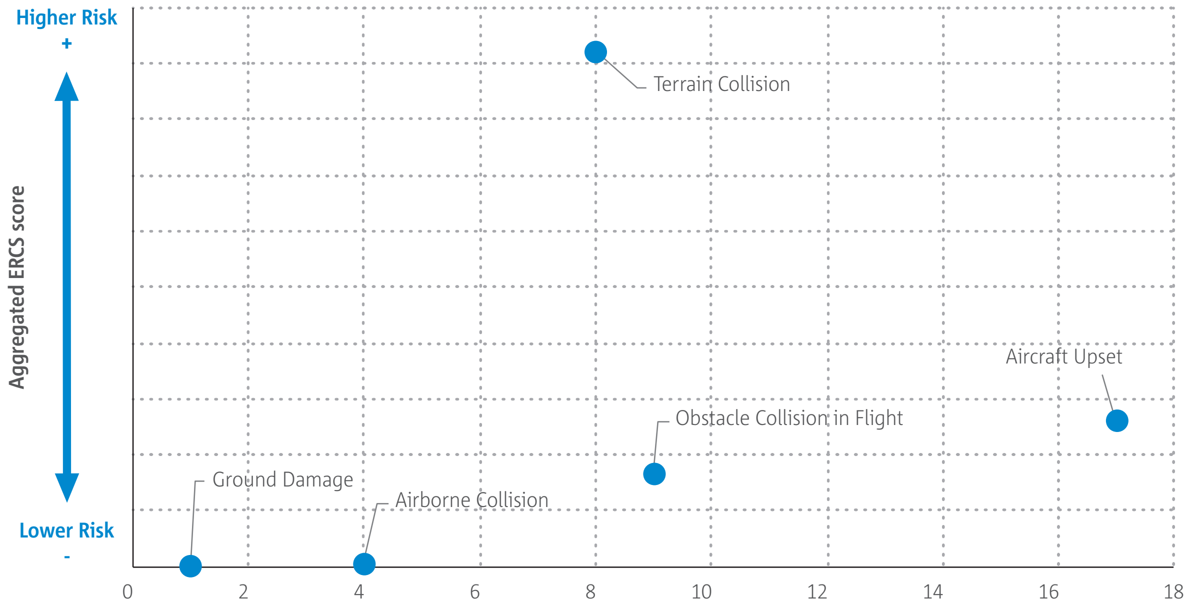
There have been a higher number of accidents and serious incidents involving turboshaft equipped helicopters then those with a reciprocating engine. For both propulsion types the number of accidents and serious incidents are above the 10 year average.

3.2.2 Safety Risk Portfolio

The safety risk portfolio for other CAT helicopter has been developed based on the analysis of accidents and serious incidents that happened from 2013 to 2017. Similar to the offshore helicopter safety risk portfolio it provides details of key risk safety areas and associated safety issues prioritised based on the number of high risk occurrences assessed using the ERCS methodology.

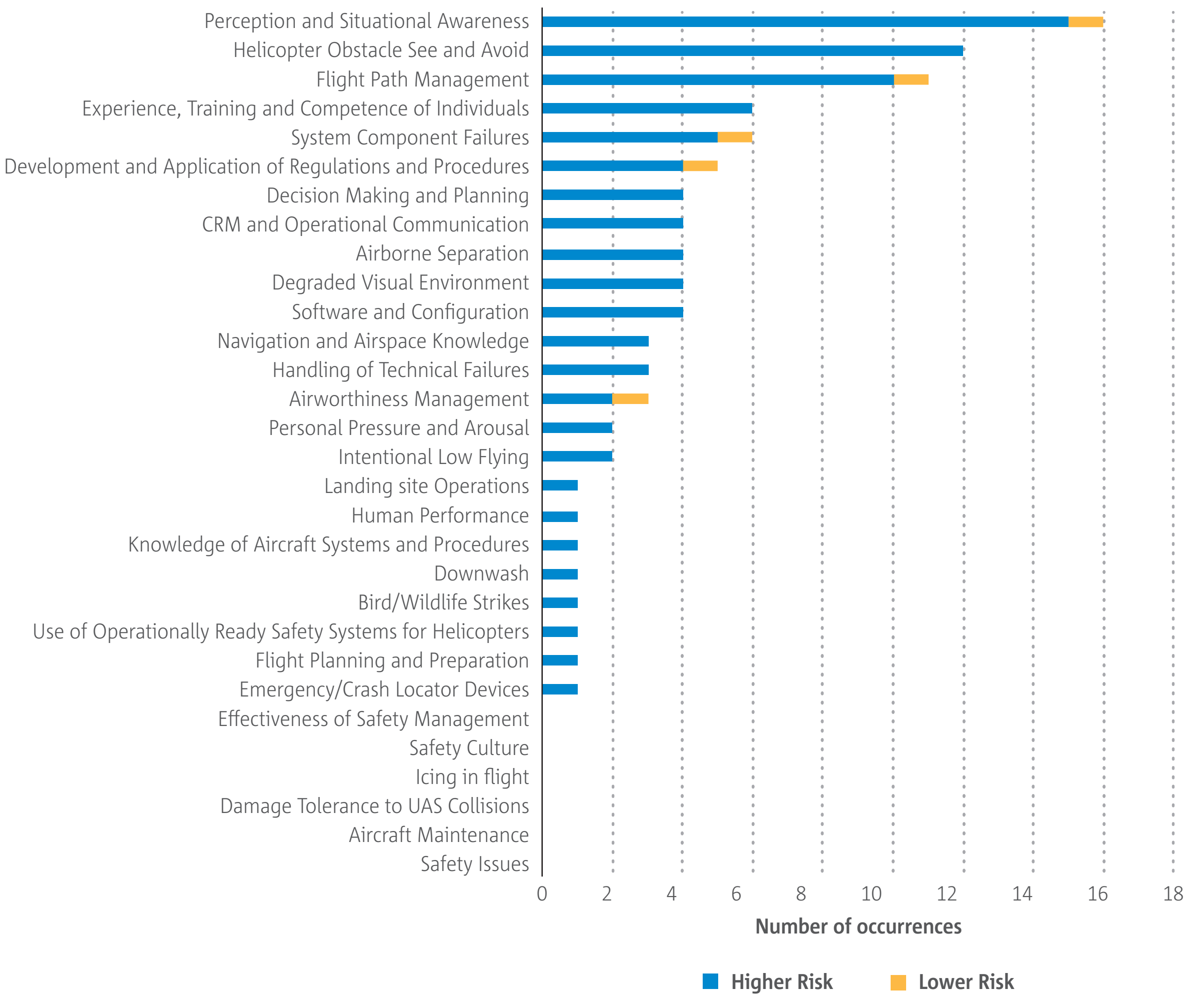
Aircraft Upset, Obstacle Collision inflight and Terrain Collision are the main key risk areas for other CAT helicopters based on the aggregated risk score and number of high risk occurrences that covers 2013 – 2017 period.

Figure 45. Other Commercial Air Transport Helicopters Key Risk Areas



The main key risk areas in terms of aggregated risk score and number of high risk occurrences covering 2013 – 2017 are Aircraft Upset, Terrain Collision and Obstacle Collision inflight.

Figure 46. Other Commercial Air Transport Rotorcraft safety issues, by higher and lower ERCS risk score, 2013-2017.


Perception and Situational Awareness
Helicopter Obstacle See and Avoid
Flight Path Management
Experience, Training and Competence of Individuals
System Component Failures
Development and Application of Regulations and Procedures
Decision Making and Planning
CRM and Operational Communication
Airborne Separation
Degraded Visual Environment
Software and Configuration
Navigation and Airspace Knowledge
Handling of Technical Failures
Airworthiness Management
Personal Pressure and Arousal
Intentional Low Flying
Landing site Operations
Human Performance
Knowledge of Aircraft Systems and Procedures
Downwash
Bird/Wildlife Strikes
Use of Operationally Ready Safety Systems for Helicopters
Flight Planning and Preparation
Emergency/Crash Locator Devices
Effectiveness of Safety Management
Safety Culture
Icing in flight
Damage Tolerance to UAS Collisions
Aircraft Maintenance
Safety Issues
0
2
4
6
8
10
12
14
16
18
Number of occurrences
Higher Risk
Lower Risk

Based on the data supporting the portfolio, the following relations between the priority 1 key risk areas and safety issues can be highlighted:

- Aircraft Upset
  - Flight Path Management
  - Systems Failures
  - Perception and Situational Awareness
  - Experience, Training and Competence of Individuals
  - Handling of Technical Failures

- Obstacle Collision
  - Helicopter Obstacle See and Avoid
  - Perception and Situational Awareness
  - Intentional Low Flying
  - Software and Configuration

- Terrain Collision
  - Perception and Situational Awareness
  - Helicopter Obstacle See and Avoid
  - Decision Making and Planning
  - Experience, Training and Competence of Individuals
  - Degraded Visual Environment

Figure 47. Safety Risk Portfolio for Other CAT Helicopter operations showing how the 5 year occurrence data 2013-2017 relates to safety issues and their outcomes relative to risk in descending order

Perception and Situational Awareness	15	•	●	•						
Helicopter Obstacle See and Avoid	12		●	•						
Flight Path Management	10	●	•							
Experience, Training and Competence of Individuals	6	●		•						
Systems Failures	6	●	•							
Decision Making and Planning	**4**		•	●						
Degraded Visual Environment	**4**	•		●						
CRM and Operational Communication	4	•		●						
Software and Configuration	4	•	•	●						
Development and Application of Regulations and Procedures	4	●		•						
Airborne Separation	4				●					
Navigation and Airspace Knowledge	3	•		●						
Handling of Technical Failures	3	●								
Personal Pressure and Arousal	2			●						
Intentional Low Flying	2		●							
Airworthiness Management	**2**	●								
Flight Planning and Preparation	1			●						
Landing site Operations	1		●							
Emergency/Crash Locator Devices	1	●								

Other CAT Helicopters

Bands of Aggregated ERCS Risk Score (2013-2017)			Priority 1			Priority 2		Priority 3		Priority 4	
Higher Risk ERCS Occurrences (2013-2017)			17	9	7	4	1	0	0	0	0
Safety Issues			Key Risk Areas (Outcomes and precursors)								
Safety Issues	#HRO ERCS	Bands of Aggregated ERCS Risk Score (2013-2018)	Aircraft Upset	Obstacle Collision	Terrain Collision	Airborne Collision	Ground Damage	Runway Collision	Unsurvivable Aircraft Environment	Excursions	Injuries
Use of Operationally Ready Safety Systems for Helicopters	1		●								
Bird/Wildlife Strikes	1		●								
Knowledge of Aircraft Systems and Procedures	1		●								
Human Performance	**1**		●								
Downwash	**1**						●				
Aircraft Maintenance	0										
Damage Tolerance to UAS Collisions	0										
Icing in flight	0										
Safety Culture	0										
Effectiveness of Safety Management	0										

● **A significant number of occurrences** • **A small number of occurrences**

3.3 Specialised Operations

This chapter covers Special Operations (Part SPO) involving helicopters of all mass groups with an EASA MS State of Registry or State of Operator.

3.3.1 Key Statistics

The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of fatalities and serious injuries happened in those accidents between the same timeframe.

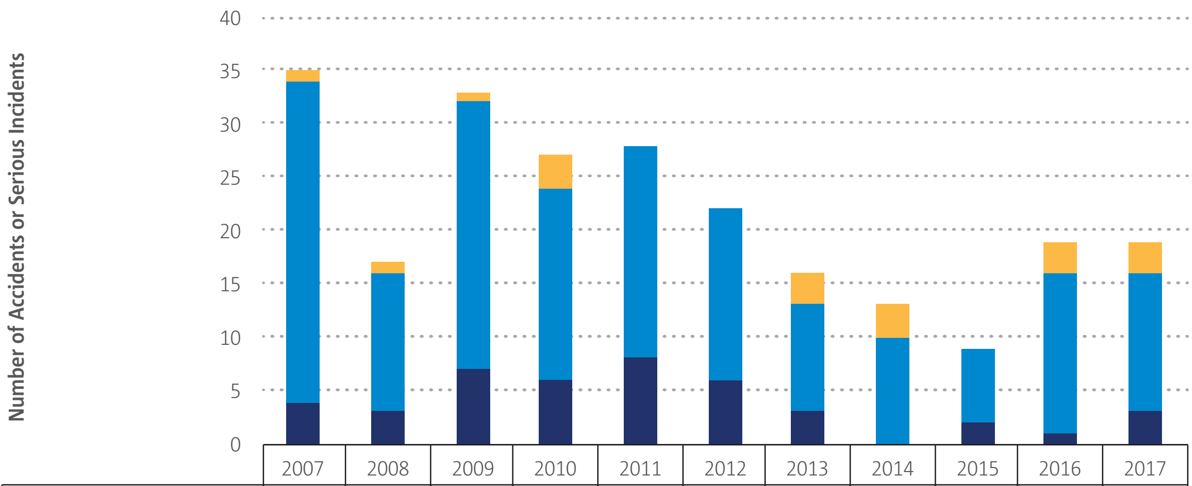
Table 9. Key Statistics for Specialised Operations Rotorcraft, 2007-2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	40	164	15
2017	3	12	5

	Fatalities	Serious Injuries
2007-2016 total	75	71
2017	4	5

The number of fatal accidents in 2017 was slightly lower than the average of the preceding decade, the number of non-fatal accidents was lower than the average of 2007-2016, while the number of serious incidents was considerably higher than the average of the preceding 10-year period. The number of fatalities in 2017 was lower than the preceding decade average, whereas the number of serious injuries was slightly lower than the 2007-2016 average.

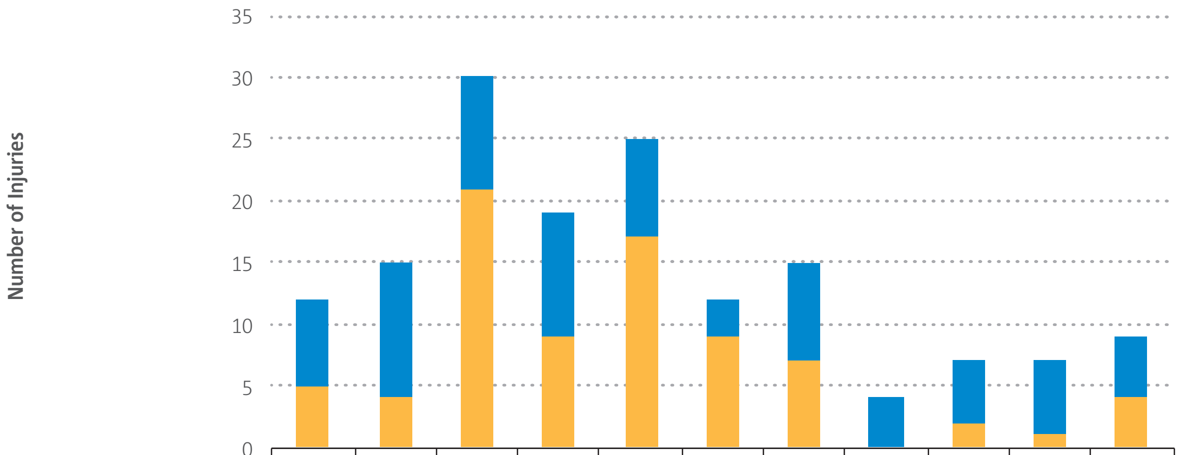
Figure 48. Number of fatal accidents, non-fatal accidents and serious incidents for rotorcraft specialised operations, 2007-2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious Incidents	1	1	1	3	0	0	3	3	0	3	3
Non-Fatal Accidents	30	13	25	18	20	16	10	10	7	15	13
Fatal Accidents	4	3	7	6	8	6	3	0	2	1	3

The four fatalities in 2017 was the highest total number of fatalities since 2013, although from 2007 up to and including 2013 the number of fatalities have been 4 or higher per year. Overall, the number of fatal or serious injuries has decreased across the period analysed.

Figure 49. Number of fatalities and serious injuries for rotorcraft specialised operations, 2007-2017

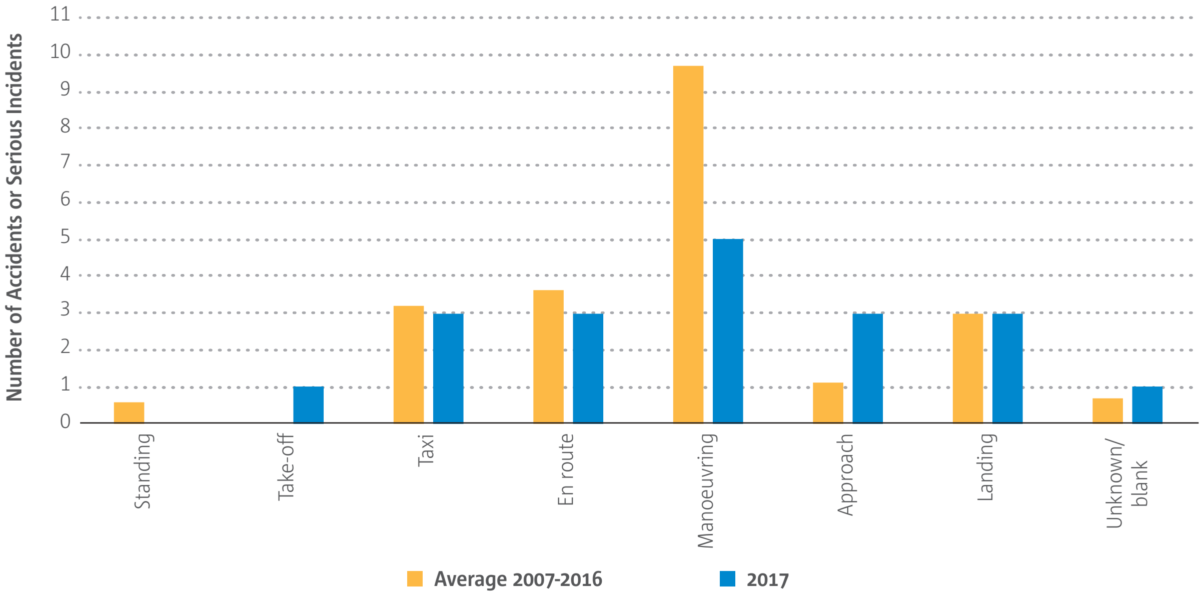


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	7	11	9	10	8	3	8	4	5	6	5
Total Fatalities	5	4	21	9	17	9	7	0	2	1	4

3.3.1.1 Phase of flight

The number of accidents and serious incidents in the en-route and approach phases was higher in 2017 than the average of the preceding decade. The number of accidents and serious incidents in the take-off and manoeuvring phases were lower in 2017 compared with the average of 2007-2016. In 2017 there was one accident/serious incident in the taxi (air taxi) phase, in the preceding decade no such accidents/serious incidents occurred. In the standing phase, no accidents or serious incidents occurred in 2017.

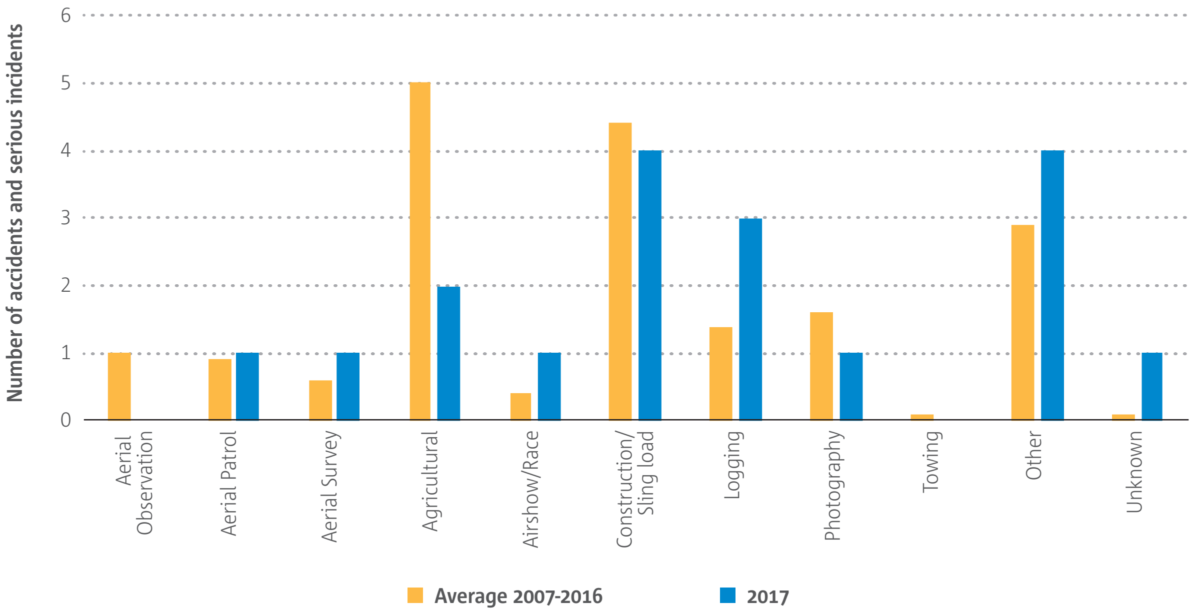
Figure 50. Rotorcraft Specialised Operations Accidents and Serious Incidents by Phase of Flight, 2007-2017



3.3.1.2 Operation Type

The number of accidents and serious incidents in aerial patrol, aerial survey, airshow/race, construction/sling load, logging and other was higher in 2017 than the average of the preceding decade. In photography the 2017 number was lower than the preceding 10-year period. There were no aerial observation accidents or serious incidents in 2017.

Figure 51. Rotorcraft Specialised Operations Accidents and Serious Incidents by Type of Operation, 2007-2017

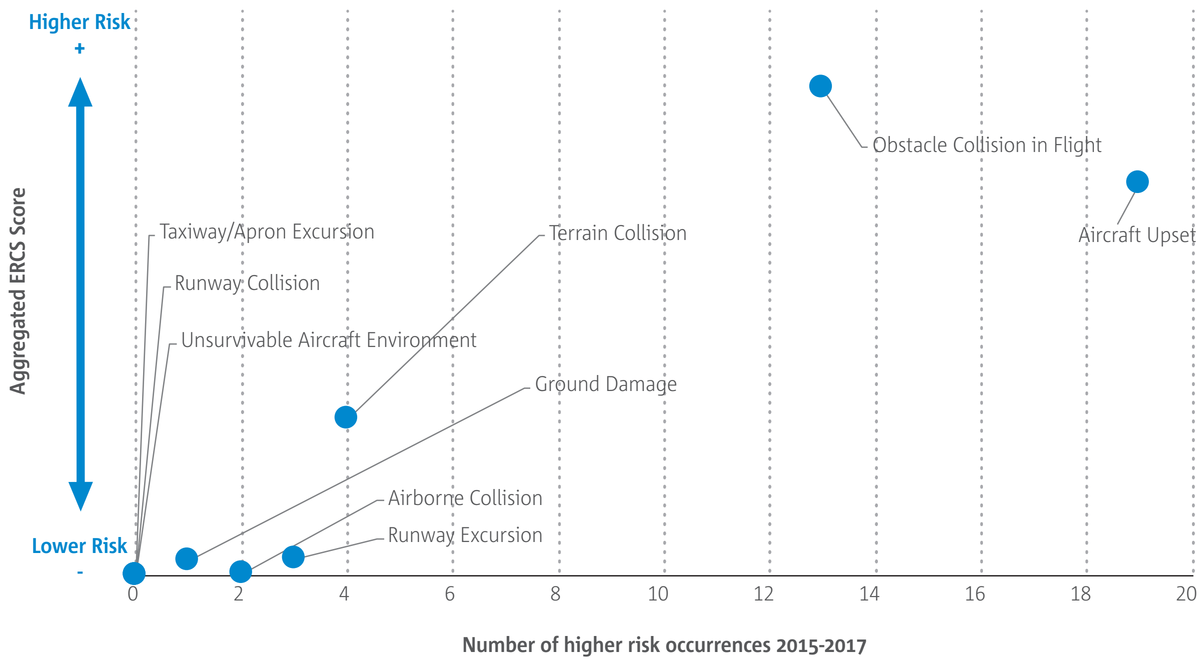


3.3.2 Safety Risk Portfolio

The Safety Risk Portfolio for Specialised Operations rotorcraft is based only on occurrence data, since an SPO Helicopters CAG has not been established. The Safety Issues and Key Risk Areas are prioritised based on the cumulative ERCS risk score for accidents and serious incidents in the EASA occurrence repository for the 2015-2017 period.

The key risk areas with the highest risk and highest number of occurrences involving specialised operations rotorcraft were Obstacle Collision In-flight and Aircraft Upset.

Figure 52. Distribution of key risk areas by frequency and aggregated ERCS risk score for rotorcraft specialised operations, 2015-2017



Based on the data supporting the portfolio, the following relations between the priority 1 key risk areas and safety issues can be highlighted:

- Obstacle Collision In-flight:
  - Intentional low-flying,
  - Helicopter obstacle see and avoid.
- Aircraft Upset:
  - System reliability.

Figure 53. Safety Risk Portfolio for SPO Helicopter operations showing how the 3 year occurrence data 2015-2017 relates to safety issues and their outcomes relative to risk in descending order

Intentional Low Flying		●	•	•						
Helicopter Obstacle See and Avoid		●	•	•						
Perception and Situational Awareness		•	•	•			•			
Control of the Helicopter Flight Path and Use of Automation		•	•							
System Reliability			●		•					
Flight Planning and Preparation			•							
Human Performance		•	•							
Handling of Technincal Failures			•							
Decision Making and Planning		•								
Airborne Separation							•			
CRM and Operational Communications		•								
Aircraft Maintenance		No data								
Approach Path Management		No data								
Bird and Wildlife Strikes		No data								
Damage Tolerance to UAS Collisions		No data								
Degraded Visual Environment		No data								
Development and Application of Regulations and Procedures		No data								
Experience, Training and Competence of Individuals		No data								
Knowledge of Aircraft Systems and Procedures		No data								
Personal Pressure and Arousal		No data								

3.4 Non-Commercial Operations

The key domain statistics for non-commercial operations involving certified helicopters registered in an EASA MS or for which an EASA MS is the State of Operator are provided below.

3.4.1 Key Statistics

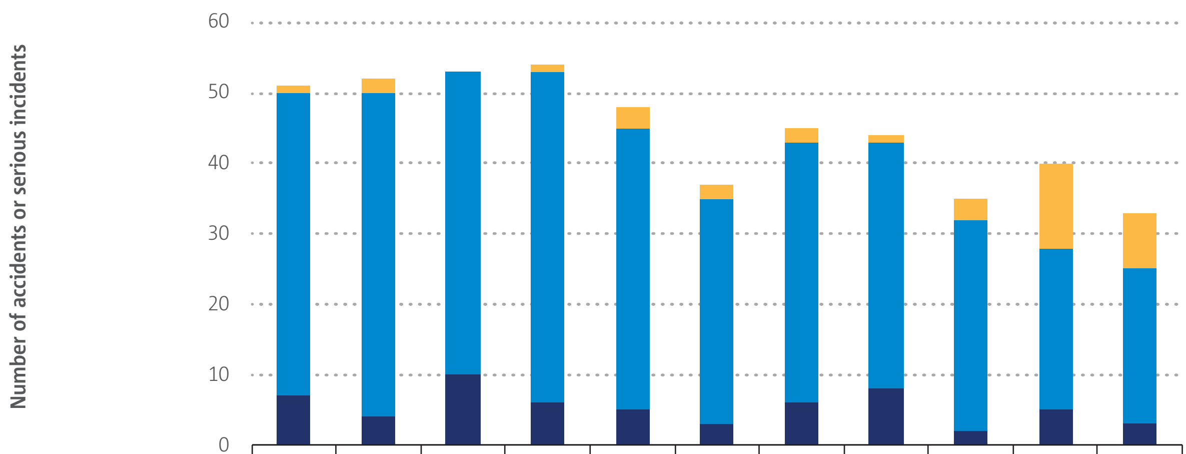
The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of fatalities and serious injuries happened in those accidents between the same timeframe.

Table 10. Key Statistics for Non-commercial Rotorcraft, 2007-2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	56	376	27
2017	3	22	8

	Fatalities	Serious Injuries
2007-2016 total	132	58
2017	7	11

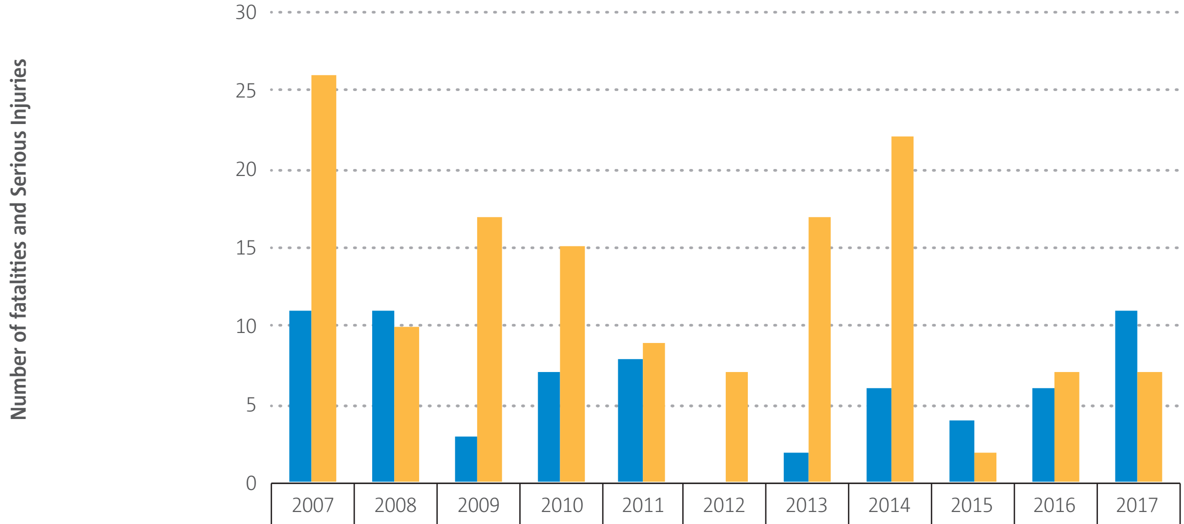
Figure 54. Non-commercially operated rotorcraft Accidents and Serious Incidents, 2007 - 2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious incidents	1	2	0	1	3	2	2	1	3	12	8
Non-fatal accidents	43	46	43	47	40	32	37	35	30	23	22
Fatal accidents	7	4	10	6	5	3	6	8	2	5	3

There has been a decrease in the number of fatal accidents in 2017 compared to 2016 and the 10 year average. There were also fewer non-fatal accidents and serious incidents in 2017 compared with 2016 and 10-year average.

➨ **Figure 55.** Number of fatalities and serious injuries in non-commercially operated rotorcraft, 2007 - 2017

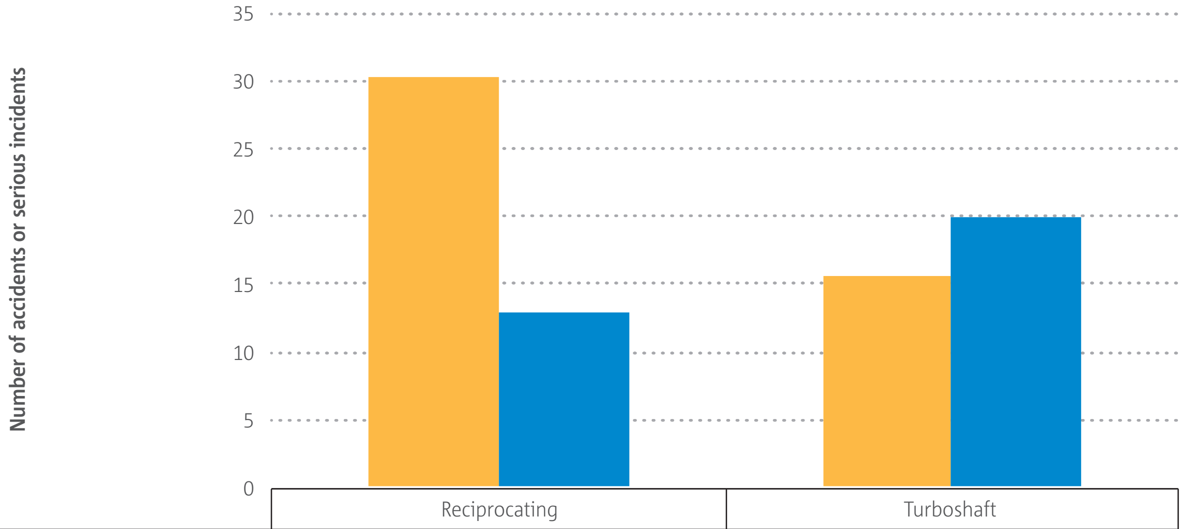


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious injuries	11	11	3	7	8	0	2	6	4	6	11
Fatalities	26	10	17	15	9	7	17	22	2	7	7

The number of fatalities was also lower in 2017 compared to the 10 year average, and there is a higher number of serious injuries in 2017 compared to 2016 and previous 10 year-average. The number of fatal and serious injuries for non-commercially operated rotorcraft changes each year. Although the number of fatal injuries in the last three years has been lower in general than the ten year period, no overall trend could be identified.

3.4.1.1 Rotorcraft Type/ Propulsion Type

➨ **Figure 56.** Distribution of accidents and serious incidents by rotorcraft propulsion type, 2007-2016 and 2017.

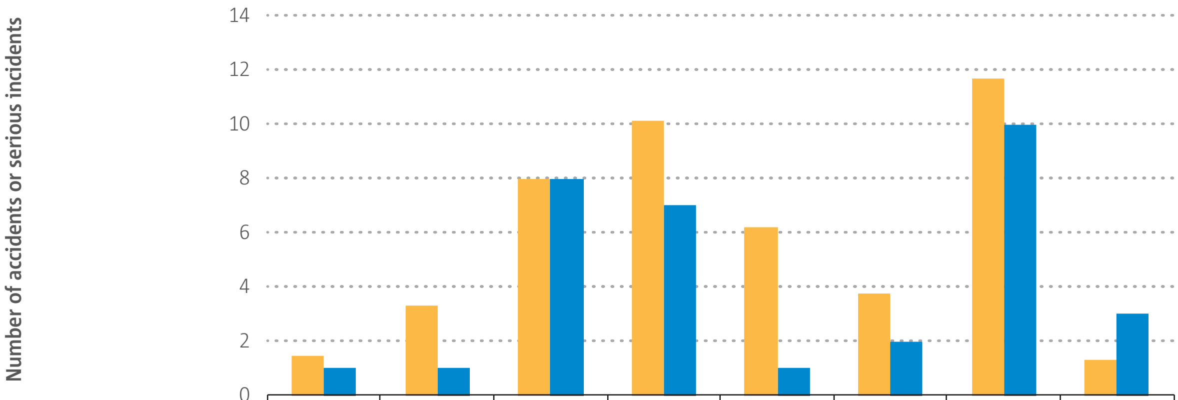


	Reciprocating	Turboshaft
2007-2016 Average	30.2	15.6
2017	13	20

In 2017 there were fewer accidents and serious incidents involving rotorcraft with reciprocating engines than turboshaft engines. However, based on the 2007-2016 average, the number of accidents and serious incidents involving reciprocating engine helicopters was higher than the average for turboshaft.

3.4.1.2 Phase of flight

Figure 57. Distribution of accidents and serious incidents by phase of flight for non-commercially operated rotorcraft, 2007-2016 and 2017

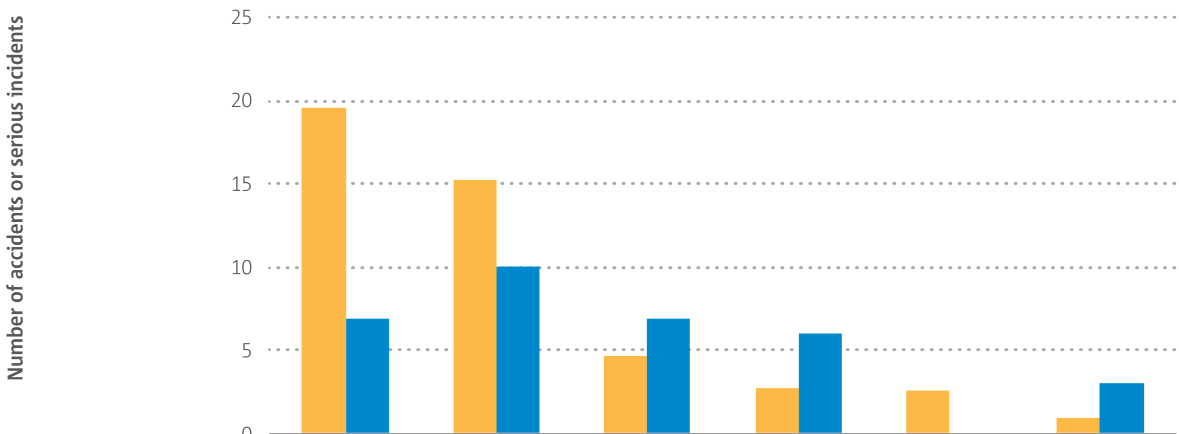


	Standing	Taxi	Take-off	En route	Manoeuvring	Approach	Landing	Unknown
2007-2016 Average	1.5	3.3	8	10.1	6.2	3.8	11.7	1.3
2017	1	1	8	7	1	2	10	3

The highest number of accidents and serious incidents occurred during the take-off, en-route and landing phases of flight. There is a significant decrease in 2017 in the number of accidents and serious incidents during enroute and manoeuvring compared to the 10-year average.

3.4.1.3 Type of Operation

Figure 58. Distribution of accidents and serious incidents by operation type for non-commercially operated rotorcraft, 2007-2016 and 2017



	Pleasure	Flight Training/ Instructional	Other/Unknown	Business	Relocation	Test Flight
2007-2016 Average	19.6	15.3	4.7	2.8	2.6	0.9
2017	7	10	7	6	0	3

Most accidents and serious incidents occurred in 2017 have happened during Flight Training/Instructional and Pleasure types of operations, and they are below the 10-year average.

Figure 59. Non-commercially operated rotorcraft aggregated ERCS risk score by type of operation, 2013-2017.

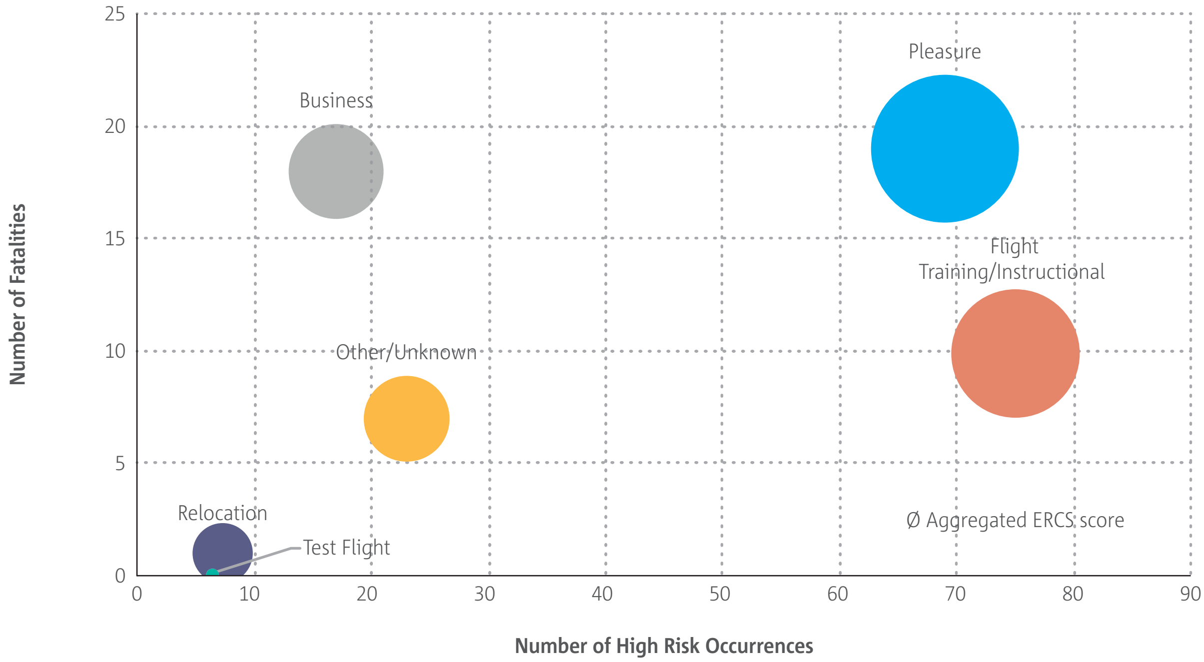


Figure 59 provides information regarding the aggregated risk score of high risk occurrences of the different operation types falling in the scope of this section that happened from 2013 – 2017. It can be seen that there are more high risk occurrences in Flight Training/Instructional operation type then in Pleasure but Flight Training/Instructional has a lower aggregated risk score than Pleasure operation type.

3.4.2 Safety Risk Portfolio

The safety risk portfolio for non-commercial helicopter operations has been developed based on the analysis of accidents and serious incidents that happened from 2013 to 2017. It provides details of key risk safety areas and associated safety issues prioritised based on the number of high risk occurrences assessed using the ERCS methodology.

Aircraft Upset, Obstacle Collision inflight and Terrain Collision are the main key risk areas non-commercial helicopter operations based on the aggregated risk score and number of high risk occurrences that covers 2013 – 2017 period.

Figure 60. Non-commercially operated rotorcraft Key Risk Areas plotted in relation to the European Risk Classification Score (ERCS) methodology, 2013-2017

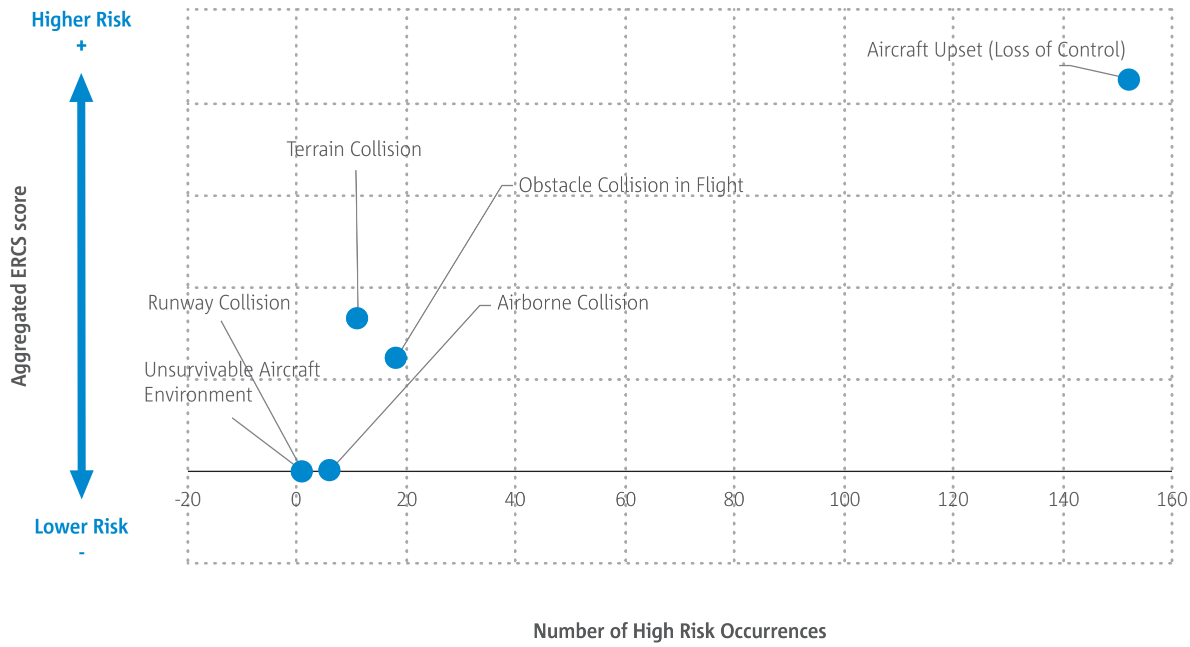
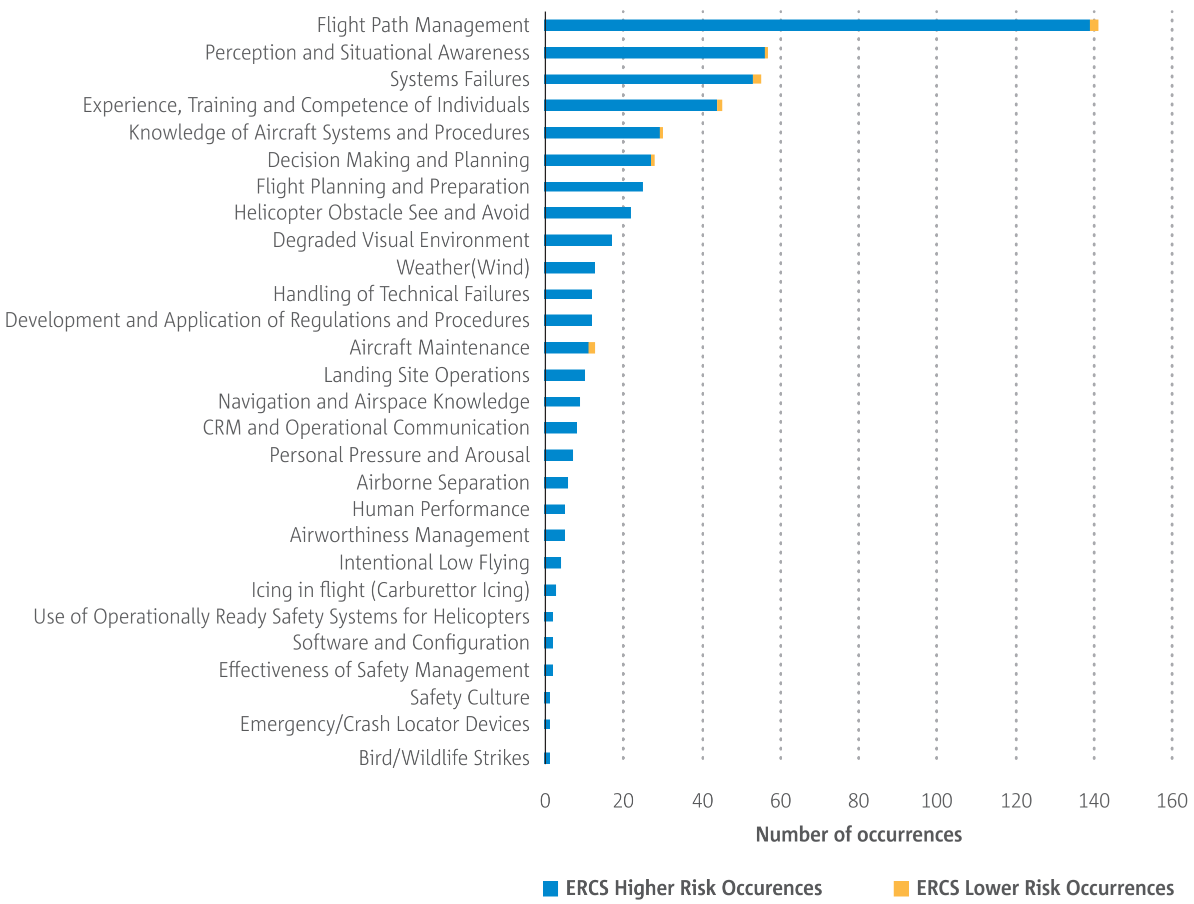


Figure 61. Non-commercially operated rotorcraft safety issues by high and low risk scores, 2013-2017



Based on the data supporting the portfolio, the following relations between the priority 1 key risk areas and safety issues can be highlighted:

- Aircraft Upset
  - Flight Path Management
  - Perception and Situational Awareness
  - Systems Failures
  - Experience, Training and Competence of Individuals
  - Knowledge of Aircraft Systems and Procedures

- Obstacle Collision
  - Helicopter Obstacle See and Avoid
  - Degraded Visual Environment
  - Navigation and Airspace Knowledge
  - Landing Site Operations

- Terrain Collision
  - Helicopter Obstacle See and Avoid
  - Navigation and Airspace Knowledge
  - Decision Making and Planning

Figure 62. Safety Risk Portfolio for NCO Helicopter operations showing how the 5 year occurrence data 2013-2017 relates to safety issues and their outcomes relative to risk in descending order

Flight Path Management	139		●	•	•						
Perception and Situational Awareness	56		●	•	•			•			
Systems Failures	53		●		•				•		
Experience, Training and Competence of Individuals	44		●	•							
Knowledge of Aircraft Systems and Procedures	29		●		•						
Decision Making and Planning	27		●	•	•						
Flight Planning and Preparation	25		●	•	•						
Helicopter Obstacle See and Avoid	22			●	•						
Degraded Visual Environment	17		●	•	•						
Weather(Wind)	13		●		•						
Handling of Technical Failures	12		●								
Development and Application of Regulations and Procedures	12		●		•						
Aircraft Maintenance	11		●								
Landing Site Operations	10		●	•	•		•				
Navigation and Airspace Knowledge	9		●	•	•			•			
CRM and Operational Communication	8		●		•			•			
Personal Pressure and Arousal	7		●		•						
Airborne Separation	6					●					
Airworthiness Management	5		●								

NCO Helicopters

Bands of Aggregated ERCS Risk Score (2013-2017)			Priority 1			Priority 2		Priority 3		Priority 4	
Higher Risk ERCS Occurrences (2013-2017)			152	18	11	6	1	1	1	0	0
			Key Risk Areas (Outcomes and precursors)								
Safety Issues	#HRO ERCS	Bands of Aggregated ERCS Risk Score (2013-2017)	Aircraft Upset	Obstacle Collision	Terrain Collision	Airborne Collision	Ground Damage	Runway Collision	Unsurvivable Aircraft Environment	Excursions	Injuries
Human Performance	5		●	•	•						
Intentional Low Flying	4		•	●	•						
Icing in flight (Carburettor Icing)	3		●								
Software and Configuration	2		●								
Use of Operationally Ready Safety Systems for Helicopters	2		●								
Effectiveness of Safety Management	2		●								
Emergency/Crash Locator Devices	1		●								
Bird/Wildlife Strikes	1		●								
Safety Culture	1		●								

● **A significant number of occurrences** • **A small number of occurrences**

Balloons

4

This chapter covers balloon operations where the state of registry was an EASA MS. The Balloon Collaborative Analysis Group was the first CAG to be established and met for the fourth time in 2018. It has already proven the concept of CAGs. The group has reviewed all the fatal accidents and to some extent the non-fatal accidents last five years. The group is combination of industry, manufacturer and NAAs providing an excellent source of inside knowledge and expertise for the deeper analysis of the accidents. The identified safety issues in relation to the available data are seen to give an accurate picture of the safety within the hot air ballooning industry today. The future work of the CAG will be to risk assess the balloon accidents and further support the EASAs SRM process.

4.1.1 Key Statistics

The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of the fatalities and serious injuries happened in those accidents between the same timeframe.

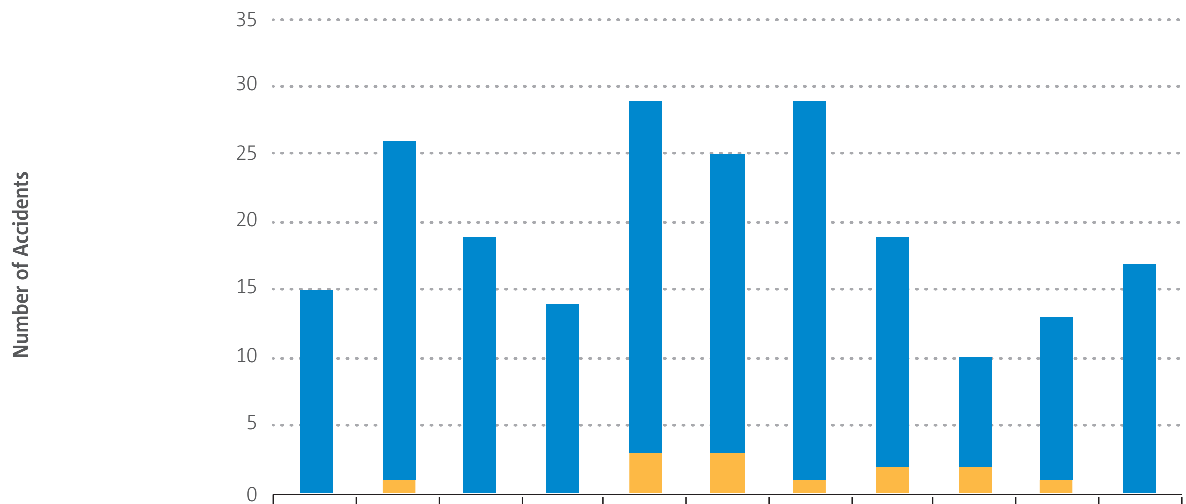
Table 11. Key statistics for balloons, 2007-2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	13	186	16
2017	0	17	2

	Fatalities	Serious Injuries
2007-2016 total	21	192
2017	0	15

2017 was a good year for balloon operations. No fatal accident occurred and number of non-fatal accidents have reduced. There were two serious incidents in 2017, which is in line with historical data.

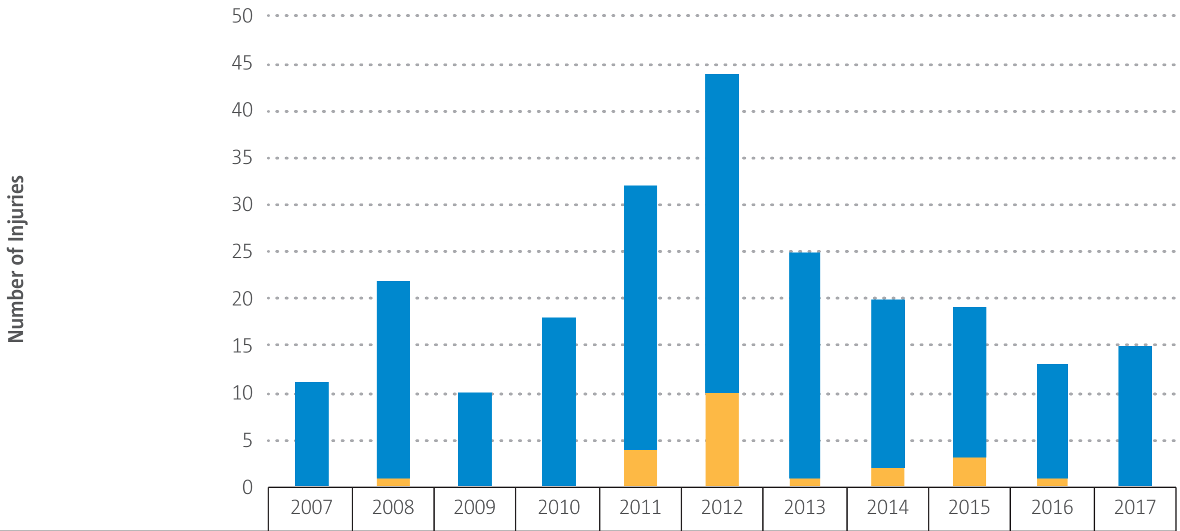
Figure 63. Balloon fatal and Non-fatal accidents from 2007-2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Non-Fatal Accidents	15	25	19	14	26	22	28	17	8	12	17
Fatal Accidents	0	1	0	0	3	3	1	2	2	1	0

There were no fatal injuries in 2017. Number of serious injuries also decreased, or from 19.2 on average for the time period 2007-2016 to 15 in 2017.

➨ **Figure 64.** Fatalities and serious injuries 2007-2017

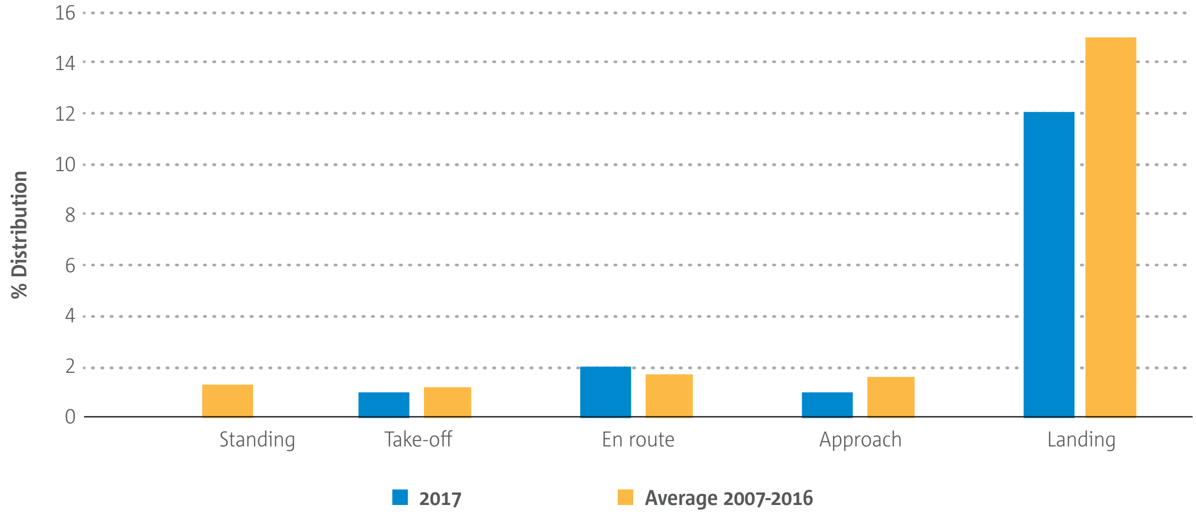


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	11	21	10	18	28	34	24	18	16	12	15
Total Fatalities	0	1	0	0	4	10	1	2	3	1	0

4.1.1.1 Phase of flight

Using the same dataset it can be seen that most balloon accidents occur during the landing phase of the flight. The average from 2007-2016 shows that 72% of the accidents happen during landing but last year that percentage dropped to 63%.

➨ **Figure 65.** Distribution of balloon accidents between flight phases

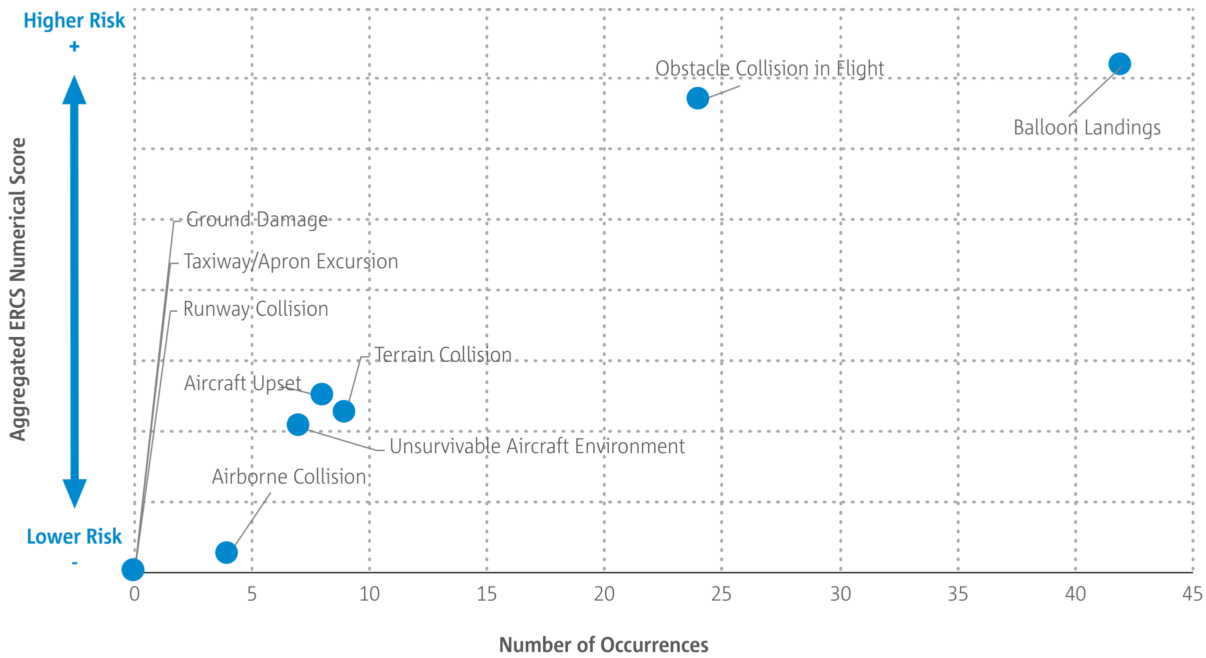


4.1.2 Safety Risk Portfolio

4.1.2.1 Categories and ERCS scores 2015-2017

By using the European Risk Classification Scheme (ERCS) EASA has now risk assessed five years of balloon accidents and serious incidents. Figure 66 shows that the Key Risk Areas bearing the highest risk are Balloon Landings and Obstacle Collision in Flight. When reviewing the data it can be seen that collisions with power lines and hard landings are the events that tend to cause injuries in ballooning operations. The causes of power line collision are mainly lack of information, position of the sun causing difficulty to spot the lines, fog or wind gusts. Main causes for hard balloon landings causing injuries are mainly wind gusts or downdrafts, passengers not ready for the impact or they have a weak bone that gives in during touch down.

➨ **Figure 66.** Balloon accidents and serious incident key risk areas by aggregated ERCS score.



4.1.2.2 Safety Risk Portfolio table

Figure 67 provides us with the Safety Risk Portfolio (SRP) for balloon operations. The portfolio is fully data driven. The safety issues have been ordered by aggregated ERCS scores and they are then marked accordingly with the appropriate priority. The same goes with the Key Risk Areas.

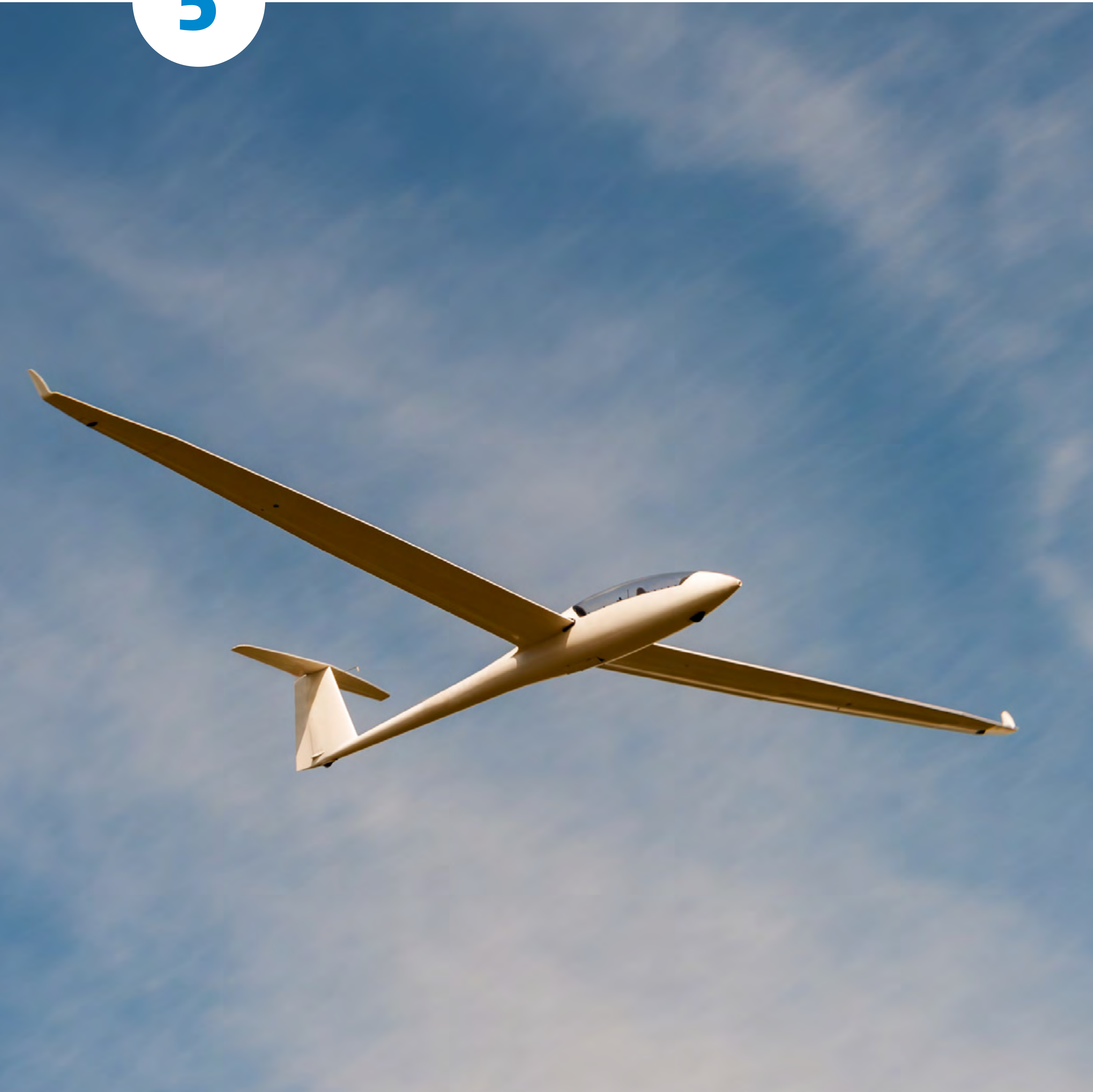
Based on the coding of the occurrences, the priority one safety issues are Decision Making and Planning and Presence and Use of Pilot Restraints.

Figure 67. Safety Risk Portfolio for Balloon operations showing how the 5 year occurrence data 2013-2017 relates to safety issues and their outcomes relative to risk in descending order

Decision Making and Planning		●	•	•			
Presence and Use of Pilot Restraints		●	•	•	•		
Perception and Situational Awareness		•	•	•	•		•
Control of Manual Flight Path		•	•		•		
Flight Planning and Preparation		●	•	•	•		
Turbulence		•	•				•
Airborne Separation							•
Approach Path Management		•	•	•			
Fuel Systems				•		•	

Sailplanes

5



Sailplanes in the GA domain differ somewhat from other General Aviation applications. This has to do with how gliding is performed. In other domains you jump on board your aircraft and you start flying but that is not so simple with sailplanes – unless you are flying a motor glider of course. Sailplane operations depend on teamwork. You will not go anywhere unless you have a team around you that makes sure that you are safely towed into the air. This added operational complexity has provided the gliding community with a collaborative team spirit and a cohesive atmosphere for safety. The gliding community with the leadership of the European Gliding Union (EGU) has been active in EASA's work on the new Sailplane OPS and FCL rules and has provided EASA with valuable input and insight into sailplane operations. The analysis that EGU with the diligent support from the British Gliding Association (BGA) has provided insight on where the risks are and what they should be called so as to be of the best use for the gliding community.

This chapter covers Sailplane operations where the state of registry is an EASA MS using EASA's accident dataset.

5.1.1 Key Statistics

The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of the fatalities and serious injuries happened in those accidents between the same timeframe.

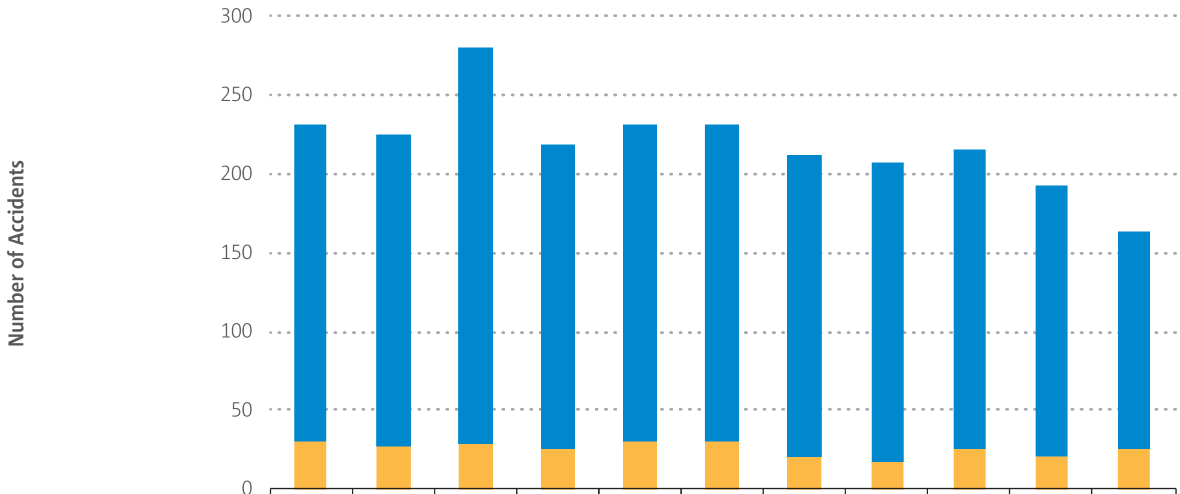
Table 12. Key statistics for sailplanes, 2007-2017.

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	254	1992	55
2017	25	138	18

	Fatalities	Serious Injuries
2007-2016 total	295	336
2017	27	20

For Sailplanes, there was an increase of fatal accidents in 2017 with 25 fatal accidents causing 27 fatalities. The number of nonfatal accidents was substantially lower than the 10-year average with 138. There was a significant decrease in the number of serious injuries. A detailed picture showing the historical fatal and non-fatal accident development can be seen in Figure 55 and fatal and serious injuries in Figure 70 below. It can be seen that number of fatal accidents have been very stable through the last decade. However, the overall trend in terms of number of accidents is decreasing.

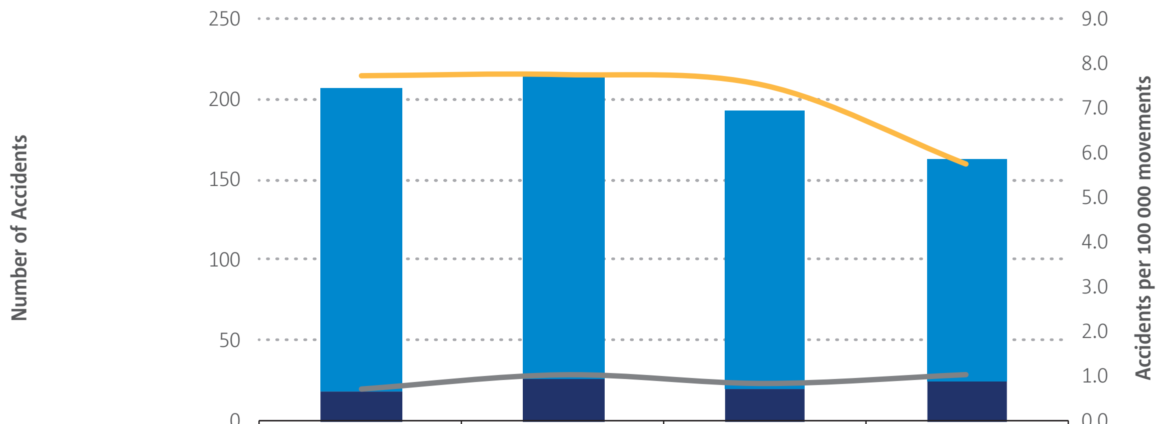
➨ Figure 68. Sailplane fatal and non-fatal accidents 2007-2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Non-Fatal Accidents	201	198	253	194	202	201	192	189	189	173	138
Fatal Accidents	30	27	28	25	30	30	20	18	26	20	25

There are no accurate figures available on number of movements. However, by using the available data reported by NAAs in 2016 and a joint survey performed by AOPA and EASA in relation to fleet size and estimation of movements and use that data to estimate for the rest of the EASA MS it is possible to estimate number of flights from 2014-2016. It was decided to use the average EU GDP increase of 2.6% from 2016 to 2017 to estimate the movements for 2017.

➨ Figure 69. Estimated accident rates for Sailplane operations 2014-2017



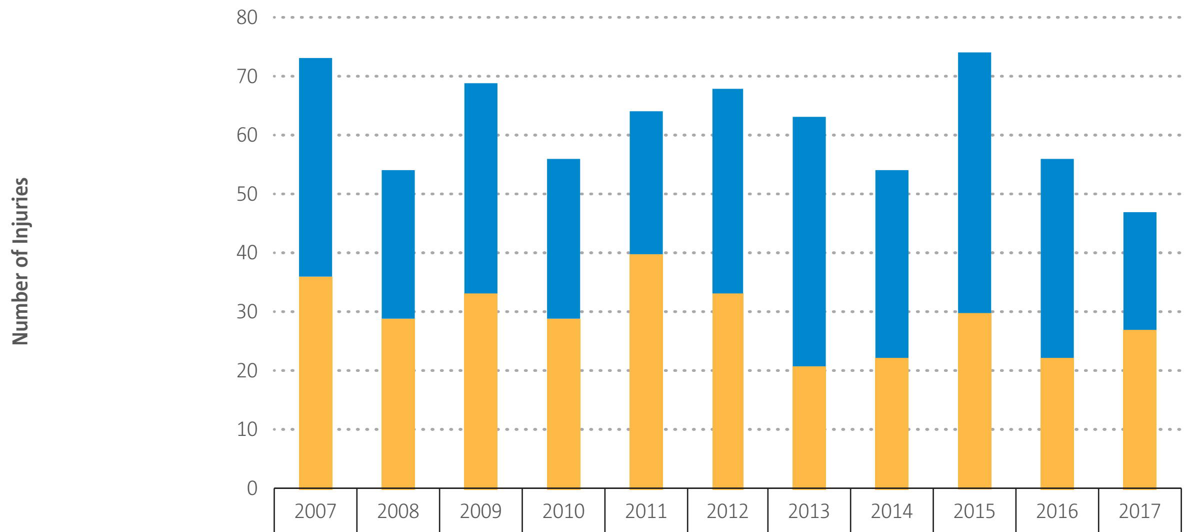
	2014	2015	2016	2017
Non-Fatal Accidents	189	189	173	138
Fatal Accidents	18	26	20	25
Fatal Accident Rate	0.7	1.0	0.9	1.0
Non-fatal Accident Rate	7.7	7.7	7.5	5.7

It should be noted that the rates displayed in the Figure 69 are estimated for all EASA MS. It should also be noted that accidents rates are different between individual EASA MS. This is in particular evident when comparing geographically where the accidents occurred. Number of fatal accidents are higher in the Alpine area than in areas with lower or more even landscape. The duration of the flights are also longer in the mountainous areas than in the lower parts of Europe where the number of movements is higher but the duration of each flight is much shorter.

The fatal accident rate is relatively stable over the four year period but then non-fatal accident rate is dropping in 2017. As the exposure data is very fragmented it is impossible at this time to provide an accident rate map of Europe. NAAs, flight clubs and associations are encouraged to both collect and share aggregated exposure data with EASA to enable better overview of the current situation.

There were 27 fatalities in sailplanes in 2017, which is in line with the figures over the preceding decade. The number of serious injuries in 2017 was the lowest in the time period analysed. As can be seen in Figure 56 a downward trend from 2007 to 2017 is evident.

Figure 70. Sailplane fatalities and serious injuries 2007-2017

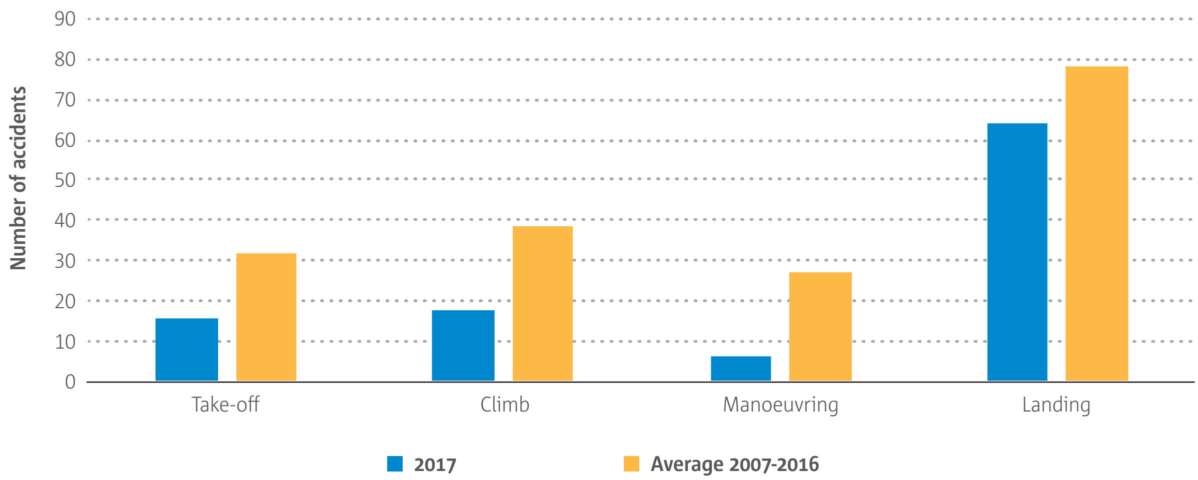


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	37	25	36	27	24	35	42	32	44	34	20
Total Fatalities	36	29	33	29	40	33	21	22	30	22	27

5.1.1.1 Phase of flight

In terms of flight phase the majority of the glider/sailplane accidents occur during the landing phase of the flight. Either it is a landing on an airfield or an off-field landing due to loss of lift. It is mostly perception of the situation which causes hard landings and/or ground loops. It should be noted that Figure 71 contains all landings both on airfield and off-field landings. During takeoff it is often a wing touching ground during a winch launch, during climb it is loss of control during the winch launch.

Figure 71. Number of Sailplane accidents per flight phase

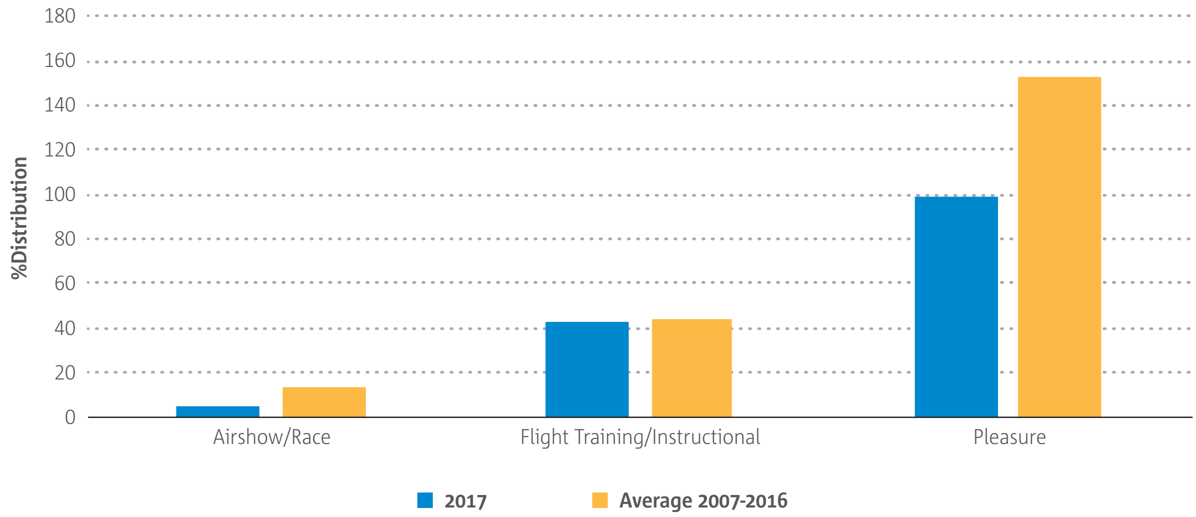


When looking at the landing phase specifically it can be seen that over 70% of the landing accidents are during Level-off/touch down or during landing roll at the airfield. Last year 30% were attributed to off-field landings where the aircraft landed outside the airfield perimeter. As the event type 'Off-field landing' is relatively new it does not give a perfect picture. It can be assumed that some of the 'Level-off/touchdown' event types have occurred during an off-field landing.

5.1.1.2 Sailplane operation type

Figure 72 shows that the main operation types on Sailplanes are pleasure flying and instructional flights.

Figure 72. Distribution of Sailplane accidents per operation type.



5.1.2 Safety Risk Portfolio

The main Key Risk Areas (KRAs) used in other domains within this report have been omitted and Safety Issues (SIs)/Accident Categories have been used instead in this joint analysis done by EGU/BGA and EASA. It is well worth noting that these safety issues or accident categories are formed by the apparent immediate cause of the accident. It should also be noted that the 'In Motor Gliders/Tugs' safety issue, contains accidents that can only occur on a powered aircraft.

➨ **Figure 73.** Percentage of Sailplane Fatal Accidents per Safety Issue - EASA dataset 2013-2017

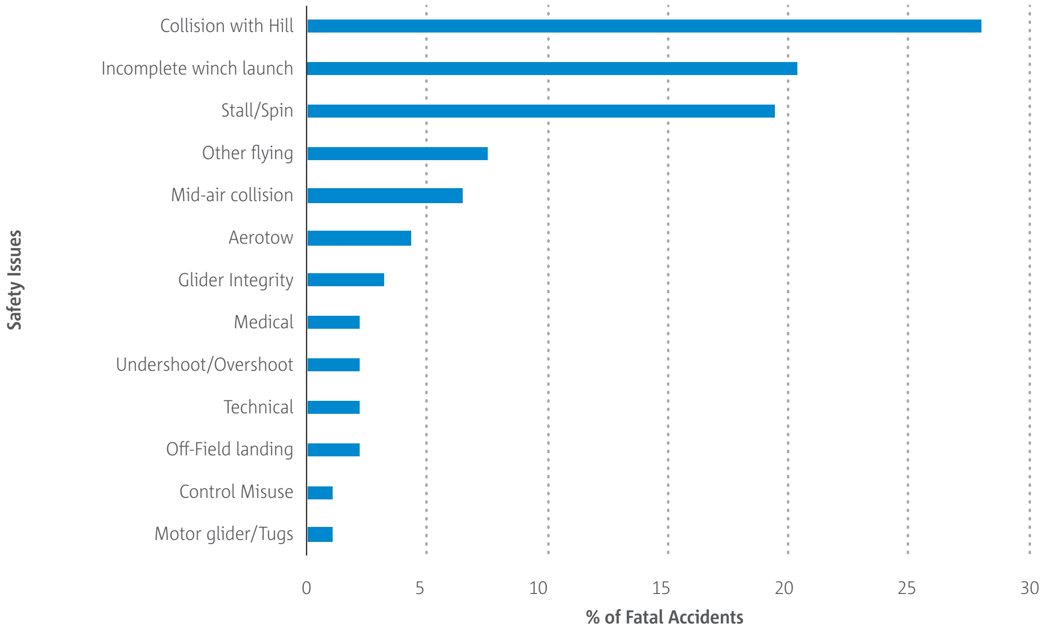
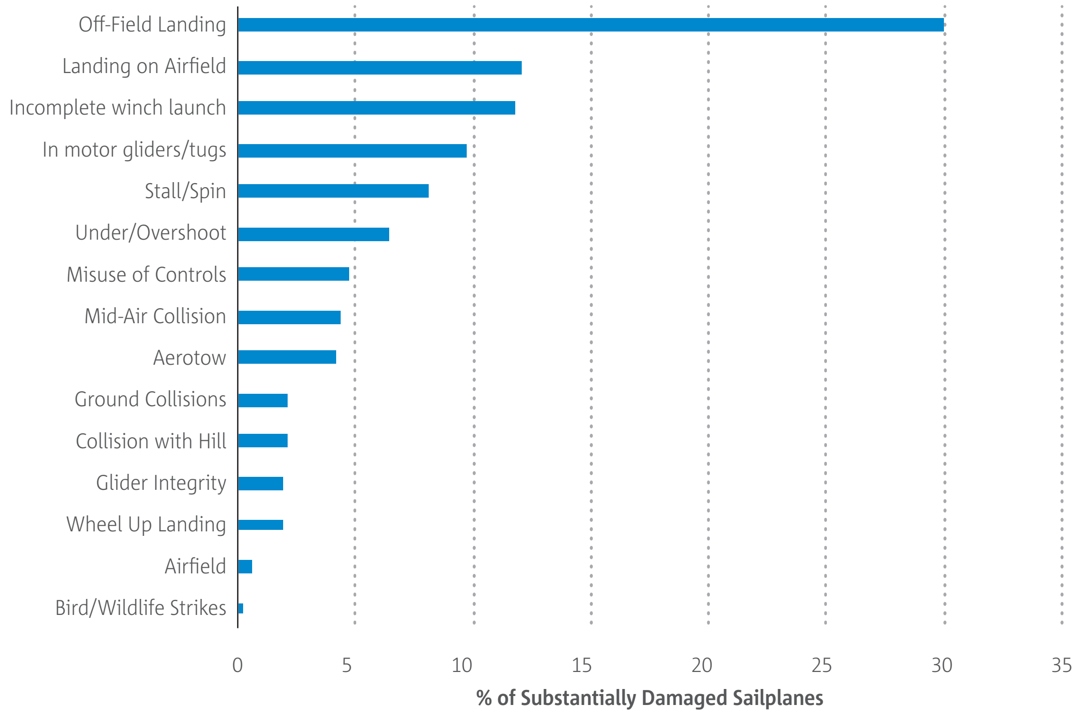


Figure 74 shows us the fatal accidents being mapped onto the safety issues. It should be noted that of 108 fatal accidents from 2013-2017 there were 15 occurrences where there was no information available to determine the immediate cause of the accident. The largest killers are:

- **Collision with hill:** Alpine flying is popular but very unforgiving. The strong winds that form around the mountains can be deadly.
- **Winch launches:** During the take-off run the aircraft swerves due to wing tip hitting the ground, angle of attach is to high causing structural overload or stall, or pilot loses control due to incomplete winch launch.
- **Stall/spin:** Loss of control is a big part of the picture when it comes to winch launches but also during the approach and landing phases of the flight.
- **Mid-Air collisions:** Searching for thermal lift with other sailplanes at the same time and approaching an airfield where communication is minimal or non-existent increases the risk of mid-air collisions.

The **'Other flying'** safety issue contains 3 structural overload during flight, 1 aerobatics accident, 1 dive into the ground, 1 unexplained loss of control and 1 suicide. The Glider Integrity issue relates to the 'Pre-flight planning and preparation' used in the last version of the portfolio including assembly of the Sailplane before flight.

Figure 74. Substantially damaged or destroyed Sailplanes - EASA dataset. Average percentage per safety issue.



Considering Figure 74 it shows accidents where sailplanes suffered substantial damage or were considered to be damaged beyond repair. The main Safety Issues are:

- **Off-field landings:** Landings in an unfamiliar territory – crop fields and other agricultural areas where it can be difficult to determine the quality of the designated landing field from above.
- **Landing on airfield:** The second Safety Issue involves landings at airfields. This includes the hard and bounced landings, causing a swerve or a runway excursion.
- **Incomplete winch launches:** This type of take-offs requires a good coordination between the pilot and the ground crew. Too high angle of attack or incorrect adjustments for the winch can cause unexpected and unintended results for the people involved.
- **In motor gliders/Tugs:** These are occurrences that can only occur to motorised sailplanes e.g. involving engine failures.
- **Stall/spin:** Loss of control is the cause of many of the fatalities. Actions are needed to address these accidents.
- **Under/overshoot:** This Safety Issue involves unstable approaches, speed and approach control in general.

5.1.2.1 Identified Safety Issues and safety issue analysis

The EASA dataset for 2015-2017 has been risk scored according to the European Risk Classification Scheme (ERCS. This allows a comparison of the key risk area and the aggregated ERCS risk score, identifying the highest risk and most commonly occurring key risk area accidents.

Figure 75. Sailplanes ERCS Scores plotted per Safety Issue.

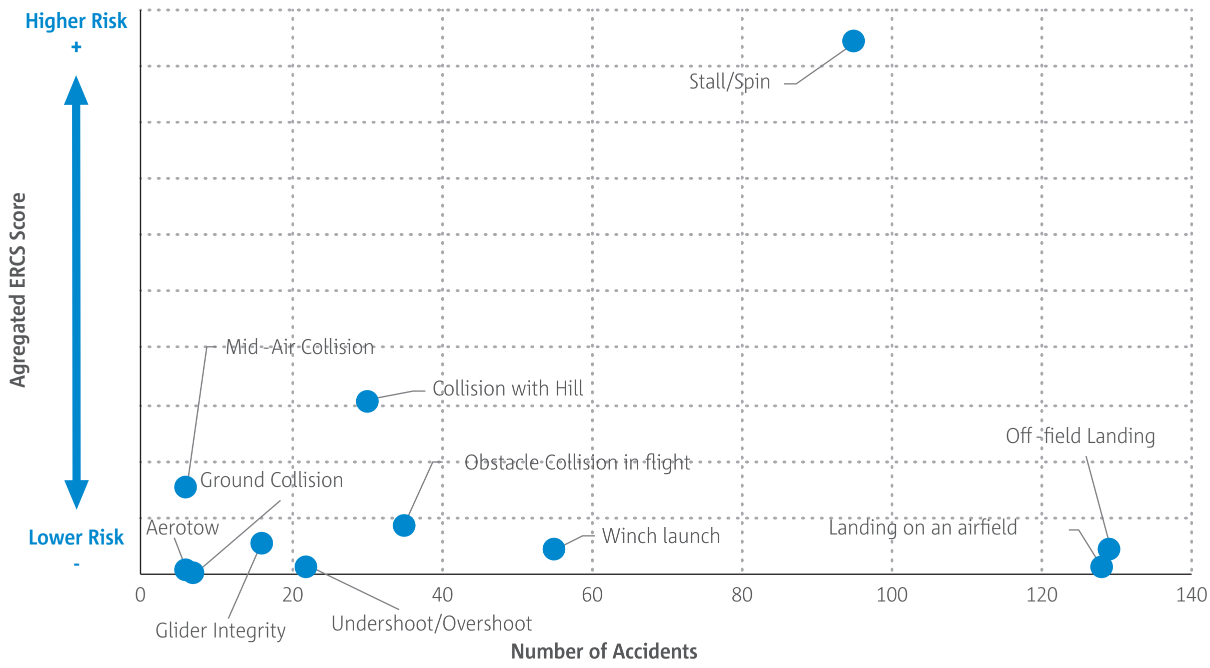


Figure 75 displays the aggregated risk vs. the number of accidents in Sailplane operation. Note that the scale of the risk is not visible as the actual risk score is not relevant. The figure shows quite clearly that the attributed risk in occurrences involving a stall or a spin resulting in a fatality or serious injury is quite high. On the other hand the figure shows also that in spite of high number of accidents the risk of a fatality or serious injury is very low. Both the Off-field landing and Landing on an airfield issues are very low in risk. Collision with Hill is showing a clear distinction in terms of risk but other safety issues show low risk but also with fewer accidents behind them.

Figure 76. Sailplane Safety Issues split between Higher and Lower Risk base on the ERCS score.

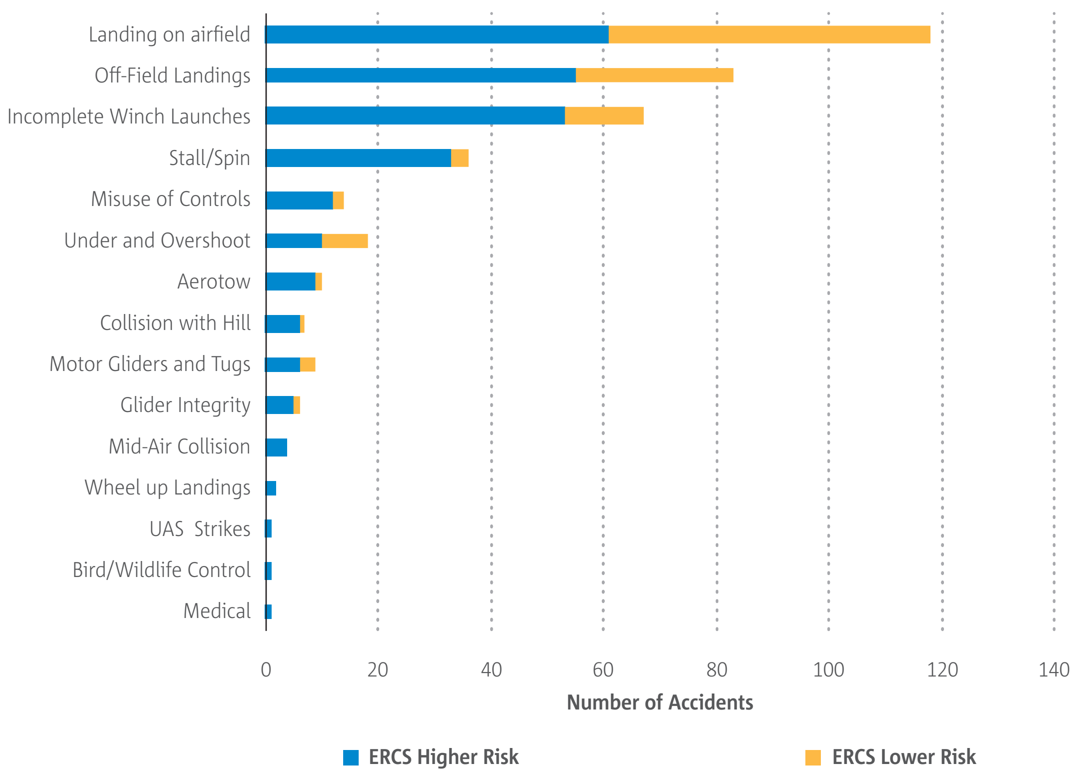


Figure 76 gives us a different perspective. The higher risk occurrences are the yellow and red areas in the risk matrix where the lower risk areas are green. The safety issues 'Landing on airfield' and 'Off-field landings' contain many occurrences resulting in both higher and lower risk occurrences. The higher risk occurrences are not high enough to push them up the scale in Figure 75 as fatalities and serious injuries are few. The main outcome of the high risk accidents are substantial damage of the sailplane involved. It can also be observed that 'Incomplete Winch Launches' has much fewer lower risk occurrences. This implies that both damage and injuries are more severe in that type of accidents. The safety issue 'Stall/Spin' has fewer still lower risk accidents but the number of fatalities are much higher. This explains why Stall/spin is so high in Figure 75.

Aerodromes and Ground Handling

6

This chapter covers aerodrome operations, with the scope being the EASA Member States as State of Occurrence. Data is fetched from the EASA database (accidents and serious incidents) as well as the European Central Repository. It is worth noting that the accidents and serious incidents in this Chapter are those related to Aerodrome operations in a general context, which means that the aerodrome itself may or may not have had a contribution to the given occurrence, but it may have a role in preventing similar occurrences in the future.

The data in this chapter differs from previous years' Annual Safety Review; this is because the scope of the data extraction from the database has changed. The data is now only extracted based on aerodrome related event types and non-airborne flight phases in the ECCAIRS taxonomy.

A Safety Risk Portfolio for Aerodrome and Ground Handling operations is also provided. This has been developed with the support of the Aerodrome and Ground Handing Collaborative Analysis Group (CAG). The CAG is lead by the Agency and has members from airports, airlines, national authorities, international organisations and unions.

6.1 Key Statistics

The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of the fatalities and serious injuries happened in those accidents between the same timeframe.

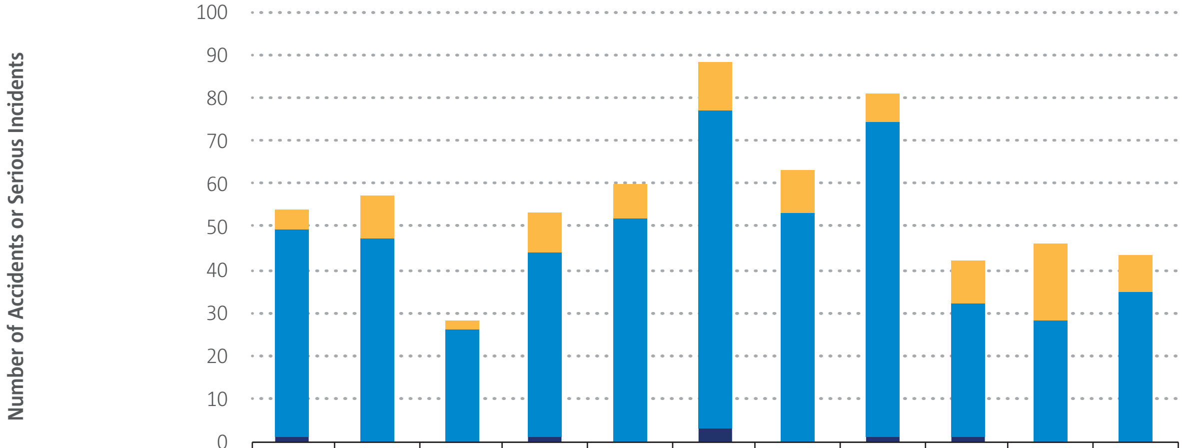
Table 13. Key statistics for aerodromes and ground handling, 2007-2017

	Fatal Accidents	Non-Fatal Accidents	Serious Incidents
2007-2016 total	7	475	90
2017	0	35	8

	Fatalities	Serious Injuries
2007-2016 total	17	36
2017	0	4

There were no fatal accidents related to aerodrome and ground handling operations in 2017. The number of non-fatal accidents were 35, which is less than the average of the preceding decade, which was 47.5.

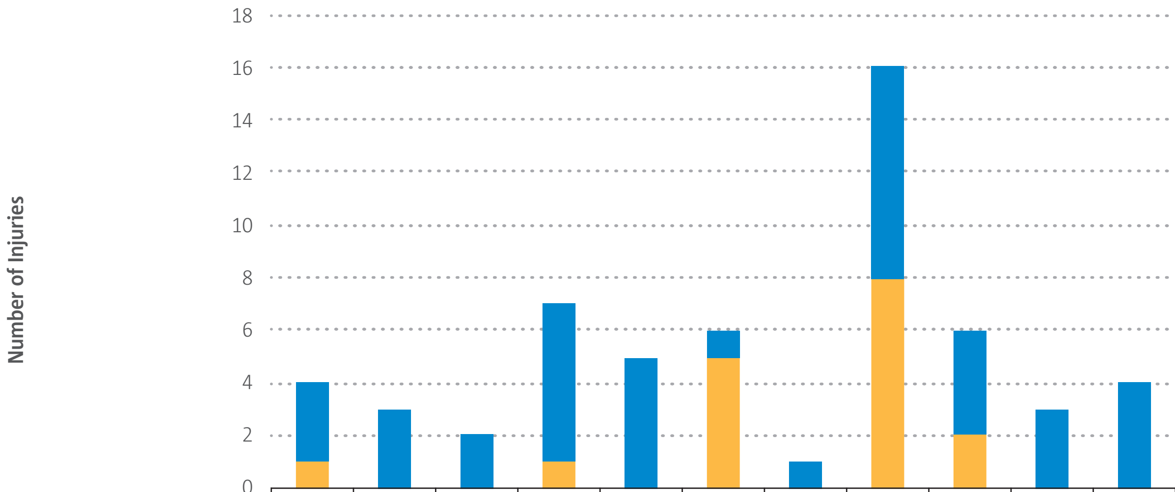
➨ **Figure 77.** Aerodrome related fatal accidents, non-fatal accidents and serious incidents, 2007-2017



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious Incidents	5	10	2	9	8	11	10	7	10	18	8
Non-Fatal Accidents	48	47	26	43	52	74	53	73	31	28	35
Fatal Accidents	1	0	0	1	0	3	0	1	1	0	0

The figures for the past three years (2015-2017) represent a return to more normal accident and serious incident levels after a peak between 2012 and 2014.

➨ **Figure 78.** Number of fatalities and serious injuries in aerodrome-related accidents 2007-2017



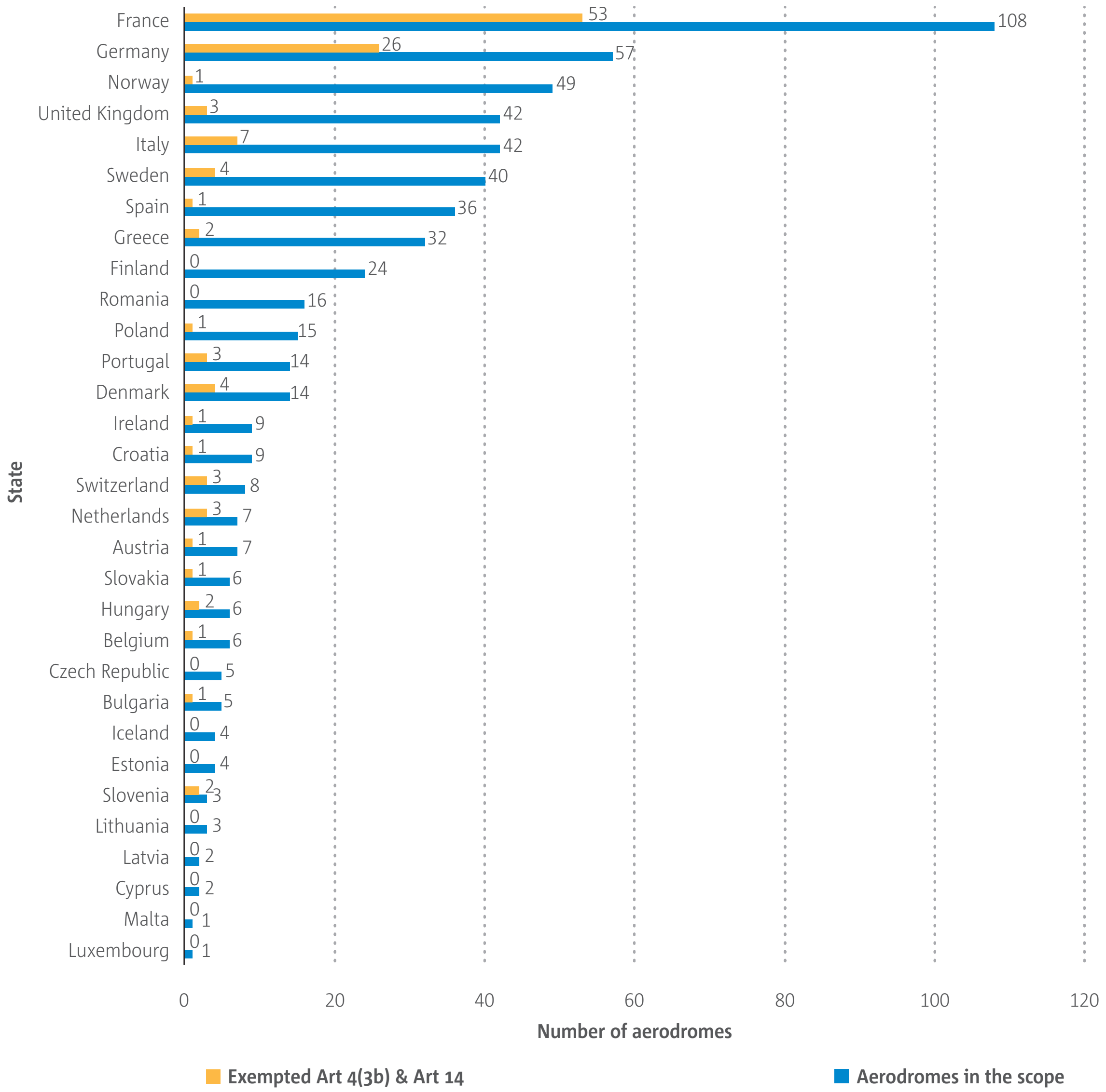
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	3	3	2	6	5	1	1	8	4	3	4
Total Fatalities	1	0	0	1	0	5	0	8	2	0	0

With the exception of 2014, the number of fatalities and serious injuries in aerodromes and ground handling have not exceeded 7 in any year in the past decade. However, in 2014 8 people were killed and a further two were seriously injured in a single accident in Finland when the aircraft's right wing broke shortly after take-off.

6.1.1 Number of EASA MS Certified Aerodromes

Regulation (EU) 139/2014 lays down the requirements for the certification of aerodromes in the EASA Member States. At time of publication, there are 577 aerodromes in the scope of the regulation. 438 of these have been certified and 118 have been granted an exemption in accordance with Article 5 of the regulation.

Figure 79. Number of Aerodromes in scope of Regulation (EU) 139/2014, by EASA Member State.



Of the 577 aerodromes in the scope of Regulation (EU) 139/2014, the Agency has, at time of publication, received traffic data (number of passengers and number of cargo movements) for 490 aerodromes for 2016. The Agency has also received traffic data for 2017 from 326 of those aerodromes. Those 326 aerodromes had a total of just over 800 million passengers and 286 000 cargo movements in 2017, an increase in passenger numbers by 6.6% and an increase in cargo movements by 3.6% compared to 2016. The highest increase in passenger numbers for an individual aerodrome was just under 4.9 million passengers, which for that aerodrome was an increase of 7.7%. The highest decrease in passenger numbers for an individual aerodrome was just over 793 000 passengers, which for that aerodrome was a decrease by 3.7%. The highest increase in cargo movements for an individual aerodrome was 2327 movements, which for that aerodrome was an increase of 8.2%. The highest decrease of cargo movements for an individual aerodrome was 681 movements, which for that aerodrome was a decrease by 15.1%.

6.2 Safety Risk Portfolio

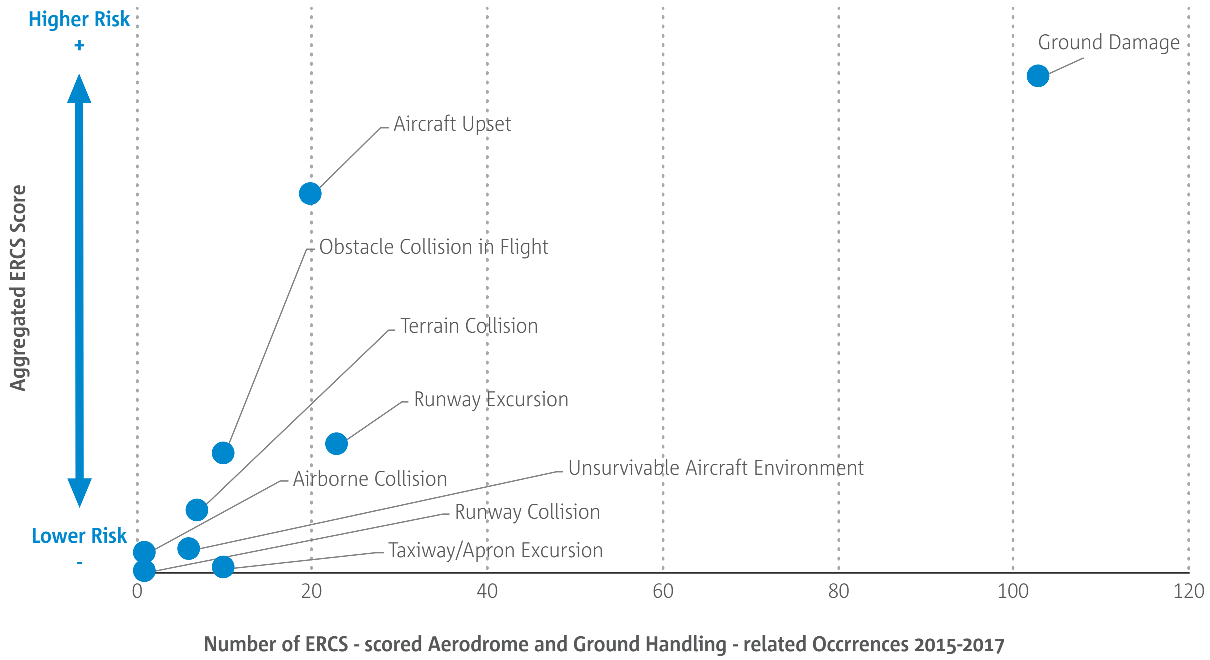
The Aerodromes and Ground Handling Safety Risk Portfolio has been developed by EASA and the Aerodromes and Ground Handling Collaborative Analysis Group (CAG). The CAG was launched in March 2017.

In the Aerodromes and Ground Handling scope, EASA has reviewed the accidents and serious incidents for 2015, 2016 and 2017 with regards to risk. All accidents and serious incidents within the scope have been risk assessed using the European Risk Classification Scheme methodology, and have been given an ERCS score.

6.2.1 Key Risk Areas

The ERCS review of the Key Risk Areas is presented below.

Figure 80. Distribution of key risk areas by frequency and aggregated ERCS risk score for aerodromes and ground handling related accidents and serious incidents, 2015-2017



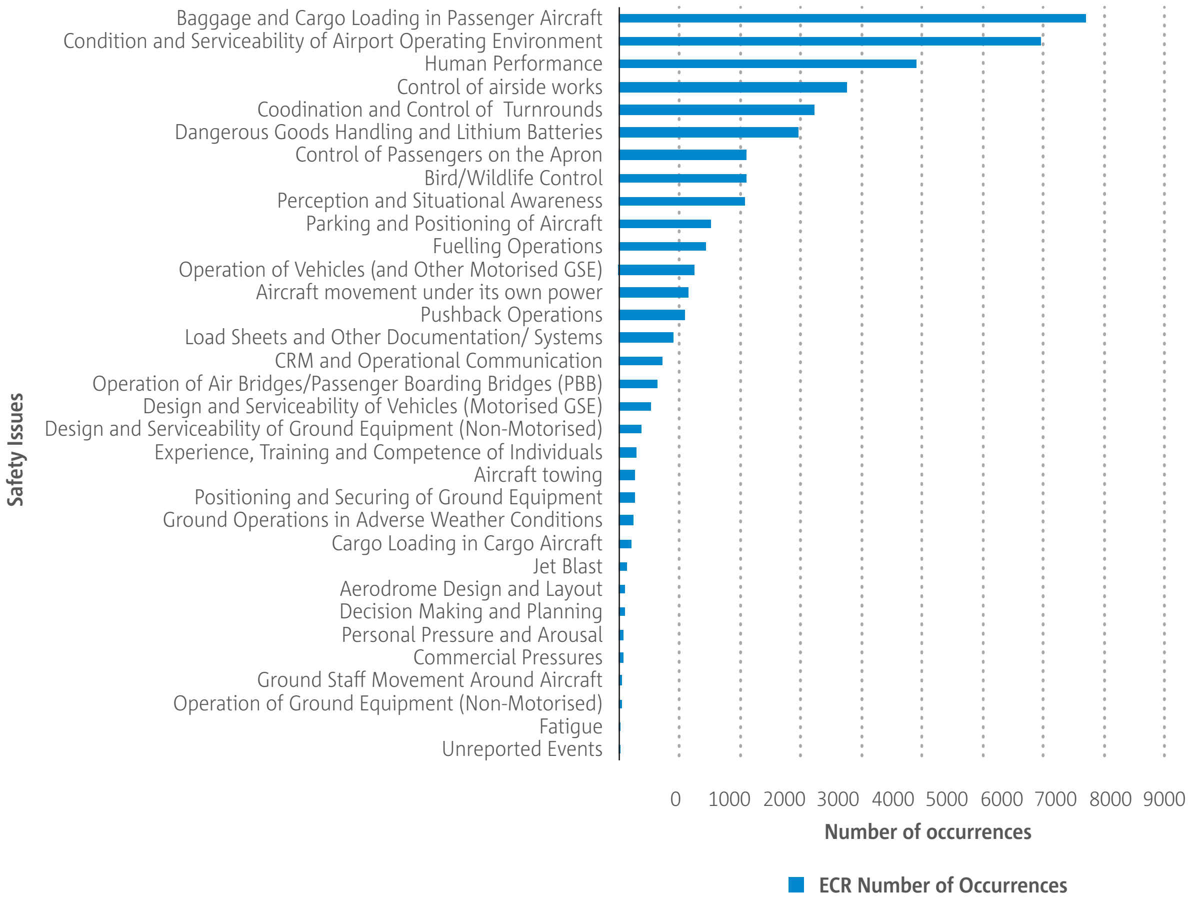
The most common Key Risk Area for Aerodrome and Ground Handling related accidents and serious incidents is Ground Damage, followed by Aircraft Upset and Runway Excursions.

6.2.2 Safety Issues

The safety issues in the Aerodrome and Ground Handling domain have been identified by the Aerodrome and Ground Handling CAG. They are derived from occurrence data from the EASA occurrence repository and the European Central Repository (ECR), as well as the operational expertise provided by the members of the CAG. The wording of the safety issues have been reviewed by the CAG as well as coordinated across other domains. Where possible, ECCAIRS queries have been constructed for each safety issue in order to identify the occurrences associated with each safety issue.

The table below shows the number of occurrences in the ECR for each safety issue (where an ECCAIRS query was possible). One occurrence can be included in more than one safety issue.

Figure 81. Number of ECR occurrences per Aerodromes and Ground Handling Safety Issue – 2015-2017

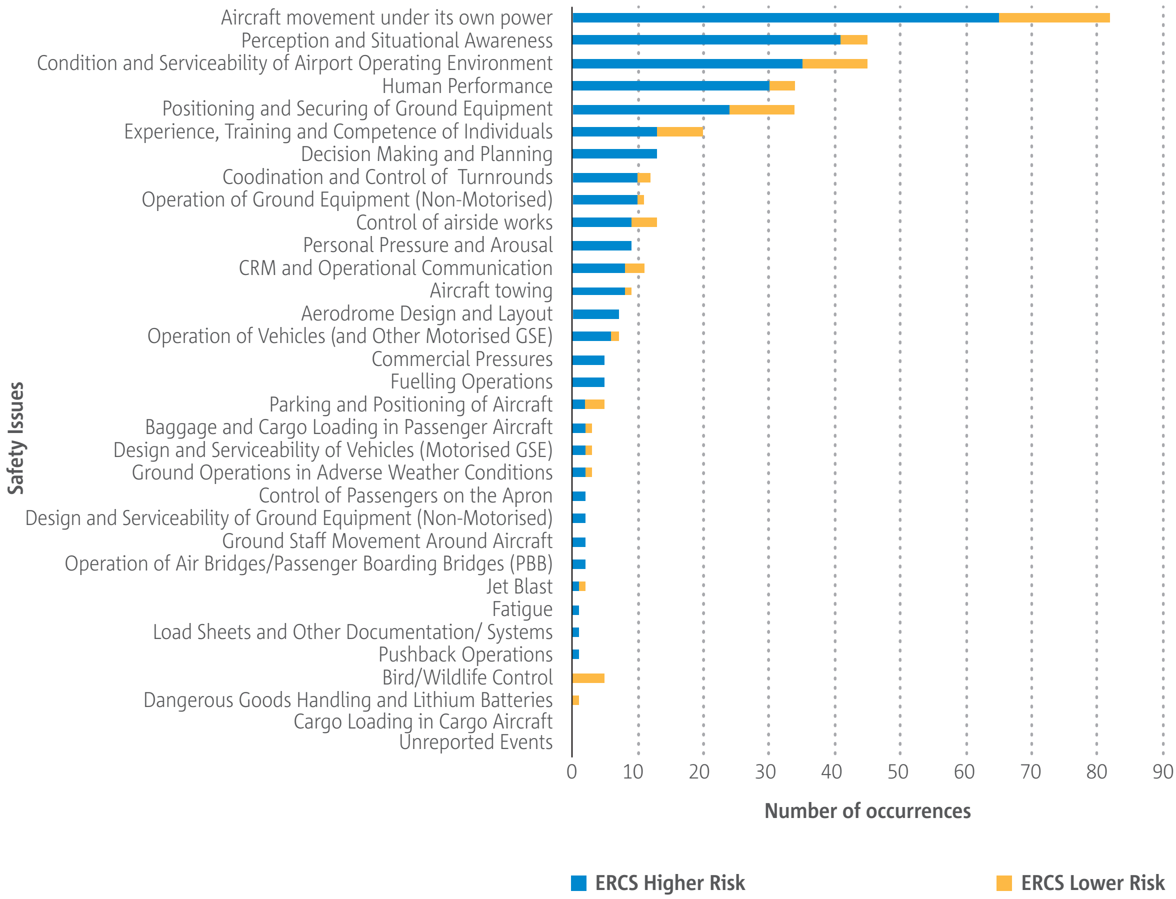


Baggage and Cargo Loading in Passenger Aircraft is the top safety issue based on number of occurrences in the ECR. It was also identified as the top safety issue of concern by the members of the Aerodromes and Ground Handling CAG. Therefore it has been selected as the first issue for assessment in the Safety Risk Management (SRM) Process and this assessment was started in 2017.

The second issue to be assessed in the SRM process will be Ground Staff Movement Around Aircraft. The number of ECR occurrences for this safety issue is low, this is however a function of the ECCAIRS taxonomy not having event types to clearly capture such risks, in combination with under-reporting from ground handling organisations.

The ERCS review of the accidents and serious incidents for each Safety Issue is presented below.

Figure 82. Number of occurrences per safety issue and ERCS severity – accidents and serious incidents 2015-2017



Higher Risk means occurrences that were given a red or amber score, Lower risk refers to occurrences that were given a green score.

6.2.3 Safety Risk Portfolio

The Safety Risk Portfolio presented below is purely based on occurrence data, mainly accidents and serious incidents, in the EASA occurrence database for 2015-2017. When the European Risk Classification Scheme (ERCS) is fully implemented, it will be possible to make such an analysis on incident data in the European Central Repository, which will be more useful.

Figure 83. Safety Risk Portfolio for Aerodromes and Ground Handling operations showing how the 5 year occurrence data 2013-2017 relates to safety issues and their outcomes relative to risk in descending order

Aircraft movement under its own power		●	•	•					●	
Decision Making and Planning		•	●	•	•	•				
Fuelling Operations			•	•			•			
Coodination and Control of Turnrounds		•	•				•			
Perception and Situational Awareness		•								
Human Performance		•								
Condition and Serviceability of Airport Operating Environment		●	●	●	•	•			●	•
Experience, Training and Competence of Individuals		•	●	●	•	•		•		
CRM and Operational Communication		•	•	•			•			
Personal Pressure and Arousal		•								
Positioning and Securing of Ground Equipment		•								
Aerodrome Design and Layout		•	•	•	•			•		
Aircraft towing		●				•				
Commercial Pressures		•	•							
Control of airside works		•	•	•	•				•	
Design and Serviceability of Vehicles (Motorised GSE)		•				•				
Design and Serviceability of Ground Equipment (Non-Motorised)		•								
Operation of Air Bridges/Passenger Boarding Bridges (PBB)		•								
Baggage and Cargo Loading in Passenger Aircraft		•								
Dangerous Goods Handling and Lithium Batteries										
Load Sheets and Other Documentation/ Systems		•								
Operation of Ground Equipment (Non-Motorised)		•								
Operation of Vehicles (and Other Motorised GSE)		•								

Aerodromes and Ground Handling

Bands of Aggregated ERCS Risk Score (2015-2017)		Priority 1		Priority 2		Priority 3		Priority 4		
ERCS scored Occurrences (2015-2017)		103	20	23	10	3	5	1	10	1
		Key Risk Areas								
Safety Issues	Priority	Ground Damage	Aircraft Upset	Runway Excursion	Obstacle Collision in Flight	Terrain Collision	Unsurvivable Aircraft Environment	Airborne Collision	Taxiway/Apron Excursion	Runway Collision
Parking and Positioning of Aircraft		•								
Control of Passengers on the Apron										
Ground Staff Movement Around Aircraft		•								
Pushback Operations		•								
Ground Operations in Adverse Weather Conditions		•							•	
Jet Blast		•								
Fatigue		•							•	
Bird/Wildlife Control				•						
Cargo Loading in Cargo Aircraft		No data								
Unreported Events		No data								

● **A significant number of occurrences** • **A small number of occurrences**

The Aerodromes and Ground Handling CAG has given each Safety Issue a problem statement, to further specify what needs to be addressed. These are presented in the tables below, in alphabetical order.

6.2.3.1 Operational Safety Issues

Table 14 Operational aerodromes and ground handling safety issues and problem statements

Aircraft movement under its own power	The management, handling or coordination of aircraft movement under its own power may lead to damage and/or injuries.
Aircraft towing	The management, handling or coordination of towing operations may lead to damage and/or injuries.
Apron/Stand Design and Layout	Apron/Stand design and layout problems that may induce the potential for collisions, aircraft damage, and injuries. Continuous monitoring of occurrences related to Aerodrome Design and Layout.
Baggage and Cargo Loading in Passenger Aircraft	Inadequate management or handling of the baggage and cargo loading process that may lead to ground damage or other safety effects.
Bird/Wildlife Control	The control of birds and wildlife that may lead to either damage or loss of control.
Cargo Loading in Cargo Aircraft	The management or handling of the cargo loading process that may lead to ground damage or other safety effects.
Condition and Serviceability of Airport Operating Environment	The management of the condition and serviceability of the airport operating environment including maintenance of ATM/CNS Equipment, Aerodrome Surfaces, Visual Aids, Markings/Signage, Lights, Snow/Ice Removal, FOD control and Other Infrastructure.
Control of airside works	The supervision, coordination and control of airside works may lead to damage and/or injuries.
Control of Passengers on the Apron	Control of passengers on the apron or any other operational area of the aerodrome or airport.
Coodination and Control of Turnrounds	The management, handling or coordination of the turnaround process.
Dangerous Goods Handling and Lithium Batteries	Fires involving lithium batteries and/or other dangerous goods, both in the aircraft cabin or hold areas, followed by the potential inability to extinguish any subsequent fire to prevent injuries or an Unsustainable Aircraft Environment.
Design of Air Bridges/Passenger Boarding Bridges (PBB)	Design of air bridges that may lead to ground collisions or injuries.
Design of Ground Equipment (Non-Motorised)	Design of non-motorised airport ground support equipment including steps, baggage trollies/dollys may lead to damage and/or injuries.
Design of Vehicles (Motorised GSE)	Design of motorised airport ground support equipment including belt loaders, baggage trucks, catering trucks, fuel bowsers and pushback equipment etc. may lead to damage and/or injuries.
Emergency/abnormal operations	The supervision, coordination and control of emergency/abnormal operations may lead to damage, injuries, and/or impaired responses to emergencies.
Emerging technologies	
Fuelling Operations	The management and handling of the refuelling process and its coordination/oversight.
Ground Operations in Adverse Weather Conditions	Negative effects of adverse weather on ground operations including low visibility, high winds, thunderstorms, and extremes of temperature etc.
Ground Staff Movement Around Aircraft	Unsafe movement of personnel takes place around an aircraft while engines are running or an aircraft is about to move (anti-collision beacon on) or within extended danger zones during cross-bleed engine starts.
Handling of Passengers with Reduced Mobility	Handling of passengers with reduced mobility may lead to injuries.

Safety Issue Title	Safety Issue Problem Statement
Jet Blast	The management of ground running or taxi patterns lead to injuries or damage due to jet blast.
Load Sheets and Other Documentation/ Systems	Errors and omissions in load systems and documentation or systems for recording loading of aircraft.
Operation of Air Bridges/Passenger Boarding Bridges (PBB)	The operation of air bridges that may lead to ground collisions or injuries.
Operation of Ground Equipment (Non-Motorised)	Operation of non-motorised ground equipment that may lead to ground collisions or injuries.
Operation of Vehicles (and Other Motorised GSE)	The operation of vehicles/motorised ground equipment that may lead to ground collisions or injuries.
Parking and Positioning of Aircraft	The marshalling, parking or positioning of aircraft that may to lead to damage or injuries. This includes problems with visual parking aids. This also includes stand allocation.
Positioning and Securing of Ground Equipment	The positioning or inadequate securing of ground equipment such as baggage trolleys/dollys, ULDs etc. or steps that may be blown around the apron in bad weather.
Pushback Operations	The management, handling or coordination of the pushback may lead to damage and/or injuries.
Runway/Taxiway Design and Layout	Runway/Taxiway design and layout problems that may induce runway incursions or the potential for collisions and aircraft damage. Continuous monitoring of occurrences related to Aerodrome Design and Layout.
Servicability of Air Bridges/Passenger Boarding Bridges (PBB)	Servicability and maintenance of air bridges that may lead to ground collisions or injuries.
Servicability of Apron/Stand	Servicability and maintenance of aprons/stands that may lead to collissions, damage, and/or injuries.
Servicability of Runways/Taxiways	Servicability and maintenance of runways/taxiways that may lead to collissions, damage, and/or injuries.
Serviceability of Ground Equipment (Non-Motorised)	Servicability of non-motorised airport ground support equipment including steps, baggage trollies/dollys may lead to damage and/or injuries.
Serviceability of Vehicles (Motorised GSE)	Servicability of motorised airport ground support equipment including belt loaders, baggage trucks, catering trucks, fuel bowsers and pushback equipment etc. may cause damage and/or injuries.
Terminal Design and Layout	Terminal design and layout problems that may induce the potential for collisions, aircraft damage, and injuries. Continuous monitoring of occurrences related to Aerodrome Design and Layout.
Transition of service contracts	The transition of the ground handling operations between service providers might induce damage and/or injuries.
Unreported Events	Events go unreported due to fear of repercussions/lack of training etc. For damage to composite structures there might be more significant damage not visible.
Worker Fatigue leading to Human Error	Inability to recruit and retain ground handling staff is leading to staff shortages, long working hours and an ageing workforce. In the long term, if left unchecked, commercial growth & expectations will exceed human resources, resulting in unsustainable operations with possible safety critical impact on flight safety due to human error.

6.2.3.2 HF Safety Issues

Table 15 Human performance-related aerodromes and ground handling safety issues and problem statements

CRM and Operational Communication	Ineffective CRM and communication, including Language Proficiency, Use of Standard Terminology, Hand Signals, Visual Communication, Distraction from outer sources (ex. Mobile Phones).
Decision Making and Planning	Incorrect planning and decision making by individuals.
Experience, Training and Competence of Individuals	Individuals (all types of actors) have insufficient experience, training or competence to perform the duties that they have been assigned.
Fatigue	Inability of individuals to perform to their best due to fatigue.
Perception and Situational Awareness	Incorrect perception and inadequate situational awareness of individuals.
Personal Pressure and Arousal	Inability of individuals to perform to their best due to pressure or lack of/excessive arousal. Problems typically arise during periods of intense workload such as the turnround.
Weather Effects	Inability of individuals to perform to their best due to the effect of weather.
Human Performance	Combining all of the above HF safety issues to address the ability of individuals to meet the human performance needs for a specific task or duty for reasons such as arousal, fatigue, repetitive processes and weather.

6.2.3.3 Organisational Safety Issues

Table 16 Organisational aerodromes and ground handling safety issues and problem statements

Commercial Pressures	Commercial pressures (e.g. Seasonal Workforce/Contracts/On-Time Performance/Non-Aviation Regulations) have an effect on Safety.
Effectiveness of Safety Management	Lack of or Ineffective implementation of Safety Management Systems.
Safety Culture	Inadequate Safety Culture in all levels of the organisation (Including Senior Leadership Role in Safety)

ATM/ANS

7

This Chapter covers accidents and serious incidents related to the provision of ATM/ANS services in the EASA Member States and the analysis thereof. The analysis includes accidents and serious incidents extracted from the EASA's Occurrence Database which occurred within an EASA MS as State of Occurrence, involving at least one CAT, either fixed wing airplane with MTOW of 2,250 kg or above, or small (CS-27) or large (CS-29) helicopter. It should be noted that, contrary to previous years, CAT helicopter operations have been included in the statistics of this Chapter. As a result, figures of accidents and serious incidents included in previous editions of the Annual Safety Report may not be coherent to the figures in this edition.

It is worth noting that the accidents and serious incidents mentioned in this Chapter are those related to the provision of ATM/ANS services, which means that the ATM system may or may not have had a contribution to the given occurrence, but it may play a role in preventing or ameliorating similar occurrences in the future. These are named as "ATM/ANS related". Among them, there are occurrences where the ATM/ANS provision of services was a factor contributing to the occurrence, or at least the ATM/ANS services played a role in aggravating the occurrence encountered by the aircraft. These events are usually known as events with "ATM/ANS contribution". In the chapter, these two types of events are distinguished when necessary.

The ATM/ANS Collaborative Analysis Group (CAG) launched in 2017 has developed an initial ATM/ANS Safety Risk Portfolio identifying Key Risk Areas and main Safety Issues in relation to the ATM/ANS provision of services. The group is working to analyse the safety issues identified and updating the portfolio on regular basis. The chapter introduces the initial ATM/ANS safety risk portfolio and the major candidate safety issues identified by the group and the prioritisation based on the analysis of accidents and serious incidents collected in the EASA database. The Safety Issues will be later completed by the ATM/ANS group with expert advice and additional occurrence data analysis from other sources (e.g., European Central Repository) as to prioritise the safety issue assessments and derive actions that will be included in the European Plan for Aviation Safety (EPAS).

7.1 Key Statistics

The key statistics for this domain are in the tables below and include comparison of the number of accidents (fatal and non-fatal) and serious incidents for the 10-year period 2007-2016 and the last year (2017). It also includes the comparison of the fatalities and serious injuries happened in those accidents between the same timeframe. The figures are split into ATM/ANS related and ATM/ANS contribution.

Table 17 Key statistics for ATM/ANS, 2007-2017

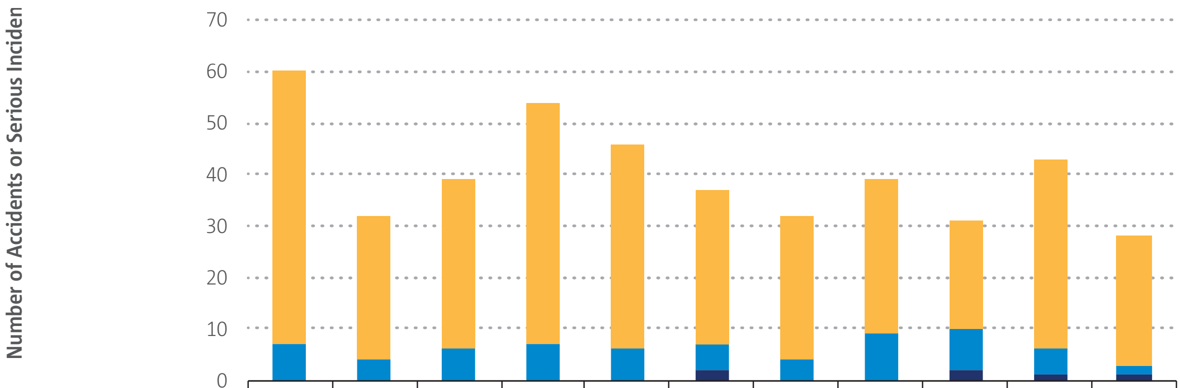
	Fatal Accidents		Non-Fatal Accidents		Serious Incidents	
	ATM/ANS related	ATM/ANS contribution	ATM/ANS related	ATM/ANS contribu-tion	ATM/ANS related	ATM/ANS contribution
2007-2016 total	5	0	61	13	347	143
2017	1	0	2	0	25	5

	Fatalities		Serious Injuries	
	ATM/ANS related	ATM/ANS contribution	ATM/ANS related	ATM/ANS contribution
2007-2016 total	16	0	48	2
2017	6	0	2	0

Table 17 shows that there were no accidents with contribution from ATM/ANS services provided in EASA MS in 2017. Fatal accidents with ATM/ANS contribution remains cero for the last ten-year period, and the non-fatal accidents (cero) and serious incidents (five) were lower than the average in previous ten-year period. One fatal accident and three non-fatal accidents ATM/ANS related occurred in 2017. The total number of non-fatal accidents and the number of serious incidents ATM/ANS related in 2017 remains lower than the average of the preceding ten-year average period.

Figure 84 illustrates the evolution of accidents and serious incidents throughout the last decade. During the last three years, fatal accidents with some relation to ATM/ANS have happened. These accidents involved helicopters (see Appendix 1.5) as the last accident with ATM relation that involved a CAT fix-wing aeroplane occurred in 2012.

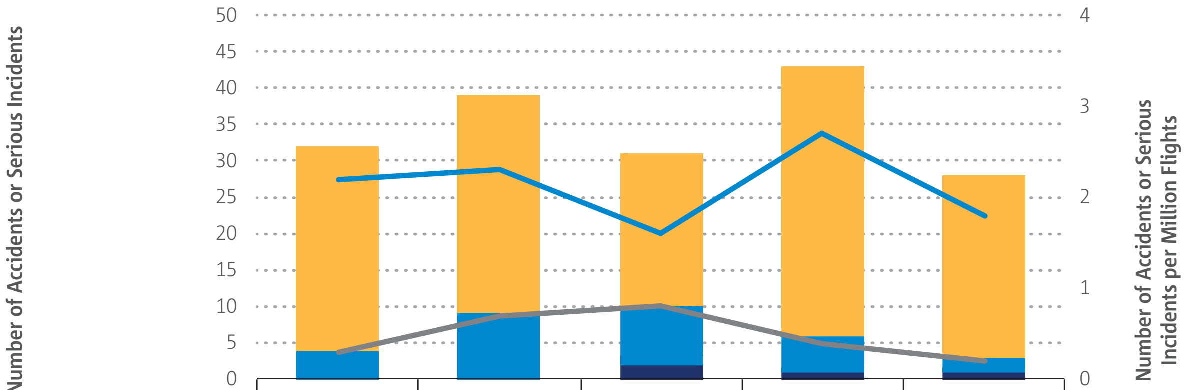
Figure 84. ATM/ANS related fatal and non-fatal accidents and serious incidents per year, 2007-2017, in EASA MS



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious Incidents	53	28	33	47	40	30	28	30	21	37	25
Non-Fatal Accidents	7	4	6	7	6	5	4	9	8	5	2
Fatal Accidents	0	0	0	0	0	2	0	0	2	1	1

Figure 85 depicts that the rate of ATM/ANS related accidents (fatal and non-fatal) per millions of IFR controlled flight hours continues decreasing since the plateau reached in 2014. The rate of serious incidents, despite the steady increase of flight hours, does not show a constant trend.

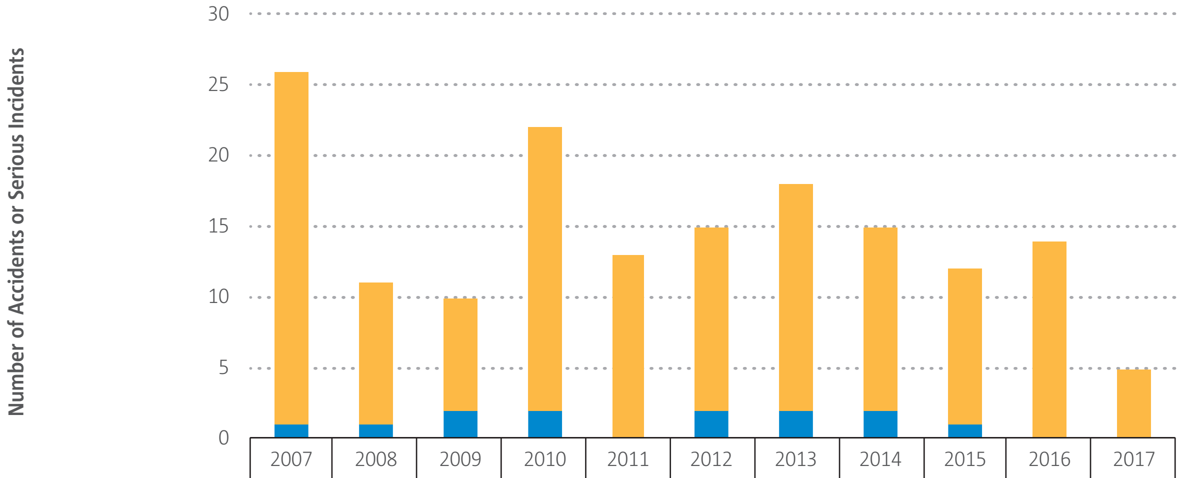
Figure 85. Rates of ATM/ANS related accidents and serious incidents per year, 2013-2017, in EASA MS



	2013	2014	2015	2016	2017
Serious Incidents	28	30	21	37	25
Non-Fatal Accidents	4	9	8	5	2
Fatal Accidents	0	0	2	1	1
Serious incident rate per million flights	2.2	2.3	1.6	2.7	1.8
Accident rate per million flights	0.3	0.7	0.8	0.4	0.2

Figure 86 illustrates that, when restricting on those occurrences with some level of contribution of the ATM/ANS services, no accidents, either fatal or non-fatal, have occurred in the last two years, with no fatal accident in the last decade.

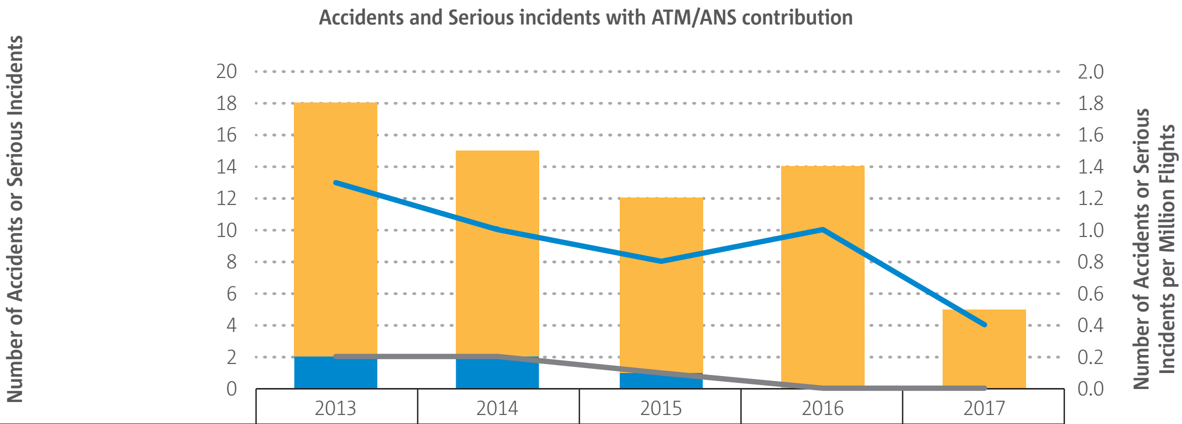
Figure 86. Fatal and non-fatal accidents and serious incidents with ATM/ANS contribution per year, 2007-2017, in EASA MS



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Serious Incidents	25	10	8	20	13	13	16	13	11	14	5
Non-Fatal Accidents	1	1	2	2	0	2	2	2	1	0	0
Fatal Accidents	0	0	0	0	0	0	0	0	0	0	0

The decreasing trend in the last 5 years is also observed in the rate of both the accidents and serious incidents with ATM/ANS contribution, as Figure 87 illustrates.

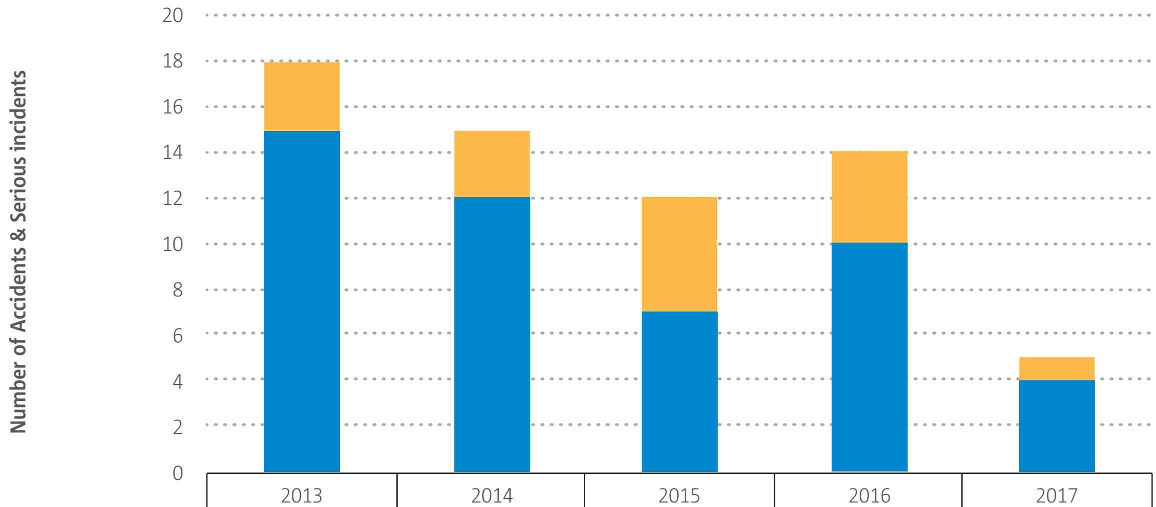
Figure 87. Rates of fatal and non-fatal accidents and serious incidents with ATM/SN contribution per year, 2013-2017, in EASA MS



	2013	2014	2015	2016	2017
Serious Incidents	16	13	11	14	5
Non-Fatal Accidents	2	2	1	0	0
Fatal Accidents	0	0	0	0	0
Accident rate per million flights	0.2	0.2	0.1	0.0	0.0
Serious incident rate per million flights	1.3	1.0	0.8	1.0	0.4

The statistics of accidents and serious incidents does not necessarily represent an accurate picture of the risk of past events, as each occurrence of the same kind may bear a different risk, and even some accidents may be considered to bear lower risk than some serious incidents. For example, a near-miss involving an aircraft with the TCAS unserviceable would be classified as a serious incident, while a collision between a ground handling vehicle and an aircraft would be classified as an accident. However, based on the potential credible worse consequences of both events, the serious incident notionally would bear higher risk that the accident described. This led the Regulation (EU) 376/2014 to consider the development a common risk classification scheme (ERCS) to risk classify all occurrences reported to the European Aviation Authorities, which will be finalised and published in 2018. The main purpose of this method is to associate a risk score to each occurrence store in the EASA's database. Even though the ERCS material is not finalised and published, EASA has applied the classification to the occurrences as from 2013. Figure 88 shows the distribution of aggregated higher and lower risk events with ATM/ANS contribution in the last 5 years. The decreasing trend of risk of events is observed as indicated by Figure 87 based on the absence of accidents in 2016 and 2017, but the indication that the serious incidents that occurred in 2016 and 2017 had a greater proportion of higher risk suggests that performance of the system can be further improved and that effort should still be dedicated towards this objective.

Figure 88. Higher and lower risk scored accidents and serious incidents with ATM/ANS contribution per year, 2013-2017, in EASA MS

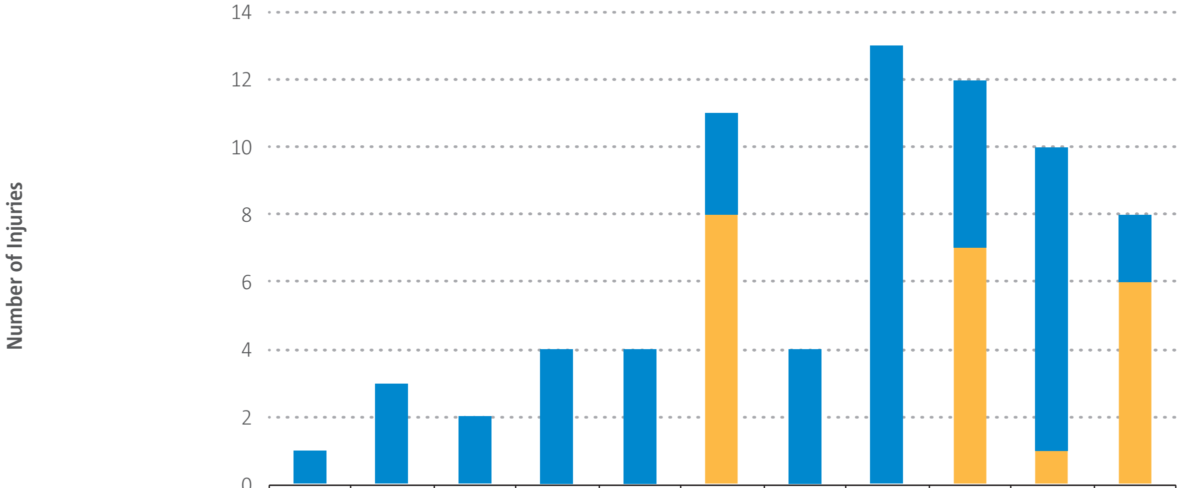


	2013	2014	2015	2016	2017
Lower Risk	3	3	5	4	1
Higher Risk	15	12	7	10	4

With regards to fatalities and injuries, Figure 86 shows that the number of fatalities and serious injuries in events where there was ATM/ANS contribution was zero in 2017, while Figure 89 shows that within the ATM/ANS- related occurrences, the number of fatalities and serious injuries in 2017 were 6 and 2, respectively.

As it can be seen in Figure 89 below, the number of fatalities per year in ATM/ANS related accidents does not follow a clear pattern, depending on the size of aircraft involved in the reduced number of accidents that occurred only in some years of the period under analysis, which corresponds to only CAT helicopters involved in ATM/ANS related accidents in the last three years.

Figure 89. Fatalities and serious injuries in ATM/ANS related accidents per year, 2007-2017, in EASA MS

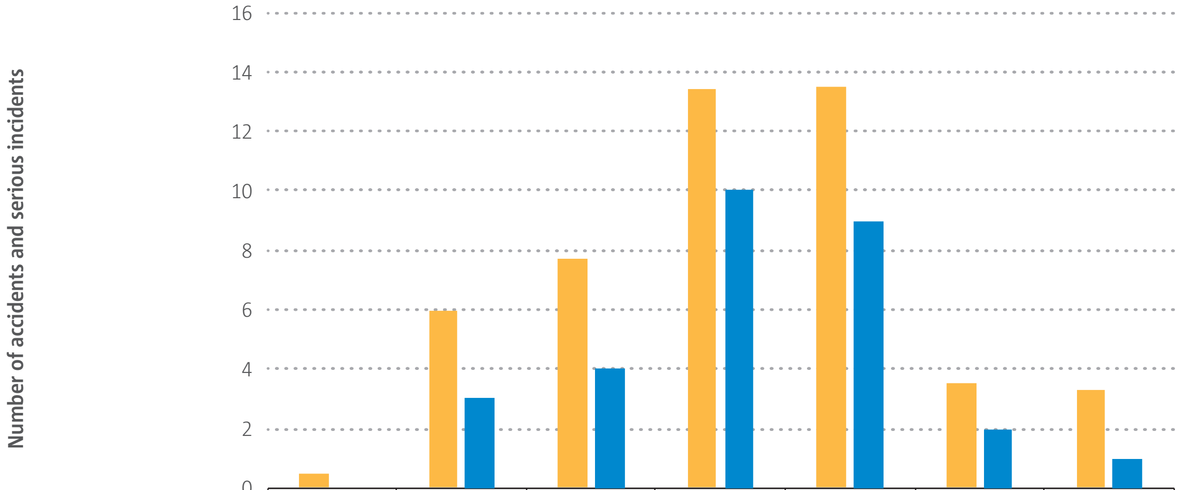


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Serious Injuries	1	3	2	4	4	3	4	13	5	9	2
Total Fatalities	0	0	0	0	0	8	0	0	7	1	6

7.1.1.1 Phase of flight

With regard the flight phase, the majority of ATM/ANS-related accidents and serious incidents took place during the En-Route and Approach phases, followed by Take-off, Taxi and Landing phases. By comparing the percentages of flight phase distribution in 2017 data with the 2007-2016 average, differences are not remarkable and follow the same distribution, with small increase in the proportions of events in En-route and Approach phases. "Unknown/blank" corresponds to those occurrences where no data is available for one or both aircraft involved in the event. This proposition has decreased, which indicates a better and more complete coding of event in the database.

Figure 90. Phase of flight in ATM/ANS related accidents and serious incidents per year, 2007-2017, in EASA MS

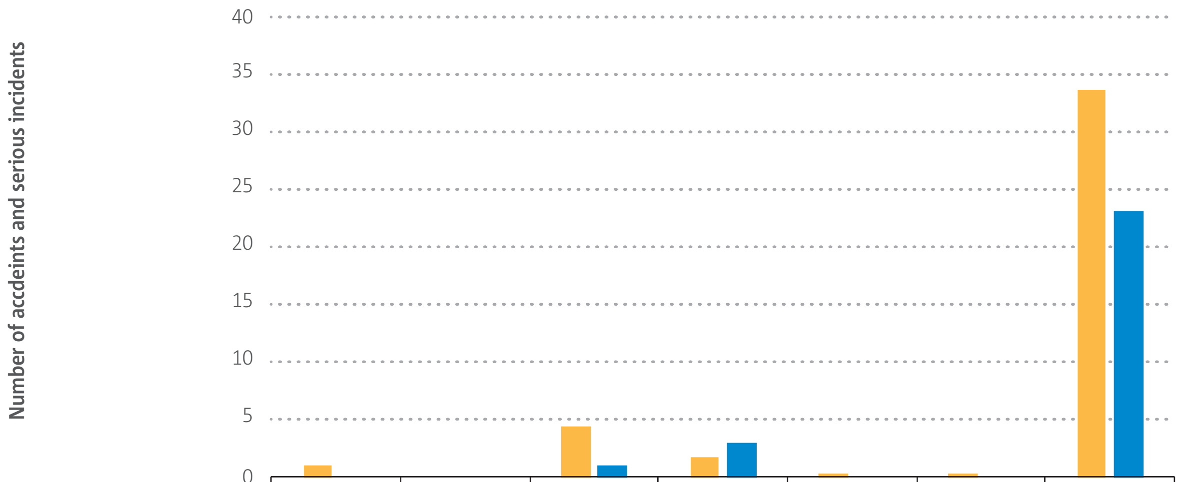


	Standing	Taxi	Take-off	En route	Approach	Landing	Unknown/ Blank
Average 2007-2016	0.5	6	7.7	13.4	13.5	3.5	3.3
2017	0	3	4	10	9	2	1

7.1.1.2 Class of airspace

The airspace class where the ATM/ANS related accidents and serious incidents occurred is shown in Figure 91. It is worth noting that the majority of events do not contain information about the type of airspace class where the service was provided. This information is very relevant to the service provided (e.g. separation provision, information service, etc). Even though the proportion of events in class D seems to have increased, and those in class C to have decreased, the number of events coding the airspace class is too small,three and one respectively, to reach any conclusion in the trend.

Figure 91. Airspace class where ATM/ANS related accidents and serious incidents occurred, 2007-2017, in EASA MS



	A	B	C	D	E	G	Blank
2007-2016 Average	1	0	4.3	1.7	0.3	0.2	33.5
2017	0	0	1	3	0	0	23

7.2 Safety Risk Portfolio of the ATM/ANS domain

This section describes the top risk areas and the major safety issues of concern in the ATM/ANS domain that can be derived from the occurrence data available in the EASA database, i.e. using analysis of accidents and serious incidents. These top risk areas and safety issues are collected in the form of a safety risk portfolio for the ATM/ANS services. In a nut shell, the analysis of these occurrences has been used to populate a list of indicators (Key Risk Areas and Safety Issues) of the performance framework in the ATM/ANS domain. The portfolio is later used to prioritise the assessment of safety issues, to target analysis activities over key risk areas and to prioritise safety actions, involving various ATM/ANS partners in the recently set-up ATM Collaborative Analysis Group, which includes ANSPs, Aviation Authorities, Eurocontrol, organisations of aviation professionals, and the like.

It is worth noting that the ATM safety portfolio that is described below is a snapshot of the risks beard by past events derived by the limited data analysed, i.e. accidents and serious incidents. This is considered an intermediate step towards the final ATM/ANS Safety Risk Portfolio. The incorporation of additional occurrence data not analysed by the Aviation Safety and Investigation Authorities, e.g., occurrences reported to the European Central Repository or occurrences analysed by the SMS of organisations providing ATM/ANS services, may change the risk picture shown here, helping identify additional precursors of accidents and making the analysis more proactive. In addition, the safety risk portfolio may add other criteria, based on qualitative expert judgement of the ATM CAG members and the EASA Operational Departments that consider, for example, the effectiveness of existing controls and barriers and the expected risk reduction by already agreed safety actions. This will help close the gap of risks that are not observable in the data sample. By adding this additional information, the safety risk portfolio may change both in terms of additional safety issues and a different prioritisation for analysis of safety issues.

7.2.1.1 Key Risk Areas

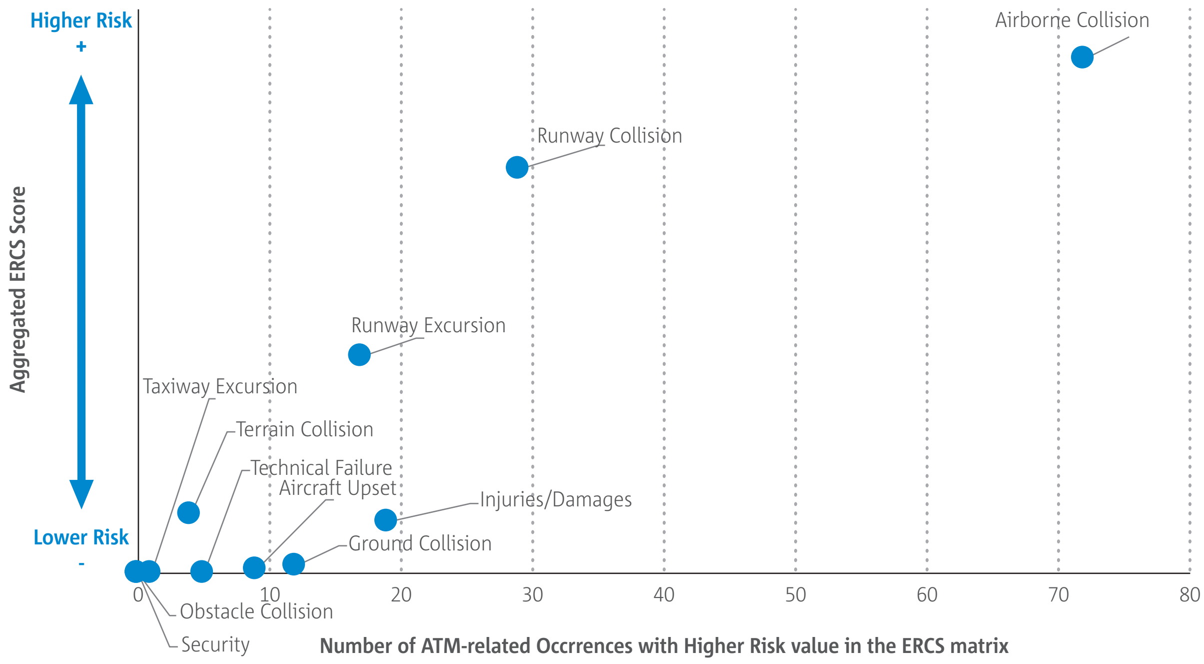
To identify the top Key Risk Areas in the ATM/ANS domain, the ATM/ANS related accidents and serious incidents of the last 5 years were assesses, risk classified using the draft common risk classification scheme (ERCS), and the ERCS risk scores aggregated. The results are illustrated in Figure 92. The figure depicts the number of higher risk occurrences per key risk area in the x-axis and the aggregated ERCS risk score of those higher risk occurrences for each key risk area, which is used as a proxy of the safety risk associated to that area. It shows that the top Key Rey Risk Areas in the ATM/ANS domain are, not surprisingly, Airborne Collision and Runway Collision, which are ranked higher in the aggregated ERCS score and frequency of occurrences. In a second layer of priority, the Key Risk Areas of Runway Excursion, Terrain Collision and Injuries are placed. Finally, a third layer of priority includes the rest of risk areas (i.e., Ground Collisions, Aircraft Upset, Technical Failures, Obstacle Collisions and Security).

The top Key Risk Areas highlighted above are defined by their accident outcome to be prevented and by the immendiate precursors of that accident outcome:

- **Airborne Collision**: it includes occurrences involving actual or potential airborne collisions between aircraft while both aircraft are airborne and between aircraft and other controllable airborne objects (which excludes birds and wildlife). This includes all separation-related occurrences regardless the cause, AIRPROX reports and genuine TCAS/ACAS alerts. It does not include false TCAS/ACAS alerts caused by equipment malfunctions or loss of separation with at least one aircraft on the ground, which may be coded as Runway or Movement Area Collision if the occurrence meets the criteria.

- **Runway Collision**: it includes all occurrences involving actual or potential runway collisions between an aircraft and other aircraft, vehicle or person that occurs on the runway of an aerodrome or other predesignated landing area. This includes occurrences involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft. It does not include occurrences involving wildlife on the runway.

Figure 92. Prioritisation of Key Risk Areas of the ATM/ANS services, 2013-2017, in EASA MS



7.2.1.2 Safety Risk Portfolio

The safety risk portfolio derived from the sample of ATM/ANS related accidents and serious incidents in the last five years is shown in Figure 93. It shows the ranking of safety issues given by the aggregated ERCS risk score of the higher risk occurrences related to the safety issues. This indicator is used as proxy of the risk posed by the safety issue, but it is evaluated as a better reference than the pure sorting by the number of accidents and serious incidents. The risk priority is depicted notionally with coloured bands from red (higher priority) to blue (lower priority). The number of occurrences higher risk ERCS scores are indicated in the table too. The ranking is being further modified by inputs from the ATM CAG group and EASA Operational Departments.

The top row of the table include the key risk areas ranked by the aggregated ERCS score, as indicated previously. The risk priority is depicted notionally with coloured bands from red (higher priority) to blue (lower priority). The number of occurrences with higher risk ERCS scores are indicated in the table above each Key Risk Area too. The "•" symbol indicates that an observed occurrence contained a certain safety issues and was associated to a key risk area areas, i.e. it identifies which safety issues contribute to which (potential) accident outcomes. When the symbol "●" is used means that the majority of occurrences of the safety issue contributes primarily with that key risk areas, in other words with that (potential) accident outcome. Where no symbol is indicated means that no occurrence was found linked to the safety issue and the concerning risk area.

The safety issues with higher risk scores identified in Figure 93, based on the used data sample, are defined as follows:

- **Deconfliction IFR vs VFR flights**. It involves ineffective deconfliction of IFR vs VFR flights in an airspace class where IFR-VFR are not provided (i.e., class D, E, and G), which may lead to airproxes and ultimately to airborne collision.
- **Airspace Infringement.** Airspace infringement occurs when an aircraft enters notified airspace without previously requesting and obtaining clearance from the controlling authority of that airspace, or enters the airspace under conditions that were not contained in the clearance.
- **Undetected Occupied runway**. It involves runway incursions with aircraft landing/taking-off and the ATC missing that the runway is occupied by a vehicle or aircraft that had received a clearance to be on the runway.

- **ACAS RA not followed by the pilot**. It involves encounters where the TCAS system installed on board of aircraft triggered a Resolution Advisory message and one of the aircraft's flight crew (or both) did not follow the instruction given by the TCAS to resolve the conflict and avoid the mid-air collision.

- **Provision of weather information (wind at low height).** In involves inaccurate or missing wind-related information provided to the crew by ground (e.g., tail wind on ground, gusts) during the approach phase, which may lead to increase of non-stabilised approaches and thus increasing the risks of runway excursions.

It is worth noting that this ranking and the list of safety issues in the safety risk portfolio may vary when additional occurrence data, i.e. other than accidents and serious incidents, are added and/or when complemented with qualitative criteria evaluated by the ATM CAG and EASA operational departments. One example of special interest of additional criteria considered may be to prioritise safety issues that involve not only ATM/ANS related occurrences, but those that have contribution from the ATM/ANS services, and therefore, where the ATM/ANS has greater managerial control to mitigate the risks.

Figure 93. Safety Risk Portfolio for ATM/ANS services operations showing how the 5 year occurrence data 2013-2017 relates to safety issues and their outcomes relative to risk in descending order

Deconfliction IFR/VFR	10		●										
Airspace infringement	6		●										
Undetected occupied runway	13		•	●									
ACAS RA not followed	5		●	•									
Wind information (wind at low height)	9		•		●								
Deconfliction with aircraft operating without transponder	4		●							•			
High energy runway conflict	7			●	•	•							
Provision of weather information (turbulence/windshear/convective weather)	20		•		•		●		•				
Conflict detection with closest aircraft	12		●										
Integration of RPAS/Drones	4		●										
Landing/take-off without clearance	3		•	●									
ATM influence on the non-stabilised approaches	4				●	•							
Failure of Navigation service	1					•				•			
Level Bust	4		●			•			•				
Failure of Surveillance service	2		•							•			
Coordination/handling of pushback	1							●					
Failure of Air/Ground communications	1		•							•			
Ground Operations in Adverse Weather Conditions	0												
Cybersecurity	0												

ATM/ANS SERVICES

Bands of Aggregated ERCS Risk Score (2013-2017)			Priority 1		Priority 2			Priority 3				Priority 4	
Higher Risk ERCS Occurrences (2013-2017)			72	29	17	4	19	12	9	5	1	0	0
Safety Issues	#HRO ERCS	Bands of Aggregated ERCS Risk Score (2013-2018)	Key Risk Areas (Outcomes and precursors)										
			Airborn Collision	Runway Collision	Runway Excursion	Terrain Collision	Injuries/Damages	Ground Collision	Aircraft Upset	Technical Failure	Taxiway Excursion	Security	Obstacle Collision
New technologies and automation (e.g. rTWR, SWIM)	0												
Safety Culture	0												
Effectiveness of Safety Management	0												
Understanding and monitoring system performance interdependencies	0												

● **A significant number of occurrences** • **A small number of occurrences**

Appendix 1 -
List of Fatal Accidents

1.1 Aeroplanes

1.1.1 Commercial Air Transport Airline

Local date	State/area of occurrence	Location	Aeroplane	Headline
25/01/2007	France	AD Pau (64)	FOKKER - F27 - 100	Loss of control during take-off due to ice contamination, collision with a vehicle at the crash.
20/08/2008	Spain	Madrid	MCDONNELL DOUGLAS	Loss of control on take-off from Madrid Barajas, due to incorrect take-off configuration and disabled warning. Post-crash fire.
01/06/2009	South Atlantic Ocean	Près du point TASIL	AIRBUS - A330 - 200	Loss of control during cruise due to incorrect handling of technical failure. Aircraft crashed into the sea.
10/02/2011	Ireland	Cork Apt EICK	SWEARINGEN - SA227 - BC	Loss of control during landing below weather minima. Impacted runway inverted
11/11/2012	Italy	Roma Fiumicino Airport	AIRBUS - A320	Loading crew caught between loader and baggage door during aircraft ground handling operation.
24/07/2014	Mali	80 km south-east of Gossi	DOUGLAS - DC9 - 80 - 83	Loss of control due to incorrect engine power. Anti-icing system not activate leading to the blockage of the engine pressure sensor by ice crystals. Aircraft stalled and crashed.
20/10/2014	Russian Federation	UUWW (VKO): Moskva/ Vnukovo	DASSAULT - FALCON 50 - EX	Aircraft collided with a snowplough vehicle during take-off run. Aircraft was destroyed by fire.
24/03/2015	France	Prads-Haute-Bléone	AIRBUS - A320 - 200 - 211	First officer alone in the cockpit, initiated a rapid descent - Aircraft impacted mountainous terrain
08/01/2016	Sweden	Oajevágge	BOMBARDIER - CL600 2B19	IRU malfunction - Crew spatial disorientation - Loss of control - Aircraft crashed on a mountainous terrain

1.1.2 Non-commercial Complex Business

Local date	State/area of occurrence	Location	Aeroplane	Headline
26/12/2007	Kazakhstan	Almaty Airport (ALA)	CANADAIR - CL600 2B16 - 600 - 604	Loss of control after take-off due to ice contamination on the wings. Wing-anti-ice not ON
14/02/2010	Germany	Reinhardts-dorf-Schöna	CESSNA - 550 - NO SERIES EXISTS	During climb the crew performed an aerobatic manoeuvre and lost control of the aircraft. Aircraft disappeared from radar screen at FL250.
24/09/2012	United States	San Francisco CA	GULFSTREAM - GV	Truck collision with stationary aircraft
10/12/2012	Cyprus	Larnaca	CESSNA - 750 - NO SERIES EXISTS	A service vehicle struck the right wingtip, vehicle driver trapped
29/04/2013	Congo, Democratic Republic of the	FZAA (FIH): Kinshasa/ N'djili	DASSAULT - FALCON 900EX	Runway incursion by a person during take-off. Aircraft hit the person

1.1.3 Specialised Operations

Local date	State/area of occurrence	Location	Aircraft make/model	Headline
2007-03-11	United Kingdom	HEADCORN AIRFIELD, KENT	DE HAVILLAND - DHC2 - III	Aircraft failed to get airborne during take-off run
2007-03-17	Italy	Campo dei Fiori (Varese)	MAULE - MXT7 – 180, PZL BIELSKO - SZD55	Loss of control and subsequent crash after glider release
2007-08-07	Spain	SANTA AMALIA (BADAJOZ)	PIPER - PA36, PIPER - PA36 - 285	Mid-air collision between two aircraft
2007-08-13	Czech Republic	LKHC	OTHER	Loss of control and subsequent crash, post-impact fire
2007-09-01	Poland	MATZ EPRA	ZLIN - Z526 - AFS, ZLIN - Z526 - F	Airshow midair collision.
2007-09-25	Romania	near Vaideeni	DIAMOND - DA42	Propeller control failure - uncommanded IFSD, spin and crash; Overweight.
2007-12-06	France	Enroute	NORTH AMERICAN - T6 - G	North American T6 - Flew Into the Ground During Aerobatics - 2 POB - 2 Killed
2008-01-11	Slovenia	Trbovlje	ANTONOV - AN2	Aircraft crashed into mountain during low visibility conditions
2008-04-26	Germany	Eisenach-Kindel	ZLIN - Z37	Runway excursion after aborted take-off at airshow, aircraft impacted spectators

Local date	State/area of occurrence	Location	Aircraft make/model	Headline
2008-05-10	Romania	Ulmeni	PZL OKECIE	Aircraft crashed during crop spreading operation, post-impact fire
2008-05-14	Bulgaria	Topoli village, near LBWN	LET	Collision with power lines during manoevering at low height
2008-05-30	Spain	near Lillo y Villatobas	PILATUS - PC6	In flight structural failure in turbulence
2008-06-14	France	Connantre (51)	PIPER - PA38	Loss of control in flight, collision with the ground during an air race
2008-06-14	France	Castres (81)	OTHER	Loss of control during practice for airshow
2008-06-28	Spain	Sa Pobla (Illes Balears)	OTHER	COLLISION WITH TERRAIN
2008-08-12	Italy	località Val Vibrata, Corropoli, Teramo	PIPER - PA18 - 150	Piper PA18-150 - Loss of control in flight and ground impact- 1POB - 1OB Fatal - A/C Destroyed
2009-06-20	Czech Republic	200 m left RWY 24, LKCR	LET	Loss of control uring parachute operations
2009-07-08	United Kingdom	Bishop Norton (Lincolnshire)	PERCIVAL	Mechanichal engine failure and in-flight fire
2009-07-18	Hungary	LHDK	ZLIN - Z42	Crash when performing low-level aerobatics
2009-08-14	Portugal	Evora - Bairro de Almeirim	BEECH - 99	Loss of control during single-engine go-around
2009-08-23	Germany	Erpfental near Ellwangen	CESSNA - F182, ROBINSON - R44	Mid-air collision between aeroplane and helicopter near airshow
2009-09-06	Italy	LIPO Airport	MUDRY - CAP10	Aircraft impacted on ground during aerobatic manouver.
2009-10-09	Italy	Canevare (Modena)	PARTENAVIA - P68	Loss of control inflight
2010-05-28	Czech Republic	LKTO	OTHER	Aircraft crashed shortly after takeoff
2010-05-29	Spain	Aldeanueva de Barbarroya (To)	PIPER - PA25	STALL DURING FLIGHT
2010-06-19	United Kingdom	Methley Bridge (West Yorkshire	EXTRA - EA300	Aircraft crashed while performing an aerobatic display
2010-08-17	Spain	Aerodr. Casarrubios del Monte	OTHER	COLLISION WITH TERRAIN DURING ACROBATIC MANOEUVRE
2010-09-04	United Kingdom	Near Ryde, Isle of Wight	MOONEY - M20, VANS - RV4 - UNDESIGNATED SERIES	Mid air collision during Merlin Trophy Air Race

Local date	State/area of occurrence	Location	Aircraft make/model	Headline
2010-09-05	Germany	Lauf-Lillinghof	OTHER	Collision with airshow spectators during take off roll
2010-09-19	Germany	Warngau (Miesbach)	EXTRA - EA300, OTHER	Mid-air collision during airshow
2010-10-02	France	Les Moëres	CESSNA - F172 - M, Aveko VL3B	Cessna F172 & Aveko VL3B - Midair Collision - 4POB - 2OB Fatalities - 2OB Minor - F172 Substantial damage - Aveko Destroyed
2010-10-12	Spain	Navarra	ROBIN - DR400	COLLISION WITH TERRAIN DURING CRUISE
2011-01-11	Italy	Airport LIRG	ROBIN - DR400 - 180R	Robin 400 180R while towing a glider in the take off phase crashed. The pilot of the airplane is killed.
2011-06-02	Netherlands	EHTE	CESSNA - F172	The aircraft crashed after pick up of a banner
2011-06-18	Poland	Plock - Wisla River	CHRISTEN - EAGLE II	Crash during aerobatics over river
2011-07-04	France	AD Dijon-Darois (21)	SOCATA	Stalling of towing aircraft after glider release
2011-08-30	Poland	Nowy Targ	PZL OKECIE	Loss of control during approach and subsequent crash with post-impact fire
2012-04-28	Germany	Alkersleben	ZLIN - Z226	A/C touched the ground after a formation flight
2012-05-05	France	AD Buno Bonnevaux (91)	PIPER - PA25 - 235, SLINGSBY - T31	Mid-air collision between a glider and an aeroplane above runway
2012-06-17	Romania	Banesti, Prahova	OTHER	Collision with power cables on approach and subsequent crash and post-impact fire
2012-07-22	France	AD Couhé Vérac (86)	OTHER	Loss of control and subsequent crash during airshow
2012-09-07	Italy	Di Fioranello street 163, Rome	CESSNA - 402	Aircraft impacted terrain during aerial work operations - aerial photography
2012-09-09	Germany	Backnang-Heiningen	ROBIN - DR400 - 180R	Avions Robin DR400 - Loss of control during take off as A/C fell into the vortex generated by the preceding a/C flying - 4POB - 3OB Fatalities - 1OB Serious
2012-10-22	Netherlands	EHAA	DIAMOND - DA40, GENERAL AVIA - F22	Mid air collision during photo flight - POB 2 on each aircraft - 2 fatalities - 2 serious injuries - both aircraft destroyed
2013-03-09	Czech Republic	600m N Srbce (Chrudim)	ZLIN - Z37 - A	Aircraft collided with trees in IMC

Local date	State/area of occurrence	Location	Aircraft make/model	Headline
2013-05-05	Spain	Madrid-Cuatro Vientos Airport (LECU)	HISPANO AVIACION - HA200 - D	Aircraft crashed during airshow
2013-05-08	Netherlands	Egmond aan Zee, Noord-Holland	OTHER - Not mapped	Ditched in north sea near Egmond
2013-06-01	Sweden	Söderhamn Airport	SAAB - 91	Engine failure during airshow due to loose spark plugs
2013-06-29	Germany	Eberswalde-Finow	ZLIN - Z526 - AFS	Aircraft crashed during aerobatics
2013-06-30	Sweden	Near Veberöd, Sweden	GRUMMAN - GA7	Crash in a field after reported engine problems
2013-10-19	Belgium	Gelbressee	PILATUS - PC6	Abrupt maneuver - left wing structural failure due to a significant overload - A/C out of control crashed into a ploughed field
2014-04-20	Finland	2 km from Jämijärvi airfield EFJM, Satakunta	OTHER	During climb, right wing broke due to a fatigue failure - aircraft entered a spin, crashed and caught fire - 11POB - 8OB Fatalities
2014-05-08	Latvia	EVLA - Liepaja	PITTS - S2 - B	Pitts S-2B Special - Aircraft crashed during aerobatic routine - 1POB - 1OB Fatal - A/C Destroyed
2014-05-10	Italy	Ceriano Laghetto (Monza province)	OTHER	Aircraft crash during a demonstrative flight, two persons died.
2014-06-06	Czech Republic	near Krizanov airfield, LKKA	TECNAM - P92	Crashed shortly after take off whilst glider towing. Glider disconnected and landed safely - 1POB - 1OB Fatal - A/C Destroyed
2014-06-23	Germany	Near Olsberg-Elpe	LEARJET - 35 - A, OTHER - Military	Collision of two A/C in flight, one military - 3POB - 2OB Fatally Injured
2014-07-05	Poland	Topolów district My-kanów, Czesto-chowskas-treet No 36; near Czestochowa	PIPER - PA31P	Piper PA-31 Navajo - Engine problems during climb-out, loss of height and collision with ground. A/C Destroyed by post-impact fire - 12POB - 11OB Fatal -1OB Serious - A/C Destroyed
2014-07-19	Czech Republic	1 NM S LKKM	ZLIN - Z526 - F	The aircraft entered an inverted spin and impacted the ground
2014-09-13	France	At FL110 AD Tarbes Laloubère	CESSNA - U206 - F	Parachute opened upon parachutist leaving the aircraft, parachute struck the tail of the aircraft and damaged part of the stabilizer, loss of control of aircraft and subsequent crash

Local date	State/area of occurrence	Location	Aircraft make/model	Headline
2014-09-21	Italy	near Venezia Lido Airport	OTHER - Not mapped	XtremeAir Xtreme 3000 - Aircraft crashed during aerobatics performance - 1POB - 1OB Fatal - A/C Destroyed
2014-09-28	Italy	Colle di Val d'Elsa, Siena	PITTS	Pitts 12 - Aircraft fell during aerobatic maneuvers - 2POB - 2OB Fatalities - A/C Destroyed
2015-05-30	France	Blois	STAMPE - SV4 - C	During aerobatics session the aircraft entered into spin after a half loop maneuver - Aircraft crashed
2015-05-31	Adriatic Sea	Tortoreto, Alba Adriatica (TE)	VANS - RV8 - A, VANS - RV7	Collision of two aircraft in flight during an air show
2015-08-01	United Kingdom	near Oulton Park	OTHER - Military	Flight into terrain during airshow
2015-08-01	Romania	Stancuta, Braila county	PZL MIELEC - AN2 - R	Aircraft crashed shortly after take-off.
2015-08-20	Slovakia	Cervený Kamen	LET - L410 - UVP, LET - L410	Mid-air collision during en-route. Both aircraft were performing parachute dropping operations.
2015-08-22	United Kingdom	near EGKA - Shoreham Airport	HAWKER - HUNTER - T7 - T7	Aircraft crashed on a road during an air show.
2015-08-23	Switzerland	Dittingen LSPD	2x COMCO IKARUS - IKARUS C42 - B	Mid-air collision during airshow
2015-08-30	Austria	Airfield Friesach Hirt, Carinthia	PITTS - S2 - B	Loss of control during Aerobatic show with A/C crashed
2016-05-20	Germany	Rodigast	PZL OKECIE - PZL101	Loss of control and subsequent crash into forest
2016-06-11	Italy	Cecina	PILATUS - PC6	Parachutists reserve parachute opened prematurely. Parachutist hit the RH stabilizer - structural damage in flight and crash.
2016-06-19	Portugal	Canhestros	PILATUS - PC6	In-flight fuselage breakup due to material fatigue
2016-09-18	Hungary	Gödöllo Arboretum	PIPER - PA28 - 140, CESSNA - 182 - D	Two aircraft collided with each other in the vicinity of LHGD. 4 POB, 4 fatalities
2017-08-15	Spain	Near the 55 kilometer point of N-340 road	PIPER - PA36 - 375	Bird strike followed by crash during fumigation work in a rice field (low altitude operation)
2017-09-03	Italy	Pontinia	CESSNA - 182 - P	Loss of control inflight - crash and fire.
2017-09-16	Slovakia	LZPE	ZLIN - Z37 - C	Loss of control and crash

1.1.4 Non-commercial Other Than Complex

The list below provides information on all fatal accidents occurring within NCO for the past 3 years.

03/01/2015	United Kingdom	Blackwood Forest, near the EGHP	ALPI AVIATION - PIONEER400	Engine failure at approach, aircraft crashed in woodland.
18/01/2015	Germany	Rech-berghausen	PIPER - PA24 - 260	Aircraft crashed into a garage
26/01/2015	Germany	Dannenfels	PIPER - PA30	Aircraft crashed killing the pilot
18/02/2015	France	Colombier	ROBIN - DR400 - 160	Aircraft impacted the top of a tree and crashed in adverse weather conditions
23/02/2015	Switzerland	Proche AD Yverdon	ROBIN - DR400 - 140B	Aircraft crashed near the airfield shortly after the take-off
11/03/2015	France	Vrigny	ROBIN - DR400 - 120	Loss of Control on Approach - Aircraft crashed to the ground
03/04/2015	Germany	Witzenhausen	PIPER - PA28	Aircraft crashed into a Forrest
04/04/2015	United Kingdom	Near Loch Etive, Oban, Argyll and Bute	PIPER - PA28 - 140	Aircraft crashed into mountainous terrain
12/04/2015	Germany	Oldenburg - Hatten	CESSNA - F172 - N	A/C hit trees and crashed into the ground
15/04/2015	Germany	Moosburg	BOLKOW - BO207	Controlled flight into terrain
22/04/2015	United Kingdom	EGSV:OLD BUCKENHAM	OTHER	Aircraft crashed while practising aerobatics. One POB, fatally injured.
03/05/2015	United Kingdom	West of Abernyte, near Dundee	BEECH - 55 - 95B55	Flew into terrain on approach
21/05/2015	France	Saint-Laurent-Blangy	ROBIN - DR400 - 140B	Engine power loss and loss of control during initial climb, Aircraft crashed and caught fire
21/05/2015	Bulgaria	LBLS	OTHER	Accident with airplane RALLY 105, reg. marks LZ-GVG, while taking-off from Lesnovo airfield.
26/05/2015	Sweden	Skå-Edeby	OTHER	Destroyed aircraft, Steen Skybolt - one fatality
26/05/2015	Portugal	Next to the football field of Água Longa, SANTO TIRSO.	OTHER	Loss of control during base approach - Spiral dive - aircraft crashed
26/05/2015	France	Remoray-Boujeons	CEA - DR380	Collision with high terrain in adverse weather conditions with fog

Date	State of Occurrence	Location of Occurrence	Make/Model	Summary
06/06/2015	Italy	AVIOSU-PERFICIE “ALVARO LEONARDI” - TERNI	UNKNOWN	The engine failed and the aircraft hit the ground about 270 meters from the runway threshold
07/06/2015	Croatia	Zvekovac	VANS - RV7 - A	Accident report - Airplane below 2250 kg
23/06/2015	Germany	Holzminden	JABIRU - J430	Aircraft hit tree tops and then impacted the ground
25/06/2015	Croatia	Split	LAKE - LA4 - 200	Accident report - Airplane below 2250 kg
26/06/2015	Lithuania	Alytus	YAKOVLEV - YAK55	Akrobatinio skrydzio metu nukrito lektuvas
28/06/2015		Aviosuper-ficie “Alvaro Leonardi” - Terni	RUTAN	Incidente aereo aeromobile marche D-EESY
30/06/2015	Germany	Egelsbach	DIAMOND - DA20 - A1	Take-off collision with power lines
01/07/2015	France	Treilles	PIPER - PA28 - 181	Collision with high terrain during cruise affected by adverse weather conditions. Post-crash fire
18/07/2015	Sweden	ESGF	VANS - RV6 - A	Loss of control in flight
30/07/2015	Germany	Villingen-Schwennin-gen	EXTRA	Loss of control in climb phase
02/08/2015	France	AD Marennes	BRANDLI - BX2	Aborted landing, Aircraft collided first with the vegetation then struck the ground.
05/08/2015	Switzerland	Hundwil/AR	SKYSTAR - KITFOX	Aircraft crashed into a forest
09/08/2015	Iceland		DE HAVILLAND - DHC2	Aircraft collided with a mountain during flight. Fatal accident; 1 fatality
12/08/2015	Spain	Robledillo de Mohernando Airfield (Término municipal de Malaguilla)	ZENAIR - CH640	Aircraft fell to the ground during the base leg.
17/08/2015	United Kingdom	Newquay Airport	PIPER - PA34 - 220T	Aircraft crashed during go-around.
04/09/2015	United Kingdom	Hinton in the Hedges Airfield	CESSNA - 150 - F	Loss of control during go-around after bounced landing
05/09/2015	France	AD Haguenau	BRUGGER - MB2	Aircraft crashed shortly after take-off.
05/09/2015	Sweden	Brattsfor-sheden	YAKOVLEV - YAK42	Accident YAK52two fatally injured
08/09/2015	Belgium	Celles	OTHER	Aircraft impacted the ground at a low horizontal / high vertical speed.

Date	State of Occurrence	Location of Occurrence	Make/Model	Summary
08/09/2015	Spain	Toses	PIPER - PA28 - 181	Aircraft crashed into a mountain.
10/09/2015	Germany	Können	BEECH - 24	Aircraft crashed into a field due to unknown circumstances. 1 POB, 1 fatality
16/09/2015	Germany	Mechernich-Bergheim	PIPER - PA28 - 161	Crew abandoned the aircraft during enroute. Aircraft crashed and caught fire.
20/09/2015	Switzerland	Muhen/AG	NEW GLASAIR - GLASAIR SUPER II - RG	Collison with a car during emergency landing in Muhen/AG
26/09/2015	Germany	Sandstedt	CESSNA - F172	Collision in Flight causing one aircraft to lose control and crash. 4 POB, 3 fatalities.
03/10/2015	United Kingdom	Near Chigwell	BEECH - 200 - B200	Aircraft crashed shortly after take-off
08/11/2015	Austria	Ma. Rojach	BREEZER	Aircraft crashed during low flying. 2 POB, 2 fatalities
08/11/2015	Slovenia	near Slovenske Konjice Airport	TL ULTRALIGHT - TL2000 STING	Ultralight aircraft crashed shortly after take-off. Ballistic Recovery System activated but parachute didn't fully open.
12/11/2015	Iceland	Kapelluhraun	TECNAM - P2002 - JF	A/C crashed - during familiarization training flight
03/12/2015	United Kingdom	EGNH (BLK): Blackpool	ROCKWELL - 112 - B	Aircraft reported missing over sea. One POB, missing.
03/12/2015	Austria	Mengeš	PIPER - PA28R - 201	Aircraft crashed. Pilot reported having problem during the approach.
04/12/2015	France	La Bresse	ROBIN - DR400 - 140	Aircraft collided with mountainous terrain in adverse conditions not favourable to VFR flight
06/12/2015	France	Peypin d'Aigues	PIPER - PA28 - 161	Loss of visual references - aircraft crash on a mountainous terrain
24/12/2015	Spain	Ronda	SOCATA - TB9	Aircraft crashed and consumed by post-crash fire.
04/01/2016	Netherlands	North See, 4.5 NM west from Schoorl	CIRRUS - SR20	Unintended flight in IMC, loss of control and crash to the sea. 1 POB, 1 fatality
16/01/2016	Spain	Serranía de Cuenca Natural Park	SOCATA - TB20	Bird strike - left wing partial detachment - aircraft crashed and caught fire. 4 POB, 4 fatalities
09/02/2016	Spain	near Beas de Segura	CESSNA - 172 - P	Aircraft asked a flight path deviation due to bad weather before crash. 1 POB, 1 fatality
21/02/2016	France	near AD Vinon	JODEL	Loss of control during initial climb, aircraft crashed. 1 POB, 1 fatality
25/02/2016	France	Saint-Héand	EXTRA - EA300 - 200	Collision with high level terrain due to adverse weather conditions. 1 POB, 1 fatality

Date	State of Occurrence	Location of Occurrence	Make/Model	Summary
28/02/2016	Hungary	5km SW from Agostyán, Tata	CESSNA - FA152	Aircraft crashed in bad weather conditions. 1 POB, 1 fatal, 1 serious injury
20/03/2016	Ireland	EIAB - Abbeyshrule	OTHER	Aircraft crashed while executing rolls. 1 POB, 1 fatality
25/03/2016	Hungary	Dány térsége	TECNAM - P2002 - JF	Aircraft crashed due to unknown reasons. 2 POB, 2 fatalities
30/03/2016	Spain	Perales de Tajuña	CESSNA - 172 - R	A bird strike, wing separation in flight and a crash. 3 POB, 3 fatalities
01/04/2016	Poland	Chmielewo	TECNAM - P2002	Aircraft lost control and collided with terrain on a steep angle. 2 POB, 2 fatalities
01/04/2016	France	Sondernach	ROBIN - HR100 - 210D	Aircraft crashed and caught fire. The aircraft impacted the ground with a significant pitch down attitude. 1 POB, 1 fatality
20/04/2016	Czech Republic	near LKST - Strakonice	CESSNA - 150	Aircraft lost control and crashed into a meadow. 1 POB, 1 fatality
30/04/2016	United Kingdom	Whitwell-on-the-Hill	SLINGSBY - T67 - MII	Loss of control in flight - Aircraft crashed into a field. 2 POB, 2 fatalities
05/05/2016	Germany	Grafenau-Lichteneck	MORANE SAULNIER - MS893 - E	Aircraft collision with the ground due to unknown reasons. 1 POB, 1 fatality
06/05/2016	Austria	near LOAN - Wr.Neustadt / Ost	RANS - S12	Aircraft spin and crash during flight around the aerodrome. 2 POB, 2 fatalities
19/05/2016	Spain	Arbizu	ROBIN - DR400 - 180	Aircraft crashed due to bird strike. 3 POB, 3 fatalities
01/06/2016	France	Coëx	VANS - RV4	Engine shut-down in flight and crash. 2 POB, 1 fatal, 1 serious injury
09/06/2016	United Kingdom	Near Cushendun,	COMCO IKARUS - IKARUS C42 - FB80	Aircraft crashed into the sea for unknown reasons. 2 POB, 2 fatalities
03/07/2016	Germany	Mosbach	OTHER	Loss of Control during take-off. 1 POB, 1 fatality
05/07/2016	Spain	LECU - Madrid / Cuatro Vientos	CIRRUS - SR22	Aircraft crash at the aerodrome during touch and go landing. 2 POB, 2 fatalities
08/07/2016	United Kingdom	1 nm north of Dinton, Wiltshire	YAKOVLEV - YAK52	After loss of engine power and unsuccessful forced landing due to late decision A/C crashed in field. 2 POB, 1 fatal, 1 serious injury
10/07/2016	Austria	LOWZ:Zell am see	PIPER - PA28 - 161	Aircraft not able to maintain climb due to low speed during take-off and stalls followed by crash. 4 POB, 1 fatal, 3 serious injuries

Date	State of Occurrence	Location of Occurrence	Make/Model	Summary
03/08/2016	France	LFCV - Villefranche de Rouergue	JODEL	Crash after unsuccessful landing. 1 POB, 1 fatality
06/08/2016	United Kingdom	English Channel, 1 mile from Winchelsea	PIPER - PA28 - 161	Engine problem reported - most likely carburettor icing, aircraft ditched and sank. 1 POB, 1 fatality
15/08/2016	France	LFNE - Salon / Eyguieres	EXTRA - EA300 - 200	Unconsciousness during a training flight in aerobatics and crash. 1 POB, 1 fatality
25/08/2016	France	Saint-Rémy de Maurienne	JODEL - D11	Loss of control during the initial climb - Aircraft crashed and caught fire. 2 POB, 2 fatalities
01/09/2016	Slovenia	near Cezsoca	PIPER - PA28 - 161	Aircraft crashed due to unknown circumstances. 3 POB, 3 fatalities
01/09/2016	Germany	Herlazhofen	ROBIN - DR400 - 140B	Aircraft crashed after engine failure. 3 POB, 3 fatalities
03/09/2016	Germany	Dierdorf	OTHER	Aircraft crashed due to unknown circumstances. 1 POB, 1 fatality
04/09/2016	Germany	Stettiner Haff	SOCATA - TB20	Aircraft crashed into the ocean. 3 POB, 3 fatalities
04/09/2016	Poland	Wrocanka	VANS - RV6	Loss of control shortly after take-off. 2 POB, 2 fatalities
05/09/2016	Bulgaria	LBDB:DOLNA BANYA (AIRFIELD)	TECNAM - P92	Aircraft collided with high voltage wires and crashed. 2 POB, 2 fatalities
06/09/2016	Spain	Close to Villanueva del Condado village (León - Spain)	ROBIN - DR400 - 180	On a long visual flight the AC came down at a meadow close to the village buildings. 2 POB, 2 fatalities
14/09/2016	Austria	near Sankt Anton, Steiß-bachtal (Vallugabahn)	AQUILA - AT01	Collision with cableway. 1 POB, 1 fatality
18/09/2016	Hungary	Gödöllo Arboretum	PIPER - PA28 - 140	Two aircraft collided with each other in the vicinity of LHGD. 4 POB, 4 fatalities
27/09/2016	France	Saint Ambroix	VANS - RV8	Loss of control at low altitude. A/C crashed and caught fire. 2 POB, 2 fatalities
02/10/2016	United Kingdom	near Topcroft Farm Airstrip	NORTH AMERICAN - P51 - D	Aircraft crashed into a tree during aborted landing. 2 POB, 1 fatal, 1 seriously injured
04/10/2016	Slovakia	near Jakubovany	LANCAIR - 360	Probable hypoxia of the pilot and icing of the airframe. 1 POB, 1 fatality
15/10/2016	Romania	Luncani, Cluj County	CESSNA - 182	Skydiver's parachute was deployed while he was inside the aircraft and fell to the ground unconscious. 1 fatality

Date	State of Occurrence	Location of Occurrence	Make/Model	Summary
16/10/2016	Greece	east of Kalabryta	CESSNA - 172 - P	Aircraft crashed into mountain. 2 POB, 2 fatalities
17/10/2016	United Kingdom	near EGSN - Bourn	CESSNA - F150 - M	Aircraft crashed after take-off. 2 POB, 1 fatal, 1 seriously injured
24/11/2016	Poland	EPZP - Zielona Góra	PIPER - PA31 - 350	Premature LG retraction and crash during take-off. 1 POB, 1 fatality
25/11/2016	France	Jarsy	SOCATA - TB20	Aircraft collision with mountain due to unintended flight into IMC. 2 POB, 2 fatalities
04/12/2016	United Kingdom	over Lubenham	CESSNA - 150 - L	Mid-air collision powered ACFT and glider; Glider crashed killing the pilot.
07/12/2016	France	AD Bale-Mulhouse	PIPER - PA34 - 200T	Collision with the ground during landing - fire. 1 POB, 1 fatality
19/12/2016	Germany	Garz	TECNAM	Aircraft crashed into the forest for unknown reasons. 1 POB, 1 fatality
15/01/2017	United Kingdom	Near Aston Rowant Nature Reserve	PIPER - PA30	Aircraft flying at low altitude in IMC condition, crashed into woodland. 1 POB, 1 fatality
15/01/2017	Spain	near LEMT - Casarrubios Del Monte	TECNAM - P2002	Aircraft crashed into a field in a high nose down attitude. 2 POB 2 fatalities.
02/02/2017	Germany	Melle	DIAMOND - DA20 - A1	Aircraft collided with a wind turbine. 1 POB, 1 fatality.
20/02/2017	Guadeloupe	Petit Bourg	PIPER - PA28 - 161	Airplane crashed into a building. 1 POB, 1 fatality
27/03/2017	Ireland	Clon-coskoran, near Dun-garvan Co. Waterford	RUTAN - LONGEZ	Aircraft crashed in a field due to engine failure. 1 POB, 1 fatality
09/04/2017	France	AD Chelles Le Pin	EVEKTOR AEROTECHNIK	Bounced landing, the student pilot lost the aircraft's control after initiating a go/around. The aircraft crashed in a field. 1 POB, 1 fatality
14/04/2017	Italy	Dovera (CR)	TECNAM - P92	A/C crashed on the ground during VFR flight. 2 POB, 2 fatalities
17/04/2017	Portugal	Cascais	PIPER - PA31T	Aircraft stalled during take-off and crashed to the buildings. 4 POB, 4 fatalities
29/04/2017	Spain	Canillas de Aceituno	SOCATA - TB20	Direct impact against the terrain. 3 POB, 3 fatalities
25/05/2017	United Kingdom	2 miles north of Skipness, Kintyre	PIPER - PA28R - 201	Aircraft lost from radar, wreckage found in water. 2 POB, 2 fatalities
28/05/2017	United Kingdom	Apperknowle	EUROPA	A/C partial loss of power as a result of fuel vapour disrupting fuel supply to engine during take-off followed by crash in adjacent field. 1 POB, 1 fatality

Date	State of Occurrence	Location of Occurrence	Make/Model	Summary
18/06/2017	United Kingdom	Spanhoe Airfield, Northamp-tonshire	AUSTER	Aircraft descended into a field of crops near the airfield. 2 POB, 1 injury 1 fatality.
26/06/2017	Czech Republic	LKHD: Hodkovice	PIPER - L4 - J	Aircraft crashed shortly after take-off. 2 POB, 1 fatality, 1 serious injury.
05/07/2017	Switzerland	near LSGN - Neuchatel	CZECH SPORT - PS28	Pilot lost control after take-off during initial climb. 2 POB, 2 fatalities
19/07/2017	Finland	near Haalatvantie	PIPER - J3C - 65 - 65	The aircraft crashed into a forest during final approach in bad weather condition. 1 POB, 1 fatality
21/07/2017	Poland	EPML	OTHER	Loss of control shortly after take-off - 2 POB - 2 fatal injuries
28/07/2017	Poland	EPLL	CESSNA - 152	Aircraft collided with trees during approach. 1 POB, 1 fatality
01/08/2017	Norway	Oppland county	AQUILA - AT01	Aircraft crashed into mountain. 1 POB, 1 fatality
02/08/2017	Portugal	Praia de São João da Caparica	CESSNA - 152	Forced landing on the beach due to engine failure. Aircraft collided with pedestrians. 2 POB 2 fatal injuries on ground
04/08/2017	Switzerland	Diavolezza/ GR	PIPER - PA28 - 181	Collision with high terrain. 3 POB, 3 fatally injured
08/08/2017	Germany	Bodensee / Mainau	PIPER - PA46	The aircraft crashed into the Lake Bodensee north of Konstanz. 2 POB 2 fatalities
19/08/2017	Romania	Valcica village, Iasi county	OTHER	Aircraft crashed due to unknown reasons. 2 POB, 1 fatally injured, 1 seriously injured
20/08/2017	Switzerland	Alp Tsanfleuron, Savièse VS	PIPER - PA28 - 161	Aircraft collided with terrain. 3 POB and 3 fatalities
22/08/2017	Norway	near Holmestrand	PITTS - S2 - B	Pilot lost the aircraft control while performing aerobatics manoeuver and crashed. 2 POB, 2 fatalities
26/08/2017	United Kingdom	EGHA: Compton abbas	DE HAVILLAND - DH82 - A	Crashed shortly after take-off. Aircraft destroyed. 2 POB fatally injured.
27/08/2017	Germany	Moormeer-land	MORANE SAULNIER - MS883	Collision with the ground due to unknown circumstances. 1 POB 1 fatality
09/09/2017	Italy	Salussola (BI)	PIPER - PA34	Aircraft crashed on the ground during VFR approach in poor weather conditions. 1 POB 1 fatality
11/09/2017	United Kingdom	Wolferton, Norfolk	PIPER - PA28RT - 201	Rough running engine and electrical fire followed by Mayday call by pilot. 2 POB, 2 fatalities
12/09/2017	France	Ghisonaccia	DIAMOND - DA42	Aircraft crashed due to unknown reasons. 4 POB 4 fatalities.

Date	State of Occurrence	Location of Occurrence	Make/Model	Summary
12/09/2017	Switzerland	Braunwald/ GL	MOONEY - M20K	Aircraft crashes in high terrain - 2 POB - 2 fatally injured - Aircraft destroyed.
19/09/2017	Norway	near ENHA - Hamar / Stafsberg	VANS - RV4	Loss of control on approach, spin and crash. 2 POB, 2 fatalities
28/09/2017	United Kingdom	Wolvey, Warwickshire	EUROPA - EUROPA	On landing, runway excursion through hedge. Damage: Substantial. 2 POB, 2 fatal injuries.
05/10/2017	Portugal	Olhão: Quelfes	KOLB - TWINSTAR - III	Aircraft stalled shortly after take-off. 1 POB, 1 fatality
17/11/2017	United Kingdom	near Waddesdon	CESSNA - 152	Aircraft Mid-air collision between a Cessna and a Guimbal helicopter fatal injuries. 2 POB, 2 fatalities

1.2 Rotorcraft

1.2.1 Offshore Commercial Air Transport

Local date	State/area of occurrence	Location	Helicopter	Headline
01/04/2009	United Kingdom	Near Peterhead, Scotland	AEROSPATIALE – AS332 - L2	Loss of control inflight due to main rotor gearbox failure
11/07/2011	Myanmar	Yetagon Oil Rig, Andaman Sea	SIKORSKY – S76 - C	Power loss during take-off. Helicopter capsized during ditching
23/08/2013	United Kingdom	Samburgh Airport	AEROSPATIALE – AS332 - L2	Loss of control during approach to land at Sumburgh Airport. Crashed into the sea
29/04/2016	Norway	near Turøy	EUROCOPTER – EC225 - LP	Loss of control inflight due to main rotor gearbox failure

1.2.2 Other Commercial Air Transport

Local date	State/area of occurrence	Location	Helicopter	Headline
02/06/2007	Italy	Villa Vomano (Teramo)	ROBINSON - R44	Collision with power lines during sightseeing flight
03/08/2007	United Kingdom	Kendal (Cumbria)	ROBINSON - R44	Loss of control inflight in poor weather conditions
02/03/2008	Antarctica	nr Neumayer II	EUROCOPTER - BO105 - CBS4	Helicopter crash during research mission
31/07/2008	Hungary	Near Bankháza-Kiskun-lacháza	EUROCOPTER - EC135	Loss of control following power loss during HEMS operations
17/02/2009	Poland	Jerostow	PZL SWIDNIK - MI2	Loss of control during HEMS flight
14/08/2009	France	Dangé Saint Romain (86)	ROBINSON - R44	Loss of control during sightseeing flight
27/01/2010	Norway	Horten	ROBINSON - R44	Loss of control in poor visibility conditions
28/10/2010	Antarctica	A 53 NM de Dumont d'Urville	AEROSPATIALE - AS350 - B3	Loss of control due to loss of visual references in whiteout conditions
04/07/2011	Norway	Dalamot	AEROSPATIALE - AS350 - B3	Loss of control following abrupt manoeuvring

Local date	State/area of occurrence	Location	Helicopter	Headline
09/11/2011	Italy	Italy	AEROSPATIALE - AS365 - N3	Collision with wind turbine during HEMS operations
08/04/2012	Niger	Niger	AEROSPATIALE - AS350 - BA	Helicopter crashed in for as yet unknown reason
14/01/2014	Norway	Near Solihogda, Norway	EUROCOPTER - EC135 - P2	Collision with power lines during HEMS operations
31/07/2015	Italy	Pizzo Zocca di val Masino (Sondrio)	AEROSPATIALE - AS350 - B3	Terrain collision during flight in adverse cloud condition
17/07/2015	Slovakia	Hornád canyon - Slovenský Raj	AGUSTA - A109 - K2	Collision with power cables during en-route HEMS operations
02/06/2016	Moldova	Haragis	EUROCOPTER - EC135 - T2	Helicopter crashed in a wood for as yet unknown reason
07/09/2016	Slovakia	Strelníky	BELL - 429	Terrain collision during HEMS operations in mountainous area.
08/09/2016	Austria	Carinthia, ca. 2346 m	ROBINSON - R66	Terrain Collision in mountainous area
24/01/2017	Italy	Campo Felice	AGUSTA - AW139	Collision with mountain slope during HEMS operations.

1.2.3 Specialised Operations

Local date	State/area of occurrence	Location	Aircraft make/model	Headline
2007-07-12	Ireland	Ballynacally, County Clare	AEROSPATIALE - AS350	Engine failure and subsequent crash
2007-07-20	Austria	Gusswerk/ Steiermark	AEROSPATIALE - AS332	Ground staff fatally injured by sling load
2007-08-09	Italy	Marina di Camerota	ROBINSON - R22	Helicopter loss of control and subsequent crash in water
2007-10-11	Germany	Tegernsee	BELL - 206	Filming flight over lake, rotor downwash capsized a canoe, one canoe occupant drowned
2008-01-07	Germany	Zuzenhausen	BELL - 206	Helicopter crashed in a forest during bad weather conditions
2008-07-03	Slovakia	near Brusno	MIL - MI8	Engine failure and subsequent crash
2008-09-27	Denmark	Kirke Såby	ROBINSON - R22	Fatal helicopter accident - vortex ring
2009-02-04	Norway	Rostadalen	AEROSPATIALE - AS350 - B3	Helicopter accident during low flying in degraded visibility
2009-02-10	Hungary	Csepeli szennyvíz tisztító	ROBINSON - R44	Helicopter ditched in river

Local date	State/area of occurrence	Location	Aircraft make/model	Headline
2009-06-20	France	Bregnier-cordon (01)	AEROSPATIALE - AS350 - B2	Helicopter loss of control and subsequent crash
2009-08-23	Germany	Erpfental near Ellwangen	ROBINSON - R44, CESSNA - F182	Mid-air collision between aeroplane and helicopter near airshow
2009-09-02	Switzerland	Fully/VS	AEROSPATIALE - AS350 - B3	Flight assistant on ground killed by falling wall during hovering of the helicopter
2009-09-07	Italy	Val d'Aosta	AEROSPATIALE - SA315	Rotor strikes rocks on ground
2009-10-09	France	Domjulien (88)	AEROSPATIALE - AS350 - B3	Collision with trees and ground due to adverse weather conditions
2010-06-27	Netherlands	Maasvlakte, Rotterdam	EUROCOPTER - EC130	Loss of control during hover
2010-07-23	Austria	Gahbuhel	BELL - 204 - B	Tail rotor collision with tree during sling load operation
2010-07-31	France	Bormes-les-Mimosas (83)	AEROSPATIALE - AS350	Vibrations during landing, hard landing
2010-08-04	French Guyana	2 Nm S-E Croisée d'Apatou	AEROSPATIALE - AS350	Collision with vegetation during sling load mission
2010-08-08	Belarus	Minsk-Barawaja	HUGHES - 369 - H - HS	Accident during low level aerobatic flight manoeuvres
2010-08-17	Algeria	Benbakhta, wilaya de Boumerdes	AEROSPATIALE - AS350 - B3	Loss of control and subsequent crash
2011-03-08	United Kingdom	Honister Slate Mine, Seatoller	AEROSPATIALE - SA341 - G	Aircraft missing - later found crashed in valley
2011-04-26	Italy	1.3 NM S-SE of Sulmona (AQ)	ROBINSON - R22	Helicopter R22 Accident - CFIT during aerial work
2011-06-07	Spain	Quincoces de Yuso	BELL - 407	Helicopter crash in mountainous area and post-impact fire
2011-06-15	Andorra	Pleta de Juclar (Canillo)	AEROSPATIALE - AS350 - B3	Helicopter crash durirng sling load operation
2011-06-25	Italy	Cison di Valmarino (TV)	SCHWEIZER	Helicopter impacts cables during aerial work
2011-08-05	Italy	Cogolo di Pejo (Trento)	AEROSPATIALE - AS350 - B3	collision with obstacles during aerial work
2011-09-14	France	Vallorcine (74)	AEROSPATIALE - AS350 - B3	Collision with cable car cable, post-impact fire
2011-10-18	Belgium	10km from Liege	EUROCOPTER - EC120	Crashed during aerial work
2012-01-11	Norway	Mosjøen SE of	ROBINSON - R44	Helicopter crashed into ground during reindeer herding.
2012-03-12	Martinique	Le Lorrain	BELL - 47	Collision with power lines and subequent post-impact fire

Local date	State/area of occurrence	Location	Aircraft make/model	Headline
2012-03-14	Gabon	near Iguela	BELL - 212	Collision with obstacles during sling load operation
2012-04-06	Belgium	Huy	ROBINSON - R22	Collision with cable in hover
2012-06-29	Germany	Lieser, nahe	HUGHES - 369 - D	Collision with powerline
2012-09-09	Germany	Roßfelder Glider Airfield	EUROCOPTER - EC120 - B	Loss of control during an airshow - 1 Ground fatality, 3 Ground injuries, 2 OB injuries
2013-06-29	Switzerland	Switzerland	AEROSPATIALE - AS350 - B2	Crash due to loss of control caused by a previous rotor strike
2013-11-12	France	Saint-Chaffrey	AEROSPATIALE - AS350 - B3	Helicopter crash after hitting a cable of a chairlift
2013-12-18	Portugal	near Monchique	EUROCOPTER - EC120 - B	Helicopter collision with power lines and crash.
2015-07-14	Switzerland	Guggig-letscher, Lauterbrun-nen	AEROSPATIALE - AS350 - B3	Aircraft crashed in a mountainous snow-covered area during aerial work mission
2015-12-31	Réunion	Rempart du Maïdo	AEROSPATIALE - AS350 - B3	Aircraft turned back due to bad weather conditions and crashed shortly afterwards.
2016-05-19	Bulgaria	Gylovtsa village, Nesebar	KAMOV - KA26	Fatal accident - collision with power lines
2017-05-13	Switzerland	Petersgrat	AEROSPATIALE - AS350 - B2	While landing in a mountainous area, the helicopter overturned onto its side and rolled over.
2017-06-23	Greece	Scinias of Marathonas area wetland	MD HELICOPTER - 369 - E - E	Helicopter crashed at marathonas area during low flying due to collision with electrical power lines
2017-09-26	Sweden	Högheden	MD HELICOPTER - 369	Fatal helicopter accident during positioning flight

1.3 Balloons

29/08/2008	Germany	Bobenheim	SCHROEDER - FIRE BALLOONS G	Uncommanded balloon lift off after landing. Two passenger fell from the basket one fatal injury.
01/01/2011	United Kingdom	Midsomer Norton	CAMERON - O120	Balloon deflated during flight and fell to the ground
22/04/2011	Belgium	Oudenburg	KUBICEK - BB37 - N	Flight initiated in spite of poor weather forecast. High speed landing caused the basket to flip 180 degrees
25/06/2011	Switzerland	Fisibach/AG	WORNER	Loss of control of a balloon and hard landing
13/05/2012	France	Charly-sur-Marne (02)	SCHROEDER	Collision with a power line during a first flight
19/08/2012	France	Feings(41)	CAMERON	Cameron Balloons Z-750 - Hard landing, One passenger was ejected and hit by the basket - 34 POB - 1 OB Fatal - No damage
23/08/2012	Slovenia	Ljubljana marshes	LINDSTRAND - LBL600C	Lindstrand LBL600C - Hot air balloon crash in storm - 32POB - 6OB Fatalities - 12OB Serious - 14OB Minor - A/C Destroyed
06/08/2013	Switzerland	Haut-Intyamon/FR	CAMERON - Z105	Collision of balloon with power line
05/10/2014	France	Cazes Mondenard (82)	SCHROEDER - FIRE BALLOONS G	Precautionary bounced landing - basket flipped on its side - fire - evacuation - 10POB - 1OB Fatal - 2OB Serious - 7OB Minor - A/C Destroyed
05/10/2014	France	Lauzerte	SCHROEDER - FIRE BALLOONS G	Balloon basked tipped over and fire broke out
12/07/2015	Spain	Vilanova del Cami	ULTRAMAGIC - S160	Balloon basket impacted against the top of a metal fence on final approach, basket overturned, expulsion of some occupants included pilot - pilot died
08/10/2015	Italy	Montescaglioso (MT)	SCHROEDER - FIRE BALLOONS G	Balloon forced landing after hitting power line
05/01/2016	France	Aurel	ULTRAMAGIC - M120	Fall of a person gripped on the outside of the basket during take-off.

1.3.1 Sailplanes

Local date	State/area of occurrence	Location	Aeroplane	Headline
06/04/2015	Sweden	10 km SSE Nikkaluokta	GROB - G103C - TWIN III SL - TWIN III SL	Loss of control during wave flight (in cloud), glider destruction in flight. Pilot bailed out, the student was killed.
12/04/2015	Germany	Oschatz	SCHEIBE - LSPATZ 55	Wing hit the Ground during Take Off - the glider swerved and overturned.
29/04/2015	France	La Piarre	GLASER DIRKS - DG800	Breakage of airbrakes control during a mountain flight, autorotation, collision with terrain.
02/05/2015	Germany	Bad Münder, Bakede	SCHEMPP HIRTH - NIMBUS 3	Glider stalled and crashed into a forested area.
18/05/2015	Austria	Near Airfield Hohenems, Vorarlberg	GLASER DIRKS - DG300	Mid-air collision. One of the two aircraft crashed into the mountain rocks and caught fire. The other aircraft returned to the airfield and landed safely.
28/05/2015	Germany	Bartholomä	SCHEMPP HIRTH - JANUS	Glider crashed into the Ground during a winch launch.
05/06/2015	Italy	Monte Terlago (TN)	SCHEMPP HIRTH - VENTUS 2CM	Glider crashed on a mountain slope.
07/06/2015	Hungary	LHEM	OTHER	Two Sailplanes collided during approach. One Sailplane broke and crashed. 2 POB - 2 fatalities. The other glider managed to land.
14/06/2015	United Kingdom	Aston Down Airfield	SCHLEICHER - K8 - B	A Glider Crashed into roof of building – Suicide.
01/07/2015	Switzerland	Klosters-Serneus/ GR	ROLLADEN SCHNEIDER - LS8 - 18	Glider accident in Klosters-Serneus/ GR.
03/07/2015	Austria	Seiten-stetten, NÖ	PILATUS - B4 - PC11	The sailplane hit the ground after an aerobatic manoeuvre (ARF 2015-008).
13/07/2015	France	Eygliers	PIPISTREL	Loss of control in flight, the Sailplane collided with the ground.
02/08/2015	France	Saint-André	SCHEMPP HIRTH - VENTUS C	Collision with the mountain side. The glider wreckage has been found at 2700m of altitude.
03/08/2015	Croatia	Donji Lapac., area Kruge		Glider found crashed - POB 1, 1 fatal injury.
06/08/2015	Germany	Füssen	ROLLADEN SCHNEIDER - LS8	The Glider lost control and crashed in a forested area
06/08/2015	Romania	MUCHIA CHEII, Masivul Postavarul	OTHER	Aircraft crashed in a mountain area. Wreckage found several months after the accident flight.

Local date	State/area of occurrence	Location	Aeroplane	Headline
11/08/2015	Poland	ATZ EPPL	PZL BIELSKO - SZD50 - 2	Glider collided with a winch cable and crashed.
11/08/2015	France	Embrun	ROLLADEN SCHNEIDER - LS1	Glider collided with trees and crashed to the mountain.
12/08/2015	Italy	Col FERRET	SCHEMPP HIRTH	Motor glider crashed against a mountain slope.
20/08/2015	Germany	Purkshof	GLASER DIRKS - DG100	Glider disconnected the rope during towing and crashed on the runway.
23/08/2015	Spain	1NM to Sevilla airport (LEZL)	PIPISTREL	Pilot incapacitation in flight - Passenger took the controls - Aircraft crashed and caught fire.
24/09/2015	Norway	Hatten mountain, Lesja municipality	SCHLEICHER - ASW24	Aircraft crashed. The pilot bailed out the aircraft before the crash at low altitude and was killed when hit the ground.
26/09/2015	Denmark	5 km øst for EKRS: Ringsted	SCHLEICHER - ASW24	From level flight the aircraft suddenly pitched nose down and hit the ground in a steep nose down attitude. The pilot died and the glider was destroyed.
03/10/2015	Poland	Miedzy-brodzie Zywieckie	PZL BIELSKO - SZD48 - 3	Glider entered spin after a long flight and crashed.
13/12/2015	Germany	Koblenz-Winningen	OTHER	TMG collided with a communication tower during a flight in fog.
24/12/2015	Namibia	Stryfontein Farm	SCHEMPP HIRTH - VENTUS CM	Powered Glider crashed, no details available.
03/01/2016	Germany	Near Kamp Lintfort Airfield (EDLC)	DIAMOND - HK36 - R	Aircraft crashed during a go-around - 1 POB 1 fatality.
26/03/2016	France	Seillans	OTHER - Generic	Pilot incapacitated due to a medical condition - Loss of Control, Collision with Trees and Terrain.
03/04/2016	Austria	3,3 kmNorth from LOGL - Lanzen-Turnau	SPORTINE AVIACIJA - LAK19	Glider entered spin and crashed into terrain. 1 POB - 1 fatality.
03/04/2016	Austria	Kötschach Mauthen	GLASER DIRKS - DG400	Glider crashed into a mountain - 1 POB, 1 fatality.
16/04/2016	Poland	EPST	PZL BIELSKO - SZD9	Glider crashed into the ground after winch cable was released. 1 POB 1 fatality.
20/04/2016	Slovakia	Lysá Polana	SCHLEICHER - ASW27 - 18E	Competition flight - loss of height below safe altitude - abrupt manoeuvre - The aircraft stalled and crashed with a nose down attitude. 1 POB 1 fatality.
03/05/2016	Germany	Bautzen	PIK - PIK20E - NO SERIES EXISTS	Crash on Approach during glider competition.

Local date	State/area of occurrence	Location	Aeroplane	Headline
04/05/2016	Slovenia	Near Airport LJSG	GLASER DIRKS - DG800	Glider accident. Suspected pilot incapacitation. 1 POB 1 fatality.
21/05/2016	Switzerland	Montricher LSTR	GLASER DIRKS - DG400	Glider collides with trees and crashes. 1 POB 1 fatality.
29/05/2016	Germany	Rhede/ Emsland	LET - L23	Glider crashed into a field under unknown circumstances. 2 POB 1 fatality.
19/06/2016	Germany	Bramsche	SCHEMPP HIRTH	Loss of control during approach causing the aircraft to enter spin. 1 POB 1 fatality.
22/06/2016	France	Authon	SCHEMPP HIRTH	Loss of control followed by collision with terrain - during training flight en route.
06/07/2016	Switzerland	Lenk/BE	GLASER DIRKS - DG800	Glider collides with elevated terrain. 1 POB 1 fatality.
21/07/2016	United Kingdom	Bradley	SCHLEICHER - ASW27	Loss of control in-flight, leading to ground impact. 1 POB 1 fatality.
09/08/2016	Germany	Lüsse	SCHLEICHER - ASW27	Glider fell to the ground during winch launch take-off. 1 POB 1 fatality.
27/08/2016	France	Sauto	SPORTINE AVIACIJA - LAK17 - A	Collision with a cable/wire followed by crash. 1 POB 1 fatality.
10/09/2016	Germany	Großrück-erswalde	SCHLEICHER - ASK21	Two aircraft -glider and an ultralight collided close to the threshold. Pilot of the ultralight died.
14/09/2016	Switzerland	L'Isle/VD	BINDER	Glider lost control entered a vertical dive and crashed. 2 POB 2 fatalities
04/12/2016	United Kingdom	over Lubenham	CESSNA - 150 - L	Mid-air collision powered ACFT and glider; Glider crashed killing the pilot.
04/12/2016	United Kingdom	Brentor	SCHLEICHER - ASW24	Glider winch launch failed. Pilot was not able to land safely due to downdraft. 1 POB 1 fatality.
19/03/2017	France	Le Vernet	GLASER DIRKS - DG1000 - M	Collision with trees and ground. 2 POB 1 fatality 1 serious injury.
29/03/2017	France	LFLE - Chambéry / Challes-les-Eaux	SPORTINE AVIACIJA - LAK17 - A	Glider crash during winch launch take-off. 1 POB 1 fatality.
08/04/2017	United Kingdom	Currock Hill airfield	PZL BIELSKO - SZD55 - 1	Glider elevator not connected - glider crashed on aero tow. 1 POB 1 fatality.
08/04/2017	Germany	Eschbach	SCHLEICHER - ASW24 - E	Glider Crashed into Industrial Area. 1 POB 1 fatality.
12/04/2017	France	Valdeblore	SCHLEICHER - ASW22	Glider lost control - rolled onto its side and crashed into the ground. 1 POB 1fatality.
03/05/2017	Poland	EPJL	PZL BIELSKO - SZD30	Glider made a steep climb then rolled and crashed during a winch launch. 1 POB 1 fatality.

Local date	State/area of occurrence	Location	Aeroplane	Headline
06/05/2017	Germany	Mannheim	SPORTINE AVIACIJA - LAK17	Glider spin shortly after release from winch-launch followed by crash.
14/05/2017	France	Near to AD Auch	SCHEMPP HIRTH - CIRRUS	The glider collides with the ground shortly after release.
20/05/2017	Hungary	Nyíregyháza	PZL BIELSKO - SZD30	Glider crash for unknown reasons.
10/06/2017	Italy	Riva Valdobbia (VC)	GLASFLUGEL - MOSQUITO	Glider collided the terrain below mountain tip.
11/06/2017	Italy	Novi Ligure	OTHER	Glider lost wing during aero tow and crashed in city centre
15/06/2017	Austria	near Karlhöhe	GLASER DIRKS - DG600	Glider lost control and crashed in a mountainous area.
16/06/2017	Hungary	LHTL	SCHEIBE - SF25 - C	Motorized sailplane lost control and crashed during training exercise. 2 POB 2 fatalities.
18/06/2017	Germany	Purkshof	GROB - G102 - ASTIR CS	Wing tip of the Glider hit ground during winch launch causing it to overturn. 1 POB 1 fatality.
24/06/2017	Germany	Bartholomä-Amalienhof	GROB - G103 - TWIN ASTIR	Glider lost control while searching for lift and fell to the ground. 1 POB 1 fatality.
13/07/2017	United Kingdom	Near Brimslade Farm	DIAMOND - HK36 - TC	Aircraft crashed into a field due to unknown circumstances. 2 POB 2 fatalities.
13/07/2017	Hungary	Pirtó	SCHLEICHER - ASW27 - 18E	Glider crashed due to loss of control. 1 POB. 1 fatal injury.
14/07/2017	France	Val des Prés	SCHEMPP HIRTH - VENTUS C	Glider collided with elevated terrain due to unknown circumstances. 1 POB 1 fatality.
17/07/2017	France	LFOV (LVA): Laval Entrammes	CENTRAIR - 101 - A	Glider impacted the ground during winch launch take-off
04/08/2017	Germany	Rädicke	SCHLEICHER - ASW24 - E	Glider was found crashed on a field. Loss of control suspected. 1 POB 1 fatality.
13/08/2017	Switzerland	Villavolar	GLASER DIRKS - DG800B	The glider crashed onto a steep pasture and was destroyed upon impact.
27/08/2017	Croatia	Sinj - Kamešnica	GROB - G103 - TWIN ASTIR	Sailplane crashed below a mountain ridge. 2 POB. 1 Fatality and 1 Seriously injured.
30/08/2017	Poland	EPBC Warszawa Babice / ATZ EPBC	PZL BIELSKO - SZD50 - 3	Glider accident (crash) – spin after the safety latch of the winch cable broke while winch launching.
10/09/2017	Germany	Hockenheim	ROLLADEN SCHNEIDER - LS8	Glider stalled during winch launching. 1 POB 1 fatality.
14/10/2017	Switzerland	Davos/GR	ROLLADEN SCHNEIDER - LS8 - 18	Glider crashed in ca 2500 meter altitude in mountainous area. Circumstances unknown. 1 POB 1 fatality.

1.4 Aerodromes and Ground Handling

2007-01-25	France	AD Pau (64)	FOKKER - F27 - 100	Loss of control during take-off, collision with a vehicle.
2010-07-25	Spain	Aeródromo Casarrubios del Mont	OTHER	Gyroplane collided with person during taxi
2012-05-05	France	AD Buno Bonnevaux (91)	PIPER - PA25 - 235, SLINGSBY - T31	Mid-air collision between a glider and an aeroplane above runway
2012-11-11	Italy	Roma Fiumicino Airport	AIRBUS - A320	Loading crew caught between loader and baggage door
2012-12-10	Cyprus	Larnaca	CESSNA - 750 - NO SERIES EXISTS	A service vehicle struck the right wingtip, vehicle driver trapped
2014-04-20	Finland	2 km from Jämijärvi airfield EFJM, Satakunta	OTHER	During climb, right wing broke due to a fatigue failure - aircraft entered a spin, crashed and caught fire - 11POB - 8OB Fatalities
2015-12-24	Spain	Ronda	SOCATA - TB9	Aircraft crashed and consumed by post crash fire, incorrect fuel used

1.5 ATM/ ANS

02/08/2012	Spain	Santiago Airport (LEST)	CESSNA - 500	Unstabilized approach: Aircraft crashed on approach in heavy fog condition.
30/09/2012	Austria	Ellbögen, Tirol	CESSNA - 414	Aircraft crashed in wooded terrain in IMC weather conditions. Aircraft not airworthy and overloaded -
17/07/2015	Slovakia	Hornád canyon - Slovenský Raj	AGUSTA - A109 - K2	Helicopter crashed on a river bank after strike with power cables during en-route EMS mission
31/07/2015	Italy	Pizzo Zocca di val Masino	AEROSPATIALE - AS350 - B3	Helicopter ontrolled flight into mountain peak obscured by clouds
08/09/2016	Austria	Carinthia	ROBINSON - R66	Helicopter crash in a mountainous area
24/01/2017	Italy	Campo Felice (AQ)	AGUSTA - AW139	Helicopter crashed into a mountain slope during a medical emergency flight.

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25
JUL
2018

EASA welcomes new rules on mental fitness of air crew

Today, the European Union published new safety rules on air operations, including new provisions to better support the mental fitness of air crew. The Regulation includes the following safety measures:

- Support programme: all pilots working for European airlines will have access to a support programme that will assist and support pilots in recognising, coping with, and overcoming problems which might negatively affect their ability to safely exercise the privileges of their licence.
- Alcohol testing: As an additional safety barrier, alcohol testing of pilots and cabin crew for all European and foreign airlines who fly into the territories of the European Union, has been added. Alcohol testing is already a well-established practice in some Member States and with this Regulation alcohol testing will now be extended to all EU Member States within the next two years.
- Psychological assessment: European airlines will perform a psychological assessment of their pilots before the start of employment.

Commenting on the publication of the Regulation, EASA's Executive Director, Patrick Ky, said:
"These new European rules take up the proposals EASA made in its swift follow-up of the Germanwings Flight 9525 accident, in consultation with the wider aviation community. With these rules Europe introduces the right tools to safeguard the mental fitness of air crew. During the two year transition period, EASA will actively support European and international stakeholders in implementing this new Regulation".
As part of a total system approach, the new rules (so-called Air OPS Implementing Rules) complement the proposals EASA issued in August 2016, on the update of medical requirements for pilots (Part-MED).

Next steps

The Regulation on mental fitness of air crew includes a two year transition period to allow airlines and Member States to prepare for the Regulation and to set up the necessary infrastructure to comply with the Regulation. EASA will issue Acceptable Means of Compliance and Guidance Material - AMC/GM in the form of a Decision- to support the implementation of the new rules and will work with Member States and industry to assist the implementation of the Regulation.

You can access the full text of the Regulation - Link
More information from the European Commission on this Regulation - Link

RELATED CONTENT

COMMISSION REGULATION (EU) 2018/1042

EASA
European Aviation Safety Agency

THE EUROPEAN PLAN *for* AVIATION SAFETY (EPAS)

2018-2022

European Plan for Aviation Safety (EPAS) 2018-2022
including the Rulemaking and Safety Promotion Programme

European Aviation Safety Agency, 14 November 2017

Table of contents

1 Executive Summary

Air safety does not stop at borders, and cooperation amongst aviation stakeholders is needed more than ever in the face of rising traffic levels, diminishing resources and the opportunities and challenges presented by new technologies.

The European Plan for Aviation Safety (EPAS), a component of the European Aviation Safety Programme (EASP), provides a coherent and transparent framework for safety work at regional level, helping the identification of major safety risks and actions to take, supporting Member States to implement their State Safety Programmes (SSP) and the Global Aviation Safety Plan (GASP), and aiding the sharing of best practice and knowledge. The plan also includes European states not under the EASA umbrella.

The 2018-2022 edition of the EPAS is based on the following principles:

- **One comprehensive document**. The EPAS and RMP have been combined into one single document, thus providing the EASA stakeholders with a comprehensive and coherent vision of what EASA intends to do in the coming years in order to improve safety or the environmental performance of the aviation sector (safety/environment driver), to support fair competition and free movement of persons and services (level playing field driver), and to support business, technological development and competitiveness (efficiency/proportionality driver).
- **The regional dimension**. During ICAO 39th Assembly, ICAO Members supported the application of a regional approach to safety, capacity and efficiency improvements through the establishment of regional partnerships (such as Regional Aviation Systems), where appropriate regional aviation safety oversight organisations (RSOOs) should have significant potential to ensure the future safety of air navigation globally. Furthermore, the application of a regional approach will ensure that, in the spirit of resolution A39-23, No Country is Left Behind. In this context, the inclusion in EPAS of International Cooperation and Technical Training strategies emphasises the need to consider more than ever the coordination of, and support to, safety actions at regional and international levels, thereby acknowledging the growing role of RSOOs.
- **Rulemaking cool-down**. The document materialises the ambition to cool-down the rulemaking output already set up in the previous edition. In particularly, the delivery of the number of opinions over the next five years has been reduced as compared to the previous years. This reflects the need to put more focus on supporting the implementation of recently adopted regulations and give priorities to other means to improve safety, notably like Focused Oversight and Safety Promotion. The shift to Safety Promotion is particularly significant in the field of General Aviation safety.
- **Research**. The research actions have undergone a full review, resulting in the incorporation of new research projects. This illustrates the growing importance of Research in the EU policies as an enabler to enhance safety.

The strategic approach in the areas of research, international cooperation, technical training and oversight is described in section *3.2 Strategic enablers*. This section is new in this year's edition. The strategic priorities identified in the previous edition have been confirmed by stakeholders and therefore remain unchanged in this edition.

2 Introduction

2.1 The global aviation safety plan (GASP)

The EPAS implements the objectives and global priorities identified in the GASP.

The Universal Safety Oversight Audit Programme (USOAP) conclusions have identified that States' inability to effectively oversee aviation operations remains a global safety concern. For that reason, the GASP objectives call for States to put in place robust and sustainable safety oversight systems and to progressively evolve them into more sophisticated means of managing safety. These objectives are aligned with ICAO's requirements for the implementation of the States' Safety Programmes (SSPs) by the States and Safety Management Systems (SMS) by the service providers. The GASP objectives are addressed in section 5.1.1. 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 CAT operations, covering the 2006–2011 time period. 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: 5.2.1. Aircraft upset in flight (LOC-I), 5.2.2. Runway safety and 5.2.6. Terrain conflict.

In addition, during 2017 ICAO and EASA have been working together to develop a Regional Plan for Aviation Safety based on this document, thus allowing all States that are part of the European region to benefit from this approach. A proposal was presented on 30 October to the joint meeting of the Regional Aviation Safety Group (RASG-EUR) and the European Air Navigation Planning Group (EANPG) at the ICAO EUR/NAT office in Paris.

The meeting adopted the decision 'EANPG59 RASG-EUR06 Decision/03– Establishment of the EUR Regional Aviation Safety Plan (EUR-RASP):

a) a project team consisting from its members and partners be established, with the task to further develop the proposed draft Plan as presented in attachment to this report; and
b) a consolidated version of the Plan be presented for approval at the next RASG-EUR meeting.

2.2 How the plan is structured

This plan is divided in four drivers, which correspond to different chapters in the document. The drivers are**:**

- **Safety** (Chapter 5). The actions in this category are driven principally by the need to increase the current level of safety in the aviation sector.
- **Environment** (Chapter 6). The actions in this category are driven principally by the need to improve the current environmental protection in the aviation sector.
- **Efficiency/proportionality** (Chapter 7). The actions in this category are driven by the need to ensure that rules are cost-effective in achieving their objective as well as proportionate to the risks identified.
- **Level playing field** (Chapter 8) — The actions in this category 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. These projects will also contribute to maintaining or even increasing the current level of safety.

The drivers are to be understood as *main* drivers. A number of tasks could well fall under several categories, but to avoid duplication they are sorted under the main driver (e.g. CS-23 re-launch, drones).

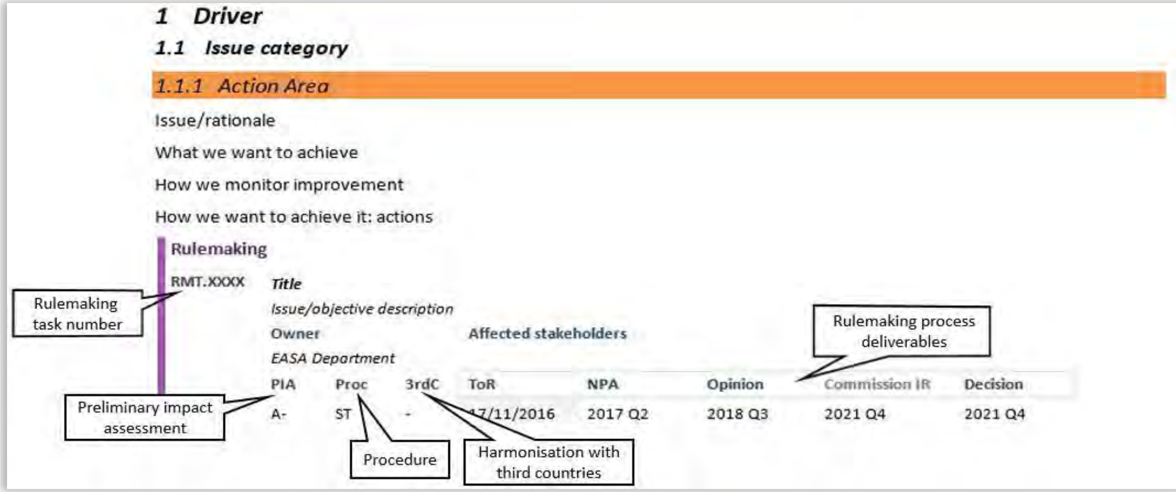

Figure 1: Overview of the conventions used in this plan

Chapter 5 (Safety) is further organised in safety issue categories and action areas. For each action area, the issue, the objective and the related actions are presented. An action area may contain several actions and types of tasks: Rulemaking (RMT), Safety Promotion (SPT), Focused Oversight (FOT), as well as Research Actions (RES)[1]. This chapter includes also tasks for the Member States identified as 'MST' tasks.

Chapter 6 is divided in two main environmental topics: climate change and aircraft noise, Chapter 7 and 8 are organised by the main stakeholders affected by the actions. These chapter contain only rulemaking tasks lead by the Agency. Section 7.1 includes now all the evaluation projects planned for the coming years. These projects intend to conclude whether the existing regulations are delivering the results they were design for and in which areas improvements are still needed.

For each task of the plan, the objective and main timelines are provided. Additionally for rulemaking tasks, basic information related to responsibility and affected stakeholders are also provided. The results from Preliminary Impact Assessments (PIAs) are presented, where available, in the form of a score: Letters 'A', 'B', and 'C' indicate strategic ('A'), standard ('B') or regular update ('C') tasks.

Further information provided for rulemaking tasks only includes an indication if they are *harmonised* with third countries (field '3rdC') in order to alleviate differences between EASA and other aviation authorities while ensuring an equivalent level of safety.

Rulemaking tasks that are following the accelerated procedure or direct publication (Article 15 'Direct publication' and Article 16 'Accelerated procedure' of MB Decision No 18-2015 on the Rulemaking Procedure) are indicated accordingly[2]. For all documents already delivered, the exact date is given in the format DD/MM/YYYY. For tasks not yet delivered, the planned date is given by Quarter (YYYY QX).

Tasks that were newly added to the plan are highlighted with red colour in the **RMT number**. An overview is also available in Appendix B 'New and deleted tasks'.

[1] Note that the list of research tasks identified in this document is not exhaustive, and a full overview of research activities is available in the EASA research programme.

[2] Accelerated procedure is identified as 'AP', direct publication as 'DP', and standard procedure as 'ST' in the field for the procedure type called 'Proc'.

2.3 How the plan is developed: The programming cycle

This plan was developed in close cooperation with stakeholders drawing from an increasing evidence based approach. There were two distinct programming phases, each with a dedicated stakeholder consultation. Firstly, during the strategic phase, the strategic priorities developed in 2016 (now in Chapter 3) were discussed with the EASA Advisory Bodies. Based on these strategic priorities, the detailed planning was developed. This document covers a 5-year time frame. However, as it is a rolling 5-year plan, it will be updated every year.

3 Strategy

In the previous programming cycle, EASA introduced the notion of strategic priorities for the EPAS and the RMP. The strategic priorities were based on the Commissions' Aviation strategy and the EASA strategic plan (See Appendix D). The safety priorities were based on the European Safety Risk Portfolios published in the Annual Safety Review 2017. The efficiency and level playing field priorities were based on stakeholders' feedback. The environmental priorities are based on the European Aviation Environmental Report.

The priorities were consulted with stakeholders in April and May 2017. The comments received led to a number of adjustments and improvements, notably the identification of priorities to be addressed first. In the detailed Chapters 5-8 of the document, the actions linked to strategic priorities are identified with an 'A' in the PIA score.

The current proposal on the strategic priorities for this edition of the EPAS is presented below. In addition to the priorities identified in the previous edition, the strategic enablers in the areas of technical training, research and international cooperation have been incorporated in the document.

3.1 Strategic Priorities

3.1.1 Systemic safety

Improve safety by improving safety management

Despite the fact that last years have clearly brought continued improvements in safety across every operational domain, last accidents underline the complex nature of aviation safety and the significance of addressing human factor aspects. Authorities and aviation organisations should anticipate more and more new threats and associated challenges by developing Safety Risk Management principles. Those principles will be strengthened by Safety Management System implementation supported by ICAO annex 19, and (EU) No 376/2014 for reporting reinforcement.. **See Section 5.1.1.**

Data4Safety (also known as D4S) is a data collection and analysis programme that aims at collecting and gathering all data that may support the management of safety risks at European level. This includes safety reports (or occurrences), flight data (i.e. data generated by the aircraft via the Flight Data Recorders), surveillance data (air traffic data), weather data - but those are only a few from a much longer list.

More specifically, the programme will allow to better know where the risks are (safety issue identification), determine the nature of these risks (Risk Assessment) and verify if the safety actions are delivering the needed level of safety (performance measurement). It aims to develop the capability to discover vulnerabilities in the system across terabytes of data.

EASA launched an initial phase called the "Proof of Concept" in 2017. The objective is to build a prototype or tester with a limited number of partners and a limited technical scope to test the technical and organisational challenges of the programme before launching the operational phase planned for 2020

Human factors and competence of personnel

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 requirements, and facilitating the availability of adequate personnel in competent authorities (CAs). 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 strategy of the Agency for technical training takes this into account in the strategic objective B i.e. "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 5.1.2.**

3.1.2 Operational safety

Commercial Air Transport Aeroplanes operations

The only fatal accident in CAT aeroplane airline operations in 2016 that involved an EASA MS operator was the accident of a Bombardier CRJ-200 performing a cargo flight on 8 January 2016. From the analysis, it can be observed that there was a lower number of non-fatal accidents involving EASA MS operators in 2016 than the 10-year average, with 16 accidents compared to the average of 23.1 over the previous 10 years. At the same time, there was a 36% increase in the number of serious incidents over the same period resulting in a total of 106 serious incidents compared with the average of 78.2. In terms of fatalities, the single fatal accident resulted in 2 fatalities (the flight crew, the only occupants of the aeroplane), which is much lower than the 10 year average.

This operational domain is the greatest focus of the EASA safety activities and the reorganisation of the collaborative analysis groups (CAGs) and Advisory Bodies will help EASA to learn more about the safety challenges faced by airlines and manufacturers.[3]

The European Safety Risk Management (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, accounting for 75% of them. 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. **See Section 5.2.1.**

— *runway excursions and collisions*

  Runway excursions account for 13% of the fatal accidents in CAT aeroplane operations involving airline/cargo operations in the past decade. This includes materialised runway excursions, both 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 collisions have been the outcome in 1% of fatal accidents in the past decade. Despite the low percentage, the risk of the reported occurrence demonstrated to be very real. **See Section 5.2.2.**

Rotorcraft operations

This area includes both CAT and offshore operations as well as aerial work performed by helicopters. In the offshore helicopter domain, there was one fatal accident, which involved the loss of an Airbus Helicopters EC225 Super Puma in Norway on 29 April 2016. The domain of CAT with helicopters mainly covers commercial transport and helicopter emergency medical services (HEMS), where there was an increase in fatal accidents in 2016 – 1 fatal accident occurred in Slovakia, and 1 in Moldova, which involved an EU operator. Both accidents involved HEMS flights and both had 4 fatalities each. In the aerial work domain there were no fatal accidents in 2016. The European Safety Risk Management process has identified opportunities to improve risk controls in the following areas so that accident numbers will not increase:

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3 Extract from the EASA Annual Safety Review 2016.

— *helicopter upset (Loss of Control)*

This is key risk area with the highest priority in offshore and CAT helicopter operations (7 fatal accidents in the past 10 years). 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 (9 fatal accidents in the past 10 years).

— *terrain and obstacle collision*

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. It is the most common outcome for aerial work operations (11 fatal accidents in the past 10 years).

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 nearly 80 fatalities per year in Europe (excluding fatal accidents involving micro light airplanes), which makes it one of the sectors of aviation with the highest yearly number of fatalities. Furthermore, in 2016, there were 78 fatalities in non-commercial operations with aeroplanes (highest number) and 20 in the domain of glider/sailplane operations (2^{nd} highest number). These two areas present the highest numbers of fatal accidents in 2016. The General Aviation 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 step changes in the existing safety level are not being achieved at European level, despite all initiatives and efforts.

Therefore, in 2016 EASA decided to organise a workshop on GA safety to share knowledge and agree on the safety actions that will contribute to improve safety in this domain. A key element of discussions is the appropriate assessment of risks, taking into account the specificities of GA leisure flying with different risk profile and minimal risk for uninvolved third parties. The following strategic safety areas were identified during the workshop: preventing mid-air collisions, coping with weather, staying in control, and managing the flight.

Ensure the safe operation of drones

The number of drones within the EU has multiplied over the last 2 years. Available evidence demonstrates an increase of drones coming into close proximity with manned aviation (both aeroplanes and helicopters) and the need to mitigate the associated risk (15 non-fatal accidents were included in the European Central Repository in 2016).

Furthermore, the lack of harmonised rules at EU level makes unmanned aircraft systems (UAS) operations dependent on an individual authorisation by every MS, which is a burdensome administrative process that stifles business development and innovation. In order to remove restrictions on UAS operations at EU level, 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, EASA is engaged in developing the relevant regulatory material.

As the technology advances, consistent requirements and expectations in already crowded airspace will help manufacturers design for all conditions and ease compliance with requirements by operators. JARUS facilitates harmonisation of standards within the EU Member States and other participating authorities.

Address current and future safety risks arising from new and emerging business models

Due to the increased complexity of the aviation industry, the number of interfaces between organisations, their contracted services and regulators has increased. CAs should work better together (cooperative oversight) and EASA should evaluate whether the existing safety regulatory system adequately addresses current and future safety risks arising from new and emerging business models.

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 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.

EASA signed on 10 February 2017 a Memorandum of Cooperation with the Computer Emergency Response Team (CERT-EU) of the EU Institutions. EASA and CERT-EU will cooperate in the establishment of a European Center for Cyber Security in Aviation (ECCSA). ECCSA's mission is to provide information and assistance to European aviation manufacturers, airlines, maintenance organizations, air navigation service providers, aerodromes, etc. in order to protect the critical elements of the system such as aircraft, navigation and surveillance systems, datalinks, etc. ECCSA will cover the full spectrum of aviation.

— *Conflict zones*

Since the tragic event of the 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 the risks on their international flights.

At global level, ICAO has launched since 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 with the aim to define further actions to be taken at European level in order to provide common information on risks arising from conflict zones. The Task Force handed over its final report to Mrs Violeta Bulc, European Commissioner for Transport on 17 March 2016. It contains recommendations to be taken by various stakeholders and a proposal to set-up a Conflict Zone Alerting System at European Level, through cooperation between Member 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 in a timely manner of information and recommendations on conflict zone risks, for the benefit of all European Member 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.

EASA acts as coordinating entity for activities not directly under Member States or European Commission responsibility and initiates the drafting, consultation and publication of Conflict Zone Information Bulletins both in cases of availability and unavailability of a common EU risk assessment.

3.1.3 Environment

The aviation industry needs to minimise its impact on the environment as much as possible while providing safe air transport. In addition it is key to have environmental requirements that are consistent with the rest of the world to ensure a level playing field.

Climate change and noise: Introduce the CAEP/10 recommendations

Actions in this area will contribute to meet European targets on climate change prevention by implementing the ICAO CO_2 standard. ICAO CAEP in February 2016 adopted entirely new standards on CO_2 and particulate matter emissions. The agreed CO_2 standard needs to be implemented in the European system to become effective.

3.1.4 Efficiency

Reduce the regulatory burden for GA

EASA is fully engaged to develop simpler, lighter and better rules for GA. This will be achieved in line with the GA Road Map created in partnership with the European Commission and stakeholders and addressing the recognised importance of GA and its contribution to the European economy and a safe European aviation system.

Enable the implementation of new technologies developed by SESAR

EPAS also caters for the regulatory needs of the SESAR common projects and other new technological development (e.g. such but not limited to U-space deployment, virtualisation and cloud-based architecture and remote tower operations) by enabling the implementation of new working methods and technologies developed by SESAR with focus on data management. Interoperability, civil-military cooperation and compatibility and NextGen international compatibility (e.g. such but not limited to ICAO GANP/ASBUS and NextGen) will form an integral part of EASA's work in impact assessment and future rulemaking. In addition, there is a need to initiate an implementation support action to look holistically to the implementation needs of the necessary enabling infrastructure to facilitate the achievement of the necessary operational improvements and new ATM operational concepts. This action should aim to facilitate safe, secure and interoperable implementation of cost-effective solutions as considered necessary (e.g. this could include GNSS, SATCOM, other satellite-based CNS solutions or other technical solutions coming from the telecommunications field). It should avoid mandate specific technological solutions while specifying clear performance requirements to be met.

Better Regulation: rules are evidence-based, where appropriate performance based, proportionate, fit-for-purpose, simply-written and contribute to the competitiveness of the industry

Legislation is not an end to itself. Modern, proportionate rules that are fit for purpose are essential in aviation safety to uphold the high common standards and ensure the competiveness of the European industry. The European Commission's (EC) better regulation agenda is aimed at delivering tangible benefits for European citizens and addressing the common challenges Europe faces. To meet this policy goal, EASA must ensure that its regulatory proposals deliver maximum benefits at minimum cost to citizens, businesses and workers without creating unnecessary regulatory burdens for Member States and EASA itself. To that end, EASA must design regulatory proposals transparently, based on evidence, understandable by those who are affected and backed up by the views of stakeholders.

To be fully effective, 'Better Regulation' must cover the entire regulatory cycle, i.e. the planning phase, design of a proposal, adoption, implementation, application, evaluation and revision. To ensure that the EU has the best regulation possible, EASA must examine each phase of new or existing projects with a view to ensure that the objectives, tools and procedures adhere to 'Better Regulation' principles.

Applying Better Regulation principles means for EASA that efforts must aim at:

— a transparent and streamlined regulatory process that is supported by an efficient stakeholder consultation;

— a plain and easily understandable language also for non-native English speakers;

— communication and IT platforms that give stakeholders easy access to consulted deliverables and regulatory material, including soft law

— a regulatory approach that is performance-based where appropriate and respects the principles of subsidiarity and proportionality; and

— actors involved in the drafting of regulatory material have been appropriately trained in drafting performance-based rules.

Regulating elements of aviation safety by describing the desired outcome is not new. This so-called performance-based approach is intended to make aviation safer, more efficient and flexible. By prescribing safety objectives instead of how to achieve them, this approach promotes the principles of subsidiarity and proportionality. Until recently EASA had not established a consistent and systematic approach to implementing Performance Based Regulations (PBR) principles. In 2016 EASA adopted a policy on PBR which establishes the expected benefits of PBR in term of: resilience, flexibility, safety management.

Resilience: The increased complexity in operations and aviation activities, the dynamics of aviation business models, fast and proliferating technologic development require a regulatory framework capable of anticipating changes (technology neutral regulations).

Flexibility: By focusing on safety outcomes, PBR provide flexibility and encourage innovation by not restricting a priori the means to control specific risks.

Safety management: By providing a flexible implementation framework and focusing on safety outcomes, PBR allow organisations and authorities to foster risk management capability and to better allocate resources against risks identified under their SMS and SSP.

It further specifies that actions towards the development of PBR are to be:

1. identified as part of the Rulemaking Programming process;
2. confirmed through impact assessment or ex post evaluation of rules;
3. discussed and agreed with stakeholders on that basis; and
4. formalised in the RMP.

To this end, the RMP contains identifiers for actions with a particular focus on PBR and an entire section dedicated to evaluation (section 7.1) which will focus on introducing more performance-based elements following a thorough assessment. The PBR policy is included in Appendix E to this document.

Better regulation: Cool-down period

As the European regulatory framework for aviation started being set up in 2002, the volume of regulation created was necessarily significant. As this process is now largely completed, a 'cool-down period' has been proposed by stakeholders in order to stabilise the regulatory system and reduce the burden on Member States and industry when implementing new requirements. This cooling down needs to differentiate between the EASA work on technical standards (Certification Specifications) and Opinions that are the basis of new Commission regulations. EASA introduced the cooling down ceilings in its 5–year plan. **See Chapter 4.**

3.1.5 Level playing field

Enable innovation and efficiency gains following the review of the Basic Regulation

The European Commission has proposed a modernisation of the Basic Regulation. Once the legal text is adopted by the Council and the Parliament, the related implementing rules need to be aligned. As the exact scope of this activity is not yet known, the present plan does not include activities related to the Basic Regulation review.

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 aerodrome minima, aerodrome equipment, and procedures both for CAT and GA.

Facilitate European emerging technologies and innovations

The objective of this priority area is to enable the introduction of new technologies.

Open rotor engine technology is one of these technologies. The related activity will identify and recommend harmonised draft requirements and advisory material for CS-E, 14 CFR Part 33, CS-25 and 14 CFR Part 25 to address the novel features inherent in open rotor engine designs and their integration with the aircraft.

A number of aircraft manufacturers and suppliers are working on *electric propulsion* for aircraft. EASA has currently one application for type certificates. Many projects are experimental or geared towards the ultra-light market with national type certification. The market potential is considered significant with related effects on wealth and job creation. Environmental benefits for Europe are also potentially significant both in terms of gaseous emissions and noise. To allow for the projects to thrive, a complex number of issues has to be tackled from a regulatory perspective. However, concrete rulemaking actions are foreseen only for future editions of the EPAS, once EASA has collected concrete technical experience with the type certification of these types of aircraft.

Harmonise FTL rules for CAT rotorcraft and commercial specialised operations

Develop harmonised and state-of-the-art FTL rules for commercial operations other than CAT fixed wing, e.g. CAT operations with helicopters and commercial specialised operations.

3.2 Strategic Enablers

3.2.1 Research

Today, Europe plays a leading role in the aviation sector thanks to its powerful research, innovation and technology development environment. Particularly in this field, systematic attention, integrated approach and coordination/correlation of the technological innovation with the re-assessment of the aviation safety standards and certification processes are crucial in order not to put the medium and long term European innovation system at risk and to remain competitive in the fast-moving global environment.

The EASA Research Strategy (accepted by the EASA MB in 2015) is articulated around four main objectives encompassing integrated/integrative and pro-active approaches:

1. Enable urgent aviation safety research: enable reactivity after incidents or accidents or support the identification of latent safety issues;
2. Get ready for global standards: ensure that EU has the means to play a leading role for setting-up global standards with respect to emerging and future technologies;

3. Reduce Time-to-Market: support the industry upstream, ensure that regulations' framework is not an impediment to innovation;
4. Cohesive Research Planning and Monitoring: ensure synergies, avoid duplication and dispersion of research efforts.

The management of aviation safety requires nowadays pro-active capabilities based on increased availability of operational and safety data. In this context (while the research items are still somehow limited in this edition), the introduction of "Aviation Research Agenda" in the next editions of EPAS aims at supporting the development of coordinated research actions and their implementation as part of EU and national programmes.

In this context EASA is ready to take a pro-active role for ensuring, in collaboration with Member States, the industry and the aviation research community, the consolidation of the research needs to respond to current safety issues identified in EPAS.

In line with the extended scope of EPAS (efficiency and level playing field dimensions) the research agenda may also encompass a series of innovation and efficiency related actions besides 'pure' safety research, in order to refine or complete the EU ACARE Strategic Research and Innovation Agenda (SRIA)[4].

3.2.2 International Cooperation

One of the European Commission's 10 key priorities is that the EU becomes a stronger global actor. EASA supports the EU and cooperates with national, regional and international organisations alike to order to enhance global aviation safety and support the free movement of European products and services. Furthermore, the acknowledgement by ICAO that aviation safety can be better managed at regional level and the responsibility given to RSOOs in this respect, play in favour of an revised role of EASA in a broader European context.

In this perspective, the strategic priorities internationally are to:

Promote safety and environmental protection for European passengers beyond Europe's borders

— Contribute to improving global safety and environmental protection
— Support the resolution of safety deficiencies through technical assistance
— Promote regional integration wherever effective

Support European industry interests

— Promote fair and open competition and remove barriers to market access.
— Enable efficient oversight between international partners
— Promote EU aviation standards around the world

Enable the European approach

— Coordinate common positions at ICAO
— Centralise international oversight actions and intelligence
— Bring together different European actors in technical assistance
— Promote the recognition of the European system at ICAO level

3.2.3 Technical Training

As mentioned above, aviation is a very dynamic sector with rapidly innovating new technologies and business models, and constantly improving efficiency and productivity. At the same time, it is confronted with evolving new risk scenarios in terms of both safety and security. These rapid changes are a challenge for the staff of

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[4] 2017 edition of ACARE SRIA : http://www.acare4europe.org/sria

aviation authorities, as well as for aviation organisations, to keep abreast with new developments and to update their knowledge and competencies to discharge their responsibilities.

In addition, the new Basic Regulation proposes a framework for pooling and sharing of technical resources between the National aviation authorities and the Agency. The implementation of this new approach requires a stronger harmonisation of the description of job profiles as well as of training and assessment standards of aviation personnel.

To address these challenges and to better contribute to the enhancement of safety and efficiency, the Agency will focus on the following key areas:

A. The continuous development and maintenance of the competences of EASA staff as well as the harmonisation of training and assessment standards for aviation inspectors within the EASA system;
B. The implementation support to aviation authorities and aviation organisations as well as lectures to universities;
C. The support of the international cooperation strategy through training services;
D. The continuous improvement of the European Central Question Bank (ECQB), which is currently used for theoretical examinations of commercial pilots.

For the continuous development of technical competencies of authority staff, the Agency will closely work together with the Common Training Initiative Group (CTIG) which is composed of training managers from the Member States and additional ECAC countries. This group adopted in its last meeting new Terms of References with the aim to evolve to pro-active group for developing common training and assessment standards for aviation personnel.

As far as training on European aviation rules is concerned, the Agency will better align its competency-based training offers with the EPAS priorities and make them better accessible for the personnel of aviation authorities.

In the area of ECQB, the training-related services are solely provided to aviation authorities. Also in this area, the development of the syllabus for pilot training as well as the development and review of questions in the databank for examinations will duly take into account EPAS priorities where relevant for the training of pilot competencies.

3.2.4 Oversight

By introducing authority requirements, and in particular strict requirements for MS on oversight, the rules developed under the first and second extension of the EASA scope have significantly strengthened the oversight requirements. In terms of efficiency, such rules have also introduced the concept of risk-based and cooperative oversight.

To support Member States, this version of EPAS includes 6 projects identifying focused oversight areas. The include both standardisation actions from EASA, as well as oversight actions led by Member States It also includes an EASA action to develop and test a concept, share best practices and develop enforcement strategies to enable the performance of audits by NAAs taking into account the risk-based oversight concept.

On cooperative oversight, EASA will continue to support NAAs in the practical implementation of cooperative oversight, e.g. existing trial projects, as well as via exchange of best practice and guidance.

4 Key indicators

The safety driver is the one that contains most of the actions in the plan, followed by efficiency/proportionality

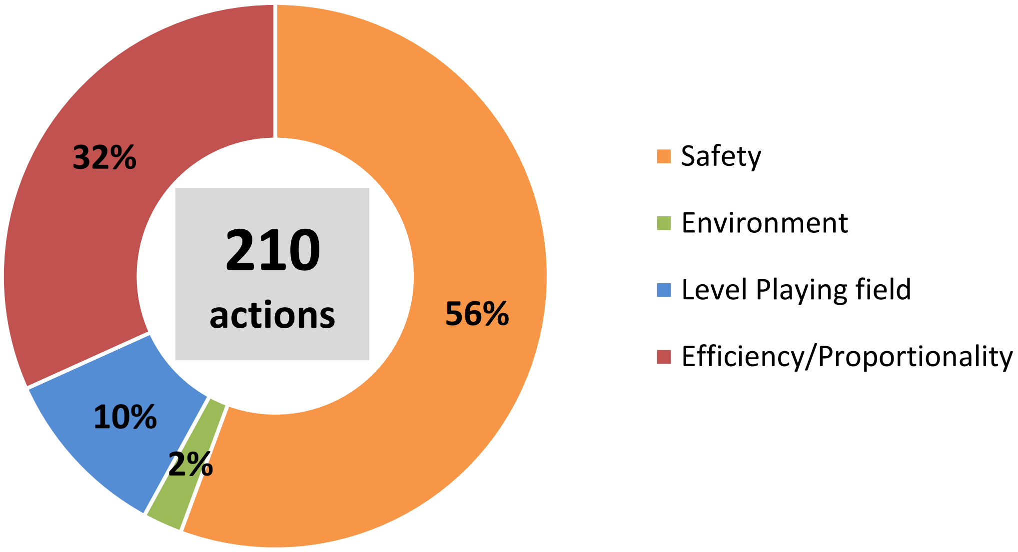

Figure 3: Share of tasks by driver

There is an equal balance between strategic and standard actions

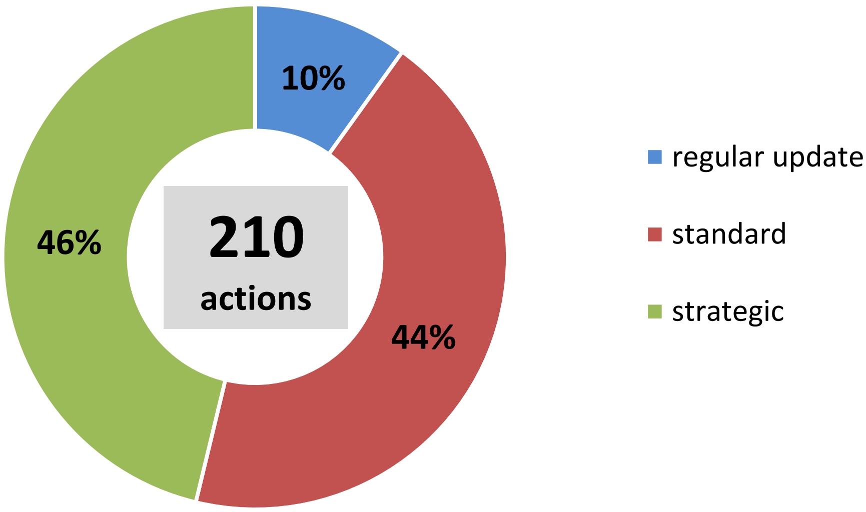

Figure 4: Share of tasks by priority type

Most of the actions in the EPAS are rulemaking projects

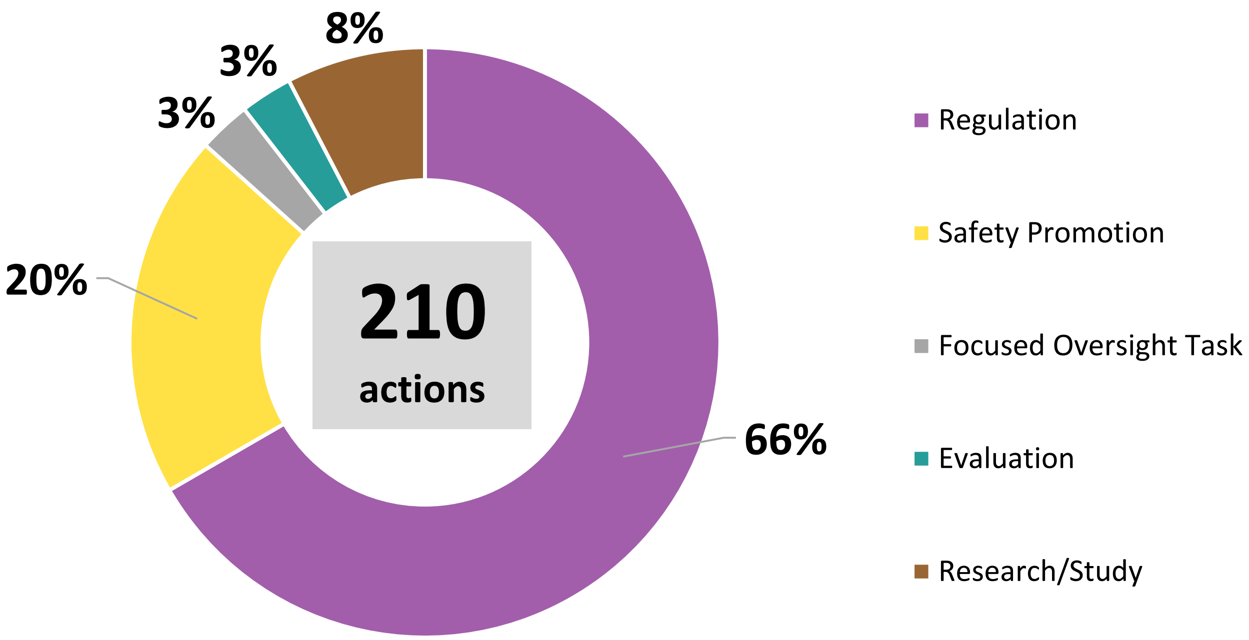

Figure 5: Share of safety tasks per activity type

Average duration of rulemaking tasks

The **average duration** of the rulemaking tasks that were closed in 2016 is **3,6 years**[5], similar to the duration calculated in 2015. In those cases in which the accelerated procedure was used (articles 15 and 16 of the rulemaking process), the duration of the rulemaking tasks was less than a year.

Rulemaking output

The rulemaking activity shows a steady decrease of new rulemaking tasks, materialised by the blue line (number of new ToR) shown in the below graph. However, EASA has to handle a backlog of Rulemaking Tasks started in the previous years. The effort to reduce the backlog is materialised by the temporary peak of activity in 2018 and 2019.

In the graphs on the next pages, we show not only the total rulemaking output of the Agency, but also separately the rulemaking activity leading either to Opinions (hard law) or to Decisions CS (soft law), as the latter has little impact on the MS resources.

The graphs do not contain decision pending IR adoptions. Those are considered being counted through opinions.

[5] The calculation is based on rulemaking tasks closed during 2016, from the time the ToR were published till the time decisions or opinions were issued by the Agency

Rulemaking activity – EASA

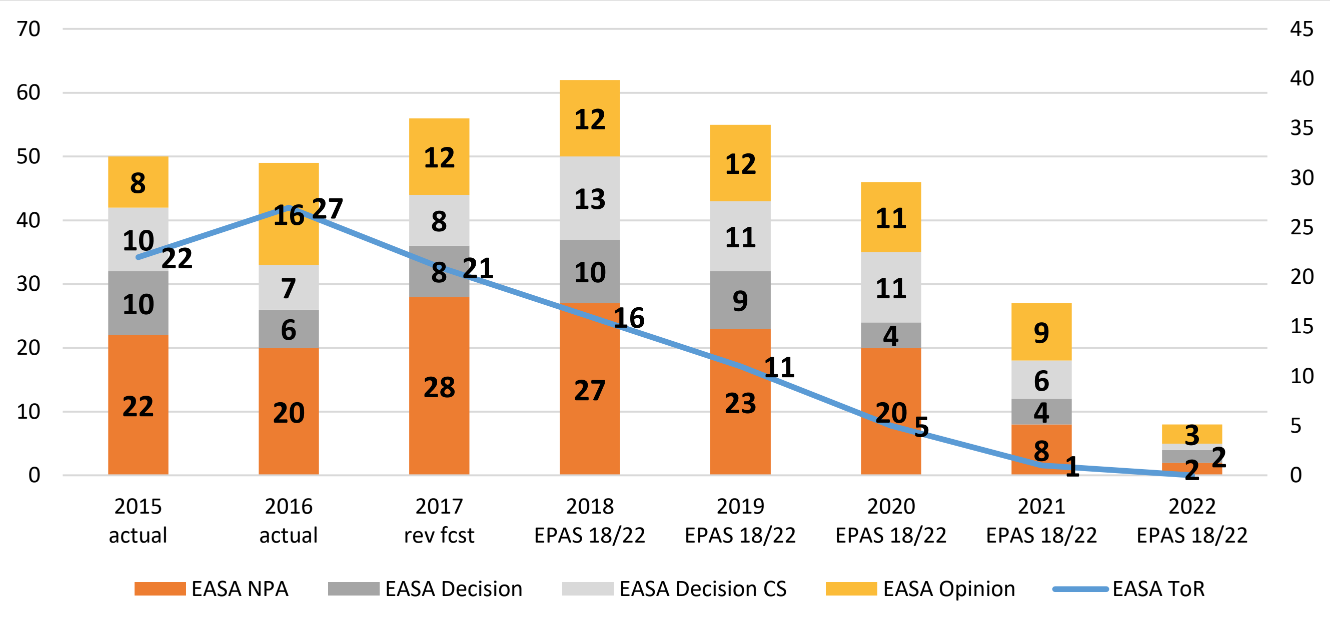

Figure 6: Rulemaking activity EASA 2015–2022

The rulemaking cool-down is materialised by the stabilisation and then reduction of Opinions delivered annually by the Agency. This is further confirmed by the diminution of ToR, which reflects a decrease of new rulemaking tasks being launched. The apparent peak of activity in 2017-2019 is due to the number of CS in the field of initial airworthiness that the Agency will deliver. This responds to the need to eliminate the backlog of rulemaking actions in this domain, knowing that there is a strong demand from Industry stakeholders to finalise those CS. Furthermore, the update of CS to keep up with safety needs and new technologies is not seen as “overregulation” but rather as providing adequate support to the manufacturing Industry.

Rulemaking activity related to Hard Law

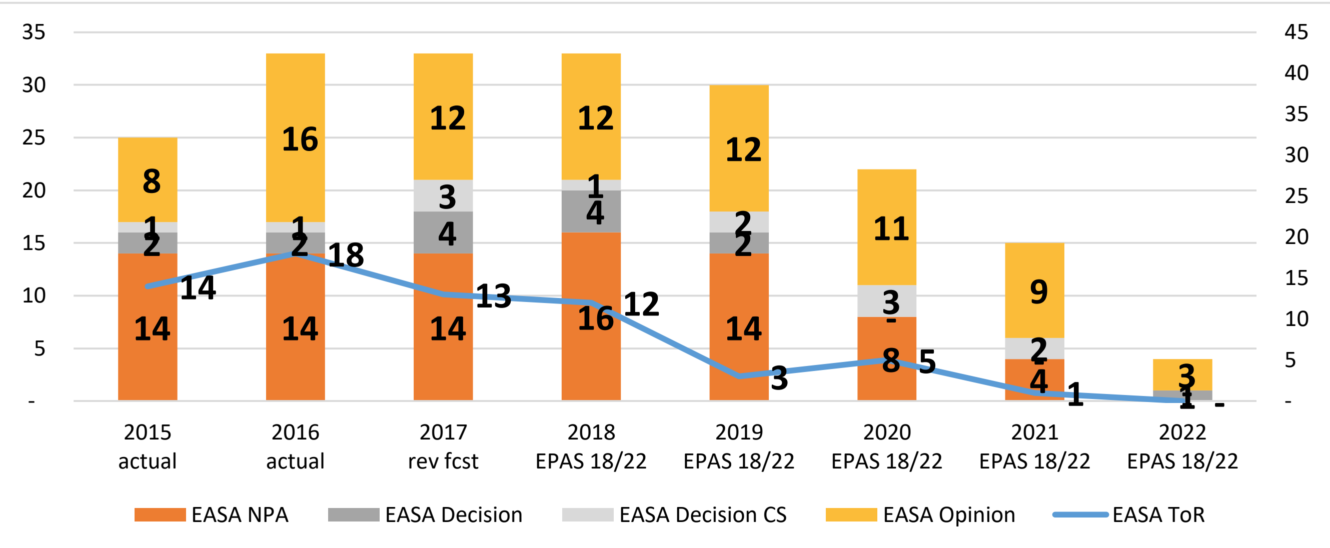

Figure 6: Rulemaking activity in Initial Airworthiness and Environment 2015–2022

The above chart shows the rulemaking output related to hard law: the ToRs and NPAs that lead to an Opinion, as well as those decisions associated to the opinions. The number of opinions has been limited to 12 per year (starting in 2017) to take into consideration the capacity of the EASA Committee. A decreasing trend in the output can be expected during the period of the plan (2018-2022).

Rulemaking activity related to Soft Law

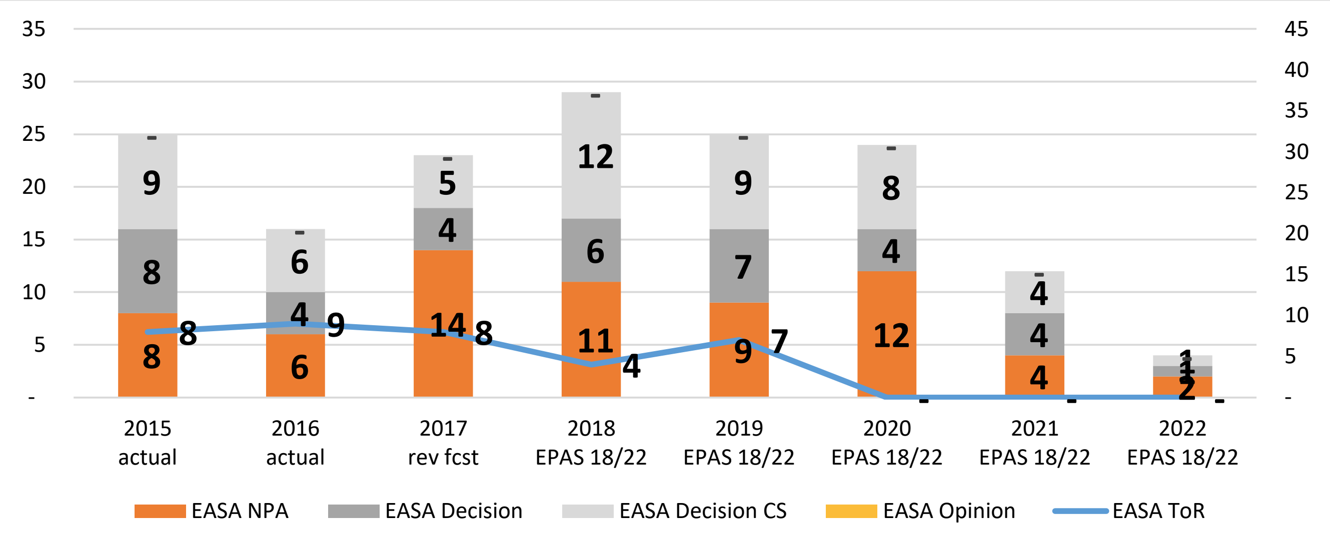

Figure 7: Rulemaking activity within the Flight Standards Directorate 2015–2022

The above chart shows the output related to soft law: ToRs and NPAs that do not lead to Opinions (i.e. only to decisions). These tasks have no impact in MS resources.

Note: The above figures represent our best estimate at the moment of develop the EPAS. They will be reviewed before the document is published in order to reflect the actual output delivered in 2017. Those deliverables not finalised in 2017 will automatically be carried over to 2018.

5 Safety (EPAS)

The actions in this section are driven principally by the need to maintain or increase the current level of safety in the aviation sector.

5.1 Safety performance

Risk areas and safety issues are identified in the Annual Safety Review (ASR) for each of the aviation domains. The ASR is used as the main source for the identification of safety issues that are then addressed in this chapter of the EPAS with concrete actions.

The ASR measures safety performance using 2 specific types of safety performance indicators (SPIs). Firstly, at Tier 1, the overall performance is measured across the different operational domains by considering the number of fatal accidents and fatalities in the previous year against the 10-year average. For 2016, this information is provided below and subdivided in three major domains CAT Aeroplanes, CAT Helicopters and Non-Commercial (General Aviation) activities.

Domain	Fatal Accidents 2016	Fatal Accidents Annual 10 Year Mean	Fatalities 2016	Fatalities Annual 10 Year Mean	Fatalities Annual 10 Year Median
CAT Aeroplanes					
Airline (Passenger/Cargo)	1	0.8	2	66.0	5.0
Other	0	1.4	0	6.4	2.0
SPO Aeroplanes	6	10.7	12	18.6	16.5
CAT Helicopters					
Offshore	1	0.4	13	3.0	0.0
Other	2	0.9	8	2.8	3.5
SPO Helicopters	0	4.1	0	7.4	6.0
Non-Commercial and Other					
NCO Aeroplanes	46	51.4	78	94.4	95.5
NCO Helicopters	9	10.0	11	17.5	17.0
Balloons*	1	2.2	1	4.0	3.0
Gliders	19	26.5	20	31.1	31.0
RPAS	0	0.0	0	0.0	0.0

*Balloon data compares 2016 with the average for the five year period 2011-2015.

One of only two domains with an increase in fatalities in 2016 was Offshore Helicopters, where there was one accident with 13 fatalities. This is the first year that a fatal accident has been recorded in this domain since 2013. The second domain recording an increase was Other CAT Helicopters, where there were 2 HEMS accidents that resulted in 8 fatalities. For the other domains, there has been a reduction in both the number of fatal accidents and fatalities. Due to the low number of fatal accidents in CAT Aeroplanes, the median average is introduced to highlight that while the mean average number of fatalities is high, this is largely due to a small number of large accidents.

The top 5 operational domains in terms of the annual average of the number of fatalities for the past 10 years (2007-2016) are: Non-Commercial Aeroplanes, CAT Aeroplanes Airline (Passenger/Cargo), Gliders/ Sailplanes, SPO Aeroplanes and NCO Helicopters.

The second measure of Tier 2 SPIs monitor safety at an individual domain level. It captures both the Key Risk Areas (Outcomes), helping thus to identify the main areas of focus in each domain, and also identifies the main Safety Issues. More details can be found on the Annual Safety Review 2017

5.2 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.

5.2.1 Safety management

Issue/rationale

Safety management is a strategic priority. Despite the fact that last years have clearly brought continued improvements in safety across every operational domain, last accidents underline the complex nature of aviation safety and the significance of addressing human factor aspects. Authorities and aviation organisations should anticipate more and more new threats and associated challenges by developing Safety Risk Management principles. Those principles will be strengthened by Safety Management System implementation supported by ICAO annex 19, and (EU) No 376/2014 for reporting reinforcement.

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 (a cross-domain SMS assessment tool is under development).

How we want to achieve it: actions

Rulemaking

RMT.0251 **Embodiment of safety management system requirements into Commission Regulations (EU) Nos 1321/2014[6] and 748/2012[7]**

With reference to ICAO Annex 19, the objective is to set up a framework for safety management in the initial and continuing airworthiness domains.

Split task:

1. Part-M linked to OPS (CAMOs)
2. Part-145, Part-21 for production organisation approval (POA), design organisation approval (DOA).

Owner	Affected stakeholders
EASA FS.1	CAMOs, MOs, POA, DOA, TOs, and national aviation authorities (NAAs)

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	1	19/07/2011	10/10/2013	11/05/2016	2018 Q2	2018 Q2
			2		2018 Q2	2019 Q2	2020 Q4	2020 Q4

6 Commission Regulation (EU) No 1321/2014 of 26 November 2014 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks (OJ L 362, 17.12.2014, p. 1).

7 Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1).

RMT.0262 **Embodiment of level of involvement (LOI) requirements into Part-21**

To ensure compliance of Part-21 with the framework of safety management provisions of ICAO Annex 19. Introduction in Part-21 of a risk-based approach for the determination of the LOI of EASA in product certification. This entails introduction of:

— systematic risk management (hazard identification, risk assessment and mitigation);
— safety performance-based oversight allowing to focus on areas of greater risk;
— safety awareness and promotion among all staff involved; and
— improved effectiveness and efficiency of Part-21 IRs achieved by their streamlining and improved consistency.

Phase 1 of the RMT will end with an Agency decision providing some initial AMC/GM to the amendments to Part-21; this decision will be issued upon adoption by the Commission and publication of the Regulation in the Official Journal, which is expected to take place 2017. In parallel, EASA develops further AMC/GM to support the application of the amendments to Part-21.

Owner	Affected stakeholders
EASA CT.7	Design approval holders (DAHs)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	27/08/2013	02/03/2015	23/05/2016	2017 Q4	2017 Q4
				2017 Q4	n/a	n/a	2018 Q3

RMT.0469 **Assessment of changes to functional systems by service providers in ATM/ANS and the oversight of these changes by competent authorities**

Development of the necessary AMC/GM for the service providers and the competent authorities.

Owner	Affected stakeholders
EASA FS.4.2	ANSPs, competent authorities

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	19/06/2012	24/06/2014	16/12/2014	01/03/2017	08/03/2017
				28/06/2017	n/a	n/a	2018 Q4

RMT.0681 **Alignment of implementing rules & AMC/GM with Regulation (EU) No 376/2014**

Alignment of IRs & AMC/GM with Regulation (EU) No 376/2014.
With regards to Commission IR and Decision: Depends on the related content, to be published concurrently with another deliverable – specific arrangement with the EU Commission.

Owner	Affected stakeholders
EASA FS.5	Operators, pilots, MOs, ATOs, manufacturers, CAMOs, aerodrome operators, ATM/ANS service providers, and ATCO TOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	30/09/2015	19/12/2016	2018 Q1	2020 Q1	2020 Q1

RMT.0706 **Update of authority and organisation requirements**

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.

Owner	Affected stakeholders
EASA FS	Competent Authorities: NAAs, NSAs, organisations

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A2	ST	-	2018 Q2	2019 Q2	2020 Q2	2021 Q2	2021 Q2

Safety Promotion

MST.001 **Member States to give priority to the work on SSPs**

Make SSPs consistently available in Europe in compliance with the GASP objectives.

Owner	Activity sector	Deliverable	Date
MS	ALL	SSP established	Continuous

MST.002 **Promotion of SMS**

Encourage implementation of safety promotion material developed by the Safety Management International Collaboration Group (SMICG).

Owner	Activity sector	Deliverable	Date
MS	ALL, HF	Best practice	Continuous

MST.003 **Member 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:

- 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 and similar safety initiatives.

The document titled 'Guidance for national aviation authorities on setting up a national flight data monitoring forum' (produced by EAFDM) is offering guidance for this purpose

Owner	Activity sector	Deliverable	Date
MS	CAT	Report on activities performed to promote FDM	Continuous

MST.026 **SMS Assessment**

Member States should make use of the EASA Management system assessment tool to support performance based oversight. Member States should provide feedback to EASA on how the tool is used for the purpose of standardisation and continual improvement

Owner	Activity sector	Deliverable	Date
MS	ALL	Feedback on the use of the tool	Continuous

SPT.057 **SMS international cooperation**

Promote the common understanding of SMS and human factors principles and requirements in different countries, share lessons learned and encourage progress and harmonisation.

Owner	Activity sector	Deliverable	Date
EASA FS.5	ALL, HF	Methodology/training material/best practice	Continuous

SPT.076 **FDM precursors of main operational safety risks**

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

Owner	Activity sector	Deliverable	Date
EASA SM.1 + EOFDM	CAT	Good practice document	2019

SPT.077 **Good practices for the integration of operator's FDM data with other safety data sources**

EASA should, in partnership with the industry, establish good practices that help an operator in integrating its FDM data with other safety data sources.

Owner	Activity sector	Deliverable	Date
EASA SM.1 + EOFDM	CAT	Good practice document	2019

5.2.2 Human factors and competence of personnel

Issue/rationale

Human factors and competence of personnel is 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 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 CAs).

How we want to achieve it: actions

Rulemaking

RMT.0106 **Certification specifications and guidance material for maintenance certifying staff type rating training**

The main objective is to improve the level of safety by requiring the applicant for a type certificate (TC) or restricted TC for an aircraft to identify the minimum syllabus of maintenance certifying staff type rating training, including the determination of type rating.

This minimum syllabus, together with the requirements contained in Appendix III to Annex III (Part-66) to Commission Regulation (EU) No 1321/2014, will form the basis for the development and approval of Part-66 type rating training courses.

Owner	Affected stakeholders
EASA FS.1	DAHs, TOs, maintenance engineers, Approved Maintenance Training Organisations

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	28/07/2014	2018 Q3	n/a	n/a	2019 Q4

RMT.0188 **Update of EASA FCL implementing rules**

A complete first review of Part-FCL addressing a number of issues to be clarified or amended as identified by industry and MS. It also establishes a flight examiner manual (FEM) and a first draft of the learning objectives (LOs). Some of these corrections and clarifications also pertain to alleviations for the GA community.

Owner	Affected stakeholders
EASA FS.3	Examiners, instructors, pilots, ATOs and DTOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	21/07/2011	17/12/2014	29/06/2017	2018 Q3	2018 Q3

RMT.0194 **Extension of competency-based training to all licences and ratings and extension of TEM principle to all licences and ratings**

More performance-based rulemaking will be addressed. The principles of CBT shall be transferred to other 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 from the GA Road Map activity list, such as modular training and CBT, will be addressed as well.

Owner: EASA FS.3
Affected stakeholders: ATOs and pilots

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2018 Q3	2020 Q3	2022 Q1	2023 Q1	2023 Q1

RMT.0196 **Improve flight simulation training devices (FSTDs) fidelity**

An ICAO harmonisation issue, as the main purpose is to include in the European provisions 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 RMT.0581 working group results. Harmonisation with the Federal Aviation Administration (FAA) should be considered.

Owner: EASA FS.3
Affected stakeholders: Operators, ATOs, DTOs, pilots, instructors, and examiners

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	1	15/07/2016	2017 Q4	n/a	n/a	2019 Q4
			2		2019 Q1	n/a	n/a	2021 Q4
			3		2021 Q1	n/a	n/a	2023 Q4

RMT.0486 **Alignment with ICAO on ATCO fatigue management provisions**

Alignment with ICAO on the subject provisions.

Owner: EASA FS.4.2
Affected stakeholders: ANSPs and ATCOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2019 Q4	2020 Q4	2021 Q4	2022 Q4	2022 Q4

RMT.0544 **Review of Part-147**

To perform a review of the effectiveness of the implementation of Part-147.

Owner: EASA FS.1
Affected stakeholders: Part-147 TOs and NAAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
n/a	ST	-	2018 Q3	2020 Q3	2021 Q3	2022 Q3	2022 Q3

RMT.0589 **Rescue and firefighting services (RFFS) at aerodromes**

The objective of this RMT is to ensure a high and uniform level of safety by establishing minimum medical standards for rescue and firefighting personnel required to act in aviation emergencies. It will also ensure that the level of protection for rescue and firefighting at aerodromes serving all-cargo or mail flights is proportionate to this type of traffic and their particular requirements. Finally, it will as well ensure a clearer implementation of the remission factor in general.

The RMT has been split in two sub-tasks:

(a) 1st sub-task: Remission factor, cargo flights, etc.

(b) 2nd sub-task: RFFS personnel physical and medical fitness standards.

Owner	Affected stakeholders
EASA FS.4.3	Aerodrome operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	10/04/2014	09/07/2015	n/a	n/a	23/05/2016
				2017 Q4	2018 Q4	2020 Q4	2020 Q4

RMT.0595 **Technical review and regular update of learning objectives and syllabi for commercial licences (IR)**

Technical review of theoretical knowledge syllabi, learning objectives, and examination procedures for the air transport pilot licence (ATPL), MPL, commercial pilot licence (CPL), and instrument rating (IR).

Owner	Affected stakeholders
EASA FS.3/ECQB Team	Competent authorities, ATOs, student pilots, providers of textbooks and training materials, ECQB

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	11/03/2015	09/06/2016	n/a	n/a	2017 Q4
				2021 Q1	n/a	n/a	2022 Q1

RMT.0596 **Review of provisions for examiners and instructors (Subparts J & K of Part-FCL)**

A complete review of the subparts of Part-FCL containing the provisions for examiners and instructors. Industry and MS experts requested this task as an urgent correction and alignment of the rules in place. It will also address some of the elements proposed by the EASA examiner/inspector task force.

This task has been merged with RMT.0194

Owner	Affected stakeholders
EASA FS.3	Pilots, instructors, examiners, ATOs, operators and DTOs

RMT.0599 **Update of ORO.FC**

A complete review of the provisions contained in ORO.FC. In a first phase, it will include the introduction of evidence-based training (EBT) and competency-based training (CBT) in the field of recurrent training and other training-related implementation issues.

The second phase will include the extension of EBT to other parts of the operator's training (e.g. conversions course, type rating) allowing a single philosophy of training to the operator, and a third phase that the will extend EBT to other aircrafts types (e.g. helicopters, business jets) allowing a single philosophy of training across the industry. Also it will include other implementation issues on the training-related rules brought to the attention of the Agency.

Owner	Affected stakeholders
EASA FS.3	Pilots, instructors, examiners, ATOs and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	05/02/2016	2018 Q2	2019 Q2	2020 Q2	2020 Q2
				2021 Q3	2022 Q3	2023 Q3	2023 Q3

RMT.0700 **Germanwings**

Preventive measures stemming from the taskforce:
(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 programme; and
(3) performing systematic drug and alcohol (D&A) testing of flight and cabin crew upon employment.
The AB consultation replaced the NPA.

Owner	Affected stakeholders
EASA FS.5	Pilots, AMEs, AeMCs, competent authorities

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	DP	-	20/04/2016	n/a	11/08/2016	2017 Q4	2017 Q4

Focused Oversight

FOT.003 **Unavailability of adequate personnel in competent authorities**

EASA Standardisation to monitor the availability of staff in CAs.

Owner	Activity sector	Deliverable	Date
EASA FS.5	ALL	Report	Annually

FOT.004 **Unavailability of adequate personnel in competent authorities**

EASA to support CAs: a. in defining the right competences needed to properly discharge their safety oversight responsibilities; and b. in providing training to their staff.

Owner	Activity sector	Deliverable	Date
EASA FS.5	ALL, HF	Report	Continuous

Research

RES.006 **Effectiveness of flight time limitations (FTL)**

The objective is to develop and demonstrate the due process for the assessment of the effectiveness of FTL and fatigue risk management (FRM) provisions as set in Article 9a of Regulation (EU) No 965/2012[8]. Particular emphasis will be put on the establishment and qualification of the appropriate metrics with a view to ascertaining the necessity for their update towards improving flight safety by better mitigating the possibly associated risks.

Owner	Activity sector	Deliverable	Date
European Commission (H2020)	CAT, HF	Report	2018

[8] Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).

5.2.3 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: actions

Rulemaking

RMT.0249 Recorders installation and maintenance thereof — certification aspects

The general objective of this RMT is to improve the availability and quality of data recorded by flight recorders in order to better support safety investigation authorities in the investigation of accidents and incidents. More specifically, this RMT is aimed at modernising and enhancing the specifications for flight recorder installation on board large aeroplanes and large rotorcraft.
Phase 1 of the RMT will result into an NPA in 2017. Following the public consultation of said NPA, EASA will develop an opinion and a decision issuing CS-25 and CS-29. In phase 2 of this RMT, EASA will prepare a second NPA (planned for Q2/2019), which will lead to a decision issuing CS-25 and CS-29.

Owner	Affected stakeholders
EASA CT.7	Operators (of aircraft required to be equipped with flight recorders), manufacturers, applicants for TC/STC

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	18/09/2014	2017 Q4	2018 Q2	2018 Q2	2018 Q2
				2019 Q2	2020 Q1	2020 Q1	2020 Q1

RMT.0271 In-flight recording for light aircraft

Assess the need for in-flight recording and make proportionate suggestions for categories of aircraft and types of operation covered by the air operations rules for which there is no flight recorder carriage requirement. Following the publication and public consultation of NPA 2017-03, EASA will develop an Opinion, which will be published together with a Comment Response Document.

Owner	Affected stakeholders
EASA FS.2	Operators (of aircraft not yet required to have flight recorders)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	25/07/2014	03/04/2017	2019 Q1	2020 Q3	2020 Q3

RMT.0294 **Data link recording retrofit for aircraft used in CAT**

Assess the need to introduce data link recording for in-service aircraft in line with ICAO Annex 6 Parts I and III

Owner	Affected stakeholders
EASA FS.2	Operators (of aircraft required to be equipped with flight recorders), manufacturers, applicants for TC/STC

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2020 Q1	2021 Q1	2022 Q1	2023 Q1	2023 Q1

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

All IRs were adopted with Commission Regulation (EU) 2015/2338; however, the AMC & GM for CAT.GEN.MPA.205 (Aircraft tracking - aeroplanes) and CAT.GEN.MPA.210 (Location of an aircraft in distress) in the rules for air operations have not yet been issued. In addition, it has been identified that amendments to certification specifications may be necessary to facilitate the implementation of CAT.GEN.MPA.210.

Owner	Affected stakeholders
EASA FS.2+CT.4	Aircraft operators and manufacturers

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	1	26/09/2012	20/12/2013	06/05/2014	11/12/2015	12/10/2015
			2					17/12/2015
			3					12/09/2016
			4					2017 Q4
			5		2018/Q4			2019/Q2

Research

RES.013 **Quick recovery of flight data recordings**

Assess means to recover flight recorder data quickly after an accident for the purpose of faster corrective actions, their limitations as well as the related challenges for standardisation and deployment.

Owner	Activity sector	Deliverable	Date
EASA SM.1	CAT	Report	2019

5.3 CAT by aeroplane

The only fatal accident in CAT aeroplane airline operations in 2016 that involved an EASA MS operator was the accident of a Bombardier CRJ-200 performing a cargo flight on 8 January 2016. From the analysis, it can be observed that there was a lower number of non-fatal accidents involving EASA MS operators in 2016 than the 10-year average, with 16 accidents compared to the average of 23.1 over the previous 10 years. At the same time, there was a 36% increase in the number of serious incidents over the same period resulting in a total of 106 serious incidents compared with the average of 78.2. In terms of fatalities, 2016 showed a lower fatality rate than the 10 year average with the single fatal accident resulting in 2 fatalities (the flight crew, the only occupants of the aeroplane).

This operational domain is the greatest focus of the EASA safety activities and the reorganisation of the collaborative analysis groups (CAGs) and Advisory Bodies will help EASA to learn more about the safety challenges faced by airlines and manufacturers[9].

5.3.1 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. Prevention of loss of control is a strategic priority.

Aircraft upset or loss of control is the most common accident outcome for fatal accidents in CAT aeroplanes operations, accounting for 75% of them. 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.

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 Commercial Air Transport Fixed Wing Portfolio (ref: Annual Safety Review 2017)

How we want to achieve it: actions

Rulemaking

RMT.0397 Unintended or inappropriate rudder usage — rudder reversals

- To propose an amendment of CS-25 to protect the aeroplane against the risk of unintended or inappropriate rudder usage. This may be achieved either by taking actions to mitigate erroneous rudder inputs from pilots to ensure safe flight, or by proposing actions that will ensure pilots will not make the erroneous rudder input.
- To determine if retroactive specifications are suitable for already certified large aeroplanes. In case of a positive answer, to propose Part-26/CS-26 standards, eventually including applicability criteria. Those standards may differ from the ones proposed for CS-25 amendment.

Owner			Affected stakeholders				
EASA CT.7			DAHs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	30/05/2017	2017 Q4	n/a	n/a	2018 Q3

9 Extract from the EASA Annual Safety Review 2016.

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 documents and several SRs. 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).
This RMT is split into multiple deliverables. See the related ToR on the EASA website.
Note: Recurrent and conversion training provisions related to UPRT were already published in May 2015. They have been applicable as of May 2016.

Owner	Affected stakeholders
EASA FS.3	Pilots, instructors, examiners, ATOs and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	20/08/2013	01/09/2015	n/a	n/a	04/05/2015
					29/06/2017	2018 Q3	2018 Q3

RMT.0647 **Loss of control or loss of flight path during go-around or climb**

The overall goal is to mitigate the safety risk (for large aeroplanes) of loss of control or loss of the flight path of the aircraft during the go-around or climb phases executed from a low speed configuration and close to the ground.
The first objective is to ensure that the thrust available after selecting the go-around mode is set to a reasonable value, such that the aeroplane's performance parameters (e.g. forward and vertical speeds, pitch attitude) are not excessive to the point that the control of the flight path may be a very demanding or hazardous task. The thrust setting should be such that the aeroplane's performance still complies with the performance requirements of CS-25 Subpart B, and the pilot can still easily select the full thrust, if needed.
The second objective is to prevent an excessive nose-up trim condition when transitioning from a low-speed phase of flight to go-around or climb when high level of thrust is applied. This may be achieved by different means, such as increasing the flight crew awareness of the low speed/excessive nose-up trim condition, or incorporating active systems preventing an unusual configuration (low speed/excessive nose-up trim condition) from developing.

Owner	Affected stakeholders
EASA CT.7	DAHs and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	06/07/2015	11/05/2017	n/a	n/a	2018 Q2

Safety Promotion

MST.004 **Include loss of control in flight in national SSPs**

LOC-I should be addressed by the MS on their SSPs. This will include as a minimum agreeing a set of actions and measuring their effectiveness.

Owner	Activity sector	Deliverable	Date
MS	CAT, HF	SSP established	Continuous

SPT.012 **Promote the new European provisions on pilot training**

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

Owner	Activity sector	Deliverable	Date
EASA FS.3	ALL, HF	Safety Promotion	2019

Research

RES.010 **Ice crystal detection**

Ice crystal icing phenomenon is still posing a severe threat to high altitude flying, in particular to new engine designs. Pilots have little or no means to detect and/or avoid it, especially at night. A research is proposed in order to better detect the presence of ice crystal icing and to develop an equipment suitable to detect such a phenomenon.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	CAT	Report	2019

RES.017 **Icing hazard linked to Super Large Droplet (SLD)**

Characterisation of phenomena (super-cooled large droplet icing) and analysis of impact/mitigation for safety in order to develop relevant airworthiness standards and means of compliance.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	CAT	Report	2019

5.3.2 Runway safety

Issue/rationale

This section deals both with Runway Excursions and Runway Collisions and is a strategic priority.

According to the definition provided by ICAO, an RE is a veer or overrun off the runway surface. RE events can happen during take-off or landing.. They account for 13% of the fatal accidents in CAT aeroplane operations involving airline/cargo operations in the past decade. This includes materialised runway excursions, both 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.

An Runway Incursions 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 have been the outcome in 1% of fatal accidents in the past decade. Despite the low percentage, 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: 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 EU 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.

Owner	Affected stakeholders
EASA FS.2	Aeroplane operators, manufacturers, Competent authorities

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	09/06/2015	30/09/2016	2018 Q2	2019 Q4	2019 Q4

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.
Due to the nature of the comments received on NPA 2013-09, EASA has decided to publish a new NPA on the reduction of REs. The proposal of the new NPA will 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 NAAs with the support of an international standardisation body (EUROCAE).

Owner	Affected stakeholders
EASA CT.7	Operators, manufacturers, applicants for TC/STC

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	09/10/2012	10/05/2013	2018 Q4	2018 Q4	2018 Q4
				2018 Q1	n/a	n/a	2020 Q1

RMT.0703 **Runway safety**

European Action Plans for the Prevention of Runway Incursions (EAPPRI) and Excursions (EAPPRE) contain several recommendations to Competent Authorities, Aerodrome Operators and EASA in order to mitigate the risks.

In the aerodromes' domain, EASA had included in Regulation (EU) No 139/2014[10] and in the relevant AMC/GM and CS many of these recommendations, however there are some of them that have not been addressed.

Owner	Affected stakeholders
EASA FS.4.3	National Aviation Authorities, aerodrome operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A1 to 2.5	ST	-	14/09/2017	2018 Q1	2019 Q1	2020 Q1	2020 Q1

RMT.0704 **Runway surface condition assessment and reporting**

Revision and update of Regulation (EU) No 139/2014 and of the related AMC and GM in order to include the changes in Annex 14 and PANS Aerodromes.

Owner	Affected stakeholders
EASA FS.4.3	Aerodrome operators, aircraft operators, GA, ANSPs, National Aviation Authorities

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A2.5	ST	-	13/09/2017	2018 Q3	2019 Q1	2020 Q2	2020 Q2

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

Owner	Affected stakeholders
EASA FS.4.3	

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A2	ST	-	2018 Q3	2019 Q3	2020 Q2	2021 Q2	2021 Q2

Safety Promotion

MST.007 **Include runway excursions in national SSPs**

REs should be addressed by the MS on their SSPs in close cooperation with the aircraft operators, air traffic control, airport operators and pilot representatives. This will include as a minimum agreeing a set of actions and measuring their effectiveness. MS should implement actions suggested by the European Action Plan for the Prevention of Runway Excursions (EAPPRE) and monitor effectiveness.

Owner	Activity sector	Deliverable	Date
MS	CAT, HF	SSP established	Continuous

MST.014 **Include runway incursions in national SSPs**

RIs should be addressed by the MS on their SSPs. This will include as a minimum agreeing a set of actions and measuring their effectiveness. MS should implement actions suggested by the European Action Plan for the Prevention of Runway Incursions (EAPPRI).

Owner	Activity sector	Deliverable	Date
MS	CAT/GA, HF	SSP established	Continuous

[10] Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, OJ L 44, 14.2.2014, p. 1–34.

5.3.3 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 MS, this key risk area has been raised by a number of MS 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

Continuous monitoring of safety issues identified in the Commercial Air Transport Fixed Wing Portfolio (ref: Annual Safety Review 2017[11])

How we want to achieve it: actions

Rulemaking

RMT.0376 Anti-collision systems on aircraft other than aeroplanes in excess of 5 700 kg or 19 pax

Set up the framework for reducing the risk of MACs. This task will include a thorough impact assessment aimed at evaluating the cost-benefit of anti-collision systems carriage.

Owner	Affected stakeholders
EASA FS.4.2	Aircraft operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	2018 Q2	2019 Q4	2020 Q3	2021 Q3	2021 Q3

Safety Promotion

MST.010 Include MACs in national SSPs

MACs should be addressed by the MS on their SSPs. This will include as a minimum agreeing a set of actions and measuring their effectiveness. MS should implement actions of the European Action Plan for Airspace Infringement Risk Reduction.

Owner	Activity sector	Deliverable	Date
MS	CAT, HF	SSP established	Continuous

MST.024 Loss of separation between civil and military aircraft

Several EU MS 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. Taking into account this situation, and the possible hazard to civil aviation safety, the European Commission mandated EASA to perform a technical analysis of the reported occurrences. The technical analysis issued a number of recommendations for the MS:

— 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;
— report relevant occurrences to EASA; and
— facilitate/make primary surveillance radar data available in military units to civil ATC units. The objective of this action is to ensure that MS follow-up on the recommendations and provide feedback on the implementation.

Owner	Activity sector	Deliverable	Date
MS	CAT	Report	2018

[11] See link in Executive Summary above.

5.3.4 Design and maintenance improvements

Issue/rationale

Design and maintenance improvements may limit the probability 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[12]. Specific analysis work is ongoing to identify the systemic, safety issues that may be present in the domains of airworthiness, maintenance and production.

What we want to achieve

Continuously assess and improve risk controls related to design and maintenance

How we monitor improvement

Continuous monitoring of safety issues identified in the Commercial Air Transport Fixed Wing Portfolio (ref: Annual Safety Review 2017)

How we want to achieve it: actions

Rulemaking

RMT.0049 **Specific risk and standardised criteria for conducting aeroplane-level safety assessments of critical systems**

To define a standardised criterion for conducting aeroplane-level safety assessment of specific risks that encompasses all critical aeroplane systems on large aeroplanes (i.e. in particular update AMC to CS 25.1309), based on the results of the Aviation Rulemaking Advisory Committee (ARAC) Airplane-level Safety Analysis Working Group (ASAWG).

In addition, to amend AMC 25.1309 taking into account the latest updates of industry documents, such as ED79A/ARP4754A.

To update CS 25.671 on safety assessment of flight control systems, based on the results of the ARAC Flight Controls Harmonisation Working Group (FCHWG).

For both objectives, harmonisation with the FAA, the Transport Canada Civil Aviation (TCCA) and Agência Nacional de Aviação Civil (ANAC) will be ensured as much as possible.

Owner	Affected stakeholders
EASA CT.7	DAHs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	18/03/2013	27/01/2014	n/a	n/a	2019 Q2

RMT.0069 **Seat crashworthiness improvement on large aeroplanes — Dynamic testing 16g**

The objective is to improve the protection of occupants on board large aeroplanes operated for commercial air transportation of passengers, when they are involved in a survivable impact accident.

This improvement would be reached by introducing on large aeroplanes used for commercial air transportation that were type certified without the JAR-25 change 13 standard improvements, passenger and cabin crew seats meeting the improved standard for dynamic testing and occupant protection, already used for type certification of new large aeroplanes.

Owner	Affected stakeholders
EASA CT.7	CAT operators and manufacturers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	17/09/2010	10/10/2013	20/05/2016	2018 Q2	2018 Q2

[12] This statement is coming from our Annual Safety Review 2016. It does not necessarily mean that the technical failure was the direct cause of the accidents, 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 airworthiness, maintenance and production. Non-accident data will be used for the analysis.

RMT.0217 **CAMOs' and Part-145 organisations' responsibilities**

Establishment of the principles to mitigate the risks linked to a faulty assessment and coordination of the responsibilities of CAMOs and Part-145 organisations, especially in complex, multi-tier and subcontracted maintenance.

Owner			Affected stakeholders				
EASA FS.1			Operators, CAMOs and MOs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	12/03/2013	02/12/2014	2020 Q2	2021 Q2	2021 Q2

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.

Owner			Affected stakeholders				
EASA FS.1			MOs (145 AMOs)				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	02/11/2011	13/05/2014	2019 Q2	2021 Q2	2021 Q2

RMT.0225 **Development of an ageing aircraft structure plan**

Develop the technical elements for an ageing aircraft structure plan:

— Review and update the supplemental structural inspection programme (SSIP) for effectiveness;
— Review existing corrosion prevention programmes and develop a baseline corrosion prevention/control programme to maintain corrosion to an acceptable level;
— Review all structurally-related service actions/bulletins and determine which require mandatory terminating action or enforcement of special repetitive inspections;
— Develop guidelines to assess the damage tolerance of existing structural repairs, which may have been designed without using damage tolerance criteria. Damage tolerance methodology needs to be applied to future repairs; and
— Evaluate individual aeroplanes design regarding the susceptibility to widespread fatigue damage (WFD) and develop a programme for corrective action.

The rulemaking framework for such issues is somewhat complex because it is necessary to address, generally speaking, the following items:

— Amendment to certification specifications (CSs) to improve the standards for ageing aircraft issues. This will address the case of future TC and future amendments to TC/future STC in accordance with the changed product rule; and
— Requirements on existing DAHs (e.g. TC, STC holders) to review their existing designs to demonstrate compliance with the amended CS. Requirements on operators to introduce modifications in individual aircraft and maintenance programmes resulting from the design review.

Owner			Affected stakeholders				
EASA CT.7			DAHs and operators				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	✓	08/05/2007	23/04/2013	10/10/2016	2018 Q2	2018 Q2

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 not be limited to operators subject to EU-OPS approval but also to any operator performing these flights.

Owner			Affected stakeholders				
EASA FS.1			Operators, CAMOs, and MOs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	04/04/2011	30/07/2012	08/03/2017	2020 Q1	2020 Q1

RMT.0453 **Ditching parameters without engine power**

Amend CS-25 to require that ditching parameters can be attained by pilots without the use of exceptional skills, including without engine power.

Owner			Affected stakeholders				
EASA CT.7			DAHs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	2019 Q1	2020 Q2	n/a	n/a	2021 Q3

RMT.0521 **Airworthiness review process**

Performance of a full review of the airworthiness review process to introduce an improved framework to mitigate the risks linked to a faulty airworthiness review with potential safety consequences where the actual airworthiness status of the aircraft is below the standard.

Owner			Affected stakeholders				
EASA FS.1			Operators, CAMOs and NAAs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	07/05/2013	05/11/2015	2019 Q2	2020 Q2	2020 Q2

RMT.0586 **Tyre pressure monitoring system**

— The specific objective is to propose a regulatory change to ensure that large aeroplanes tyres inflation pressures remain within the pressure specifications defined by the aircraft manufacturer.

— The rulemaking proposal should consider better enforcing the operator's responsibility to ensure regular tyre pressure checks, and also the aircraft manufacturer's obligation to define the tyre pressure check procedures and intervals in the instructions for continued airworthiness (ICA); as different practices exist in terms of content and presentation of the information in the aircraft maintenance manual (AMM), it could be proposed to better standardise this ICA item among manufacturers and aircraft.

— Since a tyre pressure check legal obligation would not always guarantee that the tyres are correctly inflated (e.g. air leakage in the tyre/wheel assembly, maintenance error or negligence, failure/inaccuracy of the inflation equipment, operator not correctly performing the regular checks, etc.), the rulemaking proposal should also include the installation of a tyre pressure monitoring system which will alert the pilots when a tyre pressure is abnormal or out of tolerance.

Owner			Affected stakeholders				
EASA CT.7			Operators				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	30/05/2017	2019 Q1	2020 Q1	2021 Q1	2021 Q1

RMT.0588 **Aircraft continuing airworthiness monitoring — Review of key risk elements**

Considering the implementation experience (including Standardisation feedback), the objective is to review the current principles specified in AMC3 M.B.303(b) 'Aircraft continuing airworthiness monitoring', and the related GM1 M.B.303(b) and Appendix III to GM1 M.B.303(b). In particular, to assess:

— if the requirements adequately address the processing of key risk elements (KREs) requiring annual reviews to ensure that all regulatory references remain up to date; and

— the appropriateness of each KRE, determine the need for additional KREs, review the adequacy and pertinence of typical inspection items included.

Owner			Affected stakeholders				
EASA FS.1			NAAs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	2019 Q1	2020 Q1	n/a	n/a	2021 Q1

RMT.0671 **Engine bird ingestion**

A US ARAC group was tasked to work on several improvements to the bird ingestion requirements.

Owner	Affected stakeholders
EASA CT.7	Manufacturers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	✓	30/05/2017	02/10/2017	n/a	n/a	2018 Q2

RMT.0686 **HP rotor integrity and loss-of-load (due to shaft failure)**

The task will review and amend CS-E 840 and CS-E 850 to address certification issues for new designs. There will be a US industry-led group which will be formed, to discuss the pre-rulemaking on this issue. European industry has raised this item and they would support EASA rulemaking on this issue preferring EASA to take the lead.

Owner	Affected stakeholders
EASA CT.7	DAHs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	✓	2019 Q1	2020 Q1	n/a	n/a	2021 Q1

Research

RES.014 **Air Data Enhanced Fault Detection & Diagnosis**

Develop new fault detection & diagnosis (FDD) and fault tolerant control (FTC) methods of the following types:

- Model-based analytical redundancy (e.g. virtual sensors),
- Data-based (i.e. model free-methods), or
- a combination of both types.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	CAT	Report	2019

5.3.5 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 risk of ground safety.

How we monitor improvement

Continuous monitoring of safety issues identified in the Commercial Air Transport Fixed Wing Portfolio (ref: Annual Safety Review 2017) for this particular risk area.

How we want to achieve it: actions

Rulemaking

RMT.0116 **Real weight and balance of an aircraft**

The objective of this task is to propose an amendment of CS for large aeroplanes (CS-25) to require the aeroplane being equipped with a weight and centre of gravity measuring system. Based on safety and cost-effectiveness consideration, it might be proposed:

— A retroactive requirement for such system to be installed on already type-certified large aeroplanes (using a Part-26/CS-26 rule).
— CS-23 amendment for commuters aeroplanes.

The rulemaking should consider the minimum operational performance specification (MOPS) which will be produced by the European Organisation for Civil Aviation Equipment (EUROCAE) WG-88.

Owner	Affected stakeholders
EASA CT.7	DAHs and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	2018 Q3	2020 Q1	2021 Q1	2022 Q1	2022 Q1

RMT.0118 **Analysis of on-ground wings contamination effect on take-off performance degradation**

— To propose an amendment of CS-25 to require applicants performing an assessment of the effect of aircraft aerodynamic surfaces on-ground contamination on take-off performance and on aircraft manoeuvrability and controllability.
— To propose a retroactive rule Part-26/CS-26 applicable to large aeroplane TC holders; this rule would require a similar analysis and means of protection as the ones proposed for amending CS-25. The retroactive rule may be limited in terms of applicability to a category of aircraft which would be the most vulnerable.

EASA will publish its NPA on this RMT in Q2/2018. Following the NPA's public consultation, EASA will publish a decision issuing CS-25, as well as an opinion proposing amendments to Part-26. Upon adoption of the Part-26 amendment by the Commission and publication in the Official Journal, EASA will issue the related CS-26.

Owner	Affected stakeholders
EASA CT.7	Manufacturers, operators, applicants for TC/STC

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A	ST	-	21/03/2017	2018 Q2	n/a	n/a	2019 Q1
					2019 Q1	2020 Q1	2020 Q1

Safety Promotion

MST.018 **Include ground safety in national SSPs**

This safety issue should be addressed by the MS on their SSPs. This will include as a minimum agreeing a set of actions and measuring their effectiveness.

Owner	Activity sector	Deliverable	Date
MS	CAT/HE, HF	SSP established	Continuous

5.3.6 Terrain conflict

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 a 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 Commercial Air Transport Fixed Wing Portfolio (ref: Annual Safety Review 2017) for this particular risk area.

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.

Owner	Affected stakeholders
EASA FS.2	Operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	31/01/2014	18/12/2015	16/12/2016	2017 Q4	2017 Q4

Safety Promotion

MST.006 **Include CFIT in national SSPs**

Controlled flight into terrain should be addressed by the MS on their SSPs. This will include as a minimum agreeing a set of actions and measuring their effectiveness.

Owner	Activity sector	Deliverable	Date
MS	CAT, HF	SSP established	Continuous

5.3.7 Fire, smoke and fumes

Issue/rationale

Uncontrolled fire on board an aircraft, especially when in flight, represents one of the most severe hazards in aviation. Post-crash fire is also addressed in this section.

In-flight fire can ultimately lead to loss of control, either as a result of structural or control system failure, or again as a result of crew incapacitation. Fire on the ground can take hold rapidly and lead to significant casualties if evacuation and emergency response is not swift enough. Smoke or fumes, whether they are associated with fire or not, can lead to passenger and crew incapacitation and will certainly raise concern and invite a response. Even when they do not give rise to a safety impact, they can give rise to concerns and need to be addressed.

While there were no fatal accidents involving EASA MS operators in the last years involving fires, there have been occurrences in other parts of the world that make it an area of concern within the EPAS.

What we want to achieve

Continuously assess and improve risk controls to mitigate the risk of fire, smoke and fumes.

How we monitor improvement

Continuous monitoring of safety issues identified in the Commercial Air Transport Fixed Wing Portfolio (ref: Annual Safety Review 2017) for this particular risk area.

How we want to achieve it: actions

Rulemaking

RMT.0070 Additional airworthiness specifications for operations: Fire hazard in Class D cargo compartments

Owner			Affected stakeholders				
EASA CT.7			Operators and manufacturers				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	17/09/2010	2018 Q2	n/a	n/a	2019 Q2

RMT.0071 Additional airworthiness specifications for operations: Thermal/acoustic insulation material

The general objective of this RMT is to reduce the safety risks due to flame penetration and propagation in the fuselage by introducing retroactive specifications based on CS 25.856(a) and (b), applicable to already type-certified large aeroplanes.

Owner			Affected stakeholders				
EASA CT.7			Operators and manufacturers				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	18/09/2014	01/10/2015	23/05/2016	2018 Q2	2018 Q2

Safety Promotion

MST.005 Include fire, smoke and fumes in national SSPs

This safety issue should be addressed by the MS on their SSPs. This will include as a minimum agreeing a set of actions and measuring their effectiveness.

Owner	Activity sector	Deliverable	Date
MS	CAT, HF	SSP established	Continuous

Research

RES.003 **Research study on cabin air quality**

Investigation of the quality level of the air inside the cabin of large transport aeroplanes and its health implication. The work aims at demonstrating, on the basis of a sound scientific process, whether potential health implications may result from the quality of the air on board commercially operated large transport aeroplanes.

Owner	Activity sector	Deliverable	Date
European Commission (H2020)	CAT	Study report	2018

RES.004 **Transport of lithium battery by air**

Develop mitigating measures for the transport of lithium metal and lithium ion batteries on board an aircraft.

This would include, at least:

- Identification of potential risks.
- Assessment of packaging solutions/standards (both for lithium metal and lithium ion batteries).
- Identification and assessment of additional measures that may mitigate the risks of thermal runaway and propagation of the fire.
- Evaluation of firefighting measures and suppression systems that could substitute halon.
- Development of a risk assessment method to enable operators to establish and evaluate safe conditions for air transport..

This must take into consideration the specific operational conditions of air transport (vibrations, changes of temperature, pressure, etc.) that might impact the stability of lithium battery.

Owner	Activity sector	Deliverable	Date
European Commission (H2020)	CAT	Report	2019

RES.016 **Fire risks with large PED in checked luggage**

Characterise fire risk (propagation, detection, suppression) for large PED transported in aircraft cargo compartment (checked luggage).

Owner	Activity sector	Deliverable	Date
EASA CT.7	CAT	Report	2019

5.4 Rotorcraft operations

Issue/rationale

This area includes both CAT and offshore operations as well as aerial work performed by helicopters. In the offshore helicopter domain, there was one fatal accident, which involved the loss of an Airbus Helicopters EC225 Super Puma in Norway on 29 April 2016. The CAT helicopters domain mainly covers business aviation and helicopter emergency medical services (HEMS), where there was an increase in fatal accidents in 2016 – 1 fatal accident occurred in Slovakia, and 1 in Moldova, which involved an EU operator. Both accidents involved HEMS flights and both had 4 fatalities each. In the aerial work domain there were no fatal accidents in 2016.

The European Safety Risk Management process has identified opportunities to improve risk controls in the following areas so that accident numbers will not increase.. 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 (7 fatal accidents in the past 10 years). 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 (9 fatal accidents in the past 10 years). The following actions contribute to mitigate risks in this area: RMT.0127, RMT.0709, RMT.0711 and RMT.0608

— 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. It is the most common outcome for aerial work operations (11 fatal accidents in the past 10 years). The following actions contribute to mitigate risks in this area: RMT.0708

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 Helicopter Safety Risk Portfolios (ref: Annual Safety Review 2017)

How we want to achieve it: actions

Rulemaking

RMT.0120 Helicopter ditching and water impact occupant survivability

This task aims at enhancing post-ditching and water impact standards for rotorcraft that could significantly enhance occupant escape and survivability. It will, in part, consider the recommendations arising from early work performed by the Joint Aviation Authorities (JAA) Water Impact, Ditching Design and Crashworthiness Working Group (WIDDCWG) and the Helicopter Offshore Safety and Survival Working Group (HOSSWG).
EASA plans to issue CS-27/29 in Q1/2017. In a second phase, EASA will consider whether the safety issue also necessitates amendment od Part-26/CS-26. An NPA is planned for Q4/2018, which may lead to an opinion proposing amendments to Part-26 in Q3/2019. Upon adoption of the Part-26 amendment by the Commission and publication in the Official Journal, EASA will issue the related CS-26 (expected in Q1/2021).

Owner	Affected stakeholders
EASA CT.7	DAHs and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	24/10/2012	23/03/2016	n/a	n/a	2017 Q4
				2018 Q4	2019 Q3	2021 Q1	2021 Q1

RMT.0127 **Pilot compartment view**

This proposal addresses a safety issue related to rotorcraft windshield misting and subsequent restriction of pilot vision. The existing rules are unclear as to what is required and how compliance can be demonstrated.

The specific objective is to mitigate the risks linked to restricted pilot vision, particularly during critical phases of flight (take-off, landing, low hover), by requiring a means to remove or prevent the misting of internal portions of transparencies in rotorcraft, thus ensuring safe operations in all likely flight and operating conditions.

In addition, the RMT's scope is proposed to be extended to address the rules governing pilot vision in snow conditions, which are unclear, particularly in relation to piston-engine rotorcraft.

Owner			Affected stakeholders				
EASA CT.7			Manufacturers				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	2018 Q4	2019 Q3	n/a	n/a	2020 Q3

RMT.0608 **Rotorcraft gearbox loss of lubrication**

This task aims to strengthen the existing CS-29 requirements pertaining to rotor drive system lubrication. It proposes a harmonised action to address gaps identified in the existing requirements, clarify the intent of the rule and redefine test requirements to meet the intended safety standards. This will both reduce the potential for lubrication system failures from occurring and mitigate the consequences of any failure, should this happen.

Owner			Affected stakeholders				
EASA CT.7			DAHs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A-	ST	-	22/05/2014	31/05/2017	n/a	n/a	2018 Q2

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 RMT will consider mandating the installation of HTAWS on board the helicopter for certain operations. The RMT 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. Based on the preliminary cost effectiveness analysis, HTAWS for the following operations are not to be considered: NCO, SPO, and CAT with small helicopters in VFR operations. For offshore helicopter operations, this also includes the involvement of the EASA Certification Directorate working with stakeholders on the evaluation of updated HTAWS standards

Owner			Affected stakeholders				
EASA FS.2			Helicopter operators				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B0.5 to 1.5	ST	-	2018 Q4	2019 Q4	n/a	n/a	2020 Q4

RMT.0709 **Prevention of catastrophic accidents due rotorcraft hoists issues**

Improvements in the certification specifications and standards relating to the certification of rotorcraft hoists is expected to significantly reduce the risk of catastrophic accidents due to rotorcraft hoists. The current certification specifications relating to the certification of rotorcraft hoists are not being appropriately applied. In addition, some failure modes are not consistently taken into consideration and this is reflected in service experience. A high number of safety occurrences have been reported that are attributed to rotorcraft hoists. The ETSO that is being developed is hoped to address some existing design shortfalls. Retrospective application of any additional certification specifications may be considered. Moreover, cargo hook aspects will also be considered along with the safety affects to people on the ground during non-human external cargo operations.

Owner			Affected stakeholders				
EASA CT.7			Manufacturers and operators				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B1.5	ST	-	2019 Q3	2020 Q2	n/a	n/a	2021 Q1

RMT.0710 **Improvement in the survivability of rotorcraft occupants in the event of a crash**

The likelihood of survival of rotorcraft occupants in the event of a crash would significantly be improved through the retroactive application of the current improvements in fuel tank crash resistance and occupant safety for rotorcraft that were certified before the new certification specifications for type designs entered into force in the 1980s and 1990s. SRs have been raised by Accident Investigation Boards on fuel tanks and occupant safety for helicopters certified before the upgrade of the rules for emergency landing conditions and fuel system crash resistance, for new type designs in the 1980s and 1990s. In November 2015, a new task was assigned by the FAA for the Aviation Rulemaking Advisory Committee (ARAC) to provide recommendations regarding occupant protection rulemaking in normal and transport category rotorcraft for older certification basis type designs. EASA participates to the Working Group and should consider the application of the outcome of this activity for application to the existing European fleet.

Owner			Affected stakeholders				
EASA CT.7			DAH and Manufacturers				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B2	ST	-	2020 Q1	2020 Q3	2021 Q3	2022 Q1	2022 Q1

RMT.0711 **Reduction in accidents caused by failures of critical rotor and rotor drive components through improved vibration health monitoring systems**

The use of vibration health monitoring (VHM) systems to detect imminent failures of critical rotor and rotor drive components have been shown to greatly improve the level of safety of rotorcraft particularly for offshore operations. However, there is a need to improve the current certification specifications to reflect the evolution of modern VHM systems in order to gain the associated benefits from these systems.

Improved certification specifications would drive and enable improvements in the fidelity of VHM systems and also foster the modernisation of these systems which would provide additional safety benefits when compared to the existing legacy systems.

Owner			Affected stakeholders				
EASA CT.7			DAH and manufacturers				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B1.5	ST	-	2019 Q2	2020 Q1	n/a	n/a	2020 Q3

RMT.0713 **Reduction in human-factors-caused rotorcraft accidents that are attributed to the rotorcraft design**

It is widely recognised that human factors contribute either directly or indirectly to a majority of aircraft accidents and incidents and that the design of the flight deck and systems can strongly influence the crew performance and the potential for crew errors.

Currently, the certification specifications for rotorcraft do not contain any specific requirements for a human factor assessment to be carried out. Large transport aircraft have benefited from human factor assessments of the design of the flight deck and associated systems. New generation helicopters are characterised by having a high level of integration of cockpit equipment, displays and controls. It is also likely that the future rotorcraft projects, embodying fly-by-wire technology flying controls, will pose new and additional challenges from a human factors perspective.

The development of certification specifications for human factors in the design of rotorcraft cockpits would mitigate the probability of human factors and pilot workload issues that could lead to an accident.

Owner			Affected stakeholders				
EASA CT.7			DAH				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B2	ST	-	2018 Q1	2019 Q1	n/a	n/a	2019 Q3

Research

RES.009 **Ditching in water or a Survivable water impact (SWI) for Rotary wing aircrafts (Helicopter, Tilt Rotor, Compound Rotorcraft)**

Sufficient real flotation time (2-3 Minutes) before any capsizing or side floating movement to provide opportunities for the occupants to escape a rotary wing aircraft, taking into consideration sea state 6 conditions (irregular waves), in case of ditching in water or in the event of a survivable water impact (SWI).

Owner	Activity Sector	Deliverable	Date
EASA SM.1	HE	Report	2019

RES.011 **Helicopter, tilt rotor and hybrid aircraft Gearbox health monitoring - In-situ failure detection**

New technologies for in-situ detection of tilt rotor, helicopter and hybrid aircraft gearbox failures.

Owner	Activity sector	Deliverable	Date
EASA SM.1	HE	Report	2019

RES.008 **Rotorcraft main gear box (MGB) design to guarantee integrity of critical parts and system architecture to prevent separation of the main rotor following any MGB failure.**

1. Enhancement for new design features of helicopter MGB and attachment, to prohibit at any time separation of the mast and main rotor from the helicopter, allowing in case of any major failure of the main gear box components, the helicopter to autorotate.
2. Study to understand threats to rotor drive system critical component integrity and methods to design and substantiate flaw tolerant critical component designs.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	HE	Report	2019

RES.020 **Identify helicopter technologies with safety benefits**

Revise and update the study performed by the NLR for EHEST on the safety benefits of technologies to assess and when relevant include new technologies addressing safety threats such as laser pointing, drones, bird strike, wire strike, etc.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	HE	Report	2019

Safety Promotion

MST.015 **Helicopter safety events**

NAAs, in partnership with industry representatives, to organise helicopter safety events annually or every two years. The EHEST, IHST, NAA, HeliOffshore or other sources of Safety Promotion materials could be freely used and promoted.

Owner	Activity sector	Deliverable	Date
MS	HE	Workshop	Continuous

SPT.082 **Support the development and implementation of FCOM for offshore helicopter operations**

To provide support to manufacturers, if needed, in the development of FCOM for different helicopter types and support/encourage operators in their implementation.

Owner	Activity sector	Deliverable	Date
Offshore Helicopter CAG	HE	Report	2019

SPT.092 **Improve dissemination of existing Safety Promotion material by developing mobile applications & e-platforms**

Reaching target audience is one of the main challenges of Safety Promotion. This tasks aims at improving dissemination of existing Safety Promotion material by developing mobile applications & e-platforms. This will increase user-friendliness of existing paper format Safety Promotion material and will facilitate translations and future revisions.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Mobile applications and/or e-platforms	2019

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.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Leaflets, videos, web-pages and/or applications	2021

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 guidelines coming for example from IHST and SM-ICG.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Revised helicopter safety & risk management manuals and/or toolkits	2021

SPT.095 **Promote helicopter technologies with safety benefits**

Following the Research action identifying promising helicopter technologies (update of the study performed by the NLR for EHEST), promote the helicopter technologies having high safety benefits.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Web-page, flyer and/or report	2021

SPT.096 **Organise an annual safety workshop at Helitech Int.**

The European Safety Promotion Network Rotorcraft (ESPN-R) to organise in cooperation with the International Helicopter Safety Team (IHST) for EHA the HELITECH Intl. Safety Workshop. This high profile event promotes safe helicopter operations and fosters interactions within the community.
The event theme changes every year.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Safety Workshop	Continuous

5.5 General Aviation: Fixed-wing leisure flying

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 2016, there were 78 fatalities in non-commercial operations with aeroplanes (2nd highest number) and 20 in the domain of glider/sailplane operations (2nd highest number). These two areas present the highest numbers of fatal accidents in 2015. The General Aviation Road Map is key to the EASA strategy in this domain. This area is a strategic priority.

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.

Therefore, EASA organised a workshop (5–6 October 2016) on general aviation safety to share knowledge and agree on the safety actions that will contribute to improving safety in this domain. The below strategic safety areas and related actions were identified and discussed during the workshop.

5.5.1 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

Continuous monitoring of safety issues identified in the GA-related portfolios (ref: Annual Safety Review 2016).

How we want to achieve it: 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.

Owner	Activity sector	Deliverable	Date
Safety Promotion Network (SPN)	GA	Safety workshops and safety days/evenings	Continuous

SPT.083 **Flight instruction**

Develop Safety Promotion material aimed at making more effective use and maximising the safety benefits of biennial check flights with flight instructors, including differences between aircraft types.

Owner	Activity sector	Deliverable	Date
GA Roadmap	GA	Safety Promotion material	2019

SPT.084 **Promoting safety 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.). This task is linked to rulemaking activities in Section 7.5 'GA Efficiency' that allow for the affordable and timely installation of such systems.

Owner	Activity sector	Deliverable	Date
GA Roadmap & SPN	GA	Safety Promotion material / Dissemination	2018

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

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

Owner	Activity sector	Deliverable	Date
MS	GA	Just culture included in SSP	Continuous

5.5.2 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 47 %, aircraft upset including loss of control is the most common type of fatal accidents in the last 10 years for EASA MS non-commercial operations with aeroplanes.

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 portfolios (ref: Annual Safety Review 2016).

How we want to achieve it: 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.

Owner	Activity sector	Deliverable	Date
GA Roadmap	GA	Safety Promotion campaign	2018

5.5.3 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: Annual Safety Review 2016).

How we want to achieve it: actions

Safety Promotion

SPT.087 **Weather awareness for pilots**

Produce a 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).

Owner	Activity sector	Deliverable	Date
GA Roadmap	GA	Video/media product	2018

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

Promote the results of RMT.0677 on the easier access of GA pilots to instrument flight rules (IFR) flying in order to ensure that the safety and efficiency benefits materialise across Europe.

Owner	Activity sector	Deliverable	Date
GA Roadmap	GA	Safety Promotion campaign	2019

5.5.4 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: Annual Safety Review 2016).

How we want to achieve it: actions

Safety Promotion

MST.016 **Airspace infringement risk in General Aviation**

National authorities should play the leading role in establishing and promoting local implementation priorities and actions.

Owner	Activity sector	Deliverable	Date
MS	GA, HF	Report	Continuous

SPT.089 **European Safety Promotion on Mid-air collisions 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.

Owner	Activity Sector	Deliverable	Date
GA Roadmap & SPN	GA	Safety Promotion Campaign	2018

Focused Oversight

FOT.010 **Service provision to GA flights**

Raising the quality of support provided to GA flights by air navigation service providers (ANSPs) through focused oversight.

Owner	Activity sector	Deliverable	Date
MS and GA.COM/ TeB	GA	Best Practice	Continuous

5.5.5 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: Annual Safety Review 2016)

How we want to achieve it: actions

Safety Promotion

SPT.090 **Fuel management for pilots**

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

Owner	Activity sector	Deliverable	Date
GA Roadmap & SPN	GA	Leaflet/webpage	2018

5.6 Emerging issues

This section addresses already emerging issues as well as issues that could potentially emerge in the immediate or near future. Giving consideration to safety issues derived from operations or regulations that have not been fully deployed, it incorporates a forward-looking element in EPAS.

5.6.1 Civil drones (Unmanned Aircraft Systems)

Issue/rationale

Most of EU Member States adopted national regulations to ensure *safe operations* of Unmanned Aircraft Systems (UAS) 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 proposal of the EU commission for a revision of the Basic Regulation extends the scope of the EU competence to regulate UAS even 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.

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.

How we want to achieve it: actions

Rulemaking

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

Development of IRs for UAS based on EC communication COM(2015)613 and attached proposals to amend Regulation 216/2008/EC. There are three categories of UAS 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

In order to implement an innovative new set of rules for the three categories, the following five subtasks were identified:

1 Open and specific category with dedicated implementing rule
2 Certified category with amendments to OPS, FCL, ACAS, Initial AW, Continued AW, ATCO licensing, ATM/ANS oversight, SERA, ADR
3 Specific category: New AMC std scenario and amendments to AMC1309, CS-ACNS; *this subtask is subject to the accelerated procedure.
4 Certified category with amendments to CS ETSO, CS-36; new CS-UAS
The indicative timelines and deliverables for the four subtasks *(SubT)* are given in the table below (next page). SubTask 3 will be according to Art.16 an accelerated procedure.

Owner	Affected stakeholders
EASA CT.7	Individuals and organisations using or intending to use UAS, Member States, UAS manufacturer, Manned Aviation community, Model Aircraft Community, Air Navigation Service Providers, aerodromes, all airspace users

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	1	22/12/2016	04/05/2017	2018 Q1	2018 Q3	2018 Q3
			2		2018 Q1	2019 Q1	2020 Q1	2020 Q1
	AP		3		*	n/a	n/a	2018 Q3
			4		2018 Q3	2019 Q1	2019 Q1	2019 Q1

Safety Promotion

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

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

Owner	Activity sector	Deliverable	Date
SPN	General public	Safety Promotion	2019

5.6.2 Safety and security

Issue/rationale

The safety actions in this area are aimed at mitigating the cybersecurity risks. The impact of security in safety is a strategic priority.

What we want to achieve

Manage the impact of security on safety.

How we monitor improvement

Continuous assessment and mitigation of security threats.

How we want to achieve it: actions

Rulemaking

RMT.0648 **Aircraft cybersecurity**

The specific objective of this task is to mitigate the safety effects stemming from cybersecurity risks due to acts of unlawful interference with the aircraft on-board electronic networks and systems. To achieve this objective, it is proposed to introduce in CS-25 new cybersecurity provisions taking into account the existing special condition and the recommendations of the AISP ARAC group. The need to include similar provisions such as CS-29, CS-27, CS-23, CS-E, CS-ETSO, and CS-P will also be considered.

Owner	Affected stakeholders
EASA CT.7	Applicants for TC/STC for large aeroplanes or large rotorcraft

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	✓	17/05/2016	2018 Q1	n/a	n/a	2019 Q1

RMT.0720 **Cybersecurity risks**

The specific objective of this task is to 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, aerodromes), which include high-level, performance-based requirements, and which is supported by AMC/GM material and Industry Standards.

Owner	Affected stakeholders
EASA SM.1	Manufacturer, Airlines, MRO, CAMO, Training Organisations, ATM/ANS Providers, Aerodromes

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	✓	2017 Q4	2018 Q2	2019 Q2	2020 Q1	2020 Q1

Safety Promotion

SPT.071 **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 jointly by the European Commission and EASA in close cooperation with EU Member States and industry. 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

This Strategy for Cybersecurity in Aviation, together with the wider cybersecurity strategy being implemented in the EU for the protection of EU citizens against cybercrime, will pave the way for a secure and safe air transport system.

Owner	Activity sector	Deliverable	Date
EASA, EC, MS	CAT/HE	Strategy Paper	2018

Research

RES.012 **Cybersecurity: common aeronautical vulnerabilities database**

Develop a vulnerability database collecting, maintaining, and disseminating information about discovered vulnerabilities targeting major transport information systems.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	ALL	Database	2019

5.6.3 New business models

Issue/rationale

Due to the increased complexity of the aviation industry, the number of interfaces between organisations, their contracted services and regulators has increased. NAAs should work better together (cooperative oversight) and EASA should evaluate whether the existing safety regulatory system adequately addresses current and future safety risks arising from new and emerging business models. Upon the request of MS, EASA tasked a working group of NAAs to assess airlines' emerging 'new' business models and to identify related safety risks posed to the aviation system. This is a strategic priority.

What we want to achieve

Continuously assess and mitigate risks posed by the introduction of new business models.

How we monitor improvement

Significant increase in the number of MS making use of the cooperative oversight provisions for organisations/persons certified by the CA of another MS.

How we want to achieve it: actions

Safety Promotion

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

NAAs to have a thorough understanding of operators' governance structure. In particular, influence of financial stakeholders and of the controlling management personnel, where such personnel are located outside the scope of approval.

Owner	Activity sector	Deliverable	Date
MS	CAT/HE	Research or Guidance Material	2018

Focused Oversight

FOT.007 **Cooperative oversight**

Part-ARO requires that the scope of the oversight of activities performed in the territory of a MS by organisations established or residing in another MS shall be determined on the basis of the safety priorities. In assessing these safety priorities, the 'local' CA shall participate in a mutual exchange of all necessary information and assistance with the other CAs concerned .

EASA will ensure that the EASA standardisation inspections monitor whether such authority requirements are adhered to. The objective is to ensure that each organisation's activities are known to the relevant authorities and that those activities are adequately overseen, either with or without an agreed transfer of oversight tasks.

In parallel EASA will continue to support NAAs in the practical implementation of cooperative oversight, e.g. existing trial projects (UK, NO, FR, CZ), as well as via exchange of best practice and guidance.

Owner	Activity sector	Deliverable	Date
EASA FS.2	ALL	Feedback from standardisation	2018

FOT.008 **Operator's management system**

EASA will ensure that the EASA standardisation inspections have due regard to the ability of CAs to evaluate and oversee the operator's management system, in particular as regards the consideration of specific safety risks, such as safety culture, the governance structure of the operator, and any other feature that may introduce new risks.

Owner	Activity sector	Deliverable	Date
EASA FS.2	ALL, HF	Feedback from standardisation	2018

5.6.4 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.

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

What we want to achieve

Manage the introduction of new products, systems, technologies and operations.

How we monitor improvement

Continuous assessment and mitigation of safety aspects related to new products

How we want to achieve it: actions

Rulemaking

RMT.0266 **Powered lift (tilt rotor) applicable requirements (pilot licensing with synthetic training devices, air operations and maintenance)**

To develop IRs for powered lift pilot licensing and operations.

This task has been put on hold until further notice.

Owner	Affected stakeholders
EASA FS.5	Pilots, TOs, and NAAs

RMT.0414 **Operations and equipment for high-performance aircraft (HPA)**

Review of IRs/AMC/GM in relation to the operation of HPA.

This task has been put on hold until further notice.

Owner	Affected stakeholders
EASA FS.2	HPA operators

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.

MS 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.

Owner	Activity sector	Deliverable	Date
MS	ALL	Report	2017

SPT.078 **Disseminate information on conflict zones**

In the aftermath of the B777 MH17 accident, an EU high-level task force is working to define further actions to be taken at European level in order to provide common information on risks arising from conflict zones.

Owner	Activity sector	Deliverable	Date
EASA SM.1	ALL	Information to MS	Continuous

Research

RES.015 **Vulnerability of manned aircraft to drone strike**

Assess the potential MAC threat posed by drones to manned aircraft and validate its results by means of a complete set of activities including modelling and impact tests.

Owner	Activity Sector	Deliverable	Date
EASA SM.2	CAT	Report	2019

5.6.5 Regulatory oversight considerations

Issue/rationale

By introducing authority requirements, and in particular strict requirements for MS on oversight, the rules developed under the first and second extension of the EASA scope have significantly strengthened the oversight requirements. In terms of efficiency, such rules have also introduced the concept of risk-based and cooperative oversight.

The following actions focus on supporting the implementation of these new requirements by updating inspector qualifications and enabling the implementation of risk-based oversight.

What we want to achieve

Improve MS oversight capacities and capabilities.

How we monitor improvement

Significant increase in the number of EASA MS implementing risk-based oversight. Increase in the number of inspectors qualified to conduct risk-based oversight.

How we want to achieve it: actions

Rulemaking

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

— Improve the authority and organisational requirements 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;
— Align with the Occurrence Reporting Regulation (Regulation (EU) No 376/2014);
— Ensure compliance with the ICAO Standards And Recommended Practices (SARPs);
— Address identified safety issues such as pax seating and briefing;
— GA Road Map issues.

Owner	Affected stakeholders
EASA FS.2	All operators and NAAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	16/09/2013	27/11/2015	29/06/2017	2018 Q4	2018 Q4

Focused Oversight

FOT.009 **Conduct of audits within risk-based oversight**

Develop and test a concept, share best practices and develop enforcement strategies to enable the performance of audits by NAAs taking into account the risk-based oversight concept.

Owner	Activity Sector	Deliverable	Date
EASA FS.5	ALL, HF	Concept and best practices	2018

6 Environment

The actions in this section are driven principally by the need to improve the current environmental protection in the aviation sector.

6.1 Climate change

Issue/rationale

Further to the latest developments at ICAO level under the CAEP/10 framework, the Basic Regulation (in particular Article 6) and the relevant EASA rules need to be adapted accordingly. Further work may be need to take into account as well as the outcome of the ICAO 39th Triennial Assembly.

What we want to achieve

To align Article 6 of the Basic Regulation with the ICAO CAEP/10 recommendations;

To align CS-34 with the ICAO CAEP/10 recommendations; and

To balance the environmental needs with safety and with cost-efficient rules for progressive phase-out of halon.

How we monitor improvement

European Aviation Environmental Report.

How we want to achieve it: actions

Rulemaking

RMT.0514 **Implementation of the CAEP/10 amendments**

To align Article 6 of the Basic Regulation with the ICAO CAEP/10 recommendations

Owner	Affected stakeholders
EASA CT.5	Design and production organisations

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	13/06/2016	17/01/2017	2017 Q4	2018 Q4	2018 Q4

RMT.0560 **Halon — Update of Part-26 to comply with ICAO standards**

To balance the environmental needs with safety and with cost-efficient rules for progressive phase-out of halon

Owner	Affected stakeholders
EASA CT.7	Operators and MOs — large aircraft operators and manufacturers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	18/09/2013	18/11/2014	02/08/2016	2018 Q2	2018 Q2

Research

RES.018 **Development of Particulate Matter (PM) regulations and guidelines**

Acquire high quality PM data, analysis, modelling and expert support for regulatory action.

Owner	Activity sector	Deliverable	Date
EASA SM.1	ALL	Report	2019

RES.019 **Aviation Emissions Support**

Obtain high quality technical expert support on standardisation issues.

Owner	Activity sector	Deliverable	Date
EASA SM.1	CAT	Report	2019

6.2 Aircraft noise

Issue/rationale

Further to the latest developments at ICAO level under the CAEP/10 framework, the Basic Regulation (in particular Article 6) and the relevant CSs need to be adapted accordingly.

What we want to achieve

To align CS-36 with the ICAO CAEP/10 recommendations.

How we monitor improvement

European Aviation Environmental Report.

How we want to achieve it: actions

Rulemaking

RMT.0513 **Update CS 36 to refer to the environmental technical manual on noise certification as amended after CAEP/10**

To align CS-36 with the ICAO CAEP/10 recommendations

Owner	Affected stakeholders
EASA CT.5	Design and production organisations

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	13/06/2016	17/01/2017	2017 Q4	2018 Q4	2018 Q4

7 Efficiency/Proportionality

The actions in this section are driven by the need to ensure that European rules are cost-effective in achieving their objective as well as proportionate to the risks identified. 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..

7.1 Evaluations

The RMP includes proposals for evaluation of existing rules with the objective of reviewing feedback from implementation and assessing the rules' relevancy, efficiency and effectiveness. The evaluations should identify which rules could be clarified, simplified, updated or possibly repealed. It should also assess whether a performance-based approach could be applied as a tool for increasing regulatory efficiency.

Evaluation

EVT.0001 **Evaluation of Part-66**

Assessment of the effectiveness of the implementation of provisions for Part-66 in Regulation No 2042/2003 repealed by 1321/2014, identifying problems, recommendations (solutions) fitting to the licensing needs in a fast-evolving world.

Owner: EASA FS.1.2

Affected stakeholders: Maintenance staff licensing system and CAs

PIA	Proc	3rdC	ToR	Evaluation report
n/a	ST	-	2017	2018

EVT.0002 **Evaluation of Part-147**

Assessment of the effectiveness of the implementation of provisions for Part-147 in Regulation No 2042/2003 repealed by 1321/2014, identifying problems, recommendations (solutions) fitting to the licensing needs in a fast-evolving world.

Owner: EASA FS.1.2

Affected stakeholders: Maintenance training organisations

PIA	Proc	3rdC	ToR	Evaluation report
n/a	ST	-	2017	2018

EVT.0004 **Evaluation of rules on examiners in aviation domains**

Evaluation on rules of examiners in Part FCL, Commission Regulation (EU) 1178/2011. The objective of the evaluation is to assess the efficiency and effectiveness of existing provisions for examiners (Subpart K of Part FCL) and to provide recommendations for regulatory improvements.

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Owner: EASA FS.3.2 in collaboration with SM.2.1

Affected stakeholders: Examiners; Approved Maintenance Training Organisations

PIA	Proc	3rdC	ToR	Evaluation report
n/a	ST	-	2017	2018

EVT.0005 **Evaluation of Part-145**

Assessment of the effectiveness of the implementation of provisions for Part-145 in Regulation No 2042/2003 repealed by 1321/2014, identifying problems, recommendations (solutions) fitting to the licensing needs in a fast-evolving world.

Owner	Affected stakeholders
EASA FS.1.2 in collaboration with SM.2.1	Maintenance organisations and CAs; Approved Maintenance Training Organisations

PIA	Proc	3rdC	ToR	Evaluation report
n/a	ST	-	2019	2020

EVT.0006 **Evaluation on provisions for flight crew licences laid down in the Commission Regulation (EU) No 1178/2011[13]**

The regulation will be reassessed with regard to pilot training, testing and periodic checking for performance-based regulation.

Owner	Affected stakeholders
EASA FS.3 in collaboration with SM.2.1	Organisations and CAs

PIA	Proc	3rdC	ToR	Evaluation report
n/a	ST	-	2018	2019

EVT.0007 **Evaluation on Regulation 748/2012**

Evaluation of several aspects of the Regulation, including continued validity of type certificates

Owner	Affected stakeholders
EASA CT 7.1 in cooperation with SM.2.1	Part-21 organisations (DO, PO, ETSO, etc), NAA, EASA

PIA	Proc	3rdC	ToR	Evaluation report
n/a	ST	-	n/a	2020

[13] Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, OJ L 311, 25.11.2011, p. 1–193

7.2 Aerodrome design and operations

Issue/rationale

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

What we want to achieve

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

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0638 Certification requirements for VFR heliports located at aerodromes falling under the scope of the Basic Regulation

Ensure a high uniform level of safety at aerodromes by aligning Regulation (EU) No 139/2014 with ICAO Annex 14, Volume II, Heliports; develop necessary CS and GM for design and, if necessary, AMC/GM for operation and oversight of visual flight rules (VFR) heliports co-located at aerodromes (falling under the scope of the Basic Regulation).

Owner	Affected stakeholders
EASA FS.4.3	Aerodrome operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	22/09/2014	01/08/2017	n/a	n/a	2018/Q1

RMT.0705 Addition of a new requirement for the handling of dangerous goods at aerodromes

Under the current provisions of Regulation 139/2014, (ADR.OR.D.020) aerodrome operators are required to designate appropriate areas for the storage of dangerous goods. However, Regulation 139/2014 does not contain a requirement for the establishment of the methods for the delivery storage, dispending and handling of dangerous goods at the aerodrome.

Under the current provisions of Regulation 139/2014, there is no direct requirement for aerodrome operators to train their personnel in the handling of dangerous goods, in the case that the aerodrome operator is acting as sub-contractor (handling agent) of air-operators.

It is therefore recommended to address these issues by incorporating relevant ICAO provisions in Regulation 139/2014.

This task has been put on hold until further notice.

Owner	Affected stakeholders
EASA FS.4.3	Aerodrome operators

7.3 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.

How we monitor improvement

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.

Rulemaking

RMT.0161 Conformity assessment

Development and introduction of new technologies and systems that conform to agreed goals needs to be achieved in a harmonised and consistent manner. The general objective is to develop the requirements and guidance material for the declaration or certification of systems and constituents in a manner consistent with the existing process related to changes to the functional systems.

Owner: EASA FS.4.2

Affected stakeholders: ANSPs, Manufacturers, maintenance organisations, CAs (including EASA)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B2.5	ST	-	2018 Q1	2019 Q2	2020 Q4	2022 Q4	2022 Q4

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.

Owner: EASA FS.4.2

Affected stakeholders: MS, CAs, ANSPs, aerodrome operators and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	14/07/2014	25/10/2016	2017 Q4	2019 Q1	2019 Q1

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

Transposition of the relevant ICAO provisions on ATS. The objective is to establish a sufficient level of harmonisation throughout the EU, based on mandatory and flexible requirements, and to define proportionate and cost-efficient rules.

Owner	Affected stakeholders
EASA FS.4.2	MS; CAs; ANSPs; ATCOS; aerodrome operators; aircraft operators; professional organisations; trade unions; pilots; passengers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	09/07/2014	14/09/2016	2018 Q1	2019 Q1	2019 Q1

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

Development of the necessary harmonised requirements and AMC/GM for the provision of aeronautical information and data, mainly based on the transposition of ICAO Annex 15 and ICAO Annex 4. The task will also fulfil specific needs stemming from the SES implementation.

Owner	Affected stakeholders
EASA FS.4.2	MS, CAs, ANSPs aerodrome operators and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	11/10/2013	26/04/2016	2017 Q4	2019 Q1	2019 Q1

7.4 Airlines

Issue/rationale

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

What we want to achieve

Ensure effective regulatory framework for airlines.

How we monitor improvement

The EASA Advisory Bodies 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.

Owner	Affected stakeholders
EASA FS.3	Pilots, ATOs, and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	02/11/2012	04/11/2014	2021 Q2	2022 Q2	2022 Q2

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.

Owner	Affected stakeholders
EASA FS.2	CAT Operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	04/12/2013	30/03/2015	29/06/2017	2017 Q4	2017 Q4

7.5 General Aviation

Issue/rationale

GA is a high priority for 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 Road Map.

What we want to achieve

Reduce the regulatory burden for GA.

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0135 B2L and L Part-66 aircraft maintenance licences

Introduce licensing requirements for maintenance of:

— avionic and electrical systems applicable for lower complexity of light aircraft; and
— aircraft other than aeroplanes and helicopters and in the maintenance of ELA1 aeroplanes,

by adapting the current B2 licensing requirements for maintenance of avionic and electrical systems to the lower complexity of light aircraft, and propose a simple and proportionate system for the licensing of certifying staff involved in the maintenance of aircraft other than aeroplanes and helicopters and in the maintenance of ELA1 aeroplanes.

Owner	Affected stakeholders
EASA FS.1	Approved Maintenance Training Organisations, Maintenance engineers or mechanics/GA

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	15/04/2011	04/10/2012	22/06/2015	2018 Q2	2018 Q2

RMT.0547 Task force for the review of Part-M for General Aviation (PHASE II)

The following important topics are part of this task:

— Light Part-M;
— Defect management; and
— Time between overhaul (TBO) extension.

Owner	Affected stakeholders
EASA FS.1	Operators other than airlines and GA

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	23/10/2012	09/07/2015	13/04/2016	2018 Q4	2018 Q4

RMT.0657 Review of the Aircrew Regulation in order to provide a system for private pilot training outside approved training organisations, and of the associated acceptable means of compliance and guidance material

Review the existing requirements for providing training for LAPL, PPL, SPL or BPL as regards the question on how far training can be provided outside ATOs.

Owner	Affected stakeholders
EASA FS.3	Pilots, instructors, examiners, NAAs and DTOs.

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	13/10/2015	18/12/2015	07/09/2016	2018 Q2	2018 Q2

RMT.0677 **Easier access of General Aviation (GA) pilots to instrument flight rules (IFR) flying**

Review the existing requirements for the instrument ratings and most probably the development of a new instrument rating specifically catering for the needs of the PPL holders.

Owner	Affected stakeholders
EASA FS.3	Pilots, instructors, examiners and ATOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	18/12/2015	09/11/2016	2018 Q3	2019 Q2	2019 Q2

RMT.0678 **Simpler, lighter and better Part-FCL requirements for general aviation**

Review the different requirements which have been identified by the GA Road Map to cause problems for GA. Examples:

- Modular LAPL*;
- Review of different LAPL and PPL requirements (crediting, revalidation, seaplane rating for LAPL);
- Review of class & type ratings requirements (new propulsion systems, amphibious aircraft);
- Review of language proficiency requirements for GA pilots;
- Provisions on TMG (definition, additional crediting);
- Mountain rating for helicopters;
- Review of the flight test rating requirements in the context of GA;
- Development of a 'light aircraft flight instructor (LAFI)' for LAPL training only;
- Examiner's vested interests in the context of GA.

The starred (*) items will be processed through the procedure in accordance with Article 15 of the Rulemaking Procedures (direct publication (DP)). For all other items, the standard rulemaking (ST) procedure will be applied.

Owner	Affected stakeholders
EASA FS.3	Pilots, examiners and NAAs

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	1	01/09/2016	n/a	23/10/2017	n/a	n/a
	ST		2		2020 Q2	2021 Q2	2022 Q4	2022 Q4

RMT.0689 **'PART-21 proportionality'**

Introduction of proportionality and simplification of airworthiness and environmental certification regulations for small aircraft

Simplification of the approval process and the oversight of small design, production and MOs. A template manual should simplify the approval process. The oversight should be streamlined and privileges can be granted to organisations based on the demonstrated experience.

For individual simple aircraft, the task's objective is to explore if private operation of aircraft where the owner takes full responsibility should be allowed.

In a first phase of this RMT, EASA will investigate whether some immediate benefits can be implemented by amendments to AMC/GM to Part-21. A decision will be issued in Q3/2017. In a second phase of this RMT, EASA will review Part-21 and develop an A-NPA, which is planned for Q2/2018. Following the A-NPA's public consultation, EASA will propose amendments to Part-21 and its AMC/GM in the context of a new RMT proposing amendments to Part-21 necessary to implement the revised basic Regulation.

Owner	Affected stakeholders
EASA CT.7	Design, production and maintenance approval holders, and owners of simple aircraft

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	09/06/2016	FC	n/a	n/a	2017 Q4
	ST			2018 Q2	n/a	n/a	n/a

Balloons and sailplanes

RMT.0654 Revision of the balloon licensing requirements

Address topics identified by the industry balloon experts on the aircrew and on the medical side. A focused consultation was performed and no NPA was published.

Owner	Affected stakeholders
EASA FS.3	Balloon operators, pilots, instructors and examiners, competent authorities and DTOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	16/09/2016	n/a	2019 Q1	2020 Q1	2020 Q1

RMT.0674 Revision of the European operational rules for balloons

Create a new Annex for balloons. A focused consultation was performed and no NPA was published.

Owner	Affected stakeholders
EASA FS.2	Balloon operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	23/04/2015	n/a	07/01/2016	2018 Q1	2018 Q1

RMT.0698 Revision of the operational rules for sailplanes

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

Owner	Affected stakeholders
EASA FS.2	Sailplane operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	26/04/2016	n/a	29/08/2017	2019 Q1	2019 Q1

RMT.0701 Revision of the sailplane licensing requirement

Address topics identified by the industry sailplane experts on the aircrew side.

Owner	Affected stakeholders
EASA FS.3	Sailplane operators, pilots, instructors, examiners, ATOs and DTOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	15/12/2016	n/a	2019 Q1	2020 Q1	2020 Q1

7.6 Manufacturers

Issue/rationale

Aircraft design evolves at a rapid pace. Requirements for initial airworthiness (CSs) need to be constantly reviewed and adjusted for cost-effectiveness.

What we want to achieve

Ensure an effective regulatory framework for manufacturers.

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0180 CS-E engine testing, endurance/IMI/ETOPS

Endurance:
Review the existing engine endurance test requirements, assess its suitability for all engines, and consider an alternate endurance test and associated methods of compliance. The current regulations may not adequately address the technological advancements in modern engines, as related to the current engine endurance test.
Initial maintenance inspection (IMI):
It has become increasingly clear that reliance upon robust development testing to support a certification programme can no longer be guaranteed. There is now a need to consider a potential revision to the CSs to better ensure that any reliability and integrity issues regarding the engine's design are identified and rectified prior to the engine entering service.
This task will introduce into CS-E a requirement based upon, if not identical to, the current FAR 33.90. This will ensure that engine tests are conducted at conditions representative of those expected to occur in service prior to the issue of a TC. The expected benefits of this include a reduction in the number of issues that arise following type certification, and a more robust certification programme.

Owner	Affected stakeholders
EASA CT.7	DAHs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B5	ST	-	2019 Q1	2020 Q1	n/a	n/a	2021 Q1

RMT.0456 Integrated modular avionics (IMA)

The objectives are to ensure a cost-efficient and transparent certification process by:

— offering to IMA manufacturers the possibility to obtain European technical standard order authorisations (ETSOAs) at platform/module level, independent from aircraft;

— providing public guidance for incremental certification of IMA, starting from platform modules and culminating with installation on aircraft and covering all connected aspects (e.g. impact on Master Minimum Equipment List (MMEL)).

RMT.0456 will develop European technical standard order (ETSO)-2C153 enabling authorisations at platform/module level, independent from aircraft;
As part of the regular updates, amendments to CS-ETSO Subpart A will be developed to: 1) enable ETSOAs when aircraft functional modules are integrated on the already authorised IMA platform, during the initial design phase; and 2) issue AMC 20-170 to provide public guidance for incremental certification of IMA, from platform modules up to aircraft level.

Owner	Affected stakeholders
EASA CT.7	ETSOA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	24/10/2013	10/09/2014	n/a	n/a	27/04/2016
				21/07/2017	n/a	n/a	2018 Q3

7.7 Rotorcraft operations

Issue/rationale

Helicopter operators perform a wide range of highly specialised operations that are important for the European economy and citizens. There is a need to further develop towards an efficient regulatory framework.

What we want to achieve

Enable implementation of appropriate and balanced regulation.

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0712 Enhancement of the safety assessment processes for rotorcraft designs

The safety assessment of the design of aircraft systems and equipment can help to identify shortfalls in the robustness of the design and also help aircraft designers to mitigate the risk of undesirable events by introducing means to reduce their likelihood. Ensuring robust safety assessment of rotorcraft designs can be considered to be even more critical due to the high number of single-point failures. Technology and techniques have evolved since the inception of formal safety assessment processes and therefore it is vital that certification specifications keep abreast with the latest thinking on safety assessment to maximise the potential that safety issues are identified during certification.

The safety requirements for equipment, systems and installations contained in the certification specifications should be improved for small and large rotorcraft to reflect current best practice for safety assessment.

The FAA is also developing new rules for the safety assessment of rotorcraft and these changes will create significant standard differences between the EU and US regulations and are likely to result in a lower regulatory efficiency. The proposed RMT also aims at reviewing these changes to achieve harmonisation where possible.

Owner	Affected stakeholders
EASA CT.7	DAH and manufacturers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B5	ST	✓	2018 Q3	2019 Q1	n/a	n/a	2019 Q3

RMT.0714 Enable the safe introduction of rotorcraft Fly-by-Wire technology

Currently, civil rotorcraft are equipped with mechanical flight controls (with or without hydraulic assistance), and trim and automatic flight control system (AFCS) functions are typically introduced in the mechanical flight control chains. Fly-By-Wire (FbW/FBW) technology has been in service on civil large aeroplanes for more than 40 years and this technology is now being applied to civil rotorcraft. This technology allows the introduction of advanced flight control laws and flight control protections which greatly increase the complexity of the flight control system and integration with the other systems and interaction with the aircraft handling qualities. Fly-by-Wire flight control systems are highly complex and also highly safety-critical.

EASA has already been involved in a validation activity with a US applicant, for which a set of dedicated and bespoke requirements are being developed by the FAA and EASA. It is expected that there will be an application for a design containing Fly-By-Wire technology from an EU applicant shortly.

It is for these reasons that appropriate certification specifications for rotorcraft Fly-by-Wire systems should be developed to enable the safe introduction of this technology to rotorcraft.

Owner	Affected stakeholders
EASA CT.7	DAH and manufacturers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B1.2	ST	✓	2019 Q2	2020 Q1	n/a	n/a	2020 Q3

7.8 Specialised operations

Issue/rationale

Other than CAT Operators, e.g. conducting specialised operations, make an important contribution to aviation's overall role in modern economies. There is thus a need for an efficient regulatory framework.

What we want to achieve

Enable implementation of appropriate balanced approach.

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0340 **Standard operating procedures and specific requirements/alleviations for specialised operations**

Development of SOPs and specific requirements/alleviations in Subpart SPO.SPEC for activities covered by Part-SPO. It includes aerobatic flights and the review of SR FRAN-2011-006 recommending equipping aerobatic aeroplanes with parachutes with a strap for automatic opening.

Owner	Affected stakeholders
EASA FS.2	Operators conducting specialised operations

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B2	ST	-	2019 Q1	2020 Q3	2021 Q3	2023 Q3	2023 Q3

RMT.0255 **Review of Part-66**

Review the effectiveness of the Part-66 implementation and, in particular, further simplify the licensing system for aircraft below 5 700 Kg and legacy aircraft.

Owner	Affected stakeholders
EASA FS.1	Maintenance engineers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
n/a	ST	-	2018 Q3	2020 Q3	2021 Q3	2023 Q3	2023 Q3

7.9 Maintenance training organisations

Issue/rationale

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

What we want to achieve

Ease processing of converted licence and improve efficiency of examination.

How we monitor improvement

The EASA Advisory Bodies 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.

Owner	Affected stakeholders
EASA FS.1	Maintenance training organisations (MTOs), MOs, CAMOs, and NAAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	19/12/2012	09/09/2014	2020 Q1	2021 Q1	2021 Q1

7.10 Maintenance organisations

Issue/rationale

Certain existing requirements are either not efficient or not proportionate to the risks involved.

What we want to achieve

To introduce more proportionate and efficient requirements in the airworthiness field.

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0018 **Installation of parts and appliances that are released without an EASA Form 1 or equivalent**

The intent of this task is:

— to provide a consistent interpretation of the definition of 'parts & appliances' and other terms used in the various rules;
— to develop criteria for the acceptance of parts and appliances with different production background for installation in certified aircraft;
— to create a parts classification for commercial parts, allowing an installer to install commercial parts on a type-certified product without having to obtain parts manufactured under a POA. This proposal will also allow manufacturers to continue to use parts now categorised as commercial parts in their type designs. The added benefit of the proposal is to have the manufacturers identify for EASA approval the commercial parts they intend to use;
— to develop criteria for production and release of parts and appliances proportionate to the potential impact on safety as determined in the design certification process;
— to develop the draft amendments to Regulations (EU) Nos 748/2012 and 1321/2014 as necessary to incorporate the above concepts and integrate the existing alleviations for sailplanes and European light aircraft (ELA);
— to develop the necessary AMC and GM to accompany the amendments to the regulations;
— to develop AMC and GM to support the interpretation of the above-mentioned provisions in the Basic Regulation related to parts and appliances; and
— to elaborate the AMC and GM related to standard parts.

Owner			Affected stakeholders				
EASA FS.1			Manufacturers, DAHs, operators, AMOs, and engineers				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	01/11/2012	2017 Q4	2018 Q4	2019 Q4	2019 Q4

7.11 PCP SESAR deployment

Issue/rationale

Implement the regulatory needs of the SESAR pilot common projects.

What we want to achieve

The rationale behind the following actions is to cater for the regulatory needs of the SESAR common projects and other new technological development (e.g. such but not limited to U-space deployment, virtualisation and cloud-based architecture and remote tower operations) by enabling the implementation of new working methods and technologies developed by SESAR. Interoperability, civil-military cooperation and compatibility and NextGen international compatibility (e.g. such but not limited to ICAO GANP/ASBUS and NextGen) will form an integral part of EASA's work in impact assessment and future rulemaking. In addition, there is a need to initiate a consolidated and coordinated implementation support action that should look holistically to the implementation needs of the necessary enabling infrastructure to facilitate the achievement of the needed operational improvements and new ATM operational concepts.

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0524 Data link services

Development of requirements for extended data link operations for safety-critical message use, including D-TAIX, DCL, protected mode controller–pilot data link communication (PM CPDLC), D-ATIS and controller–pilot data link communication (CPDLC), automatic dependent surveillance — contract (ADS-C) outside VHF data link coverage. This task is stemming from the single European sky (SES) initiative and SESAR and will address the PCP ATM functionality 6 requirements as well as the existing issues related to the current DLS regulation (Regulation (EC) No 29/2009[14]).

Owner	Affected stakeholders
EASA FS.4.2	CAs, ANSPs, aerodrome operators, aircraft operators and manufacturers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	2017 Q4	2018 Q3	2019 Q1	2019 Q4	2019 Q4

RMT.0624 Technical and operational requirements for remote tower operations

The development and introduction of new technologies permits the provision of aerodrome ATS from a remote location either in the form of aerodrome flight information service (AFIS) or ATC. This concept also provides the possibility to use the remote facility for contingency purposes. The general objective is to ensure that aerodrome ATS provided from a remote location meet the applicable EU and ICAO requirements and ensure at least the same level of safety as when provided from a control tower.

Owner	Affected stakeholders
EASA FS.4.2	CAs, ANSPs and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	09/12/2014	23/03/2015	n/a	n/a	03/07/2015
				2017 Q4	n/a	n/a	2018 Q2

[14] Commission Regulation (EC) No 29/2009 of 16 January 2009 laying down requirements on data link services for the single European sky (OJ L 13, 17.1.2009, p. 3).

RMT.0639 **Performance-based navigation implementation in the European air traffic management network**

PBN implementation that supports the improved performance of the EATMN, the uniform use of PBN specifications and functionalities. The optimal and safe use of airspace and the improved safe access to aerodromes through the improved airspace design, arrival/departure routes and approach procedures would be ensured based on a common application of navigation specifications and functionalities.

These regulatory measures define the ICAO PBN specifications and functionalities that are to be used in the European airspace and the dates by which they are to be applied in accordance with the SES objectives and the PCP implementation.

Owner	Affected stakeholders
EASA FS.4.2	MS, CAs, ANSPs and aircraft operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	25/06/2014	19/01/2015	28/07/2016	2018 Q3	2018 Q3

RMT.0679 **Revision of surveillance performance and interoperability (SPI)**

The current SPI Regulation (Regulation (EU) No 1207/2011[15]) details the requirements for the carriage and operation of airborne surveillance equipment by both civil and State registered aircraft, and the dates by which qualifying aircraft must be equipped.

Several implementation issues have led the EC to propose a revision of the SPI Regulation, to be prepared by EASA.

Owner	Affected stakeholders
EASA FS.4.2	MS, CAs, ANSPs and aircraft operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	18/03/2016	FC	n/a	2019 Q2	2019 Q2

RMT.0682 **Implementation of the regulatory needs of the SESAR common projects**

The general objective of the task is the development of the implementing measures as required to enable the timely deployment of the ATM functionalities and other operational changes stemming from SESAR and the European ATM Master Plan by addressing those issues which are not covered by existing RMTs.

The initial purpose of this task is to address the implementation needs, among others and when known, of the following:

— Extended arrival management (AMAN) in high-density terminal manoeuvring areas (TMAs);
— Airport integration and throughput;
— Flexible airspace management and free route;
— Network collaborative management;
— Initial system-wide information management (SWIM);
— Development of the requirements for the use of GBAS augmented GNSS to support CAT I/II/III operations;
— Other new essential operational changes (e.g. user-driven prioritisation process (UDPP), trajectory-based tools, sector-based operations, etc.)

Owner	Affected stakeholders
EASA FS.4.2	MS, CAs, ANSPs, aircraft operators, aerodrome operators, manufacturers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2017 Q4	2019 Q1	2020 Q3	2021 Q2	2021 Q2

[15] Commission Implementing Regulation (EU) No 1207/2011 of 22 November 2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (OJ L 305, 23.11.2011, p. 35).

7.12 Regular updates

Issue/rationale

The aviation industry is complex and rapidly evolving. The corresponding rules need to be updated regularly to ensure that they are fit for purpose, cost-effective, can be implemented in practice, and are in line with the latest ICAO requirements.

Regular updates are issued when relevant data is available following an update of industry standards or feedback from certification activities or minor issues raised by the stakeholders.

What we want to achieve

Ensure that the regulatory framework is cost-effective and can be effectively implemented.

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0031 Regular update of AMC/GM to Part-21

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	15/12/2016	2018 Q4	n/a	n/a	2019 Q3

RMT.0037 Regular update of CS-22

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	14/01/2016	2018 Q2	n/a	n/a	2018 Q4

RMT.0128 Regular update of CS-27&29, CS VLR

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	28/09/2016	DP	n/a	n/a	2018 Q2

RMT.0134 Rotorcraft AMC revision

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	20/10/2010	2018 Q3	n/a	n/a	2019 Q2

RMT.0184 Regular update of CS-E

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	27/07/2015	DP	n/a	n/a	2018 Q3

RMT.0287 Updating Part-MED and related AMC and GM

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.3	22/10/2012	2017 Q4	2019 Q1	2020 Q1	2020 Q1

RMT.0392 Regular updates of OPS rules

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.2	2018 Q2	n/a	2019 Q1	n/a	n/a

RMT.0412 Update of the authority and organisation requirements pertaining to Part-FCL

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.3	30/10/2012	2019 Q1	2020 Q4	2021 Q4	2021 Q4

RMT.0424 Regular update of Part-MED

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.3	09/10/2017	2019 Q2	2020 Q2	2021 Q2	2021 Q2

RMT.0457 Regular update of EASA TSOs

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	21/08/2015	22/06/2017	n/a	n/a	2018 Q3

RMT.0476 Regular update of SERA IR (stemming from ICAO SL)

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.2	18/08/2017	DP	2017 Q4	2018 Q4	2018 Q4

RMT.0499 Regular update of CS-MMEL

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	n/a	2018 Q1	n/a	n/a	2018 Q3

RMT.0502 Regular update of CS for balloons

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	n/a	n/a	n/a	n/a	n/a

RMT.0503 Regular update of CS-APU

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	n/a	n/a	n/a	n/a	n/a

RMT.0508 Regular update of CS-CC

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	n/a	2020 Q1	n/a	n/a	2020 Q3

RMT.0509 Regular update of CS-FC

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	n/a	2019 Q1	n/a	n/a	2019 Q3

RMT.0519 Regular update of CS-ACNS

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.2	12/09/2015	2018 Q2	n/a	n/a	2019 Q1 2020 Q2

RMT.0541 Aircraft type ratings for Part-66 Aircraft Maintenance

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.1.2	12/05/2009	2018 Q2	n/a	n/a	2018 Q4

RMT.0561 **Update of AMC-20 — 'In-flight entertainment (IFE), lead-free soldering, harmonisation of safety and software criteria'**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	20/07/2015	22/06/2017	n/a	n/a	2019 Q1

RMT.0587 **Regular update of regulations regarding pilot training, testing and checking and the related oversight**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.3	11/05/2016	30/11/2016	11/05/2017	2018 Q2	2018 Q2

RMT.0591 **Regular update of aerodrome rules**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.3	29/07/2016	11/04/2017	n/a	n/a	2017 Q4

RMT.0605 **Regular update of CS-LSA**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	14/01/2016	2018 Q2	n/a	n/a	2018 Q4

RMT.0643 **Regular update of AMC-20**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	20/07/2015	AP	n/a	n/a	2018 Q2

RMT.0668 **Regular update of ATCO licensing rules (IR/AMC/GM)**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.2	10/08/2017	2018/Q4	n/a	n/a	2019 Q4

RMT.0673 **Regular update of CS-25**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	27/04/2015	2018 Q2	n/a	n/a	2019 Q1

RMT.0684 **Regular update of CS-P**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	n/a	n/a	n/a	n/a	n/a

RMT.0687 **Regular update of CS-23**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	09/08/2017	2018 Q1	n/a	n/a	2018 Q3

RMT.0688 **Regular update of CS SIMD**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	n/a	2020 Q1	n/a	n/a	2020 Q3

RMT.0690 **Regular update of CS-STAN**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	09/06/2016	2018 Q3	n/a	n/a	2019 Q1

RMT.0692 **Regular update of the acceptable means of compliance and guidance material on the safety (key) performance indicators**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.2	2018 Q1	2019 Q1	n/a	n/a	2019 Q3

RMT.0719 **Regular update of ATM/ANS rules (IR/AMC/GM)**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.2	18/08/2017	DP	2018 Q1	2019 Q1	2019 Q1

RMT.0721 **RAMP Deregulation**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.2	2017 Q4	AP	n/a	n/a	2018 Q3

8 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.

8.1 Implementation of the upcoming new Basic Regulation

This action area will only be activated once the discussions between the European Parliament and Council on the revised Basic Regulation are more advanced.

8.2 Aerodromes operators

Issue/rationale

The regulatory requirement is stemming from the Basic Regulation. It was meant to be included in the Aerodrome Rules, but it has been decided to deal with the issue at a later stage.

What we want to achieve

The changes are expected to ensure compliance with ICAO SARPs on the provision of apron management services, maintain a uniform and high level of safety in the MS and ensure a harmonised approach which will support the free movement of services within the MS and reduce the administrative burden especially for those providers providing apron management services in different MS.

How we monitor improvement

The EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0485 **Requirements for apron management services at aerodromes**

The changes proposed allow the apron management services to be provided either by the aerodrome operator or by the ANSP (or any subcontractor to them). The changes are expected to ensure compliance with ICAO SARPs on the provision of apron management services, maintain a uniform and high level of safety in the MS and ensure a harmonised approach which will support the free movement of services within the MS and reduce the administrative burden especially for those providers providing apron management services in different MS.

Owner: EASA FS.4.3

Affected stakeholders: Aerodrome Operators / Air Traffic Services Providers; Providers of Apron Management Service

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	20/07/2012	18/12/2013	24/09/2014	2018 Q4	2018 Q4

8.3 Airlines

Issue/rationale

Rules may need to be harmonised within the EU 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 EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

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 (RFID).

Owner	Affected stakeholders
EASA FS.1	Operators, CAMOs and MOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	28/11/2011	07/02/2014	17/11/2016	2019 Q2	2019 Q2

RMT.0278 Importing of aircraft from other regulatory system, and Part-21 Subpart H review

Develop criteria for importing of aircraft from other regulatory system, and Part-21 Subpart H review.

Owner	Affected stakeholders
EASA FS.1	Operators and NAAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	01/02/2013	07/09/2016	2019 Q2	2020 Q2	2020 Q2

RMT.0312 Review of standard weight

Transposed task from the JAA to review the standard weights due to demographic changes. Review of IRs/AMC/GM based on the weight survey commissioned by EASA.

Owner	Affected stakeholders
EASA FS.2	CAT and NCC operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B3	ST	-	2018 Q4	2019 Q4	2021 Q2	2022 Q4	2022 Q4

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 such as newly introduced SA CAT I[16] not being yet part of ICAO regulatory system.

As a result of the task, the European industry should be enabled to take full advantage of safety and economic benefits generated through new technologies and operational experience.

Note: As regards the proposed amendments to implementing rules, a focused consultation is foreseen instead of an NPA consultation. There will be an NPA proposing only amendments to CS, AMC/GM.

Owner	Affected stakeholders
EASA FS.2	Manufacturers, MOs, air operators, ATOs, aerodrome operators, ATM/ANS

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	09/12/2015	2017 Q4	2018 Q2	2018 Q3	2018 Q3

RMT.0573 **Fuel planning and management**

Review and update the EU fuel rules, taking into account ICAO amendments and a related SR, and providing for operational flexibility

Owner	Affected stakeholders
EASA FS.2	Operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	27/04/2015	15/07/2016	2018 Q2	2019 Q4	2019 Q4

RMT.0577 **Extended diversion time operations**

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

Owner	Affected stakeholders
EASA FS.2	CAT aeroplane operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B3	ST	-	2018 Q1	2019 Q1	2020 Q4	2021 Q4	2021 Q4

[16] Special Approval CAT I represents a type of low-visibility operations with operational credits with the following provisions:

— the decision height (DH) of an SA CAT I operation should not be lower than the highest of the minimum DH specified in the AFM (if stated), the applicable obstacle clearance height (OCH) for the category of aeroplane, the DH to which the flight crew is qualified to operate; or 150 ft; and
— the lowest RVR minima to be used are specified vs approach lighting system and rea typically between 400 and 700 (m).

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

Transpose ICAO SARPs in EU rules and update the EU rules in line with the latest EFB developments

Owner	Affected stakeholders
EASA FS.2	CAs and operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	05/10/2015	04/10/2016	2017 Q4	2019 Q3	2019 Q3

RMT.0494 **FTL requirements for CAT operations of helicopters**

Establish harmonised and state-of-the-art rules for CAT helicopter operations.

Owner	Affected stakeholders
EASA FS.2	CAT helicopter operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	2020 Q3	2021 Q2	2022 Q2	2023 Q2	2023 Q2

Safety Promotion

SPT.097 **Promote the new European 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. The event theme changes every year.

Owner	Activity sector	Deliverable	Date
EASA SM.1	ALL	Safety Promotion	2019

8.4 Manufacturers

Issue/rationale

Rules may need to be harmonised within the EU 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 EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0252 **Instructions for Continued Airworthiness (ICA)**

Subtask 1:
— Definition and identification of ICA (to be provided during the certification process).
— Completeness of ICA (during the certification process).
— LOI of the CA (during the certification process).

Subtask 2:
— Availability of ICA (to owners, operators, MOs, etc.).

Subtask 3:
— MRB Scheduling Information (guidance on the MRB process).-> transferred to CAW.

Subtask 4:
— Acceptance/approval of ICAs by other than the authority.

Subtask 5:
— Certification maintenance requirements.

With regard to Subtasks 1, 2, and 4, EASA will develop an NPA, which is planned to be published in 2017. Following the NPA public consultation, EASA will develop an opinion proposing amendments to Part-21 and the Continued Airworthiness Regulation (planned for Q4/2018). Upon adoption of the amendments of the Regulations by the Commission and publication in the Official Journal, EASA will issue the related AMC/GM.
With regard to subtask 5, EASA plans to issue CS-25 in 2017.

Owner	Affected stakeholders
EASA CT.7	Design Approval holders and manufacturers

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	15/05/2013	23/11/2016	n/a	n/a	30/08/2017
				2017 Q4	2018 Q4	2019 Q3	2019 Q3

RMT.0348 **Flights related to design and production activities**

To establish IRs and associated AMC/GM on operational requirements for flights related to design and production activities (‘manufacturers flights’).
This task has been put on hold until further notice.

Owner	Affected stakeholders
EASA FS.2	Manufacturers

RMT.0384 **Enable open rotor engine & installation**

A new engine concept is being proposed to power future large transport aircraft as a means of improving aircraft fuel burn and emissions. This concept is known as the 'open rotor engine'.

The objective of this task is to identify and recommend harmonised draft requirements and advisory material for CS-E, 14 CFR Part 33, CS-25 and 14 CFR Part 25 to address the novel features inherent in open rotor engine designs and their integration with the aircraft.

Consideration should also be given to the development of new requirements to provide the required safety objectives based on the unique nature of the open rotor configuration. These new provisions and associated AMC material should ensure that the safety levels of open rotor engine installations are consistent with those of the existing turbofan fleet.

Harmonisation with 14 CFR Part 25 and 33 (and/or Special Conditions) is an objective of this RMT.

EASA will issue a second NPA on this RMT in Q2/2018. EASA plans to issue its decisions on the basis of the first and second NPA.

Owner	Affected stakeholders
EASA CT.7	DAHs; manufacturers of engines

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	✓	14/03/2011	21/12/2015	n/a	n/a	n/a
				2018 Q2	n/a	n/a	2019 Q2

RMT.0695 **Non-ETOPS operations using performance class A aeroplanes with an MOPSC of 19 or less**

The objective is to accommodate new business-jet aeroplanes operated by European CAT operators in the 180' non-ETOPS category.

Owner	Affected stakeholders
EASA FS.2	Operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	15/12/2015	25/09/2017	2018 Q2	2019 Q2	2019 Q2

8.5 Operators other than airlines

Issue/rationale

Rules may need to be harmonised within the EU 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 EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0300 Operations with airships

Development of rules for the operation of airships

This task has been put on hold until further notice.

Owner	Affected stakeholders
EASA FS.2	Airship operators

RMT.0318 Single-engine helicopter operations

Review the applicable rules and the associated AMC and GM 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.

Owner	Affected stakeholders
EASA FS.2	Helicopter operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2017 Q4	2018 Q1	2020 Q2	2021 Q2	2021 Q2

RMT.0325 HEMS performance and public interest sites

To properly address the issues stemming from non-implementation or deviation from JAR-OPS 3 performance and public interest sites (PIS) provisions, in particular performance in high mountains considering review of helicopter emergency medical services (HEMS) flights at night safety level following a UK Safety Directive.

Owner	Affected stakeholders
EASA FS.2	Helicopter CAT and HEMS operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	26/03/2014	2018 Q1	2018 Q3	2019 Q4	2019 Q4

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

Harmonised and state-of-the-art rules for EMS

Owner	Affected stakeholders
EASA FS.2	Develop harmonised and state of the art rules for EMS.

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	18/04/2012	30/10/2017	2018 Q3	2019 Q3	2019 Q3

RMT.0493 **Update and harmonisation of FTL for commercial air transport (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.

Owner	Affected stakeholders
EASA FS.2	CAT aeroplane operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	21/08/2012	30/10/2017	2018 Q3	2019 Q3	2019 Q3

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

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

Owner	Affected stakeholders
EASA FS.2	Commercial operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A2	ST	-	2020 Q2	2021 Q2	2023 Q1	2024 Q3	2024 Q3

8.6 Maintenance organisations – service providers – CAMOS

Issue/rationale

Rules may need to be harmonised within the EU 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 EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0096 **Amendments (IR and AMC/GM) in line with the process of granting foreign Part-145 approvals**

Streamline the approval process

Owner	Affected stakeholders
EASA FS.1	Maintenance organisations

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	17/06/2008	11/07/2013	n/a	n/a	2020 Q3

8.7 Horizontal issues

Issue/rationale

Rules may need to be harmonised within the EU 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 EASA Advisory Bodies will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0707 **Medical Regulation — Combine Part-MED and Part ATCO MED**

The main benefits are that Medical Assessor (MA) within the authorities, and the Aero-medical Examiner (AME) and Aeromedical centres (AeMC) only need to use one common regulatory document, encouraging harmonisation and removing duplication between Part-MED and Part ATCO.MED. Consequently, the regulation should be easier to keep up to date. Moreover, currently AMEs and AeMCs require duplicate certifications on both Part-MED and Part ATCO.MED.

The task may also consider alleviations to the existing pilot age limitation by applying a more evidence-based medical approach, subject to existing scientific evidence available as a results of EASA commissioned study on pilot age limitations, complemented with other scientific research on the same topic.

Owner	Affected stakeholders
EASA FS.3	MAs, AMEs, AeMC, pilots, ATCOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B5	ST	-	2019 Q1	2019 Q3	2021 Q3	2022 Q4	2022 Q4

Appendix A: Deliverables expected in 2018

Terms of Reference (ToRs):

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	1	RMT.0713	Reduction in human factors caused rotorcraft accidents that are attributed to the rotorcraft design	1
	2	RMT.0376	Anti-collision systems on aircraft other than aeroplanes in excess of 5 700 kg or 19 pax	1
		RMT.0706	Update of authority and organisation requirements	1
	3	RMT.0116	Real weight and balance of an aircraft	1
		RMT.0194	Competency-based training	1
		RMT.0544	Review of Part-147	1
		RMT.0722	Provision of aeronautical data by the aerodrome operator	1
	4	RMT.0127	Pilot compartment view	1
		RMT.0708	Controlled Flight into Terrain (CFIT) prevention with Helicopter Terrain Avoidance Warning Systems (HTAWS)	1
Efficiency / Proportionality	1	RMT.0161	Conformity assessment	1
		RMT.0692	Regular update of the acceptable means of compliance and guidance material on the safety (key) performance indicators	1
	2	RMT.0392	Regular updates of OPS rules	1
	3	RMT.0255	Review of Part-66	1
		RMT.0712	Enhancement of the safety assessment processes for rotorcraft designs	1
Level Playing field	1	RMT.0577	Extended diversion time operations	1
	4	RMT.0312	Review of standard weight	1
TOTAL				16

Notice of Proposed Amendments (NPAs):

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	1	RMT.0570	Reduction of runway excursions	1.0
		RMT.0599	Update of ORO.FC	1.0
		RMT.0648	Aircraft cybersecurity	1.0
		RMT.0703	Runway Safety	1.0
		RMT.0720	Cybersecurity risks	1.0
	2	RMT.0118	Analysis of on-ground wings contamination effect on take-off performance degradation	1.0
		RMT.0251	Embodiment of safety management system requirements into Commission Regulations (EU) Nos 1321/2014 and 748/2012	1.0
		RMT.0262	Embodiment of level of involvement (LOI) requirements into Part-21	1.0
	3	RMT.0070	Additional airworthiness specifications for operations: Fire hazard in Class D cargo compartments	1.0
		RMT.0106	Certification specifications and guidance material for maintenance certifying staff type rating training	1.0
		RMT.0704	Runway surface condition assessment and reporting	1.0
	4	RMT.0120	Helicopter ditching and water impact occupant survivability	1.0
		RMT.0400	Amendment of requirements for flight recorders and underwater locating devices	1.0
Efficiency / Proportionality	1	RMT.0230	Introduction of a regulatory framework for the operation of drones	0.5
		RMT.0499	Regular update of CS-MMEL	1.0
		RMT.0591	Regular update of aerodrome rules	1.0
		RMT.0687	Regular update of CS 23	1.0
	2	RMT.0037	Regular update of CS-22	1.0
		RMT.0605	Regular update of CS-LSA	1.0
		RMT.0673	Regular update of CS-25	1.0
	3	RMT.0230	Introduction of a regulatory framework for the operation of drones	0.5
		RMT.0524	Data link services	1.0
		RMT.0690	Regular update of CS-STAN	1.0
	4	RMT.0031	Regular update of AMC/GM to Part-21	1.0
Level playing field	1	RMT.0318	Single-engined helicopter operations	1.0
		RMT.0325	HEMS performance and public interest sites	1.0
	2	RMT.0384	Open rotor engine & installation	1.0
		RMT.0541	Aircraft Type Ratings for Part-66 Aircraft Maintenance License	1.0
TOTAL				27.0

Decisions:

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	1	RMT.0196	Improve flight simulation training devices (FSTDs) fidelity	1
	2	RMT.0249	Recorders installation and maintenance thereof — certification aspects	1
		RMT.0608	Rotorcraft gearbox loss of lubrication	1
		RMT.0647	Loss of control or loss of flight path during go-around or climb	1
		RMT.0671	Engine bird ingestion	1
	3	RMT.0397	Unintended or inappropriate rudder usage — rudder reversals	1
	4	RMT.0469	Assessment of changes to functional systems by service providers in ATM/ANS and the oversight of these changes by competent authorities	1
		RMT.0570	Reduction of runway excursions	1
Efficiency / Proportionality	1	RMT.0638	Certification requirements for VFR heliports located at aerodromes falling under the scope of the Basic Regulation	1
	2	RMT.0128	Regular update of CS-27&29, CS VLR	1
		RMT.0624	Technical and operational requirements for remote tower operations	1
		RMT.0643	Regular update of AMC-20	1
	3	RMT.0230	Introduction of a regulatory framework for the operation of drones	1
		RMT.0456	Integrated modular avionics (IMA)	1
		RMT.0457	Regular update of EASA TSOs	1
		RMT.0499	Regular update of CS-MMEL	1
		RMT.0687	Regular update of CS 23	1
		RMT.0721	RAMP Deregulation	1
	4	RMT.0037	Regular update of CS-22	1
		RMT.0184	Regular update of CS-E	1
		RMT.0591	Regular update of aerodrome rules	1
		RMT.0605	Regular update of CS-LSA	1
Level Playing field	4	RMT.0541	Aircraft Type Ratings for Part-66 Aircraft Maintenance License	1
TOTAL				23

Opinions:

Opinion	Task Number	Driver	Task Title	Baseline Quarter
1	RMT.0230	Efficiency / Proportionality	Introduction of a regulatory framework for the operation of drones	**1**
2	RMT.0464	Safety	Requirements for air traffic services	
3	RMT.0681		Alignment of implementing rules & AMC/GM with Regulation (EU) No 376/2014	
4	RMT.0249		Recorders installation and maintenance thereof — certification aspects	**2**
	RMT.0296		Review of aeroplane performance requirements for CAT operations	
	RMT.0695	Level playing field	Non-ETOPS operations using performance class A aeroplanes with an MOPSC of 19 or less	
5	RMT.0379		All-weather operations	
6	RMT.0573		Fuel planning and management	
7	RMT.0325		HEMS performance and public interest sites	**3**
8	RMT.0492		Development of FTL for CAT operations of emergency medical services by aeroplanes and helicopters	
	RMT.0493		Update and harmonisation of FTL for commercial air transport (CAT) by aeroplane for air taxi operations and single-pilot operations taking into account operational experience and recent scientific evidence	
9	RMT.0654	Efficiency / Proportionality	Revision of the balloon licensing requirements	
	RMT.0677		Easier access of General Aviation (GA) pilots to instrument flight rules (IFR) flying	
	RMT.0701		Revision of the sailplane licensing requirement	
10	RMT.0018		Installation of parts and appliances that are released without an EASA Form 1 or equivalent	**4**
	RMT.0252	Level playing field	Instructions for continuing airworthiness (ICA)	
11	RMT.0570	Safety	Reduction of runway excursions	
12	RMT.0589		Rescue and firefighting services (RFFS) at aerodromes	

Decision pending IR:

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	2	RMT.0069	Seat crashworthiness improvement on large aeroplanes — Dynamic testing 16g	1.00
		RMT.0071	Additional airworthiness specifications for operations: Thermal/acoustic insulation material	1.00
		RMT.0225	Development of an ageing aircraft structure plan	1.00
		RMT.0251	Embodiment of safety management system requirements into Commission Regulations (EU) Nos 1321/2014 and 748/2012	1.00
	3	RMT.0188	Update of EASA FCL implementing rules	0.50
		RMT.0262	Embodiment of level of involvement (LOI) requirements into Part-21	1.00
		RMT.0581	Loss of control prevention and recovery training	0.50
	4	RMT.0516	Update of the rules on air operations (Air OPS Regulation - all Annexes & related AMC/GM)	1.00
Efficiency / Proportionality	2	RMT.0135	B2L and L Part-66 aircraft maintenance licences	1.00
		RMT.0591	Regular update of aerodrome rules	1.00
		RMT.0657	Review of the Aircrew Regulation in order to provide a system for private pilot training outside approved training organisations, and of the associated acceptable means of compliance and guidance material	1.00
	3	RMT.0230	Introduction of a regulatory framework for the operation of drones	1.00
		RMT.0587	Regular update of regulations regarding pilot training, testing and checking and the related oversight	1.00
		RMT.0639	Performance-based navigation implementation in the European air traffic management network	1.00
		RMT.0674	Revision of the European operational rules for balloons	1.00
	4	RMT.0352	Non-commercial operations of aircraft listed in the operations specifications (OpSpecs) by an AOC holder	1.00
		RMT.0476	Regular update of SERA IR (stemming from ICAO SL)	1.00
		RMT.0547	Task force for the review of Part-M for General Aviation (PHASE II)	1.00
		RMT.0591	Regular update of aerodrome rules	1.00
Level playing field	3	RMT.0379	All-weather operations	1.00
	4	RMT.0485	Requirements for Apron Management Services at aerodromes	1.00
Environment	2	RMT.0560	Halon — Update of Part-26 to comply with ICAO standards	1.00
	4	RMT.0513	Update CS 36 to refer to the environmental technical manual on noise certification as amended after CAEP/10	0.50
		RMT.0514	Implementation of the CAEP/10 amendments	0.50
TOTAL				22.00

Appendix B: New and deleted tasks overview

New tasks:

Regulation:

Strategic Priorities	Driver	Action Area	Task Number	Task Title	Start date
strategic	Safety	New products, systems, technologies and operations	RMT.0720		2017
standard	Efficiency	Regular updates/review of Rules	RMT.0721	RAMP Deregulation	
strategic	Safety	Runway Safety	RMT.0722	Provision of aeronautical data by the aerodrome operator	

Research:

Strategic Priorities	Driver	Action Area	Task Number	Task Title	Start date
Strategic	Safety	Design and Maintenance Improvements	RES.008	Rotorcraft main gear boxes (MGB) integrity improvements (by design)	2017
Strategic	Safety	Helicopter operation	RES.009	Ditching in water or a Survivable water impact (SWI) for Rotary wing aircrafts (Helicopter, Tilt Rotor, Compound Rotorcraft)	
Strategic	Safety	Loss of Control In-Flight	RES.010	Ice crystal detection	
Strategic	Safety	Aircraft tracking, rescue operation and incident/accident investigations	RES.011	Underwater Evacuation from Helicopters	
Strategic	Safety	New products, systems, technologies and operations	RES.012	Cybersecurity: common aeronautical vulnerabilities database	
Strategic	Safety	Aircraft tracking, rescue operation and incident/accident investigations	RES.013	Quick recovery of flight data recordings	
Strategic	Safety	Design and Maintenance Improvements	RES.014	Air Data Enhanced Fault Detection & Diagnosis	
Strategic	Safety	New products, systems, technologies and operations	RES.015	Vulnerability of manned aircraft to drone strike	
Strategic	Safety	Fire, smoke and Fumes	RES.016	Fire risks with large PED in checked luggage	
Strategic	Safety	Loss of Control In-Flight	RES.017	Icing hazard linked to Super Large Droplet (SLD)	
Strategic	Environment	Climate Change	RES.018	Development of Particulate Matter (PM) regulations and guidelines	
Strategic	Environment	Climate Change	RES.019	Aviation Emissions Support	
Strategic	Safety	New products, systems, technologies and operations	RES.020	Identify helicopter technologies with safety benefits.	

Safety Promotion:

Strategic Priorities	Driver	Action Area	Task Number	Task Title	Start date
Standard	Safety	Safety Management	MST.026	SMS Assessment	2017
Standard	Safety	General Aviation	MST.027	Develop Just Culture in GA	
Strategic	Safety	Safety Management	SPT.092	Improve dissemination of existing Safety Promotion material by developing mobile applications & e-platforms	
Strategic	Safety	Helicopter operation	SPT.093	Develop new Safety Promotion material on high profile helicopter safety issues	
Strategic	Safety	Helicopter operation	SPT.094	Helicopter safety & risk management	
Strategic	Safety	Helicopter operation	SPT.095	Promote helicopter technologies with safety benefits	
Strategic	Safety	Helicopter operation	SPT.096	Organise an annual Safety Workshop at HELITECH Intl.	

Deleted task:

Strategic Priorities	Driver	Action Area	Task Number	Task Title	Reason
standard	Efficiency/ Proportionality	Manufacturers	RMT.0017	21A.163 POA privileges	This task was discussed in the early days of EASA and a pre-RIA was drafted in 2006, 11 years ago. The NPA was intended to address an amendment to IR Part 21 paragraphs 21A.163 and 21A.183 and the associated AMC/GM material by: – Adding a POA privilege under 21A.163 for the issue of an initial Airworthiness Review Certificate; – Extension of the maintenance privilege of 21A.163(d) in time and to other products and parts; and – Making the conditions for the issuance of a C of A for new aircraft as stated in 21A.183(1)(ii) consistent with the POA privilege. The first two issues are not safety related and the maintenance privileges can be covered by the organisation holding a Part-145 approval. For smaller companies this request for extended maintenance privileges is part of the considerations for the Part-21 proportionality task. The third bullet point is no longer relevant because 21.A.183 was deleted with amending Regulation (EC) No 1194/2009.
Standard	Level playing field	Airlines	RMT.0209	Contracting of continuing airworthiness management activities	An opinion will be issued to close the task.
Standard	Safety	Managing the flight	RES.007	Terrain and obstacle awareness for light aircraft	

Appendix C: EPAS safety objectives vs EASA strategic objectives

		EPAS action area	What we want to achieve	EASA's strategic objectives													
				1.1 Facilitating competitiveness, innovation and emerging technologies which generate European success.	1.2 Sustaining worldwide recognition for the European aviation safety system	2.1 Applying an advanced, pro-active and systematic approach to aviation safety	2.2 Using information technology to the benefit of the European Safety Management process	3.1 Identifying safety deficiencies and taking corrective actions in a common, coordinated and rapid manner.	3.2 Integrating technical resource management at European level for efficiency, effectiveness and flexibility.	3.3 Establishing a new resource scheme to sustain the European aviation safety system	4.1 Empowering individuals to develop, engage and grow so as to deliver on our priorities	4.2 Creating a quality work environment that helps staff succeed	4.3 Pledging to improve, refine and simplify processes, procedures and practices so as to drive efficiency	5.1 Redefining and simplifying Rulemaking activities	5.2 Assessing Rules and Regulations to ensure they are effective, proportionate and remain relevant	6.1 Demonstrating integrity by assuring technical independence and robustness of safety decision-making	6.2 Minimising the consequences of political or unexpected constraints that may impact on aviation safety.
Systemic issues		Safety Management	Work with authorities and organisations to implement safety management.														
Systemic issues		Aviation personnel	Ensure continuous improvement of aviation personnel competence.														
Systemic issues		Aircraft tracking, rescue operation and accident investigations	Increase safety by facilitating the recovery of information by safety investigation authorities, thus helping to avoid future accidents.														
Operational issues	CAT by Aeroplanes	Loss of control in flight	Further reduce the risk of accidents in this category														
Operational issues	CAT by Aeroplanes	Design and maintenance improvements	Improve overall safety in relation to bird ingestion, ditching, etc. through targeted design improvements.														
Operational issues	CAT by Aeroplanes	Mid-air collisions	Further reduce the risk of MACs.														
Operational issues	CAT by Aeroplanes	Runway safety	Reduce the number of REs and RIs in fixed wing commercial air transport.														
Operational issues	CAT by Aeroplanes	Ground safety	Further reduce the risk of accidents in this category.														
Operational issues	CAT by Aeroplanes	Controlled flight into terrain	Further reduce the risk of accidents in this category.														
Operational issues	CAT by Aeroplanes	Fire, smoke and fumes	Further reduce the risk of accidents in this category.														
Operational issues		Helicopter operations	Reduce the overall accident rate in helicopter operations.														
Operational issues		General aviation safety	Improve GA pilot risk awareness and airmanship.														
Emerging issues		New products, systems, technologies and operations	Manage the introduction of new products, systems, technologies, and operations.														
Emerging issues		Regulatory and oversight considerations	Improve MS oversight capacities and capabilities.														
Emerging issues		New business models	Evaluate whether the existing safety regulatory system adequately addresses current and future safety risks arising from new and emerging business models.														

Appendix D: European Commission's priorities and EASA's Strategic Plan

EASA is a European Union body, therefore its planning exercise must be aligned to the 10 key priorities defined by the Juncker's Commission at the beginning of its mandate, which are the following:

1. Jobs, Growth and Investment
- ✓ Creating jobs and boosting growth

2. Digital Single Market
- ✓ Bringing down barriers to unlock online opportunities

3. Energy Union and Climate
- ✓ Making energy more secure, affordable and sustainable

4. Internal Market
- ✓ Stronger industry, fewer national trade barriers, stricter business ethics

5. Economic and Monetary Union
- ✓ A deeper and fairer economic and monetary Union

6. EU-US Free Trade
- ✓ Reaching a reasonable and balanced trade agreement

7. Justice and Fundamental Rights
- ✓ Upholding shared values, the rule of law and fundamental rights

8. Migration
- ✓ Towards a European agenda on Migration

9. EU as a Global Actor
- ✓ A stronger global actor

10. Democratic Change
- ✓ Making the EU more democratic

Out of the above priorities for the transport sector, Commissioner Bulc identified the following as key priorities:
- Jobs, Growth and Investment
- Internal Market
- EU as a Global Actor
- Democratic Change

Cascading from these priorities, the Transport Agencies of the European Commission have been assigned the following objectives:
- Become global leaders
- One-stop shop for all domain-related matters
- Efficiency effort to be made, in particular on the simplification of processes
- Support to the industry
- Strategic alignment with the Juncker Objectives
- Innovative funding schemes

The Agency reviewed its planning framework taking into account all the elements above, aiming for a clear cascade from the Commisions's vision to its objectives and actions. This lead to the development of 6 strategic statements that represent the goals to be achieved by the Agency. The strategic statements respond to the inputs analysed by the Agency as well as the objectives set by Commissioner Bulc.

1. Our ambition is to be the foremost Aviation Safety Agency in the world
(Linked to the Junker objective: EU as Global Actor)

2. The Agency works on safety, in a proactive manner, helped by an enhanced safety analysis capability
(Linked to the Junker objective: EU as Global Actor)

3. One system based on partners working in an integrated, harmonised and coordinated manner
(Linked to the Junker objective: Jobs, Growth and Investment)

4. The Agency builds on committed, agile and talented staff
(Linked to the Junker objective: EU as Global Actor)

5. Rules are smart, proportionate and contribute to the competitiveness of the Industry
(Linked to the Junker objective: Jobs, Growth and Investment)

6. The Agency will continue to be independent from political or economic influence in all its safety actions
(Linked to the Junker objective: EU as Global Actor)

The strategic statements are then developed into Strategic Objectives, which have been used to derive the strategic priorities of the EPAS. They can be found in our Single Programming Document (Chapter 5)[17] and are extracted here for better reference:

Strategic statement		Objective	Outcome	Action
1. Our ambition is to be the foremost Aviation Safety Agency in the world	1.1	Facilitating competitiveness, innovation and emerging technologies which generate European success	Achieving proportionate and performance-based regulatory actions that efficiently maintain safety, stimulate jobs, growth and European industry	EASA increases safety and environmental performance by facilitating new technology deployment, impact assessment, analysis and mitigation of risks, and ex post evaluations.
	1.2	Sustaining worldwide recognition for the European aviation safety system	Recognition and respect as a strong partner with integrity, transparency and professional excellence	EASA shall implement an 'international strategy', promote European aviation standards and continue improving global safety and environmental protection levels.
2. The Agency works on safety, in a proactive manner, helped by an enhanced safety analysis capability.	2.1	Applying an advanced, pro-active and systematic approach to aviation safety	In consultation with National Aviation Authorities and industry, develop a Safety Management capability that can programme and deliver effective and robust safety actions.	Within the framework of the European Plan for Aviation Safety (EPAS), EASA shall assess, integrate and programme actions that result in Safety Promotion, Focused Oversight or Rulemaking.
	2.2	Using information technology to the benefit of the European Safety Management process	Managerial and technical processes and interactions with stakeholders are universal, simplified and streamlined	Consistent with strategic priorities, EASA shall implement integrated safety and environmental programming. Taking a holistic approach, EASA shall manage the analysis of complex safety data efficiently and effectively. EASA shall follow an 'Information Security Roadmap' to protect its technical infrastructure.
3. One system based on partners working in an integrated, harmonised and coordinated manner	3.1	Identifying safety deficiencies and taking corrective actions in a common, coordinated and rapid manner	A comprehensive risk-based oversight system provides safety performance monitoring of aviation activities.	EASA shall develop and implement one harmonised risk-based oversight system capable of targeted and timely responses to identified issues.
	3.2	Integrating technical resource management at European level for efficiency, effectiveness and flexibility	Competent well-trained technical experts can be deployed in a coordinated manner to support safety activities and National Aviation Authorities throughout Europe.	EASA shall lead the integration of planning, deployment and support for the 'common pool' of experts. EASA shall develop and maintain an 'EASA Virtual Academy'.
	3.3	Establishing a new resource scheme to sustain the European aviation safety system	One new harmonised resource management mechanism that forecasts revenues and reliably provides funds over the complete business cycle. Cooperative oversight and	EASA shall investigate, report and recommend innovative and proportionate new funding mechanisms.

[17] Single Programming Document (SPD) 2017-2020 is accessible here: http://www.easa.europa.eu/system/files/dfu/EASA%20MB%20Decision%2011-2016%20Annex%20SPD%202017-2020.pdf

Strategic statement		Objective	Outcome	Action
			pooling of experts at EU level are included.	
4. The Agency builds on committed, agile and talented staff	4.1	Empowering individuals to develop, engage and grow so as to deliver on our priorities	Clear, concise and complete HR policies, procedures and practices that include encompassing recognition, training and development	For all activities, EASA shall ensure regular tailored job evaluations, professional growth opportunities and succession planning for its staff.
	4.2	Creating a quality work environment that helps staff succeed	Facilities that encourage team work, cooperation and collaboration and encompass a paperless workplace with up-to-date support tools	EASA shall provide customised work premises and tools for active staff collaboration and support.
	4.3	Pledging to improve, refine and simplify processes, procedures and practices so as to drive efficiency.	Stakeholders receive an efficient, straightforward, quality service at a high level of availability and low level of bureaucracy.	EASA shall implement improvements, track progress, benchmark and review performance; with particular attention to certificate applicants and the Fees & Charges framework.
5. Rules are smart, proportionate and contribute to the competitiveness of the Industry.	5.1	Redefining and simplifying rulemaking activities	Consultation mechanisms and rules, opinions and guidance that are objective, understandable and responsive to demand	EASA shall monitor, and if necessary, restructure its consultative bodies in order to assure a consistent, efficient and effective approach. In addition, EASA shall consistently conduct preliminary impact assessments.
	5.2	Assessing rules and regulations to ensure they are effective, proportionate and remain relevant.	A smart feedback loop constantly improving aviation rules and regulations.	In consultation with stakeholders, EASA shall regularly review enacted rules and regulations to maintain, amend, remove or replace them with measures like safety promotion.
6. The Agency will continue to be independent from political or economic influence in all its safety actions	6.1	Demonstrating integrity by assuring technical independence and robustness of safety decision-making	Technical safety decision-making that is objective, based on analysis, impact assessment and fair judgment and not influenced by bias or undue influence.	EASA shall maintain a conflict of interest management system and strengthen existing mechanisms such as the job rotation scheme.
	6.2	Minimising the consequences of political or unexpected constraints that may impact on aviation safety	Problems are anticipated and countermeasures are enacted so that safety risks are minimised and stakeholder expectations are satisfied	EASA shall employ data-based decision-making processes and establish practical measures to counter safety risks stemming from resource constraints and the impact of undue influence.

Appendix E: Policy on performance-based regulation

Introduction

A performance-based approach is intended to make aviation safer, more efficient and flexible. Performance-based regulations (PBR) have been in existence for decades; however, no consistent and systematic approach to implementing PBR principles has been implemented so far at EASA level. To support a consistent, systematic and performance-based management of aviation safety, in 2014 EASA issued a paper laying down general principles and key concepts for ensuring a harmonised European approach in that area[18]. The PBE paper proposed further work on performance-based oversight as well as performance-based regulations.

This paper focuses on PBR and includes:

— Terminology to enhance a common understanding;
— A PBR policy to guide future action; and
— An implementation plan.

PBR are those regulations where the implementing rules focus on desired, measurable outcomes, rather than on defining prescriptive means and conditions for achieving compliance with the requirements. The objective of PBR is thus to better focus on critical safety outcomes and to increase regulatory efficiency.

Besides the regulation of aviation safety, this ´performance-based´ approach may also apply to regulating capacity/efficiency, level playing field or environmental protection.

The expected benefits of PBR are threefold: resilience, flexibility, safety management.

Resilience: The increased complexity in operations and aviation activities, the dynamics of aviation business models, fast and proliferating technologic development require a regulatory framework capable of anticipating changes.

Flexibility: By focusing on safety outcomes, PBR provide flexibility and encourage innovation by not restricting a priori the means to control specific risks.

Safety management: By providing a flexible implementation framework and focusing on safety outcomes, PBR allow organisations and authorities to foster risk management capability and to better allocate resources against risks identified under their SMS and SSP.

[18] A Harmonised European Approach to a Performance-Based Environment (PBE), available on the EASA website.

Terminology[19]

Prescriptive rule:

A rule that specifies what needs to be done and how.

Performance-based rule:

A rule that specifies what the outcome should be instead of how to achieve the outcome.

'Performance-based rules' come in different shapes and variants, which can generally be associated with one of the below categories:

Objective-based rules: only the objective is defined, not the means to achieve it.

Example: *'Records must be stored in a manner that ensures preservation and traceability throughout the entire lifecycle.'*

Process-based rules: specific organisational requirements and/or processes are prescribed as enablers of a desired outcome.

Example: *'The operator shall establish, implement and maintain a management system that includes the identification of aviation safety hazards entailed by the activities of the operator, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness.'*

Performance-standard-based rules: a set of performance metrics (quantitative and qualitative) is defined based on which to determine whether a system or process is operating in accordance with expectations

Example: *"Record keeping must ensure that lost/destroyed record incidents remain below 2 over any 2 year period."*

PBR Policy

Through the consultation of A-NPA 2014-12[20] on the topic of 'Reinforcing the performance-based approach' stakeholders, while acknowledging the benefits of such approach, called for a consolidation of the existing regulatory system before implementing any new approach, in particular by ensuring uniform interpretation and application of the existing rules.

EASA agrees with stakeholder views that PBR should not totally replace the prescriptive elements of the framework, but should rather gradually complement them further or possibly replace them where appropriate.

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[19] While the term 'regulation's encompasses essential requirements, implementing rules, Certification Specifications, AMC and GM, these definitions apply to essential requirements and implementing rule material only.

[20] 'European Commission policy initiative on aviation safety and a possible revision of Regulation (EC) No 216/2008' - https://www.easa.europa.eu/system/files/dfu/A-NPA%202014-12.pdf

The PBR policy includes the following elements:

1. The further introduction or review of performance-based elements in regulations shall be gradual and be part of the overall change management process to implement safety management in accordance with ICAO Annex 19.

2. To encourage and maximise the potential of proactive safety management introducing SMS should go in parallel with a review of existing prescriptive requirements, in particular in relation to items requiring competent authority involvement and to the nature of oversight, where both should be adapted to the level of risk and performance.

3. Combinations of prescriptive and performance-based elements should be determined depending on context and domain.
    a. Inclusion of prescriptive elements should be balanced with the need to ensure resilience of the Implementing Rules, provide flexibility, enhance safety management and efficiency.
    b. Inclusion of performance-based elements shall consider :
        — safety criticality of non-compliance;
        — impact on international harmonisation;
        — impact on oversight capabilities;
        — proportionality and flexibility; and
        — risk management capability of regulated entities.

4. As far as relevant, the above principles shall apply to the EASA Authority Requirements and Organisation Requirements and should be promoted for any other regulation within the EASA remit.

5. EASA shall ensure consistency in the use of prescriptive and performance-based elements across domains.

Implementation Plan

Implementation of a performance-based approach must take due account of the need to consolidate and stabilise the existing regulatory framework.

Implementation in specific areas shall be carefully assessed, considering the particular issue to be addressed, the benefits and drawbacks of different types of rules; specifically how they can be overseen in the field and their effects on international harmonisation, compliance with ICAO standards and on the level playing field. Related impact assessments shall specifically consider the diversity of national legal and administrative systems across Europe, the implementation costs for industry and NAAs and the impact on smaller NAAs.

The gradual process to introduce PBR complementing or as a replacement for prescriptive rules should allow to identify key areas where the benefits of PBR are expected to be significant. This process should also allow identifying which parts of the rules are obsolete and can be deleted without replacement.

The implementation plan addresses:

— the method to assess the need for a performance-based approach;
— oversight methodologies;
— the establishment of priorities for candidate PBR;
— the implementation process.

Pre-Impact Assessment / Impact assessment

Identification of key areas suitable for PBR shall be made on the basis of sound **Impact Assessment** (IA). The new Rulemaking Process promotes IA as a tool to have 'less and better regulation' as well as to implement a performance-based approach. Impact Assessments will be the means to determine if an area should rather be regulated in a prescriptive way or if it qualifies for PBR. This determination shall be addressed in three different phases:

— **Preliminary Impact Assessment** (PIA), occurring at programming phase, will consider the possibility of using more performance-based elements [e.g. find the optimal combination between soft law (i.e. Certification Specifications, Acceptable Means of Compliance and Guidance Material) and hard law (i.e. Implementing Rules)];

— **Regulatory Impact Assessment** (RIA) accompanying the drafting of the Notice of Proposed Amendment (NPA); it will support the inclusion of performance based elements by way of checking:

  - if the objective of at least one of the 3 benefits is met: resilience, flexibility, safety management;
  - if at least an equivalent level of safety compared to a prescriptive rule will be ensured;
  - if effective oversight and enforcement will be ensured, taking into account the cost burden on NAAs, particularly the smaller ones;
  - if the impact, if any, on international harmonisation and mutual recognition can be minimised.

— **Ex post evaluation,** assessing the implementation of the rules and systematically considering the possible introduction of performance-based elements as a tool for increasing regulatory efficiency.

Oversight

The introduction of PBR shall be supported by common advanced oversight methodologies ensuring harmonised implementation (including where relevant related AMCs and GM) to enable competent authorities to monitor compliance and assess performance as part of their oversight.

EASA's capabilities to ensure uniform interpretation and application of the existing rules shall be strengthened.

Priorities in the Rulemaking Programme (RMP)

Priorities for selecting candidate Implementing Rules for PBR shall be:

— identified as part of the **Rulemaking Programming** process;
— confirmed through **Impact Assessment** or **Ex Post evaluation** of Rules;
— discussed and **agreed with stakeholders** on that basis;
— formalised in the **Rulemaking Programme.**

Implementation Process

The above approach will allow to fully embed the performance-based approach in the Rulemaking Process.

The gradual introduction of PBR will be effectively implemented through and accompanied by:

— a consistent, transparent and continual action plan, the Rulemaking Programme, which will define related actions in terms of rulemaking, oversight and safety promotion;
— the rulemaking procedure, as revised in 2015, aiming at efficient processing, enhanced impact assessment and uniform application of standards for the drafting of PBR;
— education of top and middle management of NAAs.

Implementation starts as a continuous process with the 2017–2021 planning cycle, i.e. with the implementation of the new rulemaking process and the preparation of the 2017–2021 RMP. In line with the new approach regarding planning and programming, all related actions (regulatory action, oversight, training or safety promotion) are managed as a single project.

Throughout this process, proper change management, including communication and training, will be ensured.

Finally, working in partnership with the NAAs and industry is a key success factor in PBR implementation.

Appendix F: Policy on Safety Management Systems

General

1.1. The main purpose of an SMS is to ensure that, beyond assuring mere compliance with regulations, organisations have the capacity of identifying the risks they may pose to flight safety and mitigating those risks.

1.2. Accidents having generally multiple, cross-domain causes. Authorities and organisations should have a consistent approach when dealing with the identification of hazards and management of safety risks.

1.3. In its report 'Harmonised European Approach to a Performance Based Environment' EASA identified that effective implementation of SMS is the most important driver for implementing a risk- and performance-based approach[21].

Applicability and consistency

1.4. As a general principle, all organisations exposed to or possibly contributing to aviation safety risks, should be subject to SMS requirements. Possible exceptions should be determined based on:

— the overall contribution of a particular activity to the safety of the total system;

— the relative costs and benefits of SMS implementation both for organisations and authorities.

This may concern notably Part-147 Training Organisations and DOA limited to minor changes and repairs.

1.5. Applicability dates should be adapted to the type of activity of the organisations, in particular as regards their contribution to aviation safety risks.

1.6. In order to minimise changes in existing regulations and therefore the impact on organisations, the introduction of SMS requirements into new domains should be based on a careful gap analysis between existing requirements and the ICAO Annex 19 framework.

1.7. While minimising those changes, the resulting regulations should foster consistent implementation of SMS in the regulated fields. This is particularly important for those organisations holding multiple approvals within the scope of the Basic Regulation.

1.8. Common core authority requirements should apply in all technical domains to support the standardisation objectives set out in the Basic Regulation, support the implementation of SSP/EPAS, to streamline competent authority management systems and procedures, and to ensure consistency in organisation approvals.

Proportionality and flexibility

1.9. The Organisation's SMS must be commensurate with the size and complexity of the organisation and the level of risks involved.

1.10. To ensure proportionality and flexibility, the SMS requirements at Implementing Rule level should be limited to key principles. Non-essential implementation provisions should be included as AMC.

[21] This view also aligns with the majority views expressed by stakeholders through the A-NPA 2014-12 consultation as related to question 3.1.1.

1.11. The implementation provisions at AMC level should be further adapted to the size, nature and complexity of specific technical domains or categories of organisations, while ensuring a consistent approach between different technical domains.

Implementation

1.12. The development and acceptance of industry standards and Safety Promotion material should be encouraged to support SMS implementation

1.13. SMS implementation should be given reasonable time, beyond the mere implementation deadline, following a phased, performance-based approach.

1.14. Further emphasis should be put on supporting the implementation of simple, robust and proportionate SMS for simple, low-risk organisations.

General Aviation and small organisations

1.15. Safety management principles, centred on the individual, should systematically be considered when developing or amending regulations

International harmonisation

1.16. The common EASA management system framework should address the elements of ICAO Annex 19 while providing proportionality and flexibility. However, a less prescriptive and more proportionate approach than the ICAO Annex 19 SARPS is desirable.

Appendix G: Acronyms and Definitions

14 CFR Part 25	airworthiness standards: transport category airplanes
14 CFR Part 33	airworthiness standards: aircraft engines
4G	fourth generation of wireless mobile telecommunications technology
PIA A	strategic
PIA B	standard
PIA C	regular update
AAD	advanced anomaly detection
ACAS	airborne collision avoidance system
ADR	aerodromes
ADS-B	automatic dependent surveillance - broadcast
ADS-C	automatic dependent surveillance - contract
AFIS	aerodrome flight information service
Air Crew	air operations
AMAN	arrival management
AMC	acceptable means of compliance
AMC 20	general Acceptable Means of Compliance for airworthiness of products, parts and appliances
AMM	aircraft maintenance manual
AMO	approved maintenance organisation
ANAC	Agência Nacional de Aviação Civil (Portuguese national aviation authority)
ANS	air navigation services
ANSP	air navigation service provider
AOC	air operator certificate
AP	accelerated procedure
ARAC	Aviation Rulemaking Advisory Committee
ARC	aircraft airworthiness review certificate OR abnormal Runway contact
ASAGA	aeroplane state awareness during go-around
ASAWG	ARAC Airplane-level Safety Analysis Working Group
ASR	safety analysis report
ATC	air traffic control
ATCO	air traffic controller
ATM	air traffic management
ATO	approved training organisation
ATPL	air transport pilot licence
ATQP	Alternative and Training Qualification Programme
ATS	air traffic services

AV-CERT	Aviation Computer Emergency Response Team
AWO	all-weather operations
B777	Boeing 777
Basic Regulation	Regulation (EC) No 216/2008 of 20/02/2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/E
BEA	Bureau d'Enquetes et d'Analyses
BPL	balloon pilot licence
CA	competent authority
CAA	civil aviation authority
CAEP	Committee on Aviation Environmental Protection (ICAO)
CAEP/10	tenth meeting of the committee on Aviation Environmental Protection
CAG	Collaborative Analysis Group
CAMOs	continuing airworthiness management organisation
CASA	Civil Aviation Safety Authority of Australia
CAT	commercial air transport
CAT I, II, III	category I, II, III
CAW	continuing airworthiness
CBT	competency-based training
CFIT	controlled flight into terrain
CO_2	carbon dioxide
CPDLC	controller–pilot data link communication
CPL	commercial pilot licence
CRM	crew resource management
CS	certification specification
CS SIMD	Certification Specifications for Simulator Data
CS VLR	Certification Specifications for Very Light Rotorcraft
CS-22	Certification Specifications for sailplanes and powered sailplanes
CS-23	Certification Specifications for normal, utility, aerobatic and commuter aeroplanes
CS-25	Certification Specifications for large aeroplanes
CS-26	Certification Specifications for additional airworthiness specifications for operations
CS-27	Certification Specifications for small rotorcraft
CS-29	Certification Specifications for large rotorcraft
CS-34	Certification Specifications for aircraft engine emissions and fuel venting
CS-ACNS	Certification Specifications for Airborne Communication, Navigation and Surveillance
CS-APU	Certification Specifications for Auxiliary Power Units
CS-CC	Certification Specifications for cabin crew data
CS-E	Certification Specifications for Engines
CS-ETSO	Certification Specifications for European Technical Standard Orders

CS-FCD	Certification Specifications for flight crew data
CS-LSA	Certification Specifications for Light Sport Aeroplanes
CS-MMEL	Certification Specifications for Master Minimum Equipment List
CS-STAN	Certification Specifications for Standard Changes/Standard Repairs
CS-VLA	Certification Specifications for Very Light Aeroplanes
CVS	combined vision systems
CZ	Czech Republic
DAH	design approval holder
DAT.OR	organisational requirements for the data service providers
DAT provider	(aeronautical) data provider, indirectly, competent authority
DAT.TR	technical requirements for the provision of data services
D-ATIS	digital - automatic terminal information service
DCL	departure clearance
DLS	data link services
DOA	design organisation approval
DP	direct publication
DTO	declared training organisation
D-TAXI	delivery of planned and cleared departure routes by datalink
ETSO	European technical standard order
EAFDM	European Authorities Coordination Group on Flight Data Monitoring
EAPPRE	European Action Plan for the Prevention of Runway Excursions
EASA	European Aviation Safety Agency
EASA CT	EASA Certification
EASA CT.2	EASA General Aviation & Remotely Piloted Aircraft Systems (RPAS) Department
EASA CT.5	EASA Environment Department
EASA CT.7	EASA Certification Policy & Safety Information Dept.
EASA FS.1	EASA Maintenance & Production Dept.
EASA FS.1.2	EASA Maintenance Regulations Section
EASA FS.2	EASA Air Operations Department
EASA FS.2.4	EASA Safety Assessment of Foreign Aircraft Section
EASA FS.3	EASA Aircrew & Medical Department
EASA FS.4	EASA Air Traffic Management/Air Navigation Services (ATM/ANS) & Aerodromes Department
EASA FS.4.2	EASA Air Traffic Management/Air Navigation Services (ATM/ANS) Regulations Section
EASA FS.4.3	EASA Aerodromes Regulations Section
EASA FS.5	EASA Policy & Planning Department
EASA SM 2.1	EASA Safety Programmes Section
EASA SM.1	EASA Safety Intelligence & Performance Department
EASA SM.2	EASA Strategy & Programmes Department

EATMN	European air traffic management network
EBT	evidence-based training
EC	European Commission
ECAST	European Commercial Aviation Safety Team
ECQB	European Central Question Bank
ECTRL	Eurocontrol
EDTO	extended diversion time operation
EFB	electronic flight bag
EGAST	European General Aviation Safety Team
EHEST	European Helicopter Safety Team
ELA	European light aircraft
EMS	emergency medical services
EPAS	European Plan for Aviation Safety
EOFDM	European Operators Flight Data Monitoring forum
ESSI	European Strategic Safety Initiative
ETOPS	extended-range twin-engine operational performance standards
ETSOA	European technical standard order (authorisation)
EU	European Union
EU-OPS	Commission Regulation (EC) No 859/2008 of 20 August 2008 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane
EUROCAE	European Organisation for Civil Aviation Equipment
EVS	enhanced vision systems
FAA	Federal Aviation Administration
FABs	functional airspace blocks
FAR 33.90	Federal Aviation Regulation Section 33.90 — Initial maintenance inspection test
FbW/FBW	fly-by-wire
FCHWG	ARAC Flight Controls Harmonisation Working Group
FCOM	flight crew operating manual
FDM	flight data monitoring
FEM	flight examiner manual
FIS	flight information services
F-NI	fire - non-impact
FOT	focused oversight
F-POST	fire - post accident
FR	France
FRM	fatigue risk management
FSTD	flight synthetic training devices
FTE	flight test engineer

FTL	flight time limitation
FTS	flight time specifications
FW	fixed wing
GA	general aviation
GASP	Global Aviation Safety Plan (ICAO)
GBAS	ground based augmentation system
GCOL	ground collision
GLS	GBAS (ground-based augmentation system) landing system
GM	guidance material
GNSS	global navigation satellite system
GPS	global positioning system
H2020	Horizon 2020
HE	helicopter
HEMS	helicopter emergency medical services
HF	human factor
HOSSWG	Helicopter Offshore Safety and Survival Working Group
HPA	high-performance aircraft
HTAWS	helicopter terrain avoidance warning systems
HUD	head-up displays
HUMS	health and usage monitoring systems
IATA	International Air Transport Association
ICA	instructions for Continued Airworthiness
ICAO	International Civil Aviation Organization
ICAO SL	ICAO State letter
IFE	In-flight entertainment
IFR	instrument flight rules
ILS	instrument landing system
IMA	Integrated modular avionics
IMC	instrument meteorological conditions
IMI	initial maintenance inspection
Init. Airw.	initial airworthiness
IR	(Commission) Implementing rule
IR	Instrument rating
JAA	Joint Aviation Authorities
JAR-25	joint aviation requirements
JARUS	Joint Authorities for Rulemaking on Unmanned Systems
KRE	key risk element
LAPL	light aircraft pilot licence

LAPL(A)	allows pilots to act as pilot in command on aeroplanes or touring motor gliders
LAPL(S)	allows pilots to act as pilot in command on EASA sailplanes and powered sailplanes
LFTE	lead flight test engineer
LO	learning objective
LOCART	loss of control avoidance and recovery training
LOC-I	loss of control - inflight
LOI	level of involvement
LVO	low visibility operations
MAC	mid-air collision
MCF	maintenance check flights
MET	meteorology/meteorologic
MET provider	Meteorological service provider, indirectly, competent authority
MH17	Malaysia Airlines flight 17
MMEL	master minimum equipment list
mn	minutes
MO	maintenance organisation
MOPS	minimum operational performance specification
MOPSC	maximum operational passenger seating configuration
MPL	multi-crew pilot licence
MRB	Maintenance Review Board
MS	Member States
MST	Member States' tasks
MTO	maintenance training organisation
MTOM	maximum take-off mass
NAAs	national aviation authorities
NCC	non-commercial air operations with complex motor-powered aircraft
NCO	non-commercial air operations with other-than-complex motor-powered aircraft
NDB	non-directional beacon
NextGen	next generation
NO	Norway
NoA	Network of Analysts
NPA	notice of proposed amendment
OEM	original equipment manufacturer
OJ	Official Journal of the European Union
OPS	air operations
OpSpecs	operations specifications
ORO.FC.	organisation requirements for air operations - flight crew
PANS	procedures for air navigation services (ICAO)

Part-21	airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations
Part-145	maintenance organisation approvals
Part-147	training organisations requirements
Part-21 Subpart H	Airworthiness certificates and restricted certificates of airworthiness
Part-26	additional airworthiness requirements for operations
Part-66	certifying staff
Part-ARO	authority requirements for air operations
Part-FCL	flight crew licensing
Part-M	continuing airworthiness requirements
Part-MED	medical certification of pilots, medical fitness of cabin crew, certification of AMEs and requirements of GMPs and OHMPs
Part-SPO	specialised Operations
pax	passengers
PBN	performance-based navigation
PBR	performance-based regulations
PCP	pilot common project (SESAR)
PIA	preliminary impact assessment
PIS	public interest sites
PM CPDLC	protected mode controller–pilot data link communication
POA	production organisation approval
PPL	private pilot license
Q	quarter
RAMP	aerodrome ramp
RE	runway excursion
RES	research actions
RFFS	rescue and firefighting services
RFID	radio frequency identification
RI	runway incursion
RIA	regulatory impact assessment
RI-VAP	runway incursion (vehicle animal person)
RMP	rulemaking programme
RMT	rulemaking task
RNAV	area navigation
SARPS	standards and recommended practices (ICAO)
SA CAT I	Special approval CAT I
SBAS	satellite based augmentation system
SCF-NP	system component failure (non-powerplant)
SCF-PP	system component failure (powerplant)

SERA IR	standardised European rules of the air implementing rule
SERA Part C	Commission Implementing Regulation (EU) 2016/1185 of 20 July 2016 amending Implementing Regulation (EU) No 923/2012 as regards the update and completion of the common rules of the air and operational provisions regarding services and procedures in air navigation (SERA Part C) and repealing Regulation (EC) No 730/2006
SES	Single European Sky
SESAR	Single European Sky ATM Research
SET	single-engined turbine
SLD	supercooled large droplets
SMICG	Safety Management International Collaboration Group
SMS	safety management systems
SOPs	standard operating procedures
SPI	safety performance indicator
SPL	sailplane pilot license
SPN	Safety Promotion Network
SPT	safety promotion
SR	safety recommendation
SR FRAN-2011-006	French Safety recommendation from 2011 No 6
SSIP	supplemental structural inspection programme
SSP	state safety programme
ST	standard procedure
STC	supplemental type certificate
STD	synthetic training device
STeB	stakeholder technical body
Subpart SPO.SPEC	specialised operations specific requirements
Subparts J & K of Part-FCL	instructors and examiners
SVGS	synthetic vision guidance systems
SVS	synthetic vision systems
SWIM	system-wide information management
TAWS	terrain awareness warning system
TBD	to be determined
TBO	time between overhaul
TC	type certificate
TCAS	traffic collision avoidance system
TCCA	Transport Canada Civil Aviation
TCP	tricresyl phosphate
TeB	Member State technical body
TEM	threat and error management
TMA	terminal manoeuvring area

TO	training organisation
ToR	terms of reference
TSO	technical standard order
UAS	unmanned aircraft systems
UDPP	user-driven prioritisation process
UK	United Kingdom
UPRT	upset prevention and recovery training
VFR	visual flight rules
VHF	digital - automatic terminal information service
VOR	VHF omnidirectional range
VHM	vibration health monitoring
VLA	very light aeroplane
WFD	widespread fatigue damage
WIDDCWG	Water Impact, Ditching Design and Crashworthiness Working Group
WP	working paper

Appendix H: Working groups owning EPAS Actions

EAFDM

Web Link

The Agency and NAAs have formed a group of experts called the **European Authorities Coordination Group on FDM** (EAFDM). It is a voluntary and independent safety initiative with the following objectives:

a) contribute to improving the implementation of FDM programmes and to making FDM programmes more safety effective;

b) contribute to the EASA objective of a high and uniform level of safety in Europe; and

c) contribute to a better overview of air transport operational safety in Europe for EASA and NAAs.

Among the topics covered by EAFDM are:

— Development of national FDM forums;

— Oversight of FDM programs by NAAs; and

— FDM-based indicators.

EOFDM

Web Link

The **European Operators Flight Data Monitoring** (EOFDM) forum is a project of a voluntary partnership between European operators and the European Aviation Safety Agency (EASA) in order to:

a) facilitate the implementation of Flight Data Monitoring (FDM) by Operators,

b) help operators draw the maximum safety benefits from an FDM Programme

CTIG

The **Common Training Initiative Group** (CTIG), is composed of training managers from national aviation authorities. The CTIG plays a crucial role in the implementation of the new EASA aviation training strategy. The Group is mandated to harmonise training and assessment standards for aviation inspectors, with the aim to provide for highly qualified and sufficiently trained authority inspectors across Europe.

The CTIG deliverables will, among others, contribute to the functioning of the pool-of-experts, will be used for the training-related annex in NAA Partnership Agreements and will strengthen the role of EASA as an RSOO (Regional Safety Oversight Organisation).

NoA

Web Link

The **Network of Analysts** was established in 2011 to provide a collaborative framework for the EASA MS to work together on safety analysis activities. The NoA was formalized within European Regulation (EU) 376/2014 and has a role in analysing the European Central Repository of mandatory occurrences to support both the EPAS and the State Safety Programmes of the EASA MS. The NoA works closely with the CAGs in the identification of Safety Issues, Safety Risk Assessment and the monitoring of safety performance.

SM ICG

Web Link

The **SMS International Collaboration Group** (SMICG) — created in February 2009 — is a collaboration activity between aviation authorities in order to promote a common understanding of SMS principles and requirements in different countries, share lessons learned and encourage progress and harmonisation. The SMICG consists of a core group and a participant group. The core group is comprised of authorities with resources and expertise for product development. It includes members from the FAA, EASA (supported by FOCA of Switzerland, the DGAC of France, AESA Spain, the CAA of the Netherlands, ENAC Italy, Trafi Finland and UK CAA, TCCA, CASA of Australia, JCAB of Japan, CAA of New Zealand and ANAC of Brazil. The participant group tests and reviews the core group's work products and resources. Additionally, the Civil Aviation Department of Hong Kong (CAD HK), ICAO, and the UAE General Civil Aviation Authority (UAE GCAA) are observers to this group.

SPN

Web Link

The **Safety Promotion Network** (SPN) is a voluntary partnership between EASA and other aviation organisations. The objective of the Safety Promotion Network is to enhance aviation safety in Europe by providing a framework for the collaboration of safety promotion activity throughout the EASA Member States (MS).
For mutual benefit and a common purpose the members of the safety promotion network take on these objectives:

- exchanging information.
- coordinating activities.
- cooperating and sharing joint activities.
- collaborating to increase the capacity for activities.

ESPN-R

Web Link

The **European Safety Promotion Network Rotorcraft** (ESPN-R) is a mixed industry-authorities team established by the Rotorcraft Sectorial Committee (RSC) in January 2017.
The ESPN-R develops, disseminates and evaluates Safety Promotion (SP) material and actions on a voluntary basis in support of the RSC, of EASA and of the industry. The ESPN-R can also contribute to Safety Promotion campaigns

CAG

The **Collaborative Analysis Groups** operate at a domain level to enable EASA to work with both the EASA MS and industry on the tasks of identifying Safety Issues, Safety Risk Assessment and the monitoring of Safety Performance. The CAGs provide a mechanism for external engagement with industry and the Member States' NoA Representatives on the Safety Risk Portfolios, which are used to ensure agreement on the Key Risk Areas and Safety Issues in each domain. CAGs have already been established for CAT Aeroplanes, Offshore Helicopters and Balloons. Over the coming year, further groups will be established to cover the other operational domains.

Advisory Bodies

Web Link

A large number of proposed Agency actions directly affect the Member States and the Industry. So called **advisory bodies** provide the Agency with a forum for consultation of interested parties and national authorities on Agency priorities, both at strategic and technical level.

The following advisory bodies are relevant for the EPAS:

- Member States Technical Bodies (TeBs): The TeBs are Technical Bodies encompassing the scope of the TAGs and Standardisation meetings and enlarging their scope to also include safety promotion.
- Stakeholder Technical Bodies (STeBs): In the recent restructuring of the advisory bodies, the STeBs replace the sub-committees of the Safety Standards Consultative Committee (SSCC) and they are responsible for reviewing and committing to concrete actions that address the specific Safety Issues at sectorial and technical level.
- Member State Advisory Body (MAB): The MAB is strategic body encompassing and extending the scope of RAG, EASAC and EASp Summit and advising on strategic developments.
- Stakeholder Advisory Body (SAB): The SAB replace the Safety Standards Consultative Committee (SSCC) and the EASA Advisory Board (EAB) and within the Safety Risk Management process is responsible for advising on strategic developments.

Appendix I: Index

Evaluation actions

Focused oversight actions

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