ICAO

SAFETY

European Regional
Aviation Safety Group
(RASG-EUR)

2016 Safety Report

October 2017

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Table of contents

Foreword

The Regional Aviation Safety Group Europe (RASG-EUR) was established in 2011. Its main objective is to support the implementation of the Global Aviation Safety Plan (GASP) and the associated Global Aviation Safety Roadmap (GASR) in the European and North Atlantic (EUR/NAT) Regions by ensuring effective coordination and cooperation between all stakeholders and monitoring progress in their implementation.

The RASG-EUR primarily focuses on supporting the establishment and operation of a performance and risk-based safety system by analysing the risks to civil aviation at the regional and sub-regional level, developing preventive and mitigating action plans and coordinating and supporting their implementation.

The RASG-EUR builds on existing structures, mechanisms and programmes that are already in place to manage aviation safety at sub-regional levels, e.g. for European Union (EU) Member States. The RASG facilitates the exchange of best practices and safety information amongst all stakeholders in the RASG-EUR area of responsibility (hereinafter referred to as the "Region").

Coordination between the European Air Navigation Planning Group (EANPG), other Regional Aviation Safety Groups and the RASG-EUR enables a system-wide approach to the coordination of civil aviation safety-related matters in the Region as well as intra-regionally.

The RASG-EUR also serves as a mechanism for passing on information to ICAO, particularly with regards to the challenges faced by States in the Region in the implementation of ICAO provisions.

RASG-EUR members and partners include representatives from States, regional organisations, international organisations, air operators, aircraft design organisations and manufacturers, air navigation service providers, aerodrome operators, aircraft maintenance organisations, aviation training organisations and other aviation industry representatives.

Detailed information on the RASG-EUR can be found in the RASG-EUR – Procedural Handbook published on the EUR/NAT web pages.

RASG-EUR area of responsibility

- Albania
- Algeria
- Andorra
- Armenia
- Austria
- Azerbaijan
- Belarus
- Belgium
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Georgia
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Israel
- Italy
- Kazakhstan
- Kyrgyzstan
- Latvia
- Lithuania
- Luxembourg
- Malta
- Monaco
- Montenegro
- Morocco
- Netherlands
- Norway
- Poland
- Portugal
- Republic of Moldova
- Romania
- Russian Federation
- San Marino
- Serbia
- Slovakia
- Slovenia
- Spain
- Sweden
- Switzerland
- Tajikistan
- The former Yugoslav Republic of Macedonia
- Tunisia
- Turkey
- Turkmenistan
- Ukraine
- United Kingdom
- Uzbekistan

Introduction

The current Annual Safety Report was developed and published by the RASG-EUR. The safety information provided for the European Region is based on the collation and analysis of data provided by ICAO, IATA, EUROCONTROL, EASA, CANSO Europe, the IAC and other members of the RASG-EUR.

The report combines safety information from trusted regional and external sources to present a consolidated overview of aviation safety, identify key regional aviation safety risks and harmonise and drive the development and sharing of mitigating measures to improve aviation safety. This report is published annually, bringing up-to-date aviation safety information, re-evaluating existing safety risks, as well as identifying emerging ones.

The report is aimed at Contracting and non-Contracting States, civil aviation authorities, international organisations, airspace users, ANSPs, airports, manu-

facturers, safety organisations and other key aviation stakeholders in the Region.

The report is developed fully in line with ICAO's "No Country Left Behind" goals to support aviation improvement projects and to optimise collaboration with/between States, ICAO, regional stakeholders, industry, and development partners.

The European Region is highly complex, with a number of regional safety related players, each compiling safety data and producing safety information from a different angle. Hence, users of the RASG-EUR report should note that differences in the information provided by contributing stakeholders are due to the type and amount of data available, as well as the analysis criteria used. One of the main challenges, therefore, is to decide on the key risk areas to achieve properly coordinated safety efforts.

Starting with an overview of regional traffic volumes, the main body of the RASG-EUR Annual Safety Report focusses on the collection and analysis of safety information (reactive, pro-active and predictive) and delivering safety promotion. The chapter on reactive information remains the main section of the report. However, every effort has been made to strike a balance with the other sections as the methods to gather, process, share and disclose pro-active and predictive information are gaining maturity. This information is completed with agreed RASG-EUR regional safety performance monitoring, key activities to reduce risks, work on emerging (safety) challenges plus references to other available safety reports provided for sub-regional, State, functional areas.

The structure and content of the report continues to be improved, based on feedback received to ensure that RASG-EUR Member States, Organisations and Industry remain committed to collaborate in this valuable effort.

The Annual Safety Report and other RASG-EUR related documentation can be downloaded at:
http://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx

For additional information please contact the ICAO, European and North Atlantic Office (ICAO EUR/NAT);

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Executive summary

The third RASG-EUR Annual Safety Report is based on data and inputs from 2016 received from ICAO, IATA, EUROCONTROL, EASA, CANSO Europe, the IAC and other contributors.

Commercial scheduled departures in the reporting year once again exceeded the levels of the previous year. The trend indicates that the number of departures will continue to increase in the future. Given that the complexity of operations and the related business models are also growing, an even greater focus on managing safety risks is required so as to maintain, c.q. improve, the safety standards in the Region.

A slight increase in the overall accident rate in the Region was noted vis-à-vis the 2013-2015 period. However, the figures remain below the world average, and there was a marked drop in the number of fatalities. The leading categories of fatal accidents in the period 2012-2016 were Loss of Control In-Flight (LOC-I) and Controlled Flight into Terrain (CFIT). Key contributing factors were found to be the

lack of proper safety management and the States' safety oversight capabilities. Most fatal accidents occurred in poor meteorological conditions. Overall, Runway Safety remains by far the most important risk category, with hard landings being the major sub-category. Hence, the priorities of the RASG-EUR for future safety developments remain largely unchanged.

In 2016, eighteen USOAP-related activities were performed in RASG-EUR Member States. While the overall level of effective implementation (EI) was much higher than the global average, the improvement compared to 2015 was minimal. The disparity between States is still notable, with eight States remaining below 60% EI. The areas of AIG, AGA and ANS, plus the critical elements (CE) related to safety oversight, i.e. technical personnel qualification and training (CE-4), surveillance obligations (CE-7) and the resolution of safety concerns (CE-8) are those with the lowest EI. The scores are upheld by EASA's Standardisation Inspections, with 30% of findings classified as significant deficiencies that may raise safety concerns if not corrected (a relatively stable proportion over the period 2011-2016).

Analysis of Remotely piloted aircraft systems (RPAS) occurrences in the European Central Repository (ECR) identified a total of 606 occurrences, 37 of which were classified as accidents (none involved fatalities). When compared to 2015, the number of reported RPAS incidents almost tripled during 2016, with airborne conflicts, system reliability and human performance being the key risk areas. The main priorities in terms of safety issues remain, therefore, controlled airspace infringements, pre-flight planning / preparation and operators' knowledge of the aviation system.

The monitoring by the RASG-EUR of the achievement of formal safety targets indicates that the availability of financial and qualified human resources for CAAs remains a challenging area. Certification, surveillance and resolution of safety concerns scored marginally better than in 2015. However, the progress of SSP implementation continues to be a concern and is not sufficient to achieve the targets set out in the GASP – less than 30% of the RASG-EUR States have a defined implementation plan and none have fully implemented their SSP. Mitigating actions will include, amongst others, regional workshops and dedicated training.

ICAO, States, and international and regional organisations managed a wide range of safety enhancement initiatives, noteworthy 2016 output including:

- The continuing development of the European Plan for Aviation Safety (EPAS),
- Increased safety promotion via the ICAO EUR Regional Expert Safety Teams (IE-REST),
- Stepping up safety-related training,
- Advancing the Data4Safety (D4S) project as a means to predictive safety management,
- The development of an RPAS ATM Concept of Operations (CONOPS),
- The establishment of a Regional Search and Rescue (SAR) Initiative in the Balkan area.

In conclusion, the 2016 RASG-EUR Safety Report offers the summaries of publicly available regional safety reports plus the links to RASG-EUR Member States' annual safety reports.

1. Regional safety performance

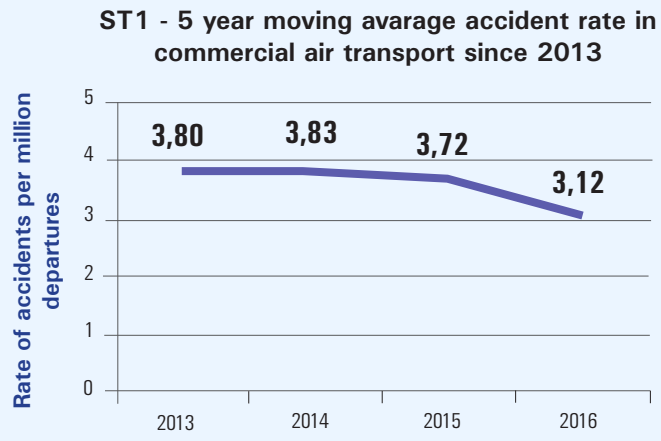
1.1. Safety Metrics and Targets Adopted by the RASG-EUR

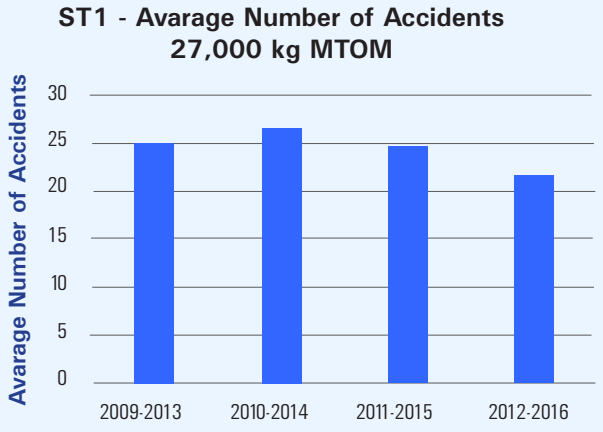
	Metric	Target
ST1 – Accident rate in commercial air transport	Moving five-year regional average accident rate (for aircraft of a maximum certificated mass of over 5700 kg in scheduled operations) Moving five-year regional average number of accidents (for aircraft of a maximum certificated mass of over 27,000 kg in scheduled operations)	Reduce by end 2017 compared with the average regional accident rate for the 2009-2013 period
ST2 – CAA resources	Yearly regional average EIs for PQs related to the financial and human resources of the CAAs (CE-3)	Increase by end 2017 compared with the average regional EI level for these PQs for 2013
ST3 – Certification, surveillance and resolution of safety concerns	Yearly regional average EIs for PQs related to CE-6, CE-7 and CE-8 in the PEL, OPS, AIR, ANS and AGA areas	Increase by end 2017 compared with the average regional EI level for these PQs for 2013
ST4 – SSC resolution	Number of unresolved SSC in the Regions Number of new SSCs not resolved within 2 years from publications in ICAO Electronic Bulletin	0 0
ST5 – SSP implementation	Yearly results from State's SSP gap analysis – using tool published by ICAO on the ISTARS SPACE website	All States to have implemented SSPs by end 2017 *(as per information uploaded by States on ICAO ISTARS SPACE website, with the pre-requisite that the State should have an average EI above 60%)*
ST6 – Accident investigations	Yearly regional rate of accidents as reported to ICAO, in commercial air transport for which an investigation has been launched by the State of occurrence according, or delegated by that State to another State or to a Regional Accident Investigation Organisation	Improve by end 2017 compared with the regional rate for 2013

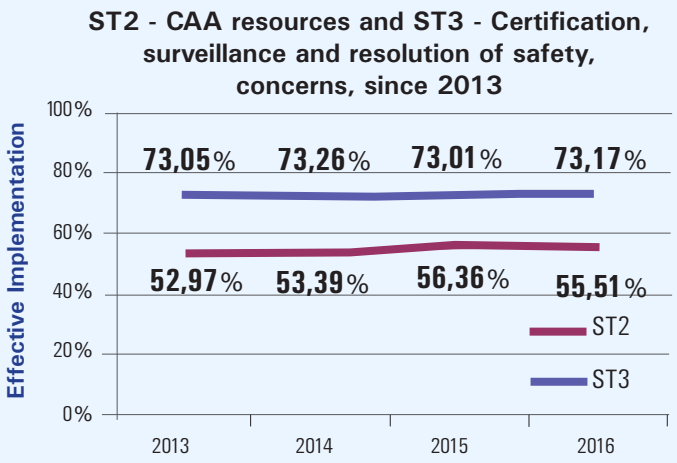
Table 1: *Safety metrics and targets as defined by the RASG-EUR (source: ICAO)*

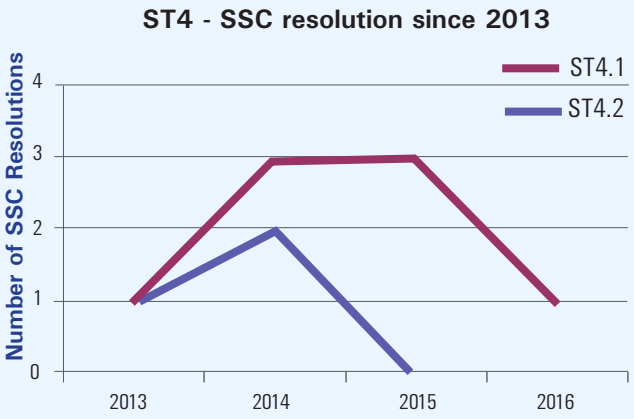
	Value for reference period	Value for 2016
ST1 – Accident rate in commercial air transport	2009-2013 regional average: 3.84 accidents per million departures (for aircraft with MTOW above 5,700 kg) 2009-2013 moving five-year regional average number of accidents: 25.2 (for aircraft with MTOW above 27000kg)	2012-2016 average: 3.12 accidents per million departures (for aircraft with MTOW above 5,700 kg) 2012-2016 moving five-year regional average number of accidents: 21.6 (for aircraft with MTOW above 27000kg)
ST2 – CAA resources	52.97%	55.51%
ST3 – Certification, surveillance and resolution of safety concerns	CE-6: 81.52% CE-7: 67.23% CE-8: 70.39% Average EI: 73.05%	CE-6: 81.33% CE-7: 67.99% CE-8: 70.18% Average EI: 73.17%
ST4 – SSC resolution	Unresolved SSC: 0 New SSCs not resolved within 2 years from publications in ICAO: 0	Unresolved SSC: 1 (2 resolved in 2016) New SSCs not resolved within 2 years: 0 (1 new SSC was published and resolved in 2016)
ST5 – SSP implementation	N/A	"Gap analysis started": by 72.92% of States above 60% EI
		"Gap analysis completed": by 47.92% of States above 60% EI
		"Implementation plan defined": by 27.08% of States above 60% EI
		"SSP implementation completed": by 0% of States above 60% EI
ST6 – Accident / serious incident investigations	There were 21 accidents reported to ICAO in 2013 with State of occurrence in EUR/NAT region. 19 accidents were found to have investigations launched. For the residual 2, no information was found if the investigation is launched, i.e. the rate was 90.48%	There were 24 accidents reported to ICAO in 2016 with State of occurrence in EUR/NAT region. 20 accidents were found to have investigations launched. For the residual 4, no information was found if the investigation is launched, i.e. the rate was 83.33%

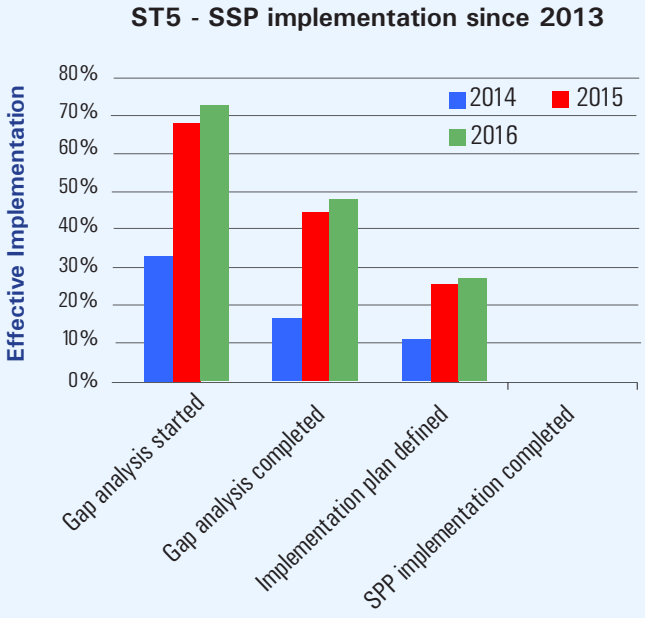
Table 2: *2016 values for safety targets adopted by the RASG-EUR (source: ICAO)*











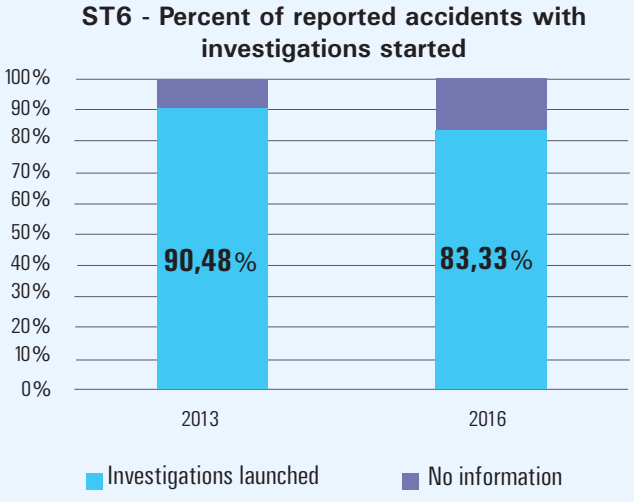


***Figure 1**: Evolution of STs (source: ICAO)*

1.2. Regional Traffic Volume

Information from the ICAO SPACE portal demonstrates that, in 2016, the commercial scheduled departures increased by around 5% compared to 2015. Despite the decrease and subsequent levelling off of growth in 2009, the number of departures has increased by more than 30% over the 14 years shown. The trend seems to indicate that the number of departures will continue to increase in the future and it is also known that the complexity of operations and business models is growing, thereby providing an even greater necessity to manage safety risks.

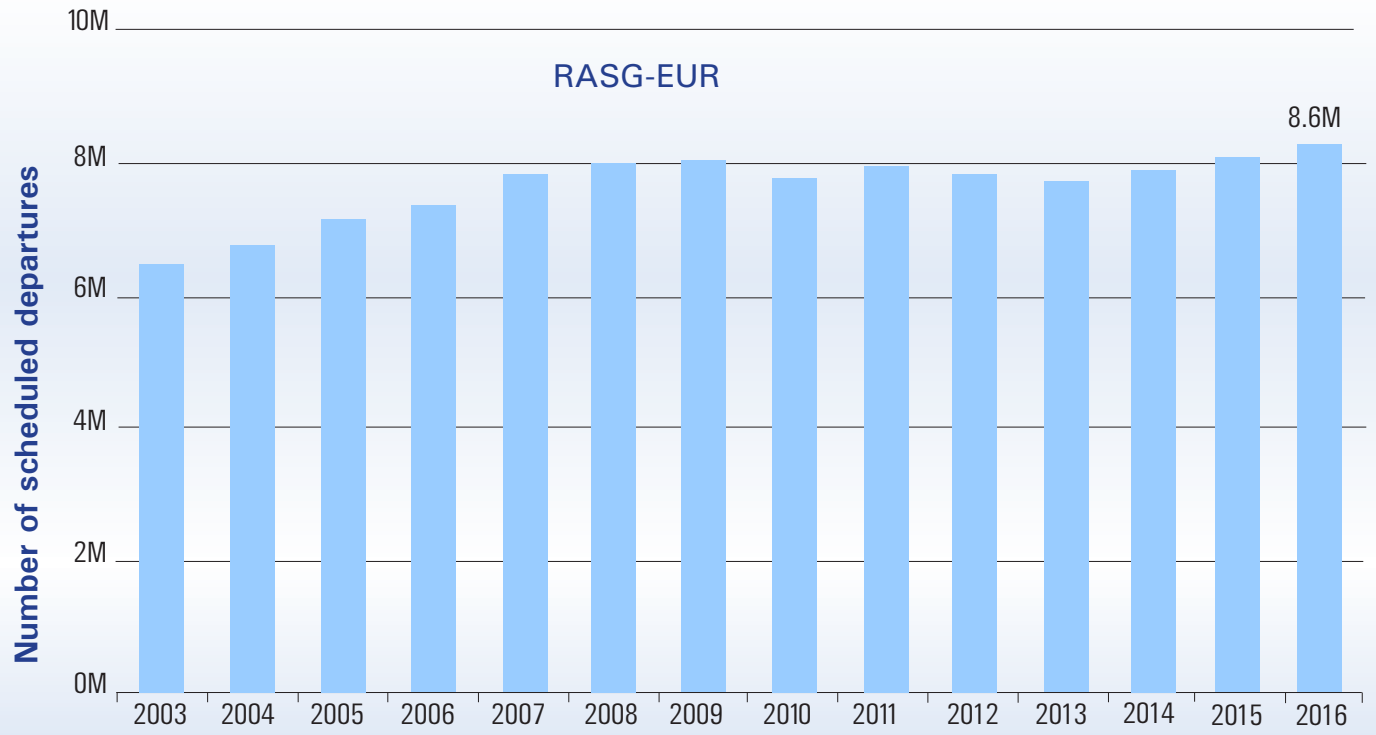


Figure 2: Number of scheduled departures in RASG-EUR (source: ICAO)

2. Safety Information and Analysis

2.1. Reactive Safety Information

In this section, data is mainly provided from three sources: EASA, IATA and ICAO.

For the analysis in this chapter, ICAO and EASA accident data has been merged and aggregated based on the state of occurrence, whereas IATA data has been aggregated based on the state of operator. These two approaches provide a different emphasis, with the state of occurrence data including accidents involving all operators in the RASG-EUR area, whereas the state of operator data shows the accidents that RASG-EUR AOC holders were involved in, regardless of where in the world the accident happened.

The sources of data are also subtly different. ICAO data is sourced from the ICAO SPACE application and includes accidents formally reported by, as well as reports received from, other sources. The EASA data uses similar sources and by merging the two datasets, they have been reviewed in detail to ensure as accurate a picture as possible, removing any duplicated or spurious records.

IATA data represents the outcome of the work done by the IATA Accident Classification Task Force (ACTF), which is composed of safety experts from IATA, member airlines, original equipment manufacturers, professional associations and federations, as well as other industry stakeholders. The data is extracted from a variety of sources, including Ascend FlightGlobal and the accident investigation boards of the states where the accidents occurred. Once assembled, the ACTF validates each accident report using their expertise to develop an accurate assessment of the events. As such it represents a valuable contribution to the overview of RASG-EUR safety, providing information on accident types, phases of flight and causal factors.

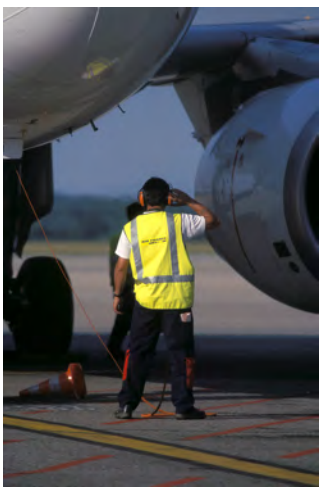
2.1.1. Regional Accidents Rates

2.1.1.1. Accidents (including fatal ones) in RASG-EUR Area

Over the past decade (2007-2016) the number of accidents and fatal accidents that occurred in the ICAO RASG-EUR area has decreased. However, the variability in the annual number of fatalities makes it difficult to determine the trend. With accident, fatal accident and fatality rates that are similar to the rest of the world, there remains room for improvement.

The criteria used to produce these figures was accidents involving scheduled commercial air transport flights using aeroplanes with a maximum take-off mass above 5,700 kg.

Figure 3: Number and rate of accidents, fatal accidents and fatalities in the ICAO EUR region, compared with the rest of the world, scheduled commercial air transport aeroplanes above 5,700 kg (source: EASA)



2.1.1.2. Accidents Involving Operators with an AOC issued by a RASG-EUR Member State

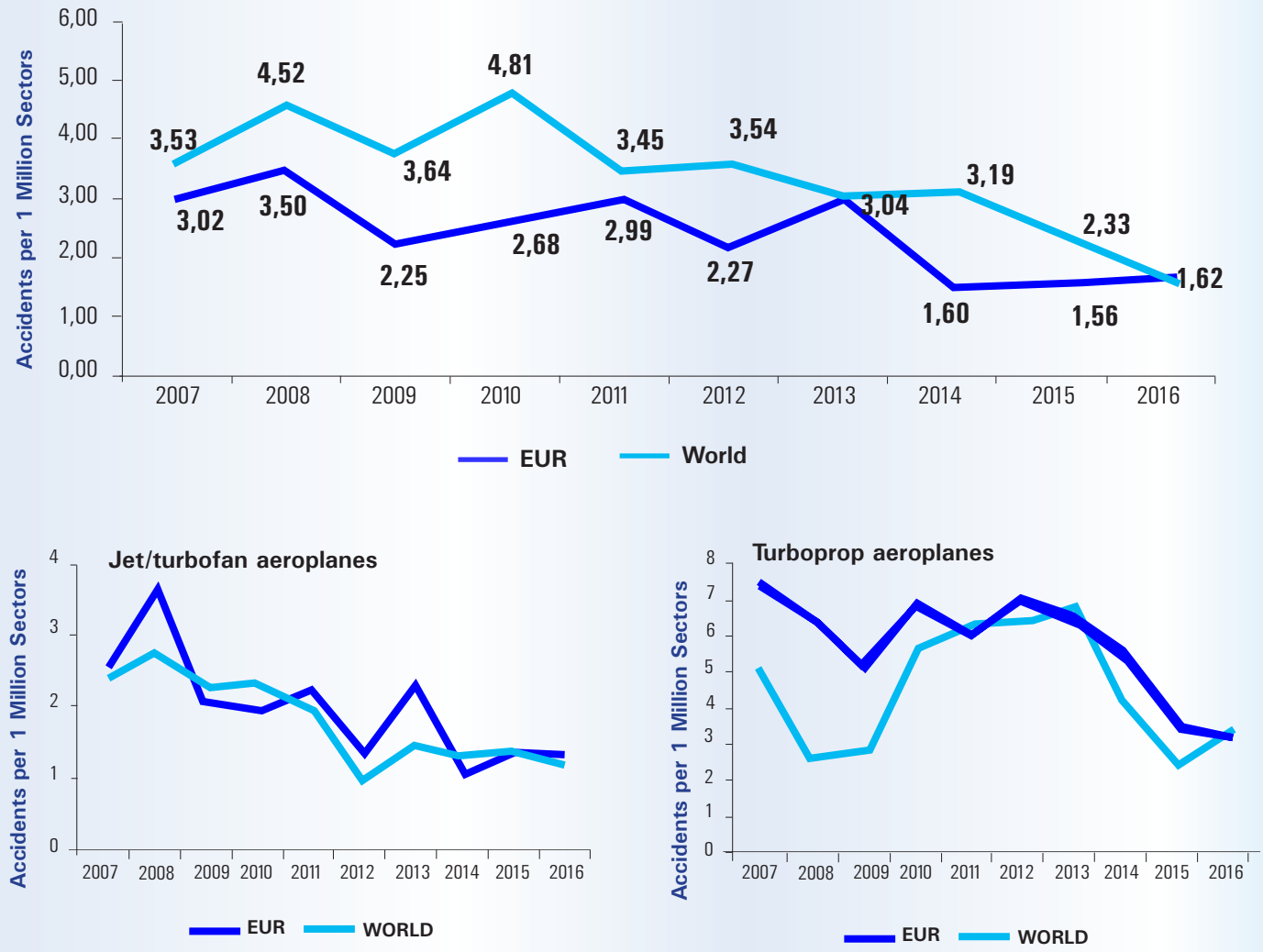


Figure 4: *Accident rate for operators with AOC issued by a RASG-EUR member State (scheduled commercial operations only, MTOW over 5,700 kg, source: IATA)*

An overall declining trend in the accident rates confirms the positive effect of actions taken by the aviation community to minimise risks while accommodating the traffic growth. However, for 2016 the accident rate for RASG-EUR AOC holders was slightly above the world-wide average data. It should be noted that accident rate data for turboprop aircraft remain twice as high as for jet aircraft, prompting concern.

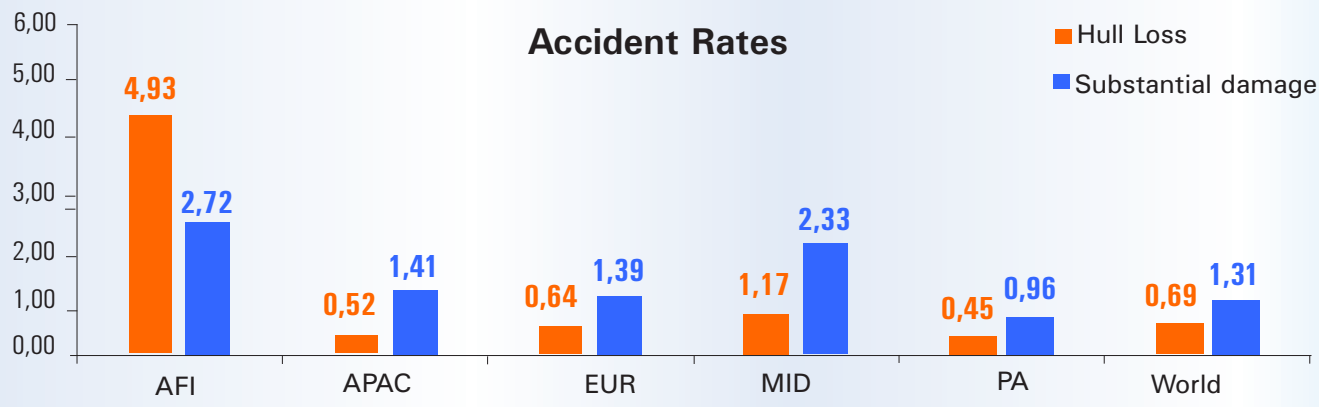


Figure 5: *Accident rates (scheduled commercial operations, MTOW over 5,700 kg, source: IATA)*

2.1.1.3. Fatal Accidents Involving Operators with an AOC issued by a RASG-EUR Member State

Analysis of accident data provided by IATA regarding operators registered in RASG-EUR member States also shows increase in 2016 compared to 2015.

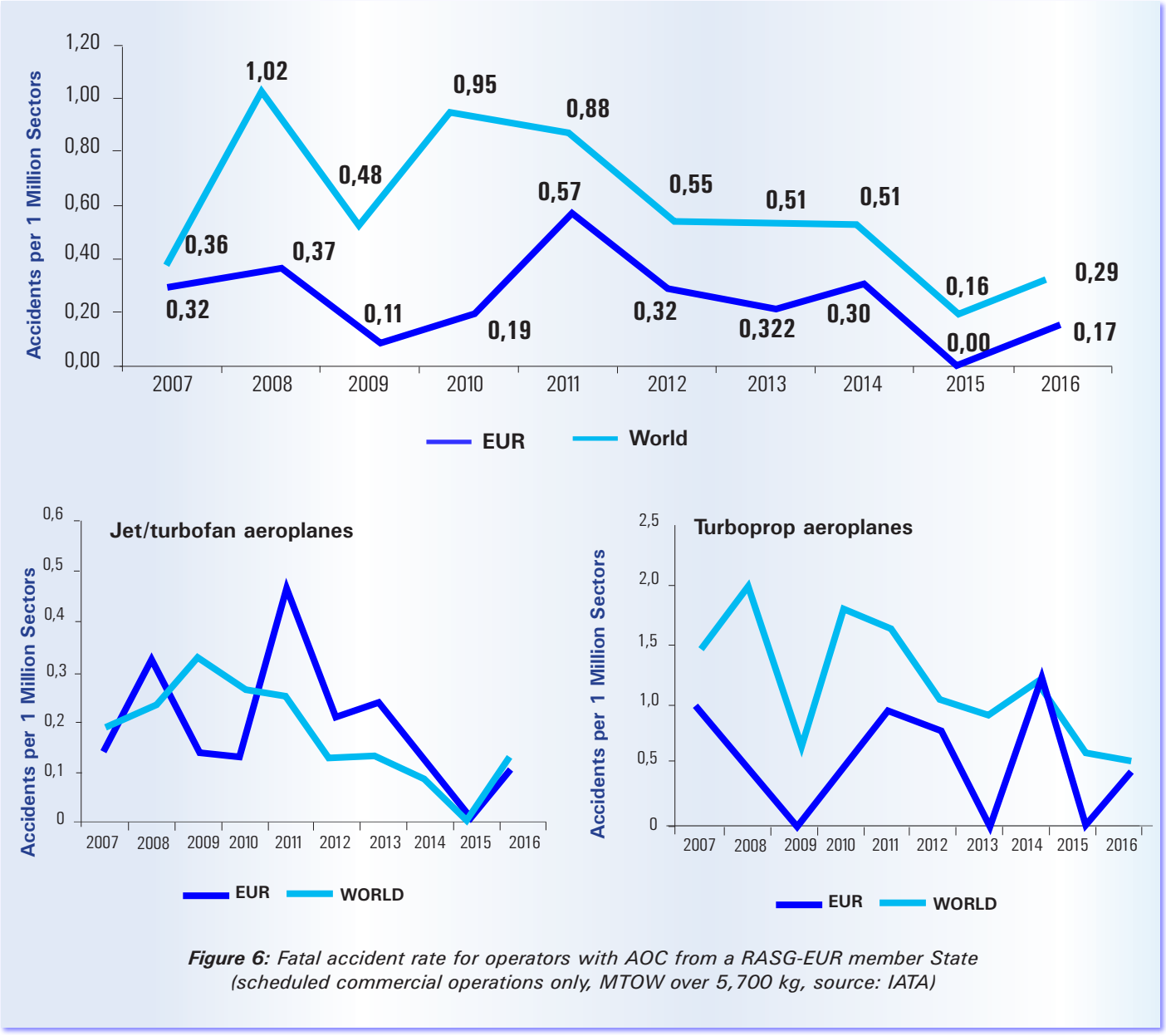


Figure 6: *Fatal accident rate for operators with AOC from a RASG-EUR member State (scheduled commercial operations only, MTOW over 5,700 kg, source: IATA)*

2.1.2. Analysis of Accidents

2.1.2.1. By Categories of Accidents and Flight Phases

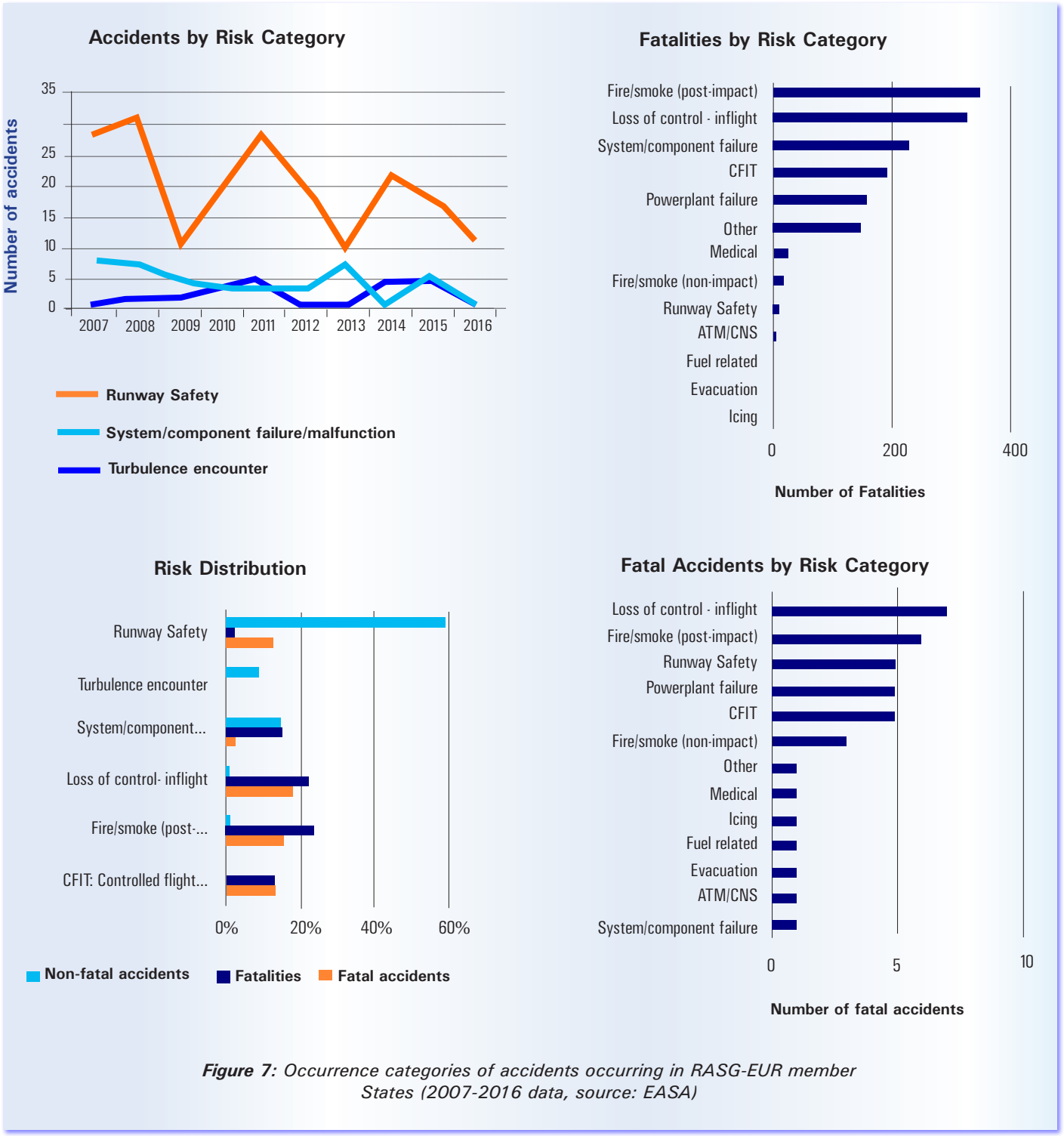


Figure 7: *Occurrence categories of accidents occurring in RASG-EUR member States (2007-2016 data, source: EASA)*

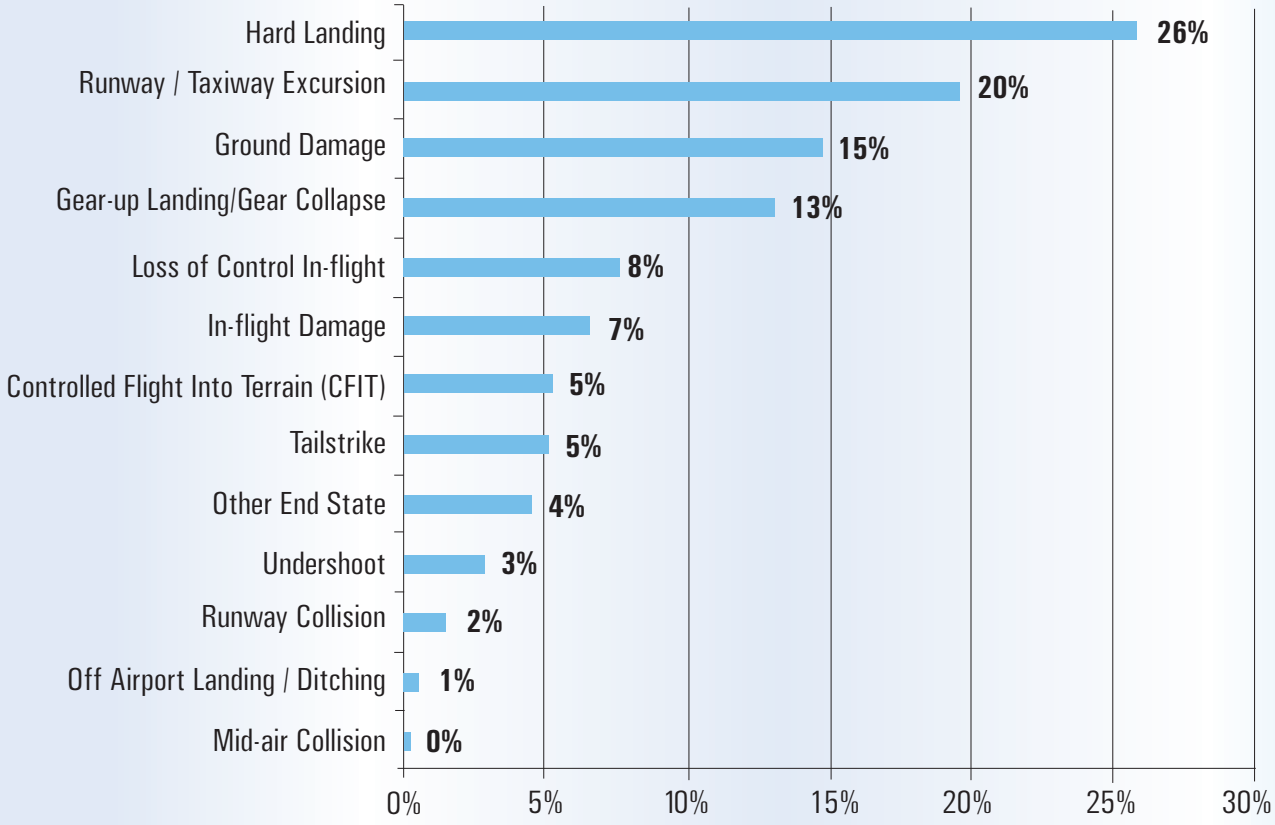


Figure 8: *Top categories of accidents involving operators with AOC issued by RASG-EUR member States (2012-2016 data, source: IATA)*

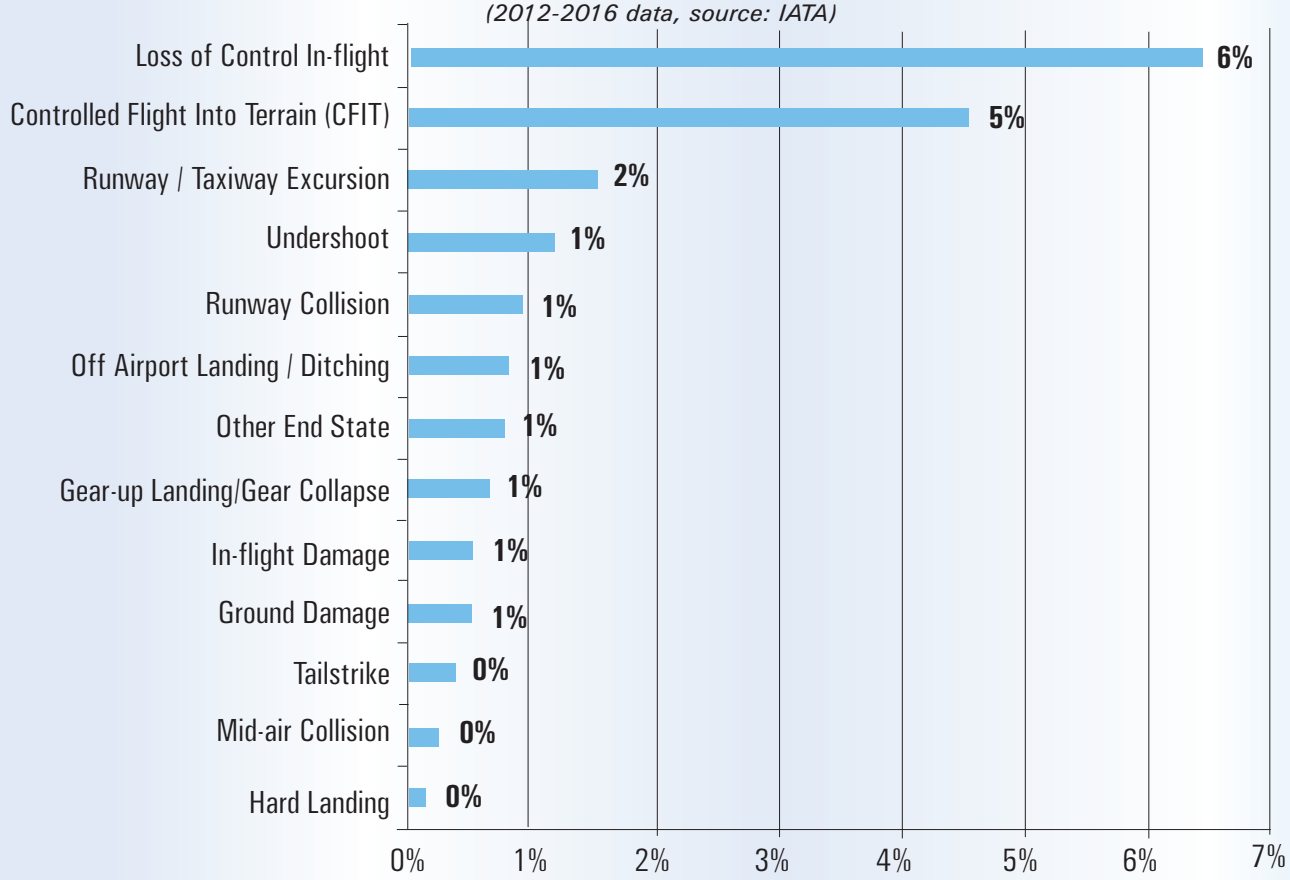


Figure 9: *Top categories of fatal accidents involving operators with AOC issued by RASG-EUR member States (2012-2016 data, source: IATA)*

Both EASA and IATA data show that, for the RASG-EUR area, the major accident types contributing to the largest number of fatalities are LOC-I, SCF-NP and CFIT, showing clear priorities for future safety developments in the Region. Fire/smoke (post-impact) (F-POST) played a significant role in the number of fatalities, highlighting the need for continued focus on aircraft evacuation and post-accident response. Runway safety, being the largest contributor in terms of the number of accidents, will remain under proper focus of the RASG-EUR's work.

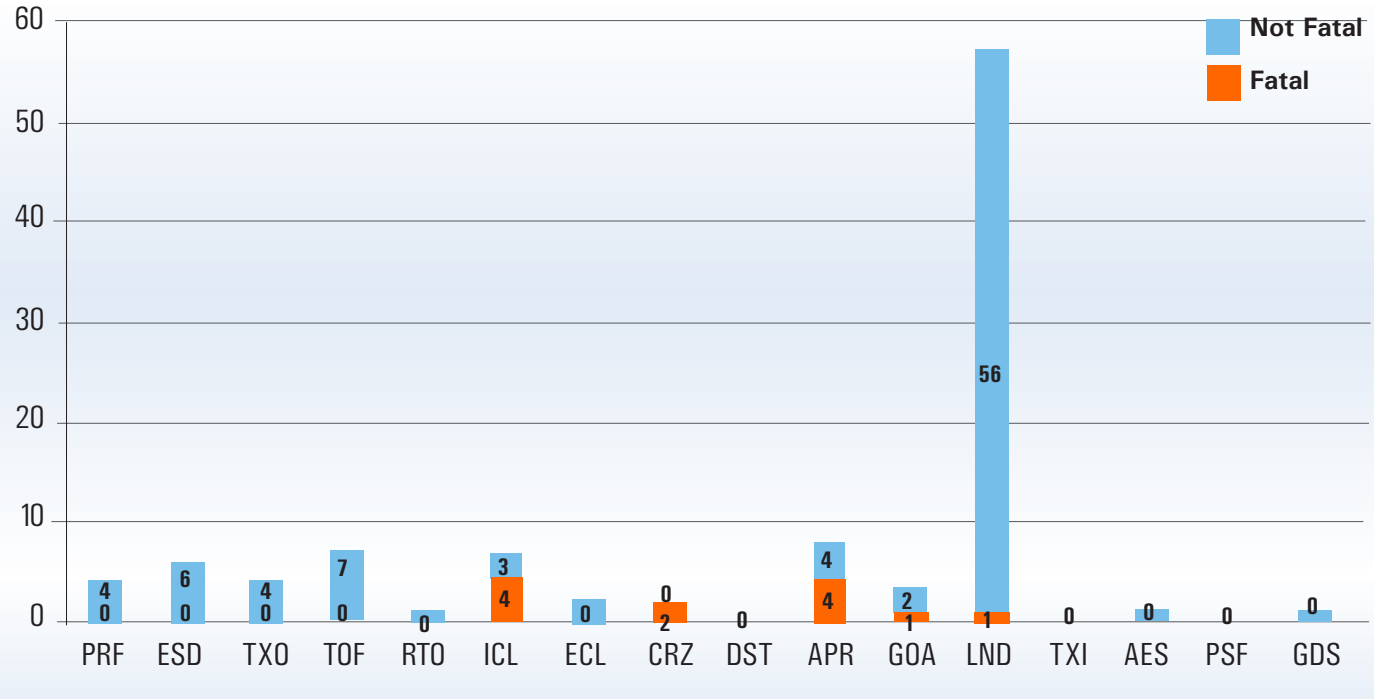


Figure 10: *Distribution of accidents involving operators from RASG-EUR member States by phase of flight (2012-2016 data, source: IATA)*

The graph shows the number of individual fatal and non-fatal accidents during the time period for each of the given phases of flight for operators from the region. Most accidents for the period 2012 – 2016 occurred in the landing phase of flight. However, fatality risk is concentrated mostly during initial climb and approach phases.

2.1.2.2. Main Categories of Accidents for the RASG-EUR Area

Loss of Control In-flight (LOC-I)

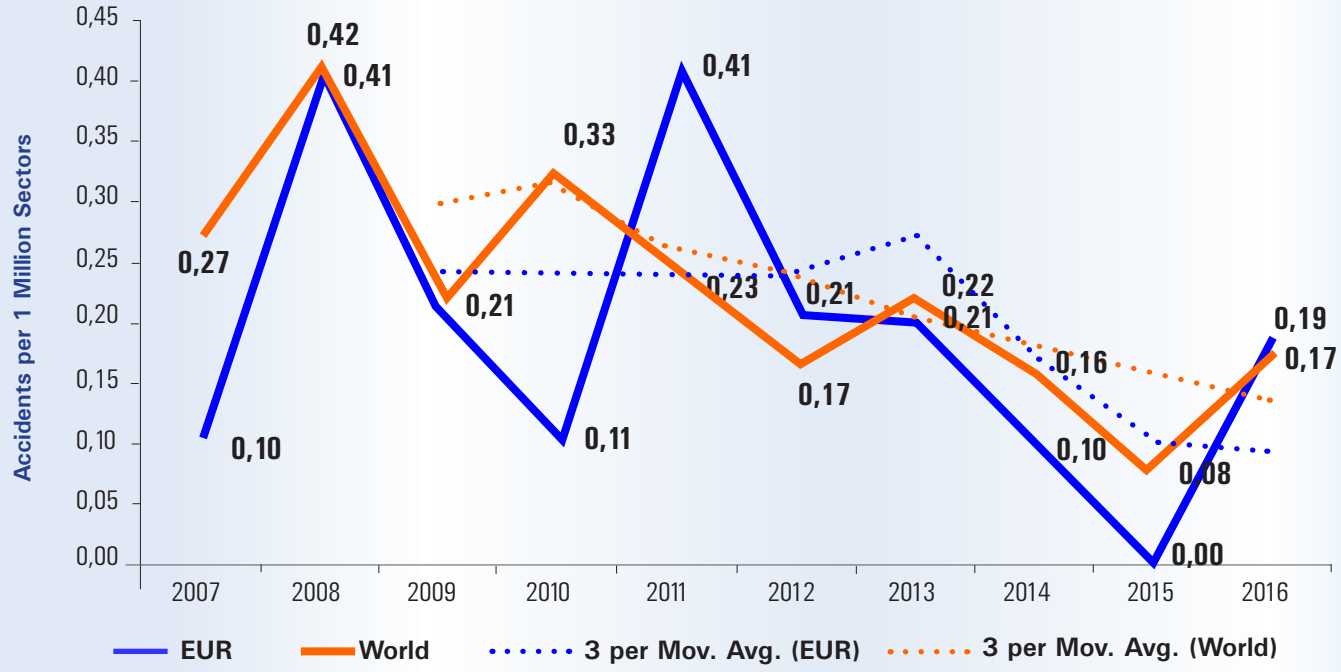


Figure 11: *Rate of occurrence of Loss of Control In-Flight (LOC-I) accidents per one million flight sectors for operators from the RASG-EUR (dark blue) versus the world (light blue) (source: IATA)*

In 2016, the rate of LOC-I accidents in the RASG-EUR area was slightly higher than the global average.

Latent Conditions	
Regulatory Oversight	43%
Safety Management	43%
Environmental Threats	
Meteorology	43%
Airline Threats	
Aircraft Malfunction	43%
Flight Crew Errors	
SOP Adherence / SOP Cross-verification	57%
Manual Handling / Flight Controls	43%
Undesired Aircraft States	
Vertical / Lateral / Speed Deviation	43%
Countermeasures	
Overall Crew Performance	57%

Table 3: *Top contributing factors for LOC-I accidents (scheduled commercial operations only, MTOW over 5,700 kg, source: IATA)*

Controlled Flight into Terrain (CFIT)

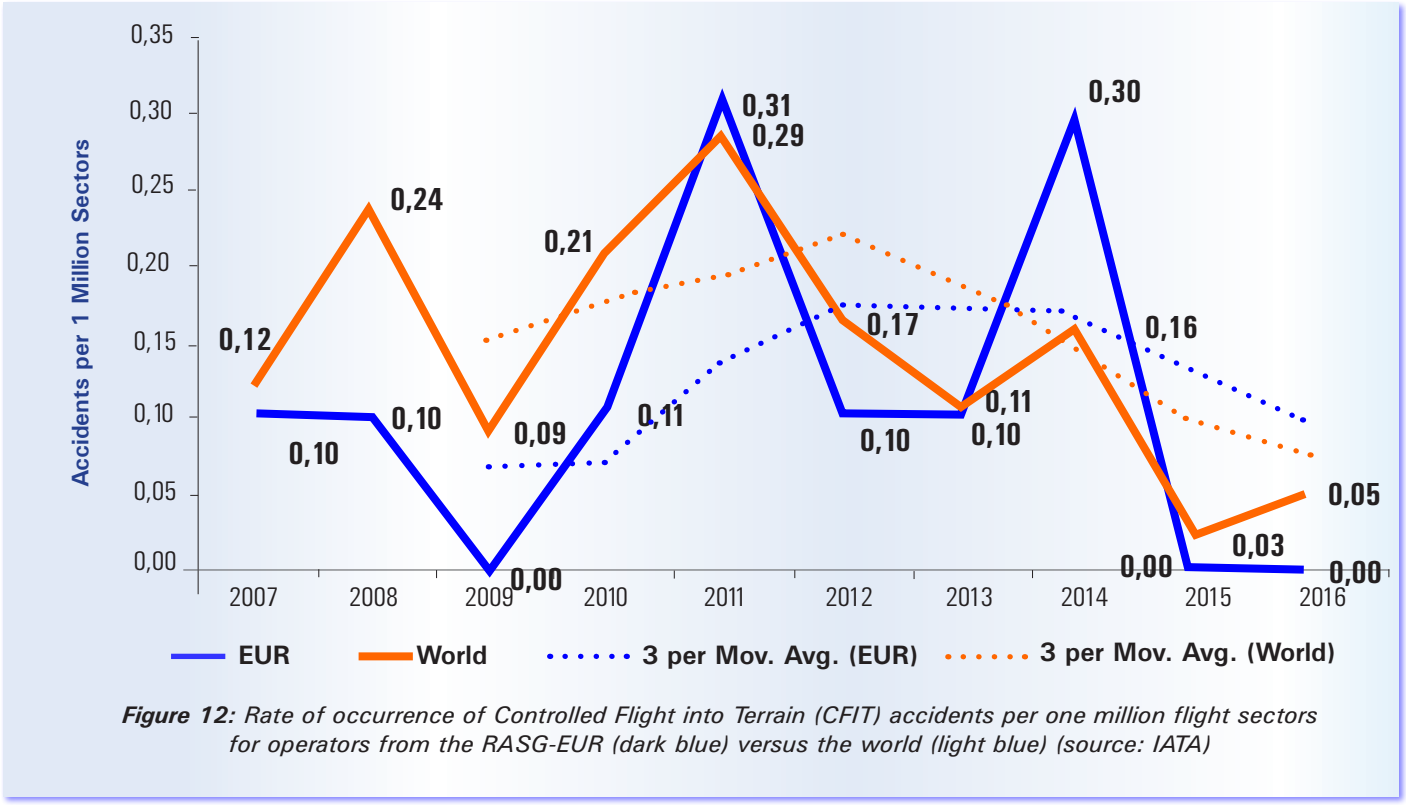


Figure 12: *Rate of occurrence of Controlled Flight into Terrain (CFIT) accidents per one million flight sectors for operators from the RASG-EUR (dark blue) versus the world (light blue) (source: IATA)*

In 2015 and 2016, the rate of CFIT accidents for RASG-EUR operators was zero. However, the 3 year rolling average remains above the world average, indicating that this category of accident should be constantly monitored.

Top Contributing Factors (2012-2016): Controlled Flight into Terrain (CFIT)	
Latent Conditions	
Regulatory Oversight	40%
Environmental Threats	
Meteorology	20%
Poor visibility / IMC	20%
Air Traffic Services	20%
Flight Crew Errors	
SOP Adherence / SOP Cross-verification	40%
Undesired Aircraft States	
Unnecessary Weather Penetration	20%
Controlled Flight Towards Terrain	20%
Vertical / Lateral / Speed Deviation	20%
Countermeasures	
Overall Crew Performance	20%

Table 4: *Top contributing factors for CFIT (scheduled commercial operations only, MTOW over 5,700 kg, source: IATA)*

Industry experts indicated that insufficient regulatory oversight was a major (40%) latent condition enabling CFIT accidents to happen. Hence, improving regulatory oversight capacities can lead to a decrease of the CFIT rate. Improper SOP adherence was found to be another key contributing factor, again highlighting the importance of crew training as a CFIT prevention mechanism.

Runway Safety (RS)

ICAO and IATA are still in the process of further aligning their analysis methods. Currently, IATA breaks down runway safety events into sub-categories.

As per Figure 10, the major sub-category of accident related to runway safety for Air Operators registered in the RASG-EUR was Hard Landing (HL) (26% of total accidents for the last five years) superseding Runway Excursion (RE) (20%), reflecting the positive effect of actions taken in the RASG-EUR to reduce RE related accidents. They are followed by ground damage (15%), gear-up landing/gear collapse (13%) and tail strike (2%). Runway collisions for RASG-EUR Air Operators contribute to only 2% of all accidents, reflecting the efforts taken worldwide and in the RASG-EUR to reduce related accidents.

The data on hard landings in 2016 was not available for the report production. Below more detailed data is present in regards to runway excursions.

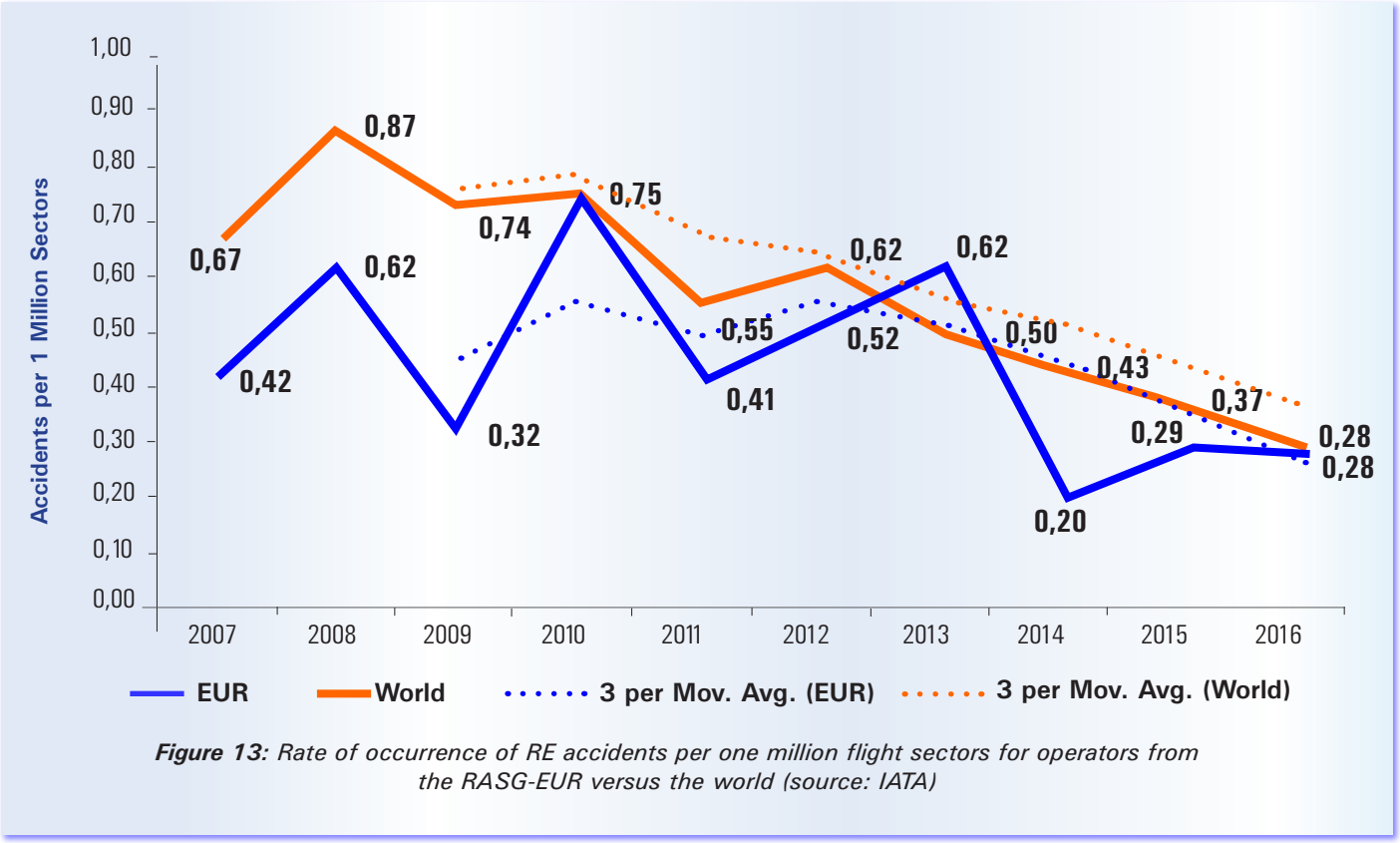


Figure 13: *Rate of occurrence of RE accidents per one million flight sectors for operators from the RASG-EUR versus the world (source: IATA)*

Top Contributing Factors (2012-2016):
Runway / Taxiway Excursion

Latent Conditions	
Regulatory Oversigh	21%

Environmental Threats	
Meteorology	53%

Flight Crew Errors	
Manual Handling / Flight Controls	47%

Undesired Aircraft States	
Long/floated/bounced/firm/off-centre/crabbed land	47%

Countermeasures	
Overall Crew Performance	26%

Table 5: *Top contributing factors for RE (scheduled commercial operations only, MTOW over 5,700 kg, source: IATA)*

For both type of events, major contributing factors and relevant risk mitigation measures are linked to crew performance (specifically in poor meteorology conditions), manual aircraft handling and related crew training.

2.2. Proactive Safety Information

2.2.1. Auditing Activities

2.2.1.1. ICAO USOAP CMA Activities

In 2016, eighteen (18) USOAP-related activities were carried out in RASG-EUR Member States, while two USOAP CMA missions were postponed. Off-site Validation Activities of France, Ireland, Serbia, Finland, Hungary and Germany were carried out during EASA Standardisation Inspections as per the Working Arrangement between ICAO and EASA.

Postponement is highly undesirable. States are urged to avoid requesting postponements of duly planned and coordinated USOAP activities.

State	Type of activity	Dates	Status
Kyrgyzstan	Audit	25 Jan – 5 Feb 2016	completed
Monaco	ICVM	16 – 22 Mar 2016	postponed
Kazakhstan	ICVM	29 Mar – 4 Apr 2016	completed
France	Off-site validation activity	Apr 2016	completed
Ukraine	Audit	4 – 11 Apr 2016	completed
Georgia	ICVM	7 – 15 Apr 2016	completed
Tunisia	Audit	18 – 28 Apr 2016	postponed
Finland	Off-site validation activity	May 2016	completed
Hungary	Off-site validation activity	May 2016	completed
Germany	Off-site validation activity	May 2016	completed
The former Yugoslav Republic of Macedonia	ICVM	14 – 22 Sep 2016 and 10 – 14 Oct 2016	completed
Morocco	Audit	10 – 20 Oct 2016	completed
Tajikistan	Audit	17 – 28 Oct 2016	completed
Ireland	Off-site validation activity	Nov 2016	completed
Israel	Audit	8 – 17 Nov 2016	completed
Sweden	ICVM	16 – 23 Nov 2016	completed
Cyprus	ICVM	22 – 29 Nov 2016	completed
Serbia	Off-site validation activity	Dec 2016	completed

Table 6: *List of USOAP CMA activities in 2016 in RASG-EUR member States (source: ICAO)*

USOAP Results by Area and Critical Element

8 areas and 7 critical elements are above the target of 60% EI.

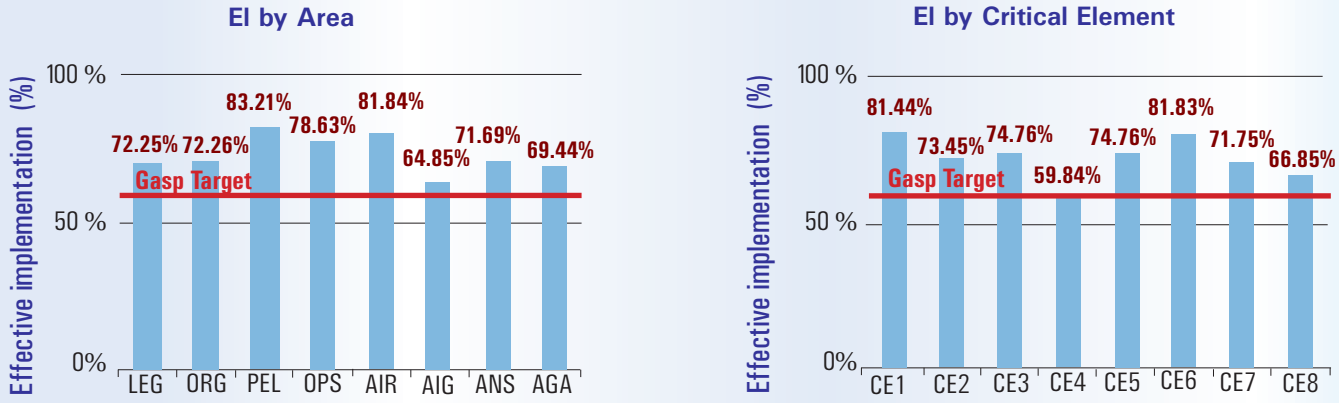
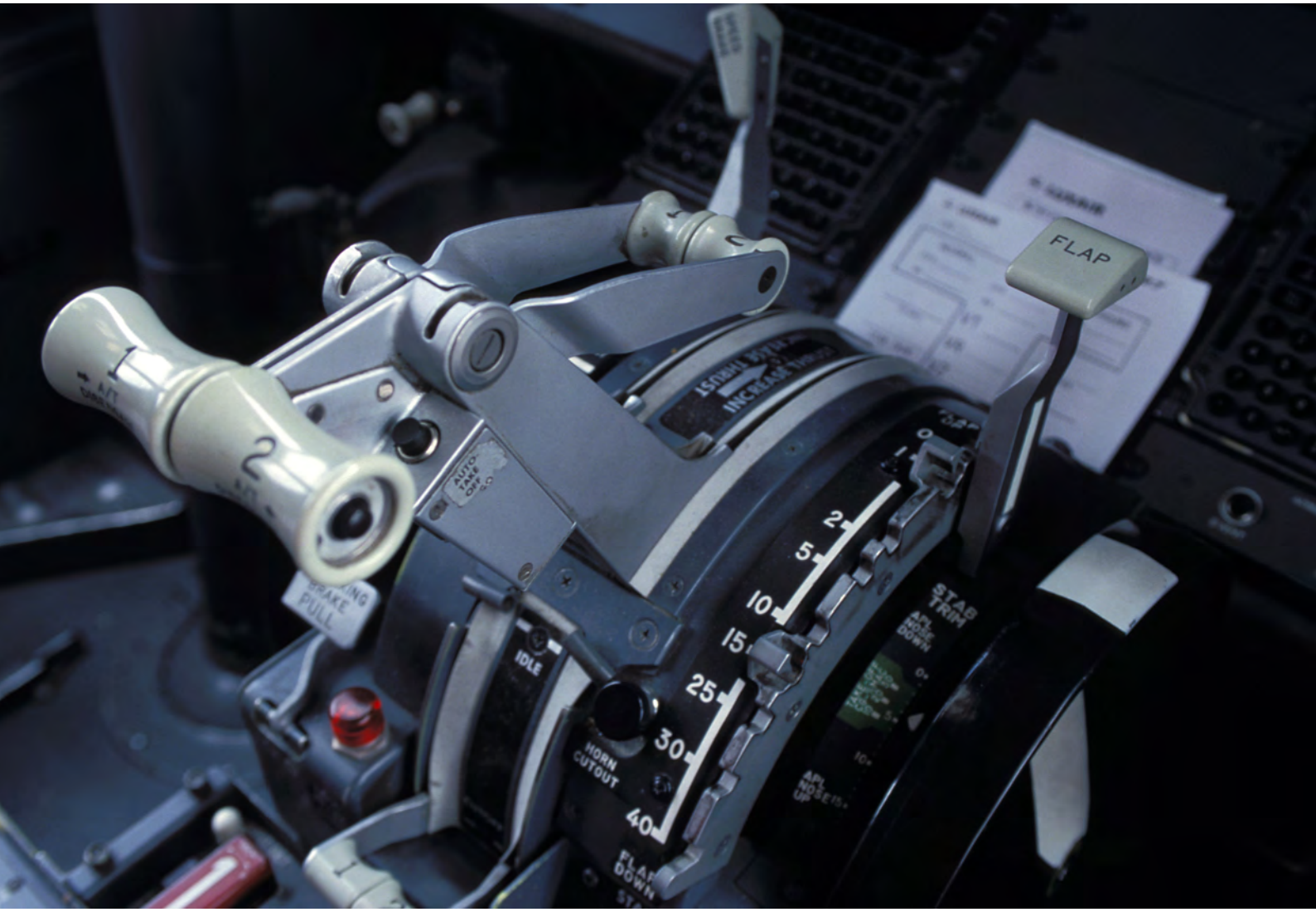


Figure 14: *Overall status of EI in RASG-EUR member States as per end of 2016 (source: ICAO SPACE)*



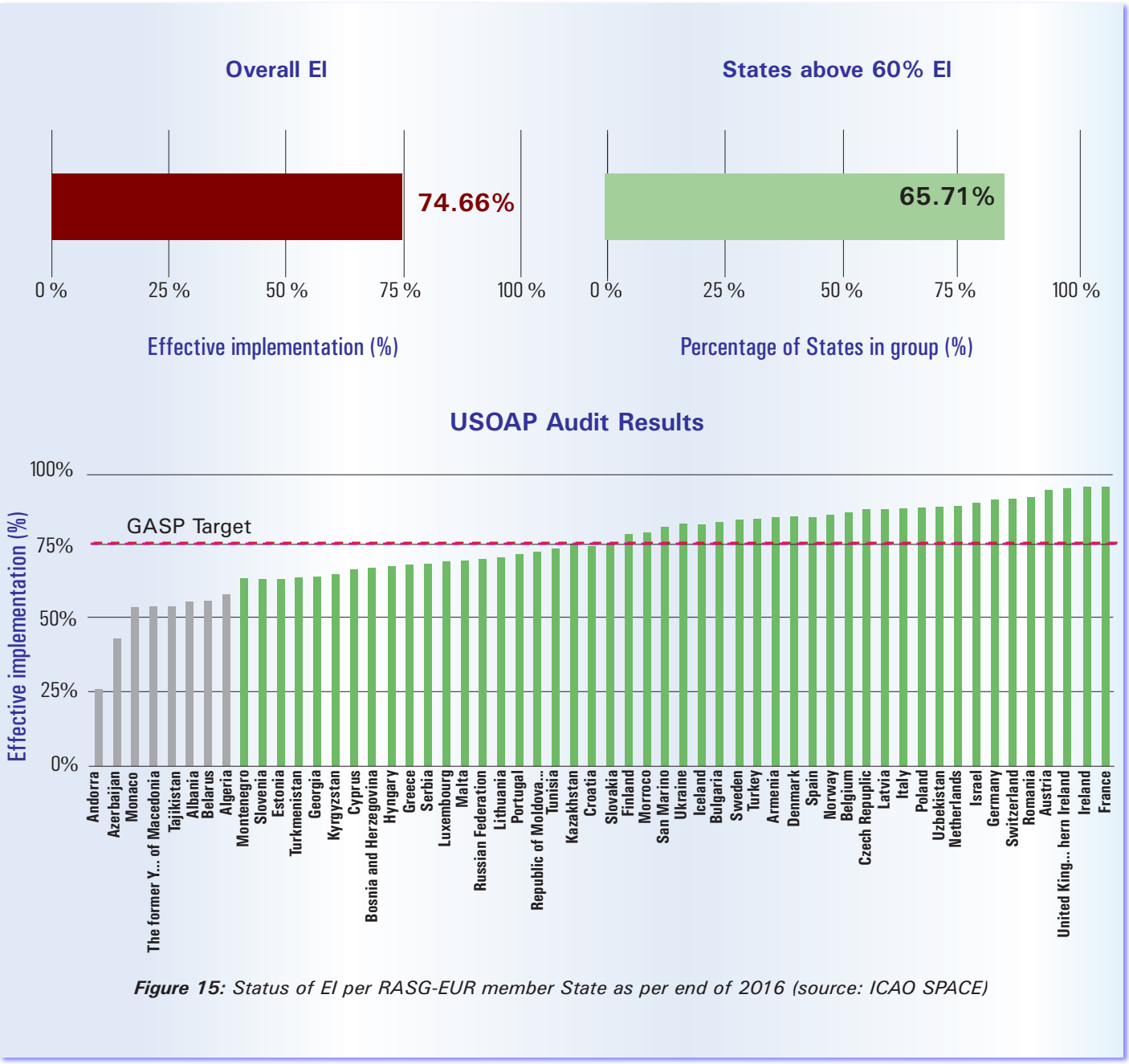


Figure 15: *Status of EI per RASG-EUR member State as per end of 2016 (source: ICAO SPACE)*

The overall level of effective implementation (EI) in the Region (74.66%) was higher than the global average and showed a small improvement compared to 2015 (74.34%).

The disparity between States remains notable, i.e. eight out of fifty-six States remain below 60% EI in 2016. This is an improvement compared to 2015, when nine States had an EI below 60%.

Improvement in the area of primary aviation legislation (LEG) helped to remove this category from the "top 3" areas requiring improvement. These now comprise: aircraft accident and incident investigation (AIG), air navigation service provision (ANS) and aerodromes and ground aids (AGA).

"Top 3" critical elements (CE) requiring improvements remained technical personnel qualification and training (CE-4), surveillance obligations (CE-7) and the resolution of safety concerns (CE-8). Nevertheless, it should be noted that these are average figures for the Region and may not be representative at State level. Such an assessment would require individual State performance reviews.

2.2.1.2. EASA Standardisation Inspections

One of the main tasks of EASA is to monitor the level of implementation of the European aviation safety regulations in all EASA member States[1]. This is to ensure that all EASA members are able to discharge their oversight capabilities. It is achieved through an auditing process that involves all EASA member States' authorities. In addition, the European Commission (EC) has tasked EASA with extending the standardisation to cover those neighbouring States that have committed to progressively implement the EU aviation safety regulations. Therefore, in addition to the 32 EASA member States, EASA standardises Albania, Armenia, Azerbaijan, Bosnia & Herzegovina, Georgia, Moldova, Monaco, Montenegro, Morocco, Serbia, the Former Yugoslav Republic of Macedonia, Turkey and Ukraine. In 2016 the scope of standardisations included:

- Air Operations (OPS);
- Aircrew (ACW), including flight crew licensing (FCL), medical (MED) and flight simulation training devices (FSTD);
- Air traffic management / air navigation services (ANS);
- Airworthiness (AIR); and –
- Ramp inspections (RAMP);

Continuous Monitoring Activities

All EASA standardisation activities are driven by a process of continuous monitoring. Therefore, inspections are prioritised and planned based on the Agency's assessment of Competent Authorities' ability to discharge their oversight responsibilities. The assessment model encompasses collection and analysis of data from Competent Authorities, ICAO, the EC and other sources to generate a 'standardisation rating', which is then combined with activity indicators and expert judgement to determine the scope and frequency of inspections.

With this approach, the status of each State becomes clearer and planning of the inspections is carried out in a more targeted manner. The maximum interval between two consecutive comprehensive inspections remains at 4 years. CMA is also a good example for Authorities willing to move towards a risk-based approach.

The data shown in the following paragraphs represents the results of all inspections carried out in 2016, including those on non-EASA member States.

Inspections Performed

In the course of 2016, 99 Standardisation inspections were performed, the same number as in 2015. Over the past five years, the annual number of inspections has reduced as a result of the continuous monitoring process. However, the application of new regulations has caused increases in some specific areas.

[1] EASA member States comprise; Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Inspection type	AIR	OPS	FCL	MED	FSTD	ANS	RAMP	Total
Comprehensive	13	14	10	8	6	10	8	69
Focused	2	6	4	3	2	7	4	28
Ad hoc	1						1	2
All types, 2016	**16**	**20**	**14**	**11**	**8**	**17**	**13**	**99**

Table 7: *2016 overviews of performed Standardisation inspections (source: EASA)*

A total of 666 non-compliances were raised in 2016, including 4 immediate safety concerns. Due to cross-domain inspections, 34 findings have been attributed to more than one domain, resulting in an additional 90 findings. The total findings thus amount to 756. 30% of all findings were classified as significant deficiencies, which may raise safety concerns if not duly corrected. This is a relatively stable proportion over the course of the past five years.

Cross-domain Assessment of Authority Requirements (XDA)

In 2016, EASA completed the cross-domain assessment of common authority requirements. 16 states were visited. The assessment of authority requirements showed a varied picture of the level of implementation, with many authorities still facing difficulties in establishing the enabling elements of a management system.

During the two-year cross domain assessment, it was possible to gather information that had not previously been reported to EASA. It was found that, in some cases, the self-assessment was over-optimistic.

Airworthiness (AIR)

The Standardisation inspections conducted in the area of Airworthiness again confirmed the distribution of the findings raised over the last four-year period. It shows that the findings were concentrated on the three critical elements related to oversight: CE-7, CE-6 and CE-8, in descending order. No immediate safety concerns were raised this year.

Air Operations (OPS)

The Air Operations Standardisation inspections, including those performed as part of the cross-domain assessment, showed that the majority of non-compliances were in CE-3, CE-6 and CE-7. The most serious non-compliances were found in CE-6 and CE-7.

Aircrew (FCL, MED, FSTD)

The Aircrew inspections conducted in 2016 focused on assessing the status of the implementation of the Aircrew Regulation. According to the analysis of the results stemming from the 2016 standardisation inspections in the FCL, MED and FSTD domains, including the XDAs, the major concerns identified were related to CE-3, CE-5, CE-6, and CE-7. Key areas of concern related to competent authority staffing levels, where in some cases there was a significant shortage in inspections, and a lack of fully compliant competent authority management systems.

Air Traffic Management / Air Navigation Services (ATM/ANS)

In the inspections conducted in 2016, the distribution of findings within all Critical Elements, except for CE-3, remains similar to that detected throughout the previous year. However, there were a disproportionate number of class 'D' findings associated with CE-6 and CE-7. This means that the certification, licensing and authorisations issues previously detected at the Competent Authorities, as well as the implementation of surveillance obligations, still require close attention.

Ramp inspections (RAMP)

Findings raised in 2016 showed a slight change in their distribution compared to last year. The results of the standardisation inspections showed that the major number of findings were related to CE-7, followed by CE-4 and CE-5. CE-7 represented almost the double of CE-4. 2016, in comparison to 2015, showed an even more significant scatter in terms of the level of implementation of the ramp inspections requirements, relevant procedures and the overall commitment to the programme across the Participating States.

2.2.1.3. IATA Operational Safety Audit (IOSA)

The total accident rate for IOSA carriers in 2016 remained considerably better than the rate for non-IOSA operators, though with a noticeable convergence tendency.

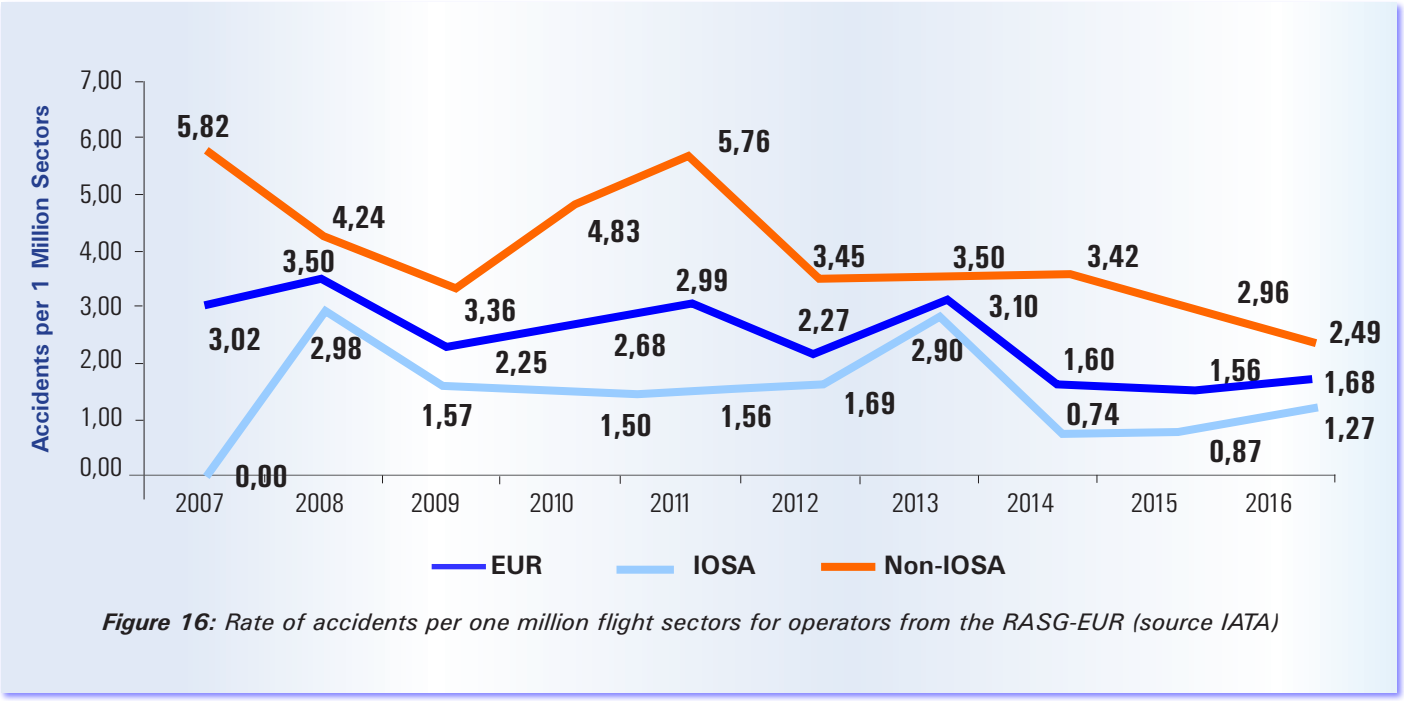


Figure 16: Rate of accidents per one million flight sectors for operators from the RASG-EUR (source IATA)

In 2016, 71 IOSA audits were conducted in the RASG-EUR Region. Below are the top findings from these audits and the explanation of the provision.

ORG 1.1.10	SMS that is implemented and integrated throughout the organization to ensure management of the safety risks associated with aircraft operations.
ORG 3.4.13	Training and qualification programme for auditors that conduct auditing under the quality assurance programme.
ORG 3.5.5	Processes to ensure the management of safety risks in outsourced operational functions conducted by external service providers.
ORG 1.6.5	Programme that ensures personnel are trained and competent to perform SMS duties appropriate to each individual's involvement in the SMS.
ORG 3.4.3	Process for addressing findings that result from audits conducted under the quality assurance programme.
FLT 2.1.36	Recurrent qualification programme for instructors, evaluators, and line check airmen.
FLT 2.5.1	Programme that ensures flight operations personnel are trained and competent to perform SMS duties.
ORG 3.1.2	Safety risk assessment and mitigation programme implemented and integrated throughout the organization.
CGO 2.3.1	Programme that ensures cargo operations personnel are trained and competent to perform SMS duties.
DSP 2.1.3	Process to ensure course materials used in training programs for personnel responsible for operational control are periodically evaluated to ensure compliance with the qualification and performance standards of the Operator and/or Authority.
DSP 2.1.7	Process to ensure those individuals designated to evaluate the competency of Flight Operations Officer (FOO) or Flight Operations Assistant (FOA), are current and qualified to conduct such evaluations.
FLT 3.13.4	Guidance and procedures for communication by the flight crew with, as applicable, passengers and/or supernumeraries if the Operator transports passengers and/or supernumeraries in the passenger cabin or supernumerary compartment, and does not use a cabin crew.
FLT 3.8.8	Procedure to ensure the availability, accessibility and serviceability of aircraft cabin emergency systems and equipment including a pre-flight inspection of such systems and equipment.
MNT 1.10.2	Process for addressing findings that result from audits of maintenance management system functions.
MNT 4.7.3	Process to ensure each maintenance organization that performs maintenance for the Operator has an Electrostatic Sensitive Devices (ESD) Programme.
ORG 2.1.1	System for the management and control of documentation.
ORG 3.2.1	Processes for setting performance measures as a means to monitor the operational safety performance of the organization and to validate the effectiveness of safety risk controls.
ORG 3.4.8	Conformance Report containing information specific to the audit of each individual IOSA standard and recommended practice.

Table 8: *Top IOSA findings for airlines registered in the RASG-EUR Region (source: IATA)*

The recurrent findings referring to the internal quality assurance (QA) programme, namely training and qualification program for the QA auditors, addressing findings that result from QA audits, producing an appropriate Conformance Report as well as documentation management and control system, indicate that some Operators still face challenges in implementing these IOSA Standards.

The majority of findings are raised within the ORG (Organization and Management System) IOSA scope, particularly SMS and quality assurance. As such, more robust measures need to be taken to implement the basic SMS and QA provisions. Another point of focus should be training and qualification management, with an emphasis on SMS training, as well as qualification and currency of those individuals who provide training and evaluation of personnel within the organization.

These items could be used for a more thorough analysis by airlines to consider an improvement of their management systems, but also by applicable authorities and other involved organizations as a focal point for oversight and/or support airlines in implementing relevant measures.

In 2016, TRAFI (Finnish Transport Safety Agency) signed a Memorandum of Understanding with IATA to use IOSA as a tool to complement their oversight of Finnish operators. This will reduce redundant audits while maintaining adherence to the global standards and recommended practices that are the basis of IOSA.

2.2.1.4. IATA Safety Audit for Ground Operations (ISAGO)

ISAGO is a standardized and structured audit programme of Ground Service Providers (GSP), i.e. ground handling companies operating at airports. In 2016, 76 ISAGO audits were conducted in the RASG-EUR Region. Below are the Top 10 findings from these audits;

ORM-S 3.1.8	(Station audits) An SMS implementation plan that defines the Provider's approach to the management of safety.
ORM-S 3.1.4	A corporate safety policy.
ORM-S 7.1.1	A programme that ensures proper maintenance of ground support equipment (GSE) and management of defective/unserviceable GSE including record retention.
ORM-S 5.1.1	A programme that ensures all personnel with duties and/or responsibilities in operational load control functions complete appropriate initial and recurrent training, if the Provider delivers load control services.
HDL 1.3.9	Procedures to ensure the Operator of motorized GSE comply with the restrictions of GSE motion in the vicinity of the aircraft.
ORM-S 5.4.1	A programme that ensures all personnel with duties and/or responsibilities in aircraft handling and loading functions complete initial and recurrent training in aircraft handling and loading operations, if the Provider delivers aircraft handling and loading services.
ORM-S 2.2.5	A process to ensure each applicable external provider is supplied with operational manuals relevant to the type(s) of outsourced ground operations conducted, including all applicable manuals from customer airline(s), if the Provider outsources ground operations and/or associated functions to an external ground service provider.
ORM-S 3.1.5	A corporate safety reporting policy that encourages personnel to report hazards to ground operations and defines the Provider's policy regarding disciplinary action.
PAB 1.2.5	A process to ensure scales utilized to determine the weight of baggage during the handling process are periodically checked and calibrated, and such action is recorded and records retained.
HDL 1.5.4	Procedures for the application of water quality standards in the preparation, handling and inspection of aircraft potable water to ensure no contamination when loaded into the aircraft, if the Provider conducts aircraft potable water servicing operations.

Table 9: *Top ISAGO findings for audits conducted in RASG-EUR region (source: IATA)*

The major findings so far indicate that GSPs need to make additional efforts in the areas of safety management, initial and recurrent personnel training, as well as ground support equipment (GSE) and document management and control. In the operational areas, findings are commonly found in movement of GSE in the vicinity of the aircraft, checks and calibration of scales utilized to determine the weight of baggage and application of potable water quality standards.

2.2.1.5. CANSO Standard of excellence in Air navigation services – Safety (SEANS-S)

The CANSO Standard of Excellence (SoE) in Air Navigation Services – Safety (SEANS-S) has been developed to assess and to demonstrate the Safety Management System (SMS) maturity levels of CANSO member ANSPs. It goes beyond the ICAO Annex 19 provisions and current domestic and international regulatory practices and allows ANSPs to build a system which is appropriate to their size and operational complexity.

The SoE in SMS supports the clear message that the achievement of the highest level of SMS maturity is a long term process that must proceed in a very deliberate step-wise manner. The revised SoE in SMS consists of a system enabler (safety culture) and a framework of five components; safety policy and objectives, safety risk management, safety achievement, safety assurance and safety promotion.

2.2.2. Analysis of Safety Data

2.2.2.1. EASA Safety Risks Analysis Data

EASA, its member states and their aviation industry, are collecting, using and protecting occurrence data including accident and incidents reports according to Regulation (EU) No. 376/2014. EASA analyses and monitors data from the ECR and safety data from other sources throughout the European safety risk management process. The results of these activities are published in EASA's Annual Safety Review: https://www.easa.europa.eu/newsroom-and-events/news/2017-easa-annual-safety-review-published

The outcome of the European safety risk management process is the 5-year European Plan for Aviation Safety (EPAS), which is updated annually and described in Chapter 3.1.2. It contains prioritised action items to improve safety across the region.

The cross-domain overview shown below monitors and compares the safety performance of the domains within EASA's area of responsibility. The table compares the number of fatal accidents and fatalities in each operational domain for 2016 with the annual average for the past 10 years. Although they are monitored, Aerodromes / Ground Handling and ATM/ANS are not currently included.

The only domain 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. For the other domains, there has been a reduction in both the number of fatal accidents and fatalities.

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 Helicop- ters	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

Table 10: *Overview of fatal accidents and fatalities 2016 vs. 10-year average (2006-2015) (source: EASA)*

2.2.2.2. IATA Regional Analyses and Global Guidance Material

In 2016, IATA conducted a number of analyses as requested by different stakeholders in the RASG EUR Region, as listed below:

- STEADES Air Traffic Services Analysis: the analysis was performed to understand the impact of Air Traffic Services (ATS) issues and identify any ATS hotspots. The analysis highlighted that Airprox and Inadequate Separation (in the air) were the top two risks in Europe.
- STEADES Bounced Landing Analysis: the analysis identified that bounced landings increased over the reporting period. EUR reported many bounced landings.
- STEADES ACAS RA Analysis: study of ACAS RA reports and adherence to ACAS RAs. The analysis identified that the majority of events occurred on Approach and that in four percent of the reports studied, the flight crew did not follow the RA command.
- STEADES Lithium Battery Analysis: the analysis highlighted EUR reported many Lithium Battery incidents and that passenger carried batteries were reported more than cargo related incidents. The analysis also identified that in 50 percent of the reports studied there was confusion by passengers and crew regarding the proper carriage of batteries.
- STEADES Runway Safety Nets Analysis: analysis on incidents related to Runway Safety protection systems. The analysis identified increasing reporting rates, with the majority of reports relating to approach and landings. It also highlighted an accuracy issue where the flight crews believed the warnings were false.
- Global Aviation Data Management (GADM) Terrain Avoidance and Warning System (TAWS) Analysis: the analysis integrated data from Accident Database, STEADES and FDX to provide a comprehensive review of CFIT accidents and TAWS events.

2.2.2.3. EVAIR

EVAIR, the first voluntary ATM incident data collection scheme organised at pan-European level, continues providing yearly reports to the ICAO RASG, thus contributing to the sharing of safety information and lessons learned.

Feedback process

In the EVAIR database in 2016, almost 30% of the reports were covered by feedback resulting from SMS investigations of the ANSPs or Aircraft Operators (AOs). The investigations of low-level severity occurrences are the main EVAIR focus and help in being more pro-active in the ATM safety field.

Data collection and reporting 2012 – 2016

For the period 2012-2016, EVAIR received about 14.000 pilot reports.

Controlled Flight into Terrain (CFIT)

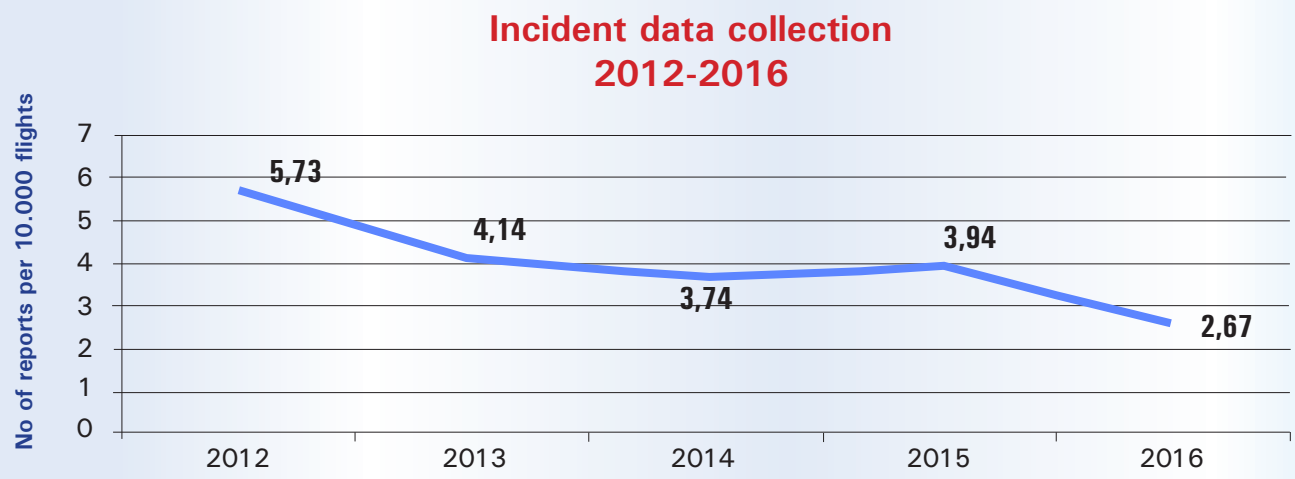


Figure 17: *Trend of pilots reports 2012-2016 (source: EUROCONTROL)*

After a small jump in the number of pilot reports in 2015, EVAIR recorded a decrease in 2016. More about EVAIR statistics can be found at
http://www.eurocontrol.int/articles/eurocontrol-voluntary-atm-incident-reporting-evair

EVAIR closely cooperates with ANSPs regarding the monitoring of the number of call sign similarity/confusion (CSS/C) occurrences. The purpose of collecting CSS/C reports is to scrutinise the efficiency of the Call Sign Similarity de-confliction Tool (CSST) created by EUROCONTROL, in coordination and cooperation with the ANSPs and AOs of its main stakeholders. For the period 2012-2016, fifteen ANSPs provided EVAIR with approx. 17,300 CSS/C reports. AOs using the CSST recorded 3.2 times fewer similarities than those not using the tool. AOs that still do not use the EUROCONTROL CSST are invited to do so as it is free of charge; the only cost is the price of the token needed to connect to the EUROCONTROL secure part of the Network Operations Portal (NOP).

Attention on drones and GPS outages

RPAS and GPS outages have a very high rate of growth. In 2016, EVAIR recorded a 330% increase in drones/RPAS reports compared to 2015. As in the previous period, almost all occurrences occurred at low level, with the majority occurring in the approach phase. EUROCONTROL continues to organise focused workshops addressing the issue of the ATM integration of drones/RPAS below 500 feet; see
http://www.eurocontrol.int/news/air-traffic-management-fit-drones

The problem of GPS outages appeared in the EVAIR database in 2013 and is still very much in existence. The most affected region – an area of four to five hundred NM north and north-west of the Black Sea – Caspian Sea axis – expanded in terms of the number of locations affected, with an increase from twenty-two in 2015 to more than forty locations in 2016. The average duration of lost GPS signal for the period 2013-2016 was 31 minutes. The specific monitoring process of GPS outages continues and EUROCONTROL closely cooperates with IATA and the FAA as well as with other organisations / bodies connected to this issue.

2.2.2.4. RPAS Incident Data

EASA monitors RPAS incidents as part of its Annual Safety Review and has developed a safety risk portfolio that supports the development of safety actions in the European Plan for Aviation Safety (EPAS). Analysis of RPAS occurrences in the ECR alone identified 606 occurrences of all severity levels for the last 5 years, of which 37 had been classified as accidents. None of the accidents involved fatalities. The collection of data on RPAS occurrences is still in its infancy and there is still a lot of work to be done to ensure the correct application of taxonomy terminology related to RPAS. The application of the definition of an accident in relation to RPAS has improved since new definitions were provided in ICAO Annex 13. However, the increase in the number of non-fatal accidents and serious incidents demonstrates the rapid development of drone operations.

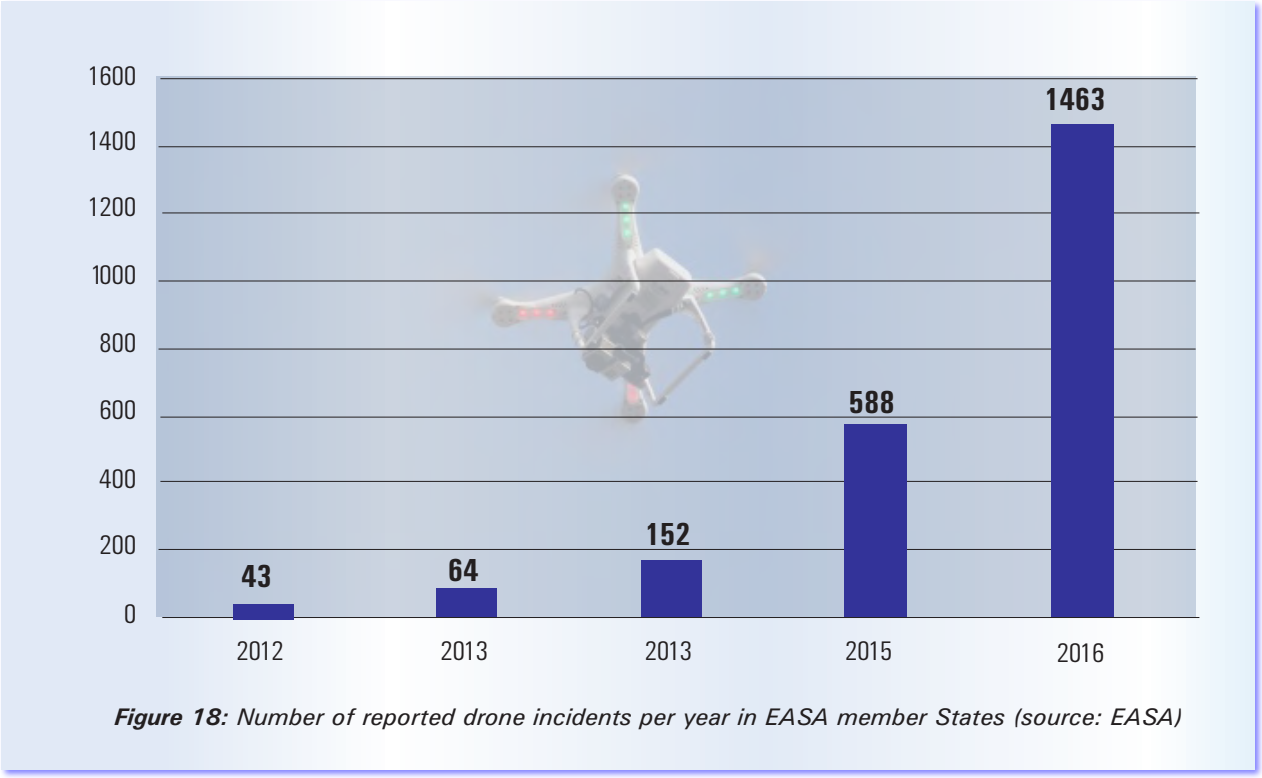


Figure 18: *Number of reported drone incidents per year in EASA member States (source: EASA)*

Based on the available data containing altitude information, it can be seen that when the drones are spotted the manned aircraft is most often in the area from 0-6,000 feet above the ground and the distance from the aircraft to the drone is from 0-1,000 feet.

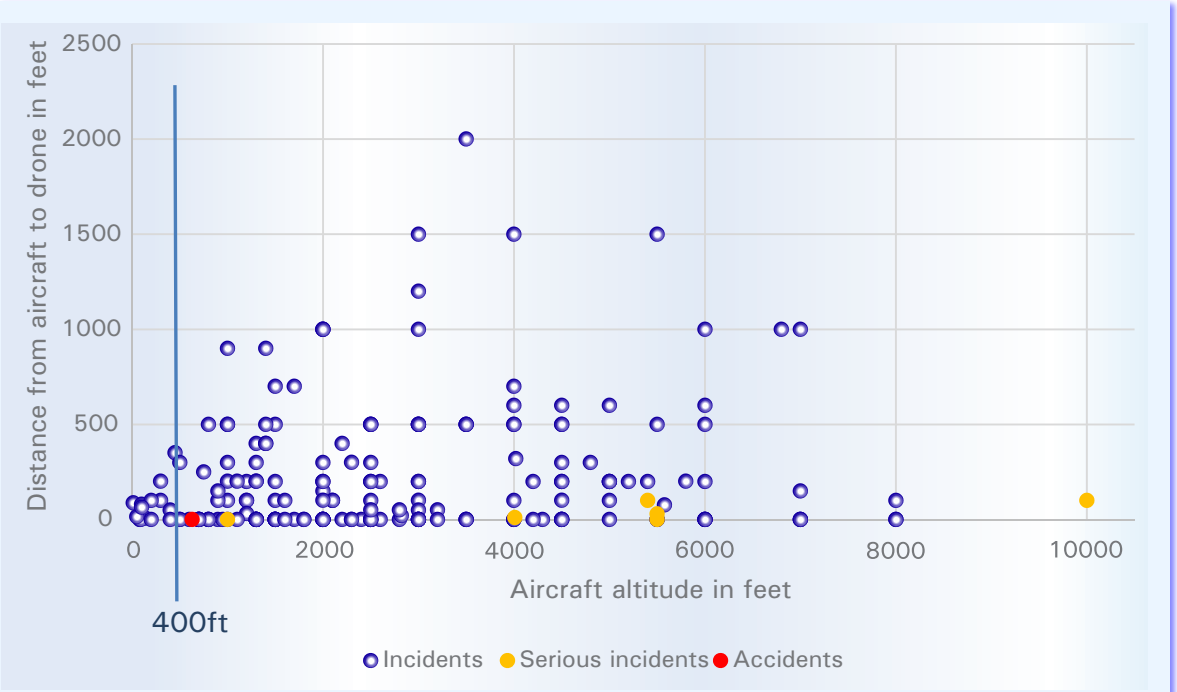


Figure 19: *Aircraft altitude vs. distance from drone at the time of detection (2010-2016) (source: EASA)*

RPAS Safety Risk Portfolio

The second version of the RPAS Safety Risk Portfolio is shown below. Further analysis is ongoing as part of an EASA task force created to assess the risk of collision between drones and aircraft.

	RPAS/UAS						
Outcome Percentage of Fatal Accidents (2012-2016)	0			0%	0%	0%	0%
Outcome Percentage of Non-Fatal Accidents (2012-2016)	32			50%	16%	13%	3%
Safety Issues				Key Risk Areas (Outcomes and percursors)			
	Incidents	Serious Incidents	Accidents	Aircraft Upset	Airbone Collision	Obstacle Collision in Flight	Terrain Collision
Operational							
Control of the RPAS Flight Path and Use of Automation	3	1	5	•	•		•
Airspace Infringement	185	5	1	•	•		
Bird/Wildlife Strikes	1	?	1	•			
Flight Planning and Preparation	3	?	?		•	•	•
Landing Management	1	?	?		•	•	
Airbone Separation	42	?	?		•	•	
Technical							
System Reliability	20	1	11	•	•	•	•
Human							
Navigation	102	4	?	•	•	•	•
Human Performance	12	?	?	•	•	•	•
Knowledge of Aircraft System and Procedures	?	?	?	•	•	•	
Experience, Training and Competence of Individuals	?	?	?	•	•	•	•
Organisational							
Development and Aplication of Regulations and Procedures	?	?	?		•	•	•
Management of Change and New Situations	?	?	?		•	•	
Safety Culture	?	?	?		•	•	

The regulatory framework for the safe operation of drones in Europe currently being developed by EASA, addresses the issue of collision between drones and aeroplanes. A combination of measures is envisaged, such as: operate in visual line of sight, fly under 150m above ground, be equipped with identification and geo limitation functions and be registered. Any operation of drones close to aerodromes would require a specific authorization from the national aviation authority based on a risk assessment.

2.2.3. State Safety Programme (SSP)

	2014	2015	2016
Gap analysis started	33.00%	68.09%	72.92%
Gap analysis completed	17.00%	44.68%	47.92%
Implementation plan defined	11.00%	25.53%	27.08%
SSP implementation completed	0.00%	0.00%	0.00%

Table 11: *Progress in SSP implementation as defined by States in RASG-EUR with EI > 60% (source: ICAO)*

The deadline for SSP implementation in the Region by States with an EI > 60% was set at the end of 2017. According to the 2016 figures, this deadline will apparently will be missed. Although the majority of RASG-EUR States have started or completed SSP gap analysis, less than 30% have defined implementation plans and none so far have reported on the competition of SSP implementation.

International and regional cooperation mechanisms need to be established to assist States to be ready with SSP Implementation by 2020, when SSP implementation in States will be audited under the USOAP programme.

ICAO plan to deliver a Regional Safety Management Symposium in October 2017 and regional workshops in 2018 to facilitate these joint efforts.

2.3. Predictive Safety Analysis

In 2016, EASA continued the development of the Data4Safety (D4S) project, the European "Big Data" Programme for Civil Aviation. The project aims to address the need for a new approach to aviation safety management caused by the continued growth and increasing complexity of the aviation system.

The project moved to the following phases:

Phase 2. Project definition and funds securing. The project was initiated under research funds (Proof of Concept phase), and moved progressively into a full operational funding scheme sustained by the project members (full deployment) – July 2015/October 2016.

Phase 3. Proof of Concept. This phase aims to demonstrate the technological and financial feasibility of the project and its benefits at a reduced scale. At this stage, only a small number of stakeholders are participating – 2016/2019.

The launch partners are: EasyJet, British Airways, Iberia, Deutsche Lufthansa, Ryanair, Airbus, the Boeing Company, the European Cockpit Association (ECA), the Spanish Aviation Safety and Security Agency (AESA), Direction de la Sécurité de l'aviation civile (France), the Irish Aviation Authority (IAA), the United Kingdom Civil Aviation Authority (UK CAA), and the European Aviation Safety Agency (EASA).

The operational phase deployment of the project, when all stakeholders and data sources will be gradually integrated in the proven platform, is targeted for 2019.

3. RASG-EUR Safety Management Themes and Activities

3.1. Systemic Safety Management Activities

3.1.1.Usage of Flight Data Analysis

The IE-REST's Flight Data Analysis (FDA) and Air Operator Safety Management System Group (IE-FDG) continued to implement the Safety Enhancement Initiatives (SEIs) related to the implementation of national FDA oversight and setting up national FDA forums.

A FDA Seminar "Development of Operations Safety and Continuing Airworthiness" was held in IAC Headquarters on 12/13 April 2016 within the framework of the ICAO-IAC Regional Project COSCAP-CIS. The Seminar was organized with the support of Airbus, ICAO and IAC. 112 aviation specialists from 12 countries and 3 International Organisations attended the workshop.

During the first day of the seminar the following subjects were discussed:

- Safety oversight aspects of the implementation of ICAO requirements to establish and maintain a FDA Programme;
- Activity of the ICAO Flight Data Working Group;
- Flight Data Analysis in the broad context of SMS;
- FDA Program development experience & best practices, "Air Astana" (Republic of Kazakhstan);
- The key role of the Flight Safety Officer;
- Flight data analysis practices within the SMS implementation of the leading Russian airlines.

The study of Flight Data Analysis Methods was continued on the second day; the case of crew interview and occurrence analysis for the potential risks detection was demonstrated.

In the conclusion of the seminar, participants highly appreciated the seminar work and noted the necessity of developing more actively the cooperation between aviation authorities, airlines and aviation manufacturers. Aviation specialists suggested to meet for a discussion on FDA issues on a regular basis. IAC also expressed its readiness to become the platform for the development of the further cooperation of specialists in this area.

This, and following FDA workshops and seminars held in the region, revealed a lack of an updated regulatory framework properly implementing ICAO recommendations (Doc 9859; Doc 10000 and others). FDA data was found to be used in airlines' safety management processes to evaluate pilots' individual performance rather than to reveal and address the overall system safety concerns. It was agreed to further work with the States to close those gaps.

The IE-FDG acknowledged the work performed by the European Authorities Coordination Group on Flight Data Monitoring (EAFDM). In particular, it was found useful to promote amongst States "Guidance for National Aviation Authorities: Setting up a national Flight Data Monitoring forum" and "Good Practice on the oversight of FDM programmes". To facilitate implementation, the IE-FDG has prepared the translation of the above mentioned materials into Russian.

The RASG-EUR agreed to support this proposal and to suggest that all 56 States of the region should benefit from this guidance. Hence, relevant RASG-EUR Safety Advisories 04 and 05 were published at the ICAO EUR/NAT web pages: https://www.icao.int/EURNAT/Pages/EURNAT-Meetings-RASGEUR.aspx ⟶ RASG-EUR Safety Advisories.

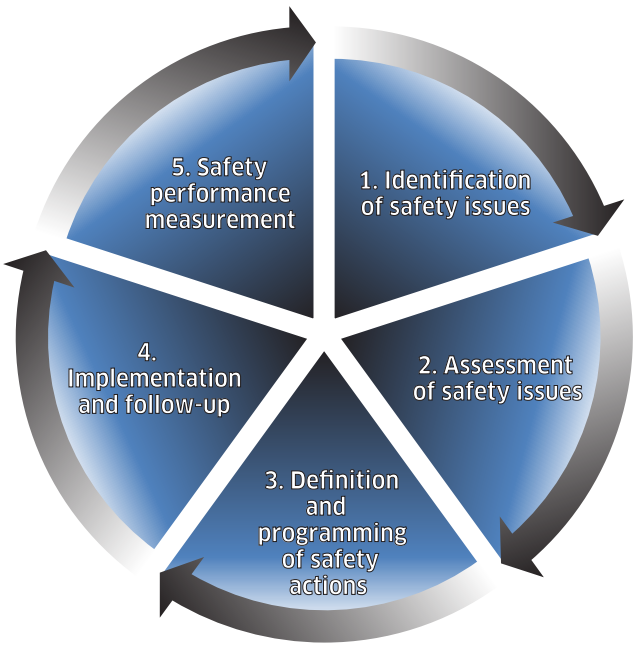
With the assistance of IE-FDG and EAFDM experts, a national FDM forum was established in 2016 in the Republic of Moldova hoping to bring additional safety improvements in the State. States that are interested in benefiting from this experience are called to participate in IE-FDG activities.

3.1.2. European Plan for Aviation Safety (EPAS)

The EPAS 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 not only considers 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 originated from EASA member states, 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. The current EPAS edition covers the 5-year period from 2017 to 2021. The EPAS is updated every year by EASA.

The EPAS is developed through the European SRM process, which is defined in 5 clear and specific steps as described.



Identification of Safety Issues: Candidate safety issues are taken from the results of EASA's safety analysis activities, as well from the members of the collaborative groups (Network of Analysts [NoA] and the Collaborative Analysis Groups [CAG]). These candidate safety issues are formally captured by the Agency and are then subject to a preliminary safety assessment. This assessment then decides whether a candidate safety issue should be formally included in the relevant safety risk portfolio or be subject to other actions. Advice is taken from the NoA and CAGs.

Assessment of Safety Issues: A safety issue is subject to a formal safety assessment. These assessments are prioritised within the portfolio. The assessment process is led by EASA, supported by the NoA and CAGs. The result of the assessment is the production of scenario based bow tie models that help to identify weak controls for which potential actions can be identified.

Definition and Programming of Safety Actions: Using the combined SIA/PIA, formal EPAS action proposals are then made to the advisory bodies. Once discussed and agreed upon, the actions are 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 different types of action within the EPAS. These include focussed oversight, research, rulemaking and safety promotion.

Safety Performance Measurement: 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 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. More information on the EPAS can be found here:

https://www.easa.europa.eu/easa-and-you/safety-management/safety-management-system/sms-europe

Systemic Safety Enablers

The Agency continues to support the implementation of safety management systems in authorities and organisations, meeting the aims of ICAO Annex 19. Following the entry into force of Regulation (EU) No. 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation, the agency is also supporting the continued development of reporting systems and taxonomies.

Key actions in 2016 were:

- Incorporate safety management requirements in initial and continuing airworthiness;
- Support States in implementing State Safety Programmes;
- Develop a European Risk Classification Scheme;
- Encourage international harmonisation of Safety Management Systems (SMS) implementation, and human factors principles;
- Support the implementation of flight data monitoring (FDM) programmes.

Human Factors and Competence of Personnel

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. 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.

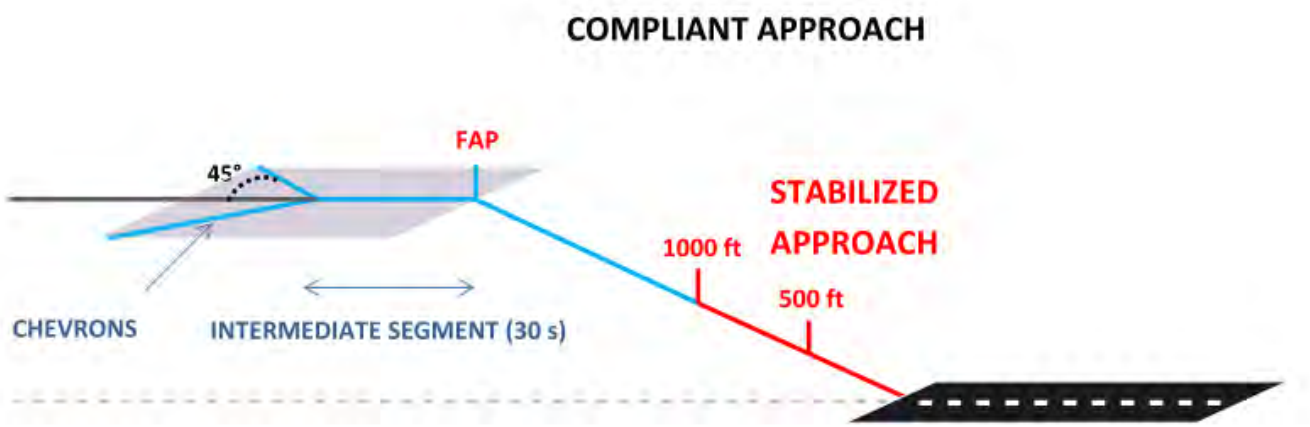
Key Actions in 2016 were:

- Introduce evidence and competency-based training into all licenses and ratings;
- Update fatigue management provisions for both Flight Crew and Air Traffic Controllers;
- Improve the fidelity of Flight Simulators;
- Support Competent Authorities with training and expertise to attract suitably qualified staff;
- Disseminate best practices in Crew Resource Management.

3.1.3. Non stabilized approaches (NStA) and Non-compliant approaches (NCA)

It has been known that non-stabilized approaches (NStA) can be precursors to a number or accident categories, including runway incursions, hard landings, etc. In order to identify the circumstances favouring NStAs DGAC of France has developed a concept of non-compliant approaches (NCA) at the beginning of the 2010s through the analysis of safety events. This work has led to the conclusion that this precursor of an NStA may be described as an approach during which at least one of the following parameters is observed:

- The interception angle to the localizer is greater than 45° (30° in the case of active parallel approaches);
- The duration of the intermediate segment is less than 30 seconds (or less than 2 NM in the case of Global Navigation Satellite System (GNSS) approaches);
- The final segment is flown at a speed not suitable to the prescribed deceleration.



It was agreed that NStA is a more airline operational concept: approach for which parameters such as runway axis, glide slope, indicated air speed are not established and kept at a certain point (distance /altitude) before the runway touch down zone. In case of NStA the following applies:

- Criteria are defined by each Air Operator
- Criteria vary (Visual Meteorological Conditions (VMC)/IMC)
- Can be detected by the crew
- Could be (sometimes) the aftermath of a NCA (but not only)

Nb	Undesirable event identification	CFIT	LOC-I	Mid-air collission	Ground collission	RWY-EXC	Damage/ injury in flight	Damage/ injury on the ground
EI2.1	Unstabilised or Non Compliant Approach	X	X			X		X

The risk portfolio in the French aviation state safety programme

To facilitate relevant actions that can be taken by air traffic controllers the concept of NCA was developed. NCA is contextual situation when an aircraft in IFR performed an instrumental approach in which some (or all) parameters to join the final approach leg prescribed by the regulation and the operational/service orders are not meet. As such the following applies for NCA:

- Could happen to an Aircraft under radar vectoring for a instruments or a visual approach
- Could have its root cause from the deck or from the ATC
- Can be detected by the crew and/or the ATC.
- Is a precursor of a NStA.

To raise the awareness and address the risk of NStA and NCA among the air traffic controllers' community a campaign has been initiated by the French regulator and the French civil air navigation service provider (DSNA). The campaign consists of a set of presentations done by one pilot and one ATCO, with supporting materials including following videos:

- vidéo # 1 : short vectoring and interception from above
https://geode.sigp.aviation-civile.gouv.fr/share/s/KQuBlOLwQR2f_zxz5Bvajg
- vidéo # 2 : tail wind on final and high speed
https://geode.sigp.aviation-civile.gouv.fr/share/s/ETsIxZxOTxuAOBLwOfkl-g

3.1.4. Safety-related Training

EASA Technical Training

In 2016, EASA conducted 118 technical class-room training sessions, with the participation of more than 800 aviation professionals from a wide range of aviation sectors, including industry professionals and world-wide Civil Aviation Authorities. In addition, almost 400 trainees enrolled to e-learning sessions.

A comprehensive course catalogue is available via the EASA's interactive training environment, the EASA Learning Gateway portal: https://training.easa.europa.eu

For further information, visit the EASA website:
http://www.easa.europa.eu/easa-and-you/technical-training/technical-training-offered-us

EASA Virtual Academy

In addition to the technical training courses offered by EASA, the EASA Virtual Academy is part of EASA's efforts to ensure that harmonised and high-quality training is available, especially to CAAs staff.

The EASA Virtual Academy provides class-room courses that support the qualification of CAA personnel involved in approval and oversight activities (inspectors). For further information please visit the EASA website: http://www.easa.europa.eu/easa-and-you/technical-training/easa-virtual-academy

Training activities under ICAO-IAC project

Maintenance & Engineering Safety Awareness Seminar (MESAS)

A two-day Maintenance & Engineering Safety Awareness Seminar (MESAS) took place in May 2016 in the Interstate Aviation Committee (IAC) with the support of Airbus as part of the ICAO-IAC Regional Project RER/01/901 "Development of Operations Safety and Continuing Airworthiness". The Seminar was attended by aviation specialists from CAAs and airlines from Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan and Turkmenistan.

Presentations were delivered by IAC experts, as well as by Airbus, the Moscow office of VERITAS, Air Astana, and the Training Centre Aviator.

During the Seminar the topics discussed were as follows:

- Data sharing and communication;
- Master Minimum Equipment List (MEL), Minimum Equipment List (MEL);
- MEL in practice & safety implication;
- Lessons learnt from in-service maintenance experience;
- Tooling black market & associated safety concerns;
- Contribution of maintenance planning to safety;
- Structural damage reporting and recording;
- Safety oversight and safety management systems in the fields of maintenance and engineering;
- Reporting and SPIs and associated challenges;
- SMS implementation at Aircraft Maintenance Training Organisations.

Airbus systems familiarization course

A series of special courses "A318, A319, A320, A321 aircraft, their systems, CFM 56, IAE V2500, IAE PW 1100G engines and flight and navigation complex" were organized in 2016 within the framework of the ICAO/IAC Regional Project RER/01/901 (COSCAP-CIS), as follows:

- June 2016, in Baku, in the National Aviation Academy of the Republic of Azerbaijan;
- August 2016, in Bishkek, Kyrgyz Republic;
- December 2016, in Kiev, Ukraine.

The characteristics of the A380, A350, and A320 NEO aircraft were presented. The courses were held by Airbus experts from the Hamburg Training Centre, Germany.

Aviation specialists from the Republic of Azerbaijan, Georgia, Ukraine, Kyrgyz Republic, Republic of Kazakhstan and Republic of Tajikistan participated in the courses.

The participants studied mechanical, electrical power, hydraulic power, fuel and pneumatic systems of the Airbus aircraft family. Functional resources of the navigation and radio navigation systems, automated take-off and landing systems, communication, air conditioning, fire extinguishing and ice protection systems, flight data recorder and reservation system with the display of information in the cockpit received detailed consideration.

Special attention was given to the study of CFM 56, IAE V2500, IAE PW 1100G power plants, their airframe structure electronic control and regulation systems. The participants received the materials of the flight and technical documentation on the maintenance schedule/maintenance checks.

The participants were also informed on the different types of composite materials (carbon fibre composite, glass fibre, aramid fibre, etc.) used by Airbus, their advantages and drawbacks.

EUROCONTROL IANS Training and Training Tools

The EUROCONTROL Institute of Air Navigation Services (IANS) in Luxembourg delivers a set of unique high-quality training courses, tools and services in ATM to various actors in the aviation community.

The portfolio includes training on CNS, Network Efficiency and Safety Management for ANSPs plus Safety Oversight for Competent Authorities or National Supervisory Authorities (NSA). The central delivery theme of these courses is a cost-effective way to train the ATM community.

All courses support the implementation of EU legislation, an aspect which is particularly important for all players in ANS and ATM. Recent examples are the adaptation of the IANS portfolio to Commission Regulation (EU) No. 2015/340 in Human Factors training and Commission Regulation (EU) No. 2017/373 in Safety Management training.

The Safety Management courses help providers of ATM/ANS services to understand how to safely manage their services in a manner which adds value and is compliant with the EU legislation in force. CNS training is vital in implementing a harmonised system deployment of CNS and data processing infrastructure in support of SES implementation across Europe. Likewise, the Network Operations training courses contribute to a harmonised implementation of the SES implementing rules.

The NSA training programme is designed to support States' obligations to ensure specific training for those involved in oversight activities. It provides participants with a solid foundation in all of the core NSA functions required by the EU legislation and with an awareness of on-going regulatory developments. More than 400 course participants – mainly from Competent Authorities – are trained annually in one of the EU legislation (LEX) courses.

IANS makes a number of its tools available to stakeholders under license:

- The English Language Proficiency for Aeronautical Communication (ELPAC) test is designed to help ANSPs, AOs, NSAs and Training Organisations to meet the ICAO language proficiency requirements for operational ATCOs and pilots. ELPAC is the only test fully recognised by ICAO for being in conformance with ICAO SARPs for language proficiency requirements.
- The First European ATCO Selection Test (FEAST) assesses the knowledge, skills and abilities of applicants for ATC training that are relevant for the ATCO job. FEAST is available to both civil and military ANSPs, and certified aviation training academies and universities.

More information on IANS training or tools can be obtained from https://trainingzone.eurocontrol.int/

2nd CIS Regional Safety Seminar "Proactive Safety: Managing the Risks"

Understanding the importance and benefits of sharing expertise and best practices of SMS implementation in their region, Air Astana, in cooperation with Airbus, held its 2nd Regional Safety Seminar "Proactive Safety: Managing the Risks" in October 2016 in Almaty, Kazakhstan.

Participants comprised of representatives from operators and Aviation Authorities from Kazakhstan, Russia, Ukraine and Kyrgyzstan. Speakers with relevant operational expertise from ICAO, IATA, Emirates Airlines, Austrian Airlines, Civil Aviation Authorities of China (CAAC), Airbus and Embraer delivered presentations.

The seminar was aimed at sharing knowledge and experience in the implementation of SMS elements, particularly in the areas of risk management and in investigation of aviation events. Presentations and discussions included topics such as the challenges and opportunities in aviation safety, an update on global and regional developments, developing predictive SPIs, safety nets effectiveness, wildlife management, proactive understanding of human factors, multi-layered hazard identification tools, triggers to inappropriate maintenance, flight date speed trend management, etc.

3.1.5 Collaborative Approach for Safety Oversight

NCLB Initiative

ICAO officially launched the "No Country Left Behind" (NCLB) Initiative on 7 December 2014 at the 70th Anniversary of ICAO. The NCLB campaign highlights ICAO's existing and new efforts to assist States in implementing ICAO Standards and Recommended Practices (SARPs).

The primary goal of this work is to ensure that SARPs implementation is better harmonized globally so that all States have access to the significant socio-economic benefits of a safe and reliable air transport system.

The NCLB Initiative also promotes ICAO's efforts to resolve Significant Safety Concerns (SSCs) brought to light through ICAO's safety oversight audits as well as other safety, security and emissions-related objectives. ICAO is giving a new thrust towards that end, coordinating, facilitating and implementing comprehensive assistance programmes, in partnership with all stakeholders willing to help States enhancing their civil aviation systems and oversight capabilities.

The NCLB Initiative enhances the capabilities of States, in particular to implement global standards and policies and improve air connectivity for the sustainable development of local and worldwide economies. The NCLB aligns with the United Nations' Agenda 2030 and its Global Goals for Sustainable Development (SDG).

Under the global NCLB Initiative, the ICAO EUR/NAT Office has developed a regional capacity-building programme, implemented through a series of technical assistance projects (EUR CBP-TAP). Until now, the EUR/NAT Technical Assistance Programme has contributed to the resolution of three SSCs in the area of accreditation of the EUR/NAT Office.

There are complex and multidisciplinary projects, including assistance in the resolution of SSCs and other identified safety deficiencies with the aim to support the States concerned. Since 2015, nine Technical Assistance projects were developed and/or are in various stages of implementation in the EUR Region. Partnerships and resource mobilization from the Region is an important and integrated part of this Programme according to the availability of funds and human resources.

From the projects mentioned above the following are considered significant:

EUR/NAT AZE 16001

This project is focused on supporting the SCAA of Azerbaijan during the period of the Tailored Action Plan (2016-2017) in the coordination of post Corrective Action Plan (CAP) implementation activities and carry out capacity building activities through qualified technical staff, with the objective of achieving an EI above 60% in the reference period. In 2016, some activities took place in the framework of this project to support the SCAA in the resolution of ICAO USOAP audit findings and update their CAP. These activities included additional training from the DGCA Turkey and Austro Control.

EUR/NAT PANS-OPS 16002

This project is supporting States to enhance their safety oversight capacity, specifically in the areas of Procedures for Air Navigation Services (PANS)-OPS and Aeronautical Charts. The project is implemented in two phases.

Phase 1: Dedicated missions to support nine EUR States included in the EUR List of Air Navigation deficiencies, specifically the lack of effective mechanisms to ensure compliance with ICAO Annex 4 (Aeronautical Charts) and Doc. 8168 (PANS OPS) provisions.

Phase 2: Establish and train, within the EUR Region, a network of PANS OPS/Aeronautical Charts experts to provide additional oversight capacity through a number of dedicated workshops and OJT activities.

During 2016, the ICAO EUR/NAT, in cooperation with Austria and Portugal, conducted two dedicated missions to Belarus and the Russian Federation and trained about 40 specialists from the civil aviation authorities and instrument flight procedure design service providers.

EASA Technical Cooperation with ICAO EUR States

In 2016, EASA implemented several regional projects supporting the EU's European Neighbourhood Policy (ENP) Initiative, which covers the Western Balkans, Eastern Europe and Mediterranean countries. These projects aim to support the enhancement of safety and interoperability with EU standards and are listed below.

Furthermore, EASA also implemented horizontal projects to promote EU safety regulations and build capacity in safety oversight, such as through the EASA International Cooperation Forum. Where relevant, EASA closely cooperates with interested EU Member States. The following technical assistance projects were implemented by EASA in the EUR region in 2015.

Eastern Partnership (EaP) / Central Asia (CA) Project (former TRACECA)

The objectives of this project are shared between two partner country groups. For ENP countries the project aims at ensuring that partners can participate effectively in the pan-European civil aviation system. For Central Asian countries the project provides support and capacity building in order to assist them in fulfilling their international obligations in the domain of aviation safety.

The implementation of the project started on 01 Feb. 2016.

More information regarding EASA Technical cooperation can be found on the project-specific EASA site: http://www.easa.europa.eu/easa-and-you/international-cooperation/technical-cooperation-projects

3.2. Activities Aiming to Reduce Risks of Loss of Control In-flight (LOC-I) Accidents

3.2.1. IE-REST Pilot Training Group (IE-PTG) activities

The RASG-EUR acknowledged that, in order to reduce the risk of Loss of Control Inflight (LOC-I) accidents, all air operators in the region should be encouraged to utilize enhanced stall/upset prevention and recovery training. To achieve this, the RASG-EUR adopted the SEI assigning the IE-PTG:

- To review, consolidate, translate and disseminate guidance material on industry best practices related to upset prevention and recovery to air operators;
- To encourage the regulators in the Region to evaluate and document the gaps or level of adoption related to enhanced stall recovery training guidance and industry best practices;
- To organize seminars and workshops on LOC-I and stall prevention/recovery issues to include representatives from the flight test community to share their stall phenomena knowledge or flight test experience (including contributing factors such as airplane configuration, high altitude stall, icing, failures, somatogravic illusion, etc.) and effective upset and stall recovery training;

The Russian Federal Air Transport Agency (FATA) agreed to act as Champion organization for the SEI and established a working group with representatives from "Pobeda" and "Meridian" airlines and Gromov's Flight Research Institute. Airbus, Boeing and Sukhoi representatives participated in this working group as experts. The implementation plan will take several years to implement. Major outcomes of this work will be presented in the next RASG-EUR annual reports.

In 2016, two Upset Prevention and Recovery Training (UPRT) were conducted in the region:

- Hosted by Airbus, in Toulouse, France, September 2016; and –
- Hosted by S7 Airlines in Moscow, Russia, December 2016.

The objective of each two-day session was to familiarize participants with new UPRT requirements and its implementation and to provide pilots participating with a hands-on demonstration of UPRT in a FSTD. In the course of the workshops the new approaches in the field of UPRT for flight crews were presented, including practical training demonstration on the FSTDs.

3.2.2. EPAS Activities

The EPAS contains several actions intended to reduce the risk of LOC-I. Key EASA actions in 2016 relating to aircraft upset are shown below. These actions involve rulemaking tasks, safety promotion and research:

- Review and promote training provisions on recovery from upset scenarios;
- Improve mitigation of loss of control during go-around;
- Research the best training methods to mitigate the impact of surprise and startle effect;
- Member States to address loss of control in flight by taking actions at the national level and measuring their effectiveness.
- Improve the certification specifications and standards relating to the certification of rotorcraft hoists.

3.2.3. Airplane Protection from Icing-Up on the Ground (IAC)

An Anti-/De-Icing Workshop was held in February 2016 with the support of Airbus/ATR in the framework of the ICAO-IAC's Regional Project 'Development of Operations Safety and Continuing Airworthiness' (RER/01/901). About 150 representatives from CAAs, leading airlines and the airports of Armenia, Belarus, Kyrgyzstan, Russia, Tajikistan, as well as experts of the IAC, France and the FAA attended the workshop.

During the first day of the workshop, IAC's experts presented the analysis of flight safety in the region of the Member States of the IAC. Airbus and ATR experts delivered presentations on the requirements to the anti-/de-icing equipment and ground staff training, as well as on the main issues of pilot training.

Participants exchanged experience on the implementation of the 'Methodical Recommendation for Aircraft Ground De-/Anti-Icing', developed by IAC in cooperation with experts of leading Russian airlines and airports. Experts of ground handling services and airlines delivered presentations on ensuring anti-icing protection of aircraft in airports and quality control, and amendments to the methodical recommendations on aircraft ground de-/anti-icing.

The workshop's practical part was held at Sheremetyevo Airport. Attendees were introduced to the anti-icing treatment procedure and the storing and utilization of liquid waste products. They also visited a De-/Anti-Icing Fluid Depot, Diagnostics Laboratory and the PSC Aviation Personnel Training Department.

The attendees approved the 'Aircraft Ground De-/Anti-Icing' methodical recommendations and proposals for development of guidance material in the following fields:

- Requirements to the de-/anti-icing treatment of specific aircraft types;
- Scheme of de-icer traffic near aircraft;
- Preliminary de-/anti-icing treatment;
- Aircraft de-/anti-icing treatment in arctic conditions (super low temperatures);
- Aircraft de-/anti-icing treatment with working engines;
- Order phraseology and forms with regard to aircraft de-/anti-icing treatment;
- Impact of RWY and taxiway de-/anti-icing liquid on the aircraft airframe and systems;

A plan to amend the 'Aircraft Ground De-/Anti-Icing' methodical recommendations was approved to include the summary of the proposals by workshop participants. It was planned to publish the new version of the recommendations by August 2016 to facilitate implementation in airlines and airports of the member States of the Agreement on Civil Aviation and Use of Airspace during autumn and winter period 2016-2017.

3.2.4. IATA activities

In 2016, IATA published its 1st Edition of the Environmental Factors Affecting Loss of Control In-Flight: Best Practice for Threat Recognition & Management. The aim of this document is to provide a point of reference for the understanding and mitigation of the risk of LOC-I as a result of the environmental factors encountered in flight. For more details see: http://www.iata.org/whatwedo/safety/Documents/guidance-loci-environmental-factors-affecting-loci-1st-edition.pdf

3.3.Activities Aiming to Reduce Risks of Controlled Flight into Terrain (CFIT) Accidents

3.3.1.EPAS activities

The EPAS contains several actions intended to reduce the risk of controlled flight into terrain. These actions involve rulemaking tasks and safety promotion.

Key actions in 2016:

- Develop a regulatory framework to reduce the risk of CFIT accidents in small aeroplanes
- Introduce requirements for helicopter terrain avoidance warning systems
- Support member states in addressing CFIT risks in their state safety programmes.

3.3.2. IATA activities

In 2016, IATA performed a study of terrain awareness warning system capability and human factors occurring in CFIT accidents between 2005 and 2014. This survey and associated report was commissioned to identify accident commonalities and lessons from the findings. For more details see:

http://www.iata.org/whatwedo/safety/Documents/CFIT-1st-edition.pdf

3.4.Activities aiming to reduce risks of Runway Safety (RS) accidents

3.4.1.IE-REST Runway Safety Group (IE-RSG) activities

The IE-RSG continued its activities aiming to improve runway safety in the region.

The material developed by the group on the development of Air Operator Standard Operating Procedures (SOPs) to improve runway safety was agreed to be published as a RASG-EUR Safety Advisory on the ICAO EUR/NAT web pages: https://www.icao.int/EURNAT/Pages/EURNAT-Meetings-RASGEUR.aspx ⟶ RASG-EUR Safety Advisories.

The Russian Federal Air Transport Agency (FATA) already issued recommendations to Air operators to review all training and checking guidance material to ensure proper emphasis on adherence to SOPs in all training and checking events in normal line operations. Other States and aviation stakeholders are invited to take benefit from this available material.

An SMS/Runway Safety Seminar was held in July 2016 in Moscow, Russia. The Seminar was organized with the support of IE-RSG members as well as ICAO, IAC, FAA, FATA, Aeroflot and Airbus. The Seminar was attended by representatives of CAAs and the airports of Armenia, the Republic of Belarus, Republic of Kazakhstan, Kyrgyz Republic and the Russian Federation.

Another major achievement for 2016 was a Runway Safety (RS) Go-Team mission to Ben Gurion Airport, Tel Aviv, Israel. The team included representatives of ICAO, IATA, CANSO, EUROCONTROL, Brussels Airport (Belgium), St. Petersburg (Pulkovo) Airport (Russia), IFALPA/ISRALPA, and the FAA. The Go-Team worked closely with the aviation authorities of Israel (CAAI). Under the CAAI's supervision and leadership, several recommendations were proposed to improve runway safety.

The ICAO RS Go-Team aims to provide international assistance from ICAO and partner organisations for the implementation of effective runway safety teams (RSTs) to improve runway safety. The RS Go-Team is a voluntary multi-disciplinary assistance visit to an airport performed by an ad-hoc group of experts from ICAO and partner organisations; it is not an ICAO audit, validation, inspection or certification. The objective of a RS Go-Team is to assist a State and airport in establishing an RST, supporting the implementation stage by providing technical assistance, including training, assessments and gap analysis, expert advice and guidance based on best practice. The States are invited to take benefit from future regional RS Go-team visits.

3.4.2.EPAS Activities

Hard landings, high-speed landings and landings following an unstabilised approach are direct precursors to runway excursions (REs). The EPAS contains several actions intended to improve runway safety through the avoidance of runway collisions or runway excursions. The key actions in 2016 were:

- Require on-board technology to reduce runway excursions;
- Improve aircraft performance in Commercial Air Transport operations;
- Assess the need to install and use predictive wind shear systems;
- Promote and implement the European Action Plan for the Prevention of Runway Incursions (EAPPRI) and Excursions (EAPPRE);
- Member States to address runway safety by taking actions at the national level and measuring their effectiveness.

3.4.3.The Collaborative Aerodrome Safety Hotspots (CASH)

When preparing flights, pilots have to deal with a large amount of information, in particular concerning departure, destination and alternate airports. An AIP (Aeronautical Information Publication), the official document used for issuing permanent aeronautical information, must comply with some requirements regarding its structure and content, as these are defined at international level. However, this means of conveying information does not always adequately allow distinctive local features to be highlighted or published, while knowledge of such features by the flight crew appears to be a plus for the conduct of the flight.

Such information may in particular originate from pilot feedback, aerodrome operator occurrence analysis or air navigation service providers. It may also concern the aeronautical, aerological or geographical environment of the aerodrome.

These factors have led to the setting-up of a working group made of representatives of the French DGAC and operators, with a view to launching a trial whose aim would be to make such information available to crews in summary form and organized to match the sequence of a flight. The goal would be to facilitate flight crew knowledge of the specific context of a given aerodrome, to provide a shared and improved vision of the aeronautical environment and, ultimately, to strengthen the overall safety performance.

The project was named CASH, for "Collaborative Aerodrome Safety Hotspots".

It should be noted that for each aerodrome part of the trial, the CASH data has been defined locally through a collaborative process involving representatives of operators based or using the aerodrome (airlines, the aerodrome operator, local services of the French weather office (Météo France), ANSPs, flight clubs and other users).

The trial was officially launched in early June 2016. Five aerodromes have agreed to take part in it: Bastia-Poretta, Beauvais-Tillé, Calvi-Sainte-Catherine, Nice-Côte d'Azur and Paris-Charles de Gaulle. A dedicated internet platform was developed for the purpose of the trial:

https://www.ecologique-solidaire.gouv.fr/en/collaborative-aerodrome-safety-hotspots-eng

3.4.4.Runway Status Light (RWSL) Implementation at Paris CDG

Since 24 October 2016, RWSL is in operational service on runways 09R/27L and 08L/26R at Paris-Charles de Gaulle aerodrome.

RWSL is an autonomous runway incursion warning system, conveying the runway occupancy status, and indicating when a runway is unsafe to enter or cross.

The RWSL, composed of Take-off Hold Lights and Runway Entrance Lights is a system that uses both primary and secondary surveillance to dynamically turn on/off lights indicating runway occupancy status directly to pilots or vehicle operators. RWSL seeks to improve airport safety by indicating when it is unsafe to cross, enter or take off from a runway. RWSL is an automatic autonomous advisory back-up system expected to prevent or reduce the severity of runway incursions.

Information about RWSL at Paris-Charles de Gaulle is available via:

http://www.eurocontrol.int/runway-status-lights

3.4.5. Unstable Approaches: Risk Mitigation Policies, Procedures & Best Practices

The 2nd Edition of Unstable Approaches: Risk Mitigation Policies, Procedures & Best Practices, has been collaboratively written by IATA, CANSO, IFATCA and IFALPA. It addresses the prevention and recovery from an unstable approach. Enhancing overall awareness of contributing factors and outcomes of an unstable approach, together with some proven prevention strategies, it provides a reference based upon the guidance of aircraft manufacturers and identified industry best practice, against which to review operational policy, procedures and training. For more details see

http://www.iata.org/whatwedo/safety/runway-safety/Documents/unstable-approaches-2016-2nd-edition.pdf

3.5.Activities on Emerging Challenges

3.5.1. EPAS Activities

Ensuring the safe operation of drones

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.

Key Actions in 2016:

- Introduction of a regulatory framework for the operation of drones;
- Coordinate European activities to promote safe operation of drones to the general public.

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. Authorities 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.

Key Actions:

- Support National Aviation Authorities in the practical implementation of cooperative oversight;
- Support operators so that their management systems can capture new hazards introduced by different employment models;
- Improve the understanding of operators' governance structures;
- Obtain better EU-wide occurrence data from Member States in order to benchmark operators' safety culture.

Impact of security on safety

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.

Key Actions in 2016:

- Develop and implement a cybersecurity roadmap;
- Disseminate information to operators in order to mitigate the risk associated with overflying conflict zones.

3.5.2. Aviation System Block Upgrades (ASBU) Implementation Monitoring Report for ICAO EUR States

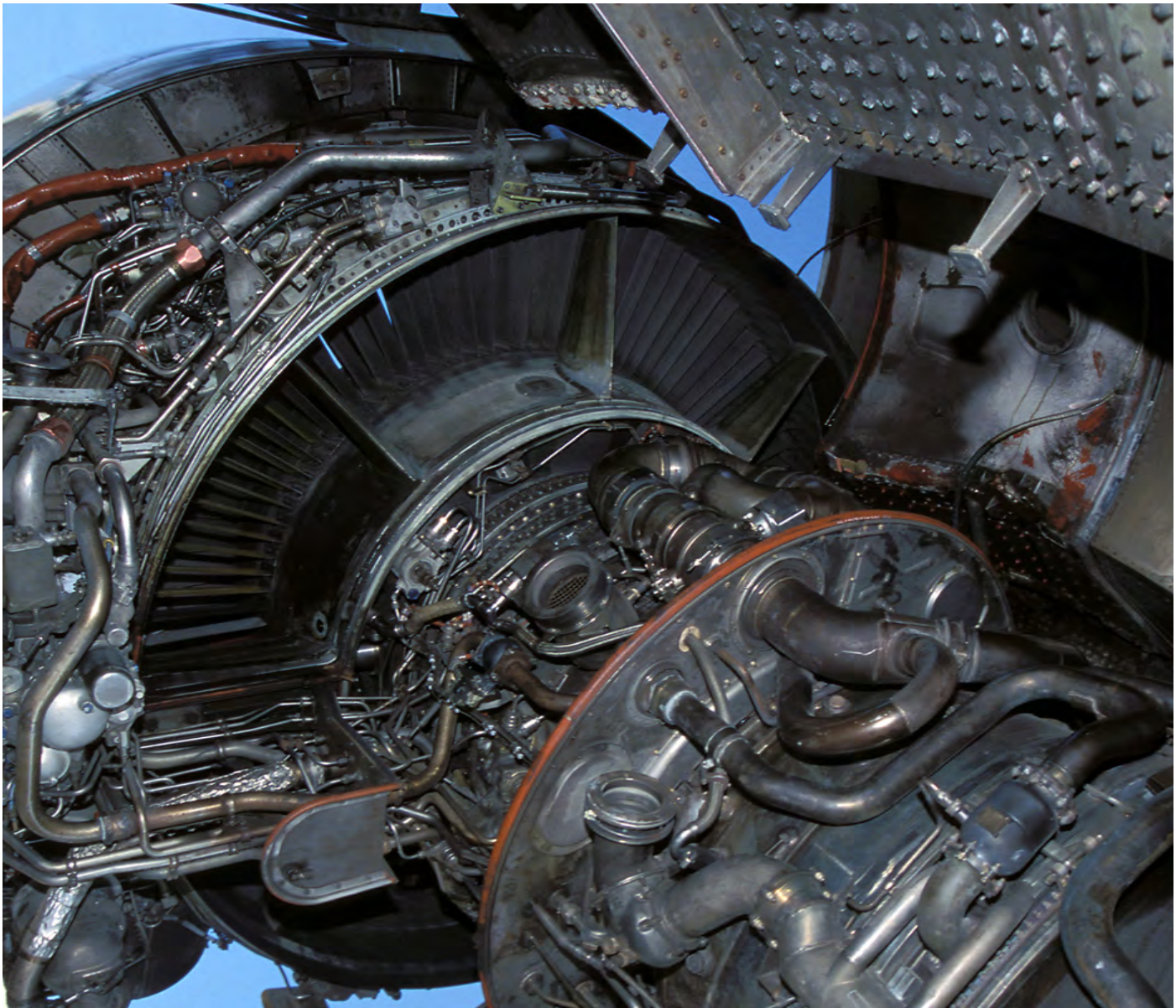
Regarding safety reporting, it is important to refer to the ASBU Implementation Monitoring within ICAO EUR States performed by EUROCONTROL.

At the EANPG/55 meeting it was agreed that, in order to enable the monitoring and reporting of the ASBU modules in the ICAO EUR Region, a cooperative mechanism would be put in place between ICAO EUR and EUROCONTROL. This mechanism encompasses mainly the usage of the existing EUROCONTROL ESSIP/LSSIP process (integrated in the European ATM Master Plan, as the ESSIP is its Level 3), complemented by a specific ICAO EUR ASBU questionnaire for non-ECAC States.

The current report shows the progress situation at the end of 2015. It was endorsed by EANPG/58 and Conclusion 22 stated that this report would be part of the eANP Vol III (see http://www.icao.int/eurnat ⟶ EUR/NAT documents ⟶ EUR Air Navigation Plan ⟶ eANP Vol I, II and III - EUR eANP Vol III Companion Document-ASBU Implm monitoring report-2015) and of the ICAO Global Air Navigation Report.

The analysis of progress covers a total of 55 States, 41 that are part of the ESSIP/LSSIP mechanism (plus Monaco, San Marino and Andorra included in hosting States) and the other 11 ICAO EUR States.

A salient aspect of the report is the presentation of statistics and dates indicating when each State of the ICAO EUR Region plans to conclude, if not yet completed, each Block 0 module.



The status for BO-SNET module planning dates corresponds approximately to the following statistics:

Completed	38%
Planned for 2016	23%
Planned for 2017	4%
Planned for 2018	12%
Planned for 2019 or other	10%
Not applicable	0%
Missing Data	6%
No final Plan	7%

The progress of BO-SNET can be considered relatively good as by the **end of 2016 about 61%** of States are expected to have completed the implementation of the module.

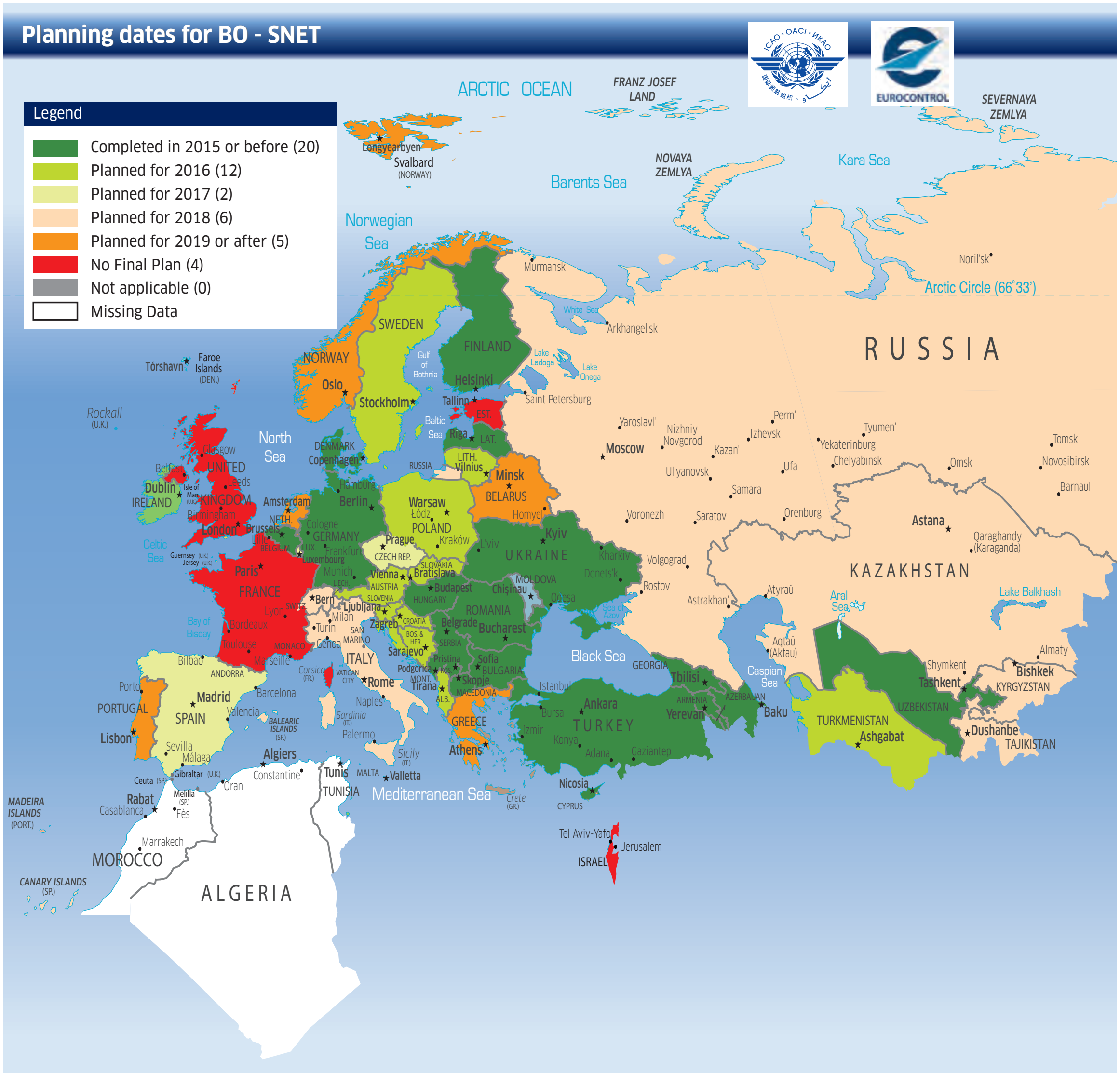


Figure 20: An example and extract / picture showing the status and statistics for a safety-related Module, i.e. the BO-SNET – 'Increased Effectiveness of Ground-based Safety Nets'. The maps cover, for the first time, the entire ICAO EUR Region (source: EUROCONTROL)

Also, a dashboard of ASBU implementation was developed and presented in the above said report, along with an outlook of implementation foreseen for 2018 (reference date for ASBU Block 0 implementation) as indicated below. These provide a simple and complete overview of the overall rate of implementation, present and forecast.

ASBU Block 0 Modules Implementation Dashboard 2015 and Outlook for 2018

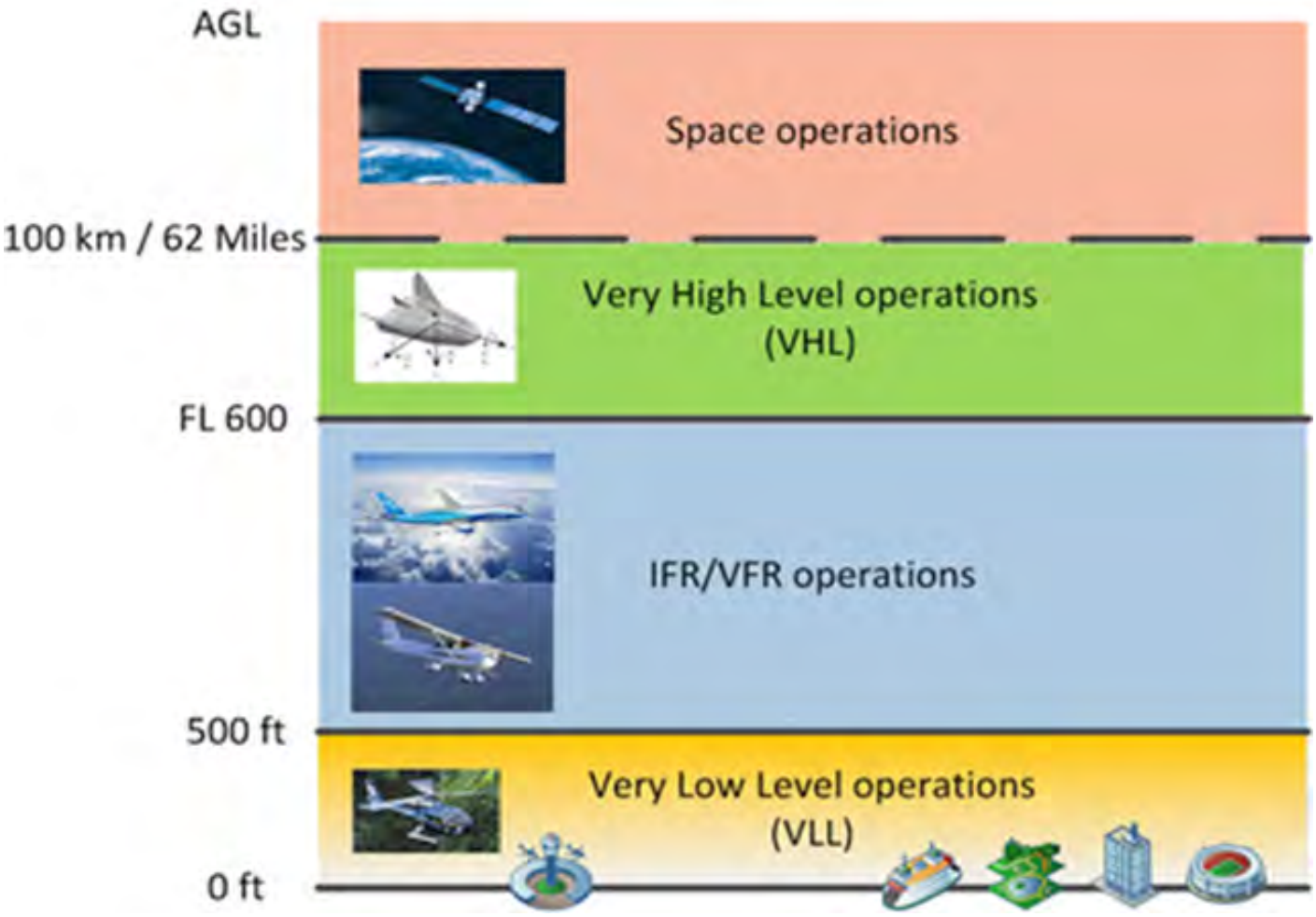
ASBU B0 Module	Number of States Completed by the end of 2015	Not Applicable States	Completion by the end of 2015 (%) - Excludes States where the module is Not Applicable
ACAS	28	0	54%
APTA	6	1	12%
DATM	5	0	10%
FICE	1	0	2%
SNET	20	0	38%
SURF	13	16	36%
ACDM	5	19	15%
ASUR	11	1	21%
CDO	17	13	43%
FRTO	4	1	8%
NOPS	3	0	6%
RSEQ	5	18	15%
TBO	7	10	16%

ASBU B0 Module	Number of States foressen to be Completed by the end of 2018	Not Applicable States	Completion by the end of 2018 (%) - Excludes States where the module is Not Applicable
ACAS	45	0	87%
APTA	39	1	76%
DATM	47	0	90%
FICE	40	0	77%
SNET	40	0	77%
SURF	30	16	83%
ACDM	27	19	82%
ASUR	24	1	47%
CDO	33	13	85%
FRTO	34	1	66%
NOPS	9	0	18%
RSEQ	22	18	65%
TBO	32	10	76%

The report is available on the EUROCONTROL website at http://www.eurocontrol.int/articles/icao-asbu

3.5.3. RPAS (ATM CONOPS)

RPAS (commonly referred to as drones) are increasingly influencing our daily lives, creating many economic benefits and also more traffic. In order to accommodate this growth, EUROCONTROL developed the RPAS ATM Concept of Operations (CONOPS) aimed at full integration by 2025.



The RPAS ATM CONOPS document aims at describing the ATM operational environment of manned and unmanned aircraft, thereby ensuring a common understanding of the challenges. It considers all types of unmanned operations and makes no distinction between civil or military operations as the integration challenges are identical. This CONOPS is aligned as closely as possible with the ICAO Global Air Navigation Plan, supports the EASA airworthiness CONOPS and addresses all phases of flight.

The CONOPS aims to adhere to the RPAS integration principles (Section 1.3.1) and, hence, to ensure no negative impact on manned aviation while supporting the development of this new type of industry.

The CONOPS does not describe or address different detailed scenarios, but provides an operational ATM perspective based on areas of operation:

- Very low level,
- 500 ft. up to FL 600 *(including airports),*
- Very high level operations (above FL 600).

The overall approach towards safe RPAS integration is that RPAS have to fit into the ATM System and not vice versa. The vision behind this concept is that RPAS, when meeting all the technical and regulatory requirements, are to be treated like any other airspace user.

To address the variety of RPAS operations, the CONOPS is primarily based on traffic classes, not RPAS categories or airspace classes. These last two typologies are used as secondary typologies. In this CONOPS, the traffic classes will therefore be defined along the document for each type of operations (Chapter 4) and is as follows:

- Type of operation: VLOS, BVLOS. IFR/VFR,
- Class of traffic: Class 1, 2, etc.,
- Class of airspace: Class A-G,
- Category of RPAS (from the EASA CONOPS).

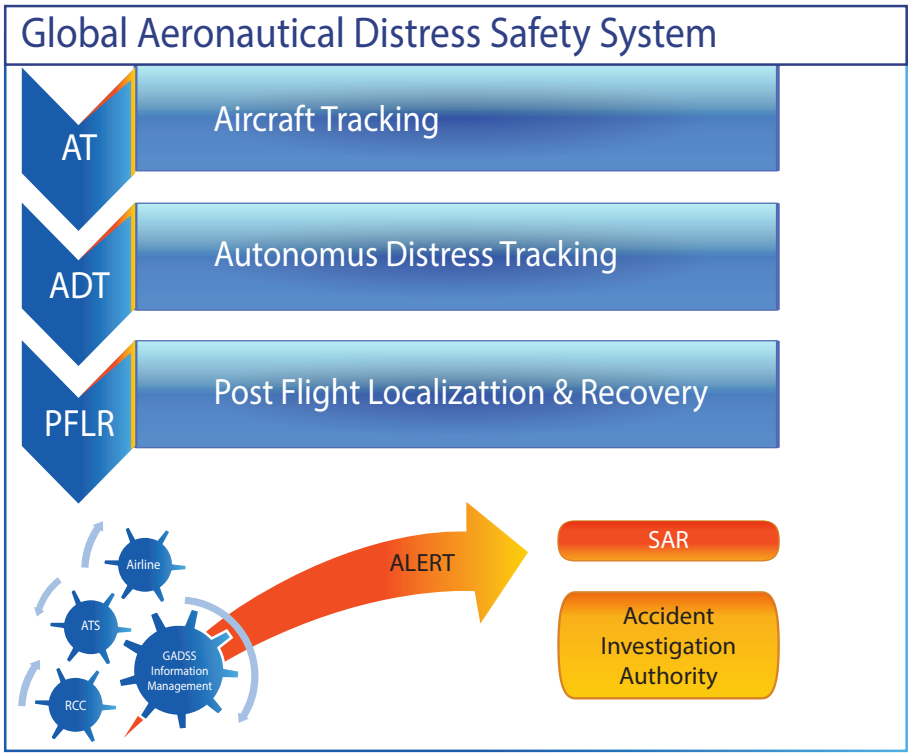
The document is available at http://www.eurocontrol.int/publications/remotely-piloted-aircraft-systems-rpas-atm-concept-operations-conops

3.5.4. Global Aeronautical Distress and Safety System (GADSS)

The effectiveness of the current alerting of search and rescue (SAR) services is being enhanced by addressing a number of key improvement areas and by developing and implementing the Global Aeronautical Distress and Safety System (GADSS), which addresses all phases of flight under all circumstances including distress.

The figure below gives a high-level overview of the GADSS and identifies the main functions:

- Aircraft Tracking,
- Autonomous Distress Tracking,
- Post Flight Localisation and Recovery, and –
- GADSS Information Management and Procedures.



The GADSS will maintain an up-to-date record of the aircraft's progress and, in case of a crash, forced landing or ditching, the location of survivors, the aircraft and recoverable flight data.

For the EUR Region, initiatives are underway to address some specific areas of improvement, such as:

- Development of cross-border agreements on SAR,
- Civil-military cooperation on SAR,
- Development of European SAR training.

The timely recovery of flight data for accident investigation can expedite the search for the cause(s) of the accident and, therefore, accelerate the implementation of mitigating actions.

3.5.5. Regional SAR Committee

The Regional Search and Rescue (SAR) Conference co-organised by the Civil Aviation Directorate (CAD) of Serbia and EUROCONTROL in February 2016 emphasised the need to formalise and improve regional cross-border cooperation for the efficient conduct of aeronautical SAR operations.

The Conference was attended by civil and military representatives from the Region – Albania, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, FYROM, Hungary, Montenegro, Romania, Serbia, Slovakia and Slovenia – but also Cyprus, Iceland and Italy as well as COSPAS-SARSAT, ICAO, ECAC and EUROCONTROL.

The forum was organised to support the EANPG/56 in terms of promoting the enhancement of SAR facilities and services within the EUR Region and adjacent regions, in accordance with Annex 12 and the International Aeronautical and Maritime SAR Manual (IAMSAR). The meeting also confirmed the systemic deficiencies identified in a significant number of States that did not have the required Annex 12 agreements with neighbouring countries in place. The latter is a recurrent finding, world-wide, in the ICAO USOAP audits.

The Conference focused on the strategic and institutional aspects of cross-border cooperation in SAR, and the identification of modalities for efficient collaboration to enhance the regional SAR system to allow for more timely responses in emergency situations.

The Conference invited EUROCONTROL and States involved in regional cross-border cooperation to support the implementation of the ICAO Global Aeronautical Distress and Safety System (GADSS). EUROCONTROL also initiated the assessment of the need to conclude SAR cross-border agreements so that its Member States can meet their Annex 12 obligations.

Following two intermediary SAR Expert meetings (held in in close coordination with the ICAO EUR-NAT Office), the Regional Aeronautical SAR Advisory Committee was formally established at Belgrade on 03 November 2016 through the signing of a Memorandum of Understanding (MoU), which presented the institutional finalisation of the Regional SAR Initiative.

The Regional SAR Committee recognised the need for increased efficiency in the cooperation and coordination in the field of SAR, as operations now include civil and military manned and unmanned platforms and, as a consequence, have become increasingly complex. They also involve national and multinational civil and military stakeholders, including in the area of ASM and relevant aerodrome operations. In that regard, the Committee identified a wide array of priority areas, including:

- Regulatory issues relative to cross-border co-operation,
- Transposition of relevant SARPs,
- Preparation of cross-border SAR agreements and operational procedures, based on templates of the ICAO EUR SAR TF and the IAMSAR Manual,
- Enhancement of SAR communication, reactivity and preparedness,
- Identification of regional training requirements,
- Sharing good practices in SAR plus transfer of knowledge and building expertise.

The Regional SAR Committee agreed to fully synchronise its efforts vis-à-vis the ICAO EUR SAR TF to avoid any duplication of efforts and to ensure that ICAO remains a leading partner on the matter.

4. Executive Summaries of Publicly Available Regional Annual Safety Reports

EUROCONTROL SRC Annual Safety Report

The analysis of the 2016 ATM safety performance in the EUROCONTROL Member States is based on the Annual Summary Templates (AST) submitted to EUROCONTROL by 39 Member States.

The preliminary safety data received from the AST reporting mechanism and available information from ICAO indicates there were a total of 72 accidents, out of which 15 were fatal. It is important to note however, that with the traffic level increasing by 3.6% compared to the previous year, only one of the reported accidents had a direct ATM contribution. This event was classified as a non-fatal collision on the ground between two aircraft.

The chart below provides the number of main ATM-related operational occurrences normalised per million flight hours and compared against a three years' rolling average.

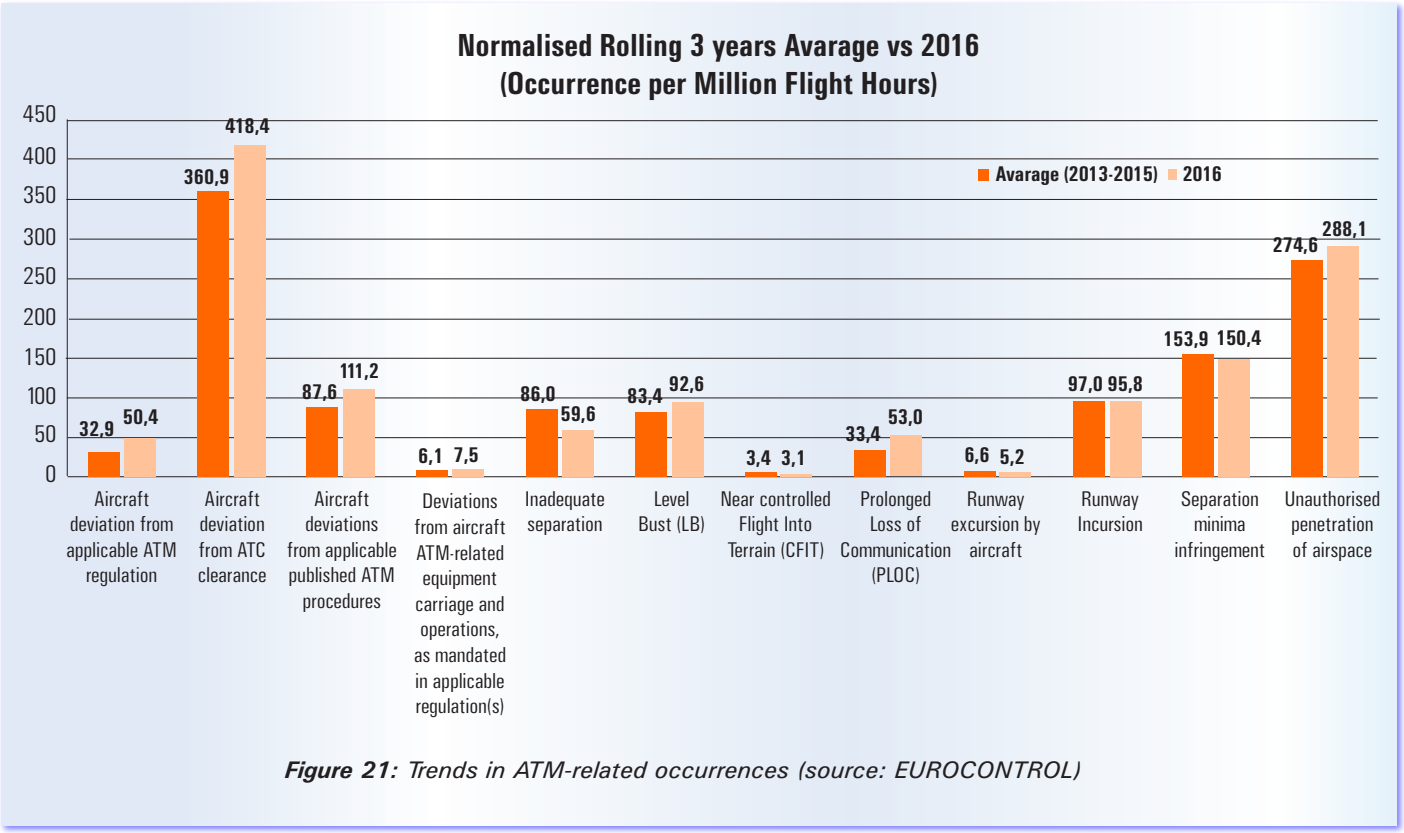


Figure 21: *Trends in ATM-related occurrences (source: EUROCONTROL)*

There is a 5.4% increase in the number of ATM-related occurrences. In respect of the risk posed by the reported occurrences to the ATM system, in absolute numbers, the number of serious incidents (severity class A) increased by over 13%, whilst the major occurrences (severity class B) decreased by 3%, maintaining the level of 2014.

Additionally, the number of incidents not severity-classified has seen an increase of almost 100% compared to the previous year's data. Work is still underway in a number of Member States to code occurrences and input them into the national databases.

The number of ATM-specific occurrences increased by 6% compared with the previous year's figures. However, it is notable that almost half of these occurrences are reported by just one Member State.

In respect of the risk posed by the ATM-specific occurrences on the ability of an ANSP to provide safe ATM services the risk bearing events (severity AA, A and B) have seen considerable drops compared with previous years, although in absolute numbers the figures are very low.

It should be noted that States continue to suffer from considerable shortages of adequate resources to timely collect and code ATM-related occurrences, which severely affects the quality and completeness of the safety-related data available in the relevant databases.

The 2015 Annual Safety Report can be found at:
http://www.eurocontrol.int/sites/default/files/article/content/documents/single-sky/src/src-docs/src-doc-55-e1.0.pdf

Interstate Aviation Committee (IAC) Flight Safety Report for 2016

The IAC has released its flight safety report for the contracting States to the agreement on civil aviation and airspace usage. The full version of the report can be consulted at
http://mak-iac.org/upload/iblock/9aa/bp-16-2_en.pdf

International Air Transport Association (IATA) Safety Report for 2016

The IATA Safety Report provides the Industry with critical information derived from the analysis of aviation accidents to understand safety risks in the Industry and propose mitigation strategies. The report combines reactive, proactive and predictive information gathered from Industry safety sources and provides valuable information aggregated at global and regional levels. Specifically, it pays attention to the need of increased focus on turboprop as well on all-weather operations.

The report can be requested at http://www.iata.org/publications/Pages/safety-report.aspx.

EASA Annual Safety Review for 2016

The full report and a summary version are available at:
https://www.easa.europa.eu/document-library/general-publications/annual-safety-review-2017

National Annual Flight Safety Reports

Links to RASG-EUR member States safety reports for 2016 (in national language (-s) and / or English as indicated) are provided in Annex A to this Report.

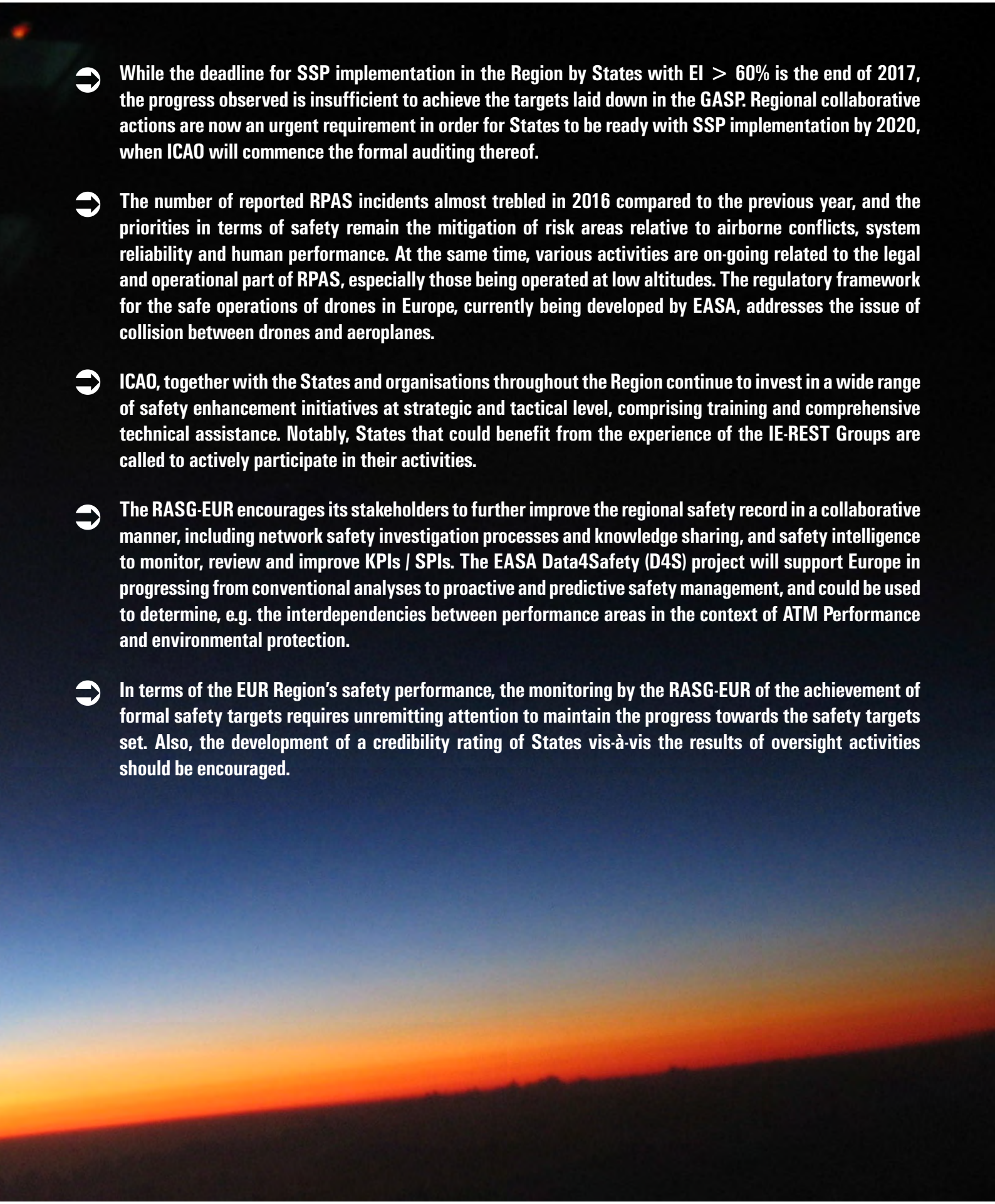
5. Final Conclusions

- The EUR Region continues to operate with high margins of safety. Given the growth of traffic and reduced separations, as well as the complexity of operations and the related business models, the focus should be firmly on managing safety risks so as to maintain, c.q. improve, the safety standards in the Region. The RASG-EUR therefore remains committed to improving safety, increasing aviation efficiency and enabling seamless cooperation among all of its stakeholders.

- Notwithstanding the declining trend in accident rates in the Region, the main risk areas – LOC-I, CFIT and Runway Safety (even with the efforts made to reduce runway collisions and runway excursion-related accidents) remain unchanged. As a direct consequence, the priorities of the RASG-EUR regarding safety developments cannot be altered. Also, accident rate data for turboprop aircraft remain high when compared to jet aircraft, demonstrating the need to prioritize safety enhancement activities in favour of turboprop aircraft operations.

- The lack of proper safety management and the States' safety oversight capabilities are still key contributing factors to accidents and serious incidents (reflected in the areas of AIG, AGA and ANS, plus the critical elements (CE) related to safety oversight [i.e. CE-4, CE-7 and CE-8]). Depending on the nature, causes and contributing factors of accidents, safety improvements should be targeted at systemic or operational issues of different aviation domains. Other areas for increased attention and improvement include crew performance and the following of Standard Operating Procedures (SOP).

- The disparity between the States in terms of the overall levels of EI of the ICAO SARPs remains an area of specific concern, as it principally affects the States' obligations in safety oversight, even though improvements in the area of LEG helped withdraw this category from the "top 3" areas requiring improvement.



- While the deadline for SSP implementation in the Region by States with EI > 60% is the end of 2017, the progress observed is insufficient to achieve the targets laid down in the GASP. Regional collaborative actions are now an urgent requirement in order for States to be ready with SSP implementation by 2020, when ICAO will commence the formal auditing thereof.

- The number of reported RPAS incidents almost trebled in 2016 compared to the previous year, and the priorities in terms of safety remain the mitigation of risk areas relative to airborne conflicts, system reliability and human performance. At the same time, various activities are on-going related to the legal and operational part of RPAS, especially those being operated at low altitudes. The regulatory framework for the safe operations of drones in Europe, currently being developed by EASA, addresses the issue of collision between drones and aeroplanes.

- ICAO, together with the States and organisations throughout the Region continue to invest in a wide range of safety enhancement initiatives at strategic and tactical level, comprising training and comprehensive technical assistance. Notably, States that could benefit from the experience of the IE-REST Groups are called to actively participate in their activities.

- The RASG-EUR encourages its stakeholders to further improve the regional safety record in a collaborative manner, including network safety investigation processes and knowledge sharing, and safety intelligence to monitor, review and improve KPIs / SPIs. The EASA Data4Safety (D4S) project will support Europe in progressing from conventional analyses to proactive and predictive safety management, and could be used to determine, e.g. the interdependencies between performance areas in the context of ATM Performance and environmental protection.

- In terms of the EUR Region's safety performance, the monitoring by the RASG-EUR of the achievement of formal safety targets requires unremitting attention to maintain the progress towards the safety targets set. Also, the development of a credibility rating of States vis-à-vis the results of oversight activities should be encouraged.

List of Acronyms

ACAS – Airborne collision avoidance system
AGA – Aerodromes and ground aids
AIG – Aircraft accident and incident investigation
AIR – Airworthiness
ANC – Air Navigation Commission (ICAO)
ANS – Air navigation services
ANSP – Air navigation service provider
AO – Aircraft Operator
AOC – Air operator certificate
AST – Annual summary template
ATCO – Air Traffic Controller
ATM – Air traffic management
CAA – Civil aviation authority
CANSO – Civil Air Navigation Services Organisation
CE – Critical element
CFIT – Controlled flight into terrain
CIS – Commonwealth of Independent States
CMA – Continuous monitoring approach
CNS – Communication, navigation and surveillance
CONOPS - Concept of Operations
COSCAP – Cooperative Development of Operational Safety and Continuous Airworthiness Programme
DGAC – Direction générale de l'aviation civile (France)
DSNA – Direction des Services de la Navigation aérienne (France)
EANPG – ICAO European Air Navigation Planning Group
EASA – European Aviation Safety Agency
EC – European Commission
ECAC – European Civil Aviation Conference
ECR - European Central Repository
EI – Effective implementation
ENP – European Neighbourhood Policy
EPAS - European Plan for Aviation Safety
EUR/NAT – Europe and North Atlantic
EU – European Union
EVAIR – EUROCONTROL Voluntary ATM Incident Reporting
FAA – Federal Aviation Administration (US)
FCL - Flight crew licensing
FDA – Flight data analysis
FDM - Flight data monitoring
FSTD - flight simulation training devices
GA – General Aviation
GASP – Global aviation safety plan
GASR – Global aviation safety roadmap
GPS – Global positioning system
GSP – Ground service provider
IAC – Interstate Aviation Committee
IATA – International Air Transport Association
ICAO – International Civil Aviation Organization
ICVM – ICAO coordinated validation mission
IE-REST – ICAO European regional expert safety team
IE-RSG – IE-REST runway safety group
IE-TSG – IE-REST taxonomy and safety data analysis group
IMC - Instrument Meteorological Conditions
IOSA – IATA Operational Safety Audit
ISAGO – IATA Safety Audit for Ground Operations
KPI – Key performance indicator
LEG – Primary aviation legislation
LI – Lithium
LOC-I – Loss of control in flight
MED – Medical
MTOW – Maximum take-off weight
NSA – National supervisory authority
OPS – Aircraft operations
ORG – Civil aviation organisation
PEL – Personnel licensing
PQ – Protocol question
RA – Resolution advisory
RASG-EUR – European regional aviation safety group (ICAO)
RE – Runway excursion

RPAS – Remotely piloted aircraft systems
RS – Runway safety
SAR - Search and Rescue
SARP – Standard and recommended practice (ICAO)
SEI – Safety enhancement initiative
SES – Single European Sky
SMS – Safety management system
SCF-NP - System/component failure or malfunction (non-powerplant)
SOP – Standard operating procedures
SPACE – Integrated safety trend analysis and reporting system, version 2.0 (ICAO)
SPI – Safety performance indicator
SRM – Safety Risk Management
SSC – Significant safety concern
SSP – State safety programme
STEADES – Safety trend evaluation analysis and data exchange system (IATA)
TRACECA – Transport Corridor Europe-Caucasus-Asia
USOAP –- Universal Safety Oversight Audit Programme (ICAO)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VLM492
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REMBA
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253
KENUM
A7516
123
278
BATTY
A0371
101
327
A5441
79
163
LNO
SPI
LARED
A1405
A1242
ARCKY
BULTO
KENAK
NETMA
PERUM
NORPA
MALUX
LGL9642
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236 M
OSNEL
TILGRUMER
VETIL
A4152
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IDOSA
LGL402
CFE47
LGL524
172 M
LGL572
57
256 M
IDARO
TOLVU
TALUB
RAROR
DISKI
MOSET
IBERA
ROUSY
KOSUMTAL
A1256
51
196
A1333
70
218
MMD
MEDOX
AKELU
TOMPI
MTZ
ZWB
A4024
24C
192
SORAL
A7320
99
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A0175
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Annex A

Links to RASG-EUR Member States Safety Reports for 2016

Country	Organisation	Language	Link
Belgium	BCAA	Dutch French English	http://mobilit.belgium.be/nl/luchtvaart/belgisch_veiligheidsprogramma/veiligheidsplan https://mobilit.belgium.be/fr/transport_aerien/programme_belge_de_securite/plan_de_securite_belge
Bosnia and Herzegovina	BHDCA	Bosnian / Croatian / Serbian	http://www.bhdca.gov.ba/website/dokumenti/Bezbjednost_letenja/Izvjestaj%20o%20dogadjajima%202016.pdf
Czech Republic	CAA	Czech	http://www.caa.cz/urad/vyrocni-zpravy
Denmark	DTCA	Danish	https://www.trafikstyrelsen.dk/~/media/Dokumenter/08%20Luftfart/01%20Publikationer%20luftfart/Sikkerhedsrapport%20for%20dansk%20civil%20luftfart%202015.pdf
Finland	TRAFI	Finnish English	https://www.trafi.fi/tietoa_trafista/turvallisuuden_vuosikatsaukset https://www.trafi.fi/en/about_trafi/annual_safety_reviews
France	DGAC/DSAC	French	http://www.ecologique-solidaire.gouv.fr/securite-aerienne#e4
Ireland	IAA	English	https://www.iaa.ie/docs/default-source/publications/corporate-publications/performance/annual-safety-performance-review-2016.pdf?sfvrsn=4
Italy	ENAC	English	www.enac.gov.it/La_Comunicazione/Pubblicazioni/info-1512456286.html
Netherlands	CIAS	Dutch	https://www.ilent.nl/onderwerpen/transport/luchtvaart/ilt_en_luchtvaart/analysebureau_luchtvaartvoorvallen__abl/index.aspx
Romania	CIAS	English	http://www.cias.gov.ro/images/studii/2016_Annual_Safety_Report.pdf
Slovak Republic	CAA	English	http://letectvo.nsat.sk/wp-content/uploads/sites/2/2014/08/2016_Výročná-správa-o-dohľade-nad-bezpečnosťou.pdf
Slovenia	CAA	Slovenian	http://www.caa.si/fileadmin/user_upload/pageuploads/Slike/Agencija/Povzetek_letnega_porocila_o_letalski_varnosti_2016.pdf
Spain	SENASA	Spanish	http://www.seguridadaerea.gob.es/lang_castellano/g_r_seguridad/notificacion_sucesos/memoria/default.aspx
Sweden	Swedish Transport Agency	Swedish	http://www.transportstyrelsen.se/sv/Publikationer/Luftfart/flygsakerhet/flygsakerhetsprogram-for-sverige-ssp/
Switzerland	FOCA	German French Italian	https://www.bazl.admin.ch/bazl/de/home/das-bazl/studien-und-berichte/jaehrliche-berichte.html
United Kingdom	CAA	English	http://www.caa.co.uk/Safety-initiatives-and-resources/How-we-regulate/CAA-Safety-Plan/
Ukraine	SAA / AAIB	Ukrainian	http://avia.gov.ua/uploads/documents/11388.pd http://www.nbaai.gov.ua/uploads/pdf/Analysis_2016.pdf

Annex B

List of Accidents 2016

Date	Model	State	Fatalities	Risk Category
2016-01-08	BOMBARDIER CL600 2B19	Sweden	2	LOC-I
2016-01-14	BOEING 737 800	United Kingdom of Great Britain and Northern Ireland	0	TURB
2016-03-19	BOEING 737	Russian Federation	62	LOC-I
2016-03-23	BAE AVRO146RJ 200	Italy	0	RS
2016-04-30	FOKKER F27 50	Italy	0	RS
2016-05-11	BOEING 777 300	France	0	RS
2016-05-11	AIRBUS A320	France	0	RS
2016-05-28	AIRBUS A320 200	United Kingdom of Great Britain and Northern Ireland	0	RS
2016-06-15	EMBRAER ERJ190 200LR	Spain	0	RS
2016-07-01	BOEING 737 800	Belgium	0	RS
2016-07-20	SAAB 340 B	United Kingdom of Great Britain and Northern Ireland	0	RS
2016-07-27	ATR ATR72	Morocco	0	F-NI
2016-08-05	BOEING 737 400	Italy	0	RS
2016-09-11	AIRBUS A320	France	0	RS
2016-09-23	BOEING 737 800	Spain	0	TURB
2016-10-04	AIRBUS A319	Germany	0	RS
2016-10-04	BOEING 737 400	United Kingdom of Great Britain and Northern Ireland	0	SCF
2016-10-11	ANTONOV AN26	Russian Federation	0	RS
2016-10-19	AIRBUS A319 100	United Kingdom of Great Britain and Northern Ireland	0	SCF
2016-10-22	ATR ATR72 200	Portugal	0	RS
2016-12-04	BOEING 777 300	Portugal	0	TURB
2016-12-14	DE HAVILLAND DHC8 400	United Kingdom of Great Britain and Northern Ireland	0	SCF
2016-12-16	BOMBARDIER CL600 2D24 900	Denmark	0	RS
2016-12-23	BOEING 737	Greece	0	RS

Accident Categories

Code	Description	Code	Description
RS	Runway safety	TURB	Turbulence encounter
LOC-I	Loss of control in-flight	SCF	System component failure
F-NI	Fire – non-impact		

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