ICAO

SAFETY

European Regional
Aviation Safety Group
(RASG-EUR)

2015 Safety Report
November 2016

DISCLAIMER

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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-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 the Member States of the European Union (EU). The RASG facilitates the exchange of best practices and safety information amongst all stakeholders in the RASG-EUR area of responsibility (hereafter 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.

The 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

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

The objective of the report is to combine available 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 will be published annually, bringing up-to-date aviation safety information, re-evaluating existing safety risks as well as identifying emerging ones.

The Region is very complex, with various regional safety related players each compiling safety data and

producing safety information from a different perspective. Users of the RASG-EUR report should note that differences in the information provided by contributing stakeholders are due to the amount of data available and the analysis criteria used. One of the main challenges, therefore, is to decide on the key risk areas to achieve properly coordinated safety efforts.

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

Starting with a short 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. Whereas the reactive information section is currently the largest portion of the report, it is anticipated that a balance between each section will be struck once the methods to collect, process, share and disclose pro-active and predictive information have gained further maturity. This information is completed with agreed RASG-EUR regional safety performance monitoring, plus references to other available safety reports provided for sub-regional, State, functional areas.

The structure and content of the report will be further 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 second RASG-EUR Annual Safety Report is based on data and inputs from 2015 received from ICAO, IATA, EUROCONTROL, EASA, CANSO Europe, IAC and other contributors. The report also refers to associated EANPG collaborative safety management efforts.

Commercial scheduled departures in 2015 exceeded the levels of 2008. The trend shows that operations will become more complex and managing safety risks increasingly challenging. Hence, the RASG-EUR will need to maintain its focus on improving safety standards throughout the Region.

Statistics and data prove that the overall accident rate in the Region maintains a declining trend, and indicates the positive effect of continuous efforts in proper safety management. Even so, the main risk areas continue to be Loss of Control In-Flight and Controlled Flight into Terrain, with the lack of State safety oversight capabilities being a major contributing factor. With Runway Safety being the largest contributor in terms of the number of accidents, the priorities of the RASG-EUR for future safety developments remain essentially unchanged.

The overall level of effective implementation (EI) in the Region exceeds the global average by almost 12%. However, the disparity between States is significant, with nine States remaining below 60% EI. The USOAP results indicate that the areas of LEG,

AIG and AGA, 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 level of EI. The scores are upheld by EASA's Standardisation Inspections, with 28% of findings classified as significant deficiencies that may raise safety concerns if not corrected.

Analysis of RPAS occurrences in the European Central Repository (ECR) identified a total of 584 occurrences, 37 of which were classified as accidents (none involved fatalities). The increase in the number of occurrences during 2015 was notable, with airborne conflicts and system failures being the key risk areas. The main priorities in terms of safety issues are; controlled airspace infringements, pre-flight planning/preparation and operators' knowledge of the aviation system.

The monitoring of the achievement of formal safety targets by the RASG-EUR indicates that the availability of financial and appropriately qualified human resources for CAAs remains an area where challenges exist. Also, the progress of State Safety Programme (SSP) implementation raises concerns, as it is not sufficient to achieve the targets set out in the GASP. Mitigating actions will include, amongst others, focused workshops and dedicated training.

Numerous safety enhancement initiatives were conducted by ICAO, States, and international and regional organisations, with the noteworthy 2015 output being:

● The further development of the European Plan for Aviation Safety (EPAS),

● The transformation of the European Strategic Safety Initiative (ESSI),

● The development of HR applications for national aviation authorities,

● Stepping up safety-related training,

● Increased civil/military coordination contributions to safety,

● Guidelines regarding State aircraft operations in High Seas Airspace.

The 2015 RASG-EUR Safety Report offers, in conclusion, the summaries of publicly available regional annual safety reports, plus links to RASG-EUR Member States' safety reports.

1. Regional Traffic Volume

Information from the ICAO SPACE portal demonstrates that, in 2015 the commercial scheduled departures exceeded the levels of 2008. The trend shows that, in future, the complexity of operations will grow and managing safety risks will be an increasingly challenging task.

Figure 1: Number of scheduled departures in RASG-EUR (source: ICAO)
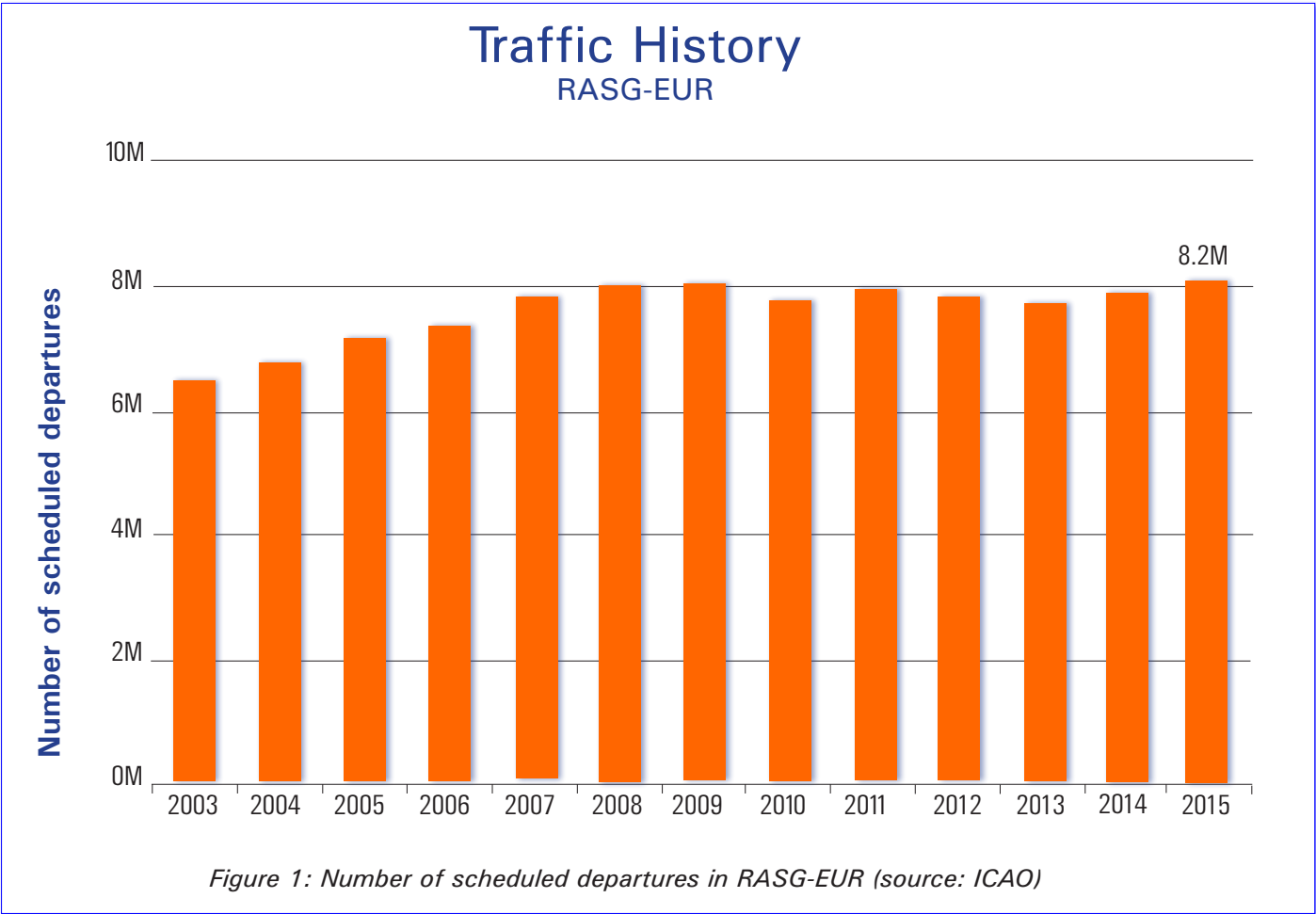
2. Safety Information and Analysis

2.1. Reactive Safety Information

In this section, data is mainly provided from two sources: ICAO and IATA. Currently, only those two organisations collect accident data for the whole RASG-EUR area.

ICAO accident data is aggregated based on State of Occurrence, i.e. if the accident happened in the territory of a RASG-EUR State. The first type of data shows if there can be any safety improvements found for RASG-EUR States as States providing Air Navigation Services.

IATA accident data is aggregated based on State of Operator, i.e. if the accident happened with an Air Operator who received an Air Operators Certificate (AOC) in one of the RASG-EUR States. This type of data can demonstrate safety improvement possibilities in the domain of safety management systems for Air Operators or State's safety oversight systems for AOC holders.

For this section of the report, IATA data does not contain information on the Germanwings accident since it is not considered to be a safety related accident by the IATA Accident Classification Task Force (ACTF).

2.1.1. Regional Accidents Rates
2.1.1.1. Accidents in RASG-EUR Area

The overall accident rate *(based on ICAO SPACE data*) in the RASG-EUR area shows a declining trend. However, the increased number of accidents compared to 2013 and 2014 shows that there is no room for respite and work should continue on constant safety improvements aimed at preventing accidents.
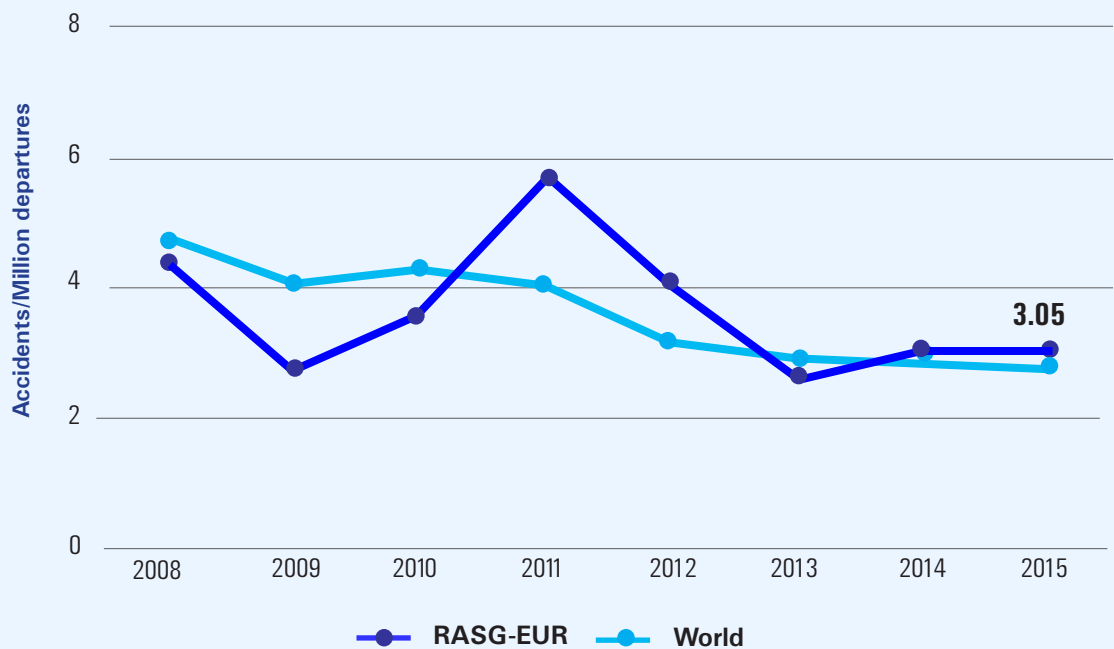
Figure 2: Accident rate in RASG-EUR (scheduled commercial operations only, MTOW over 5700 kg, source: ICAO SPACE)
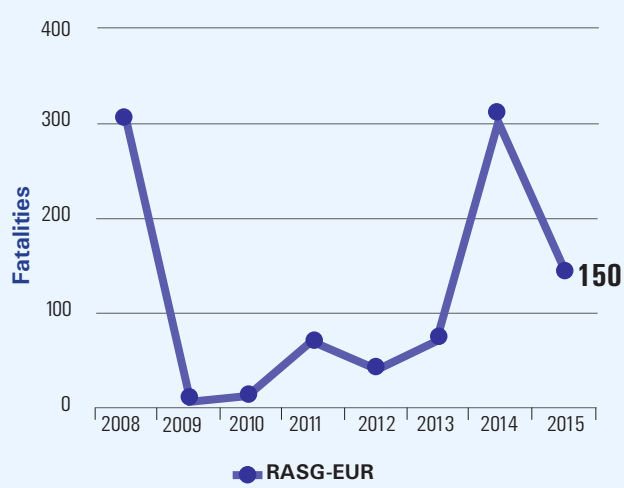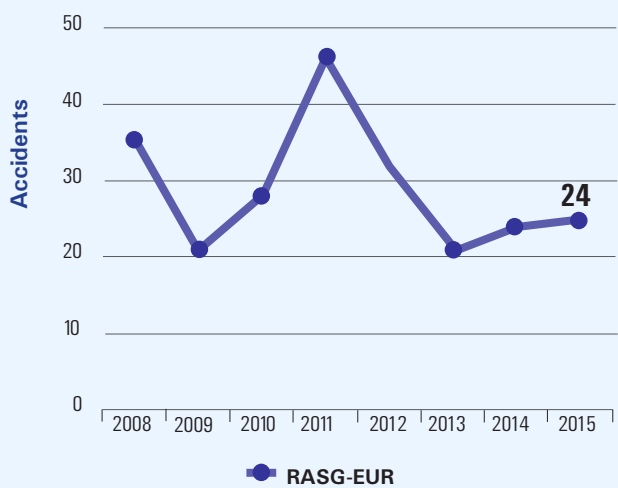
Figure 3: Accidents and fatalities in RASG-EUR (scheduled commercial operations only, MTOW over 5700 kg, source: ICAO SPACE)

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

Figure 4: Accident rate for operators with AOC from a RASG-EUR member State
(scheduled commercial operations only, MTOW over 5700 kg, source: IATA)
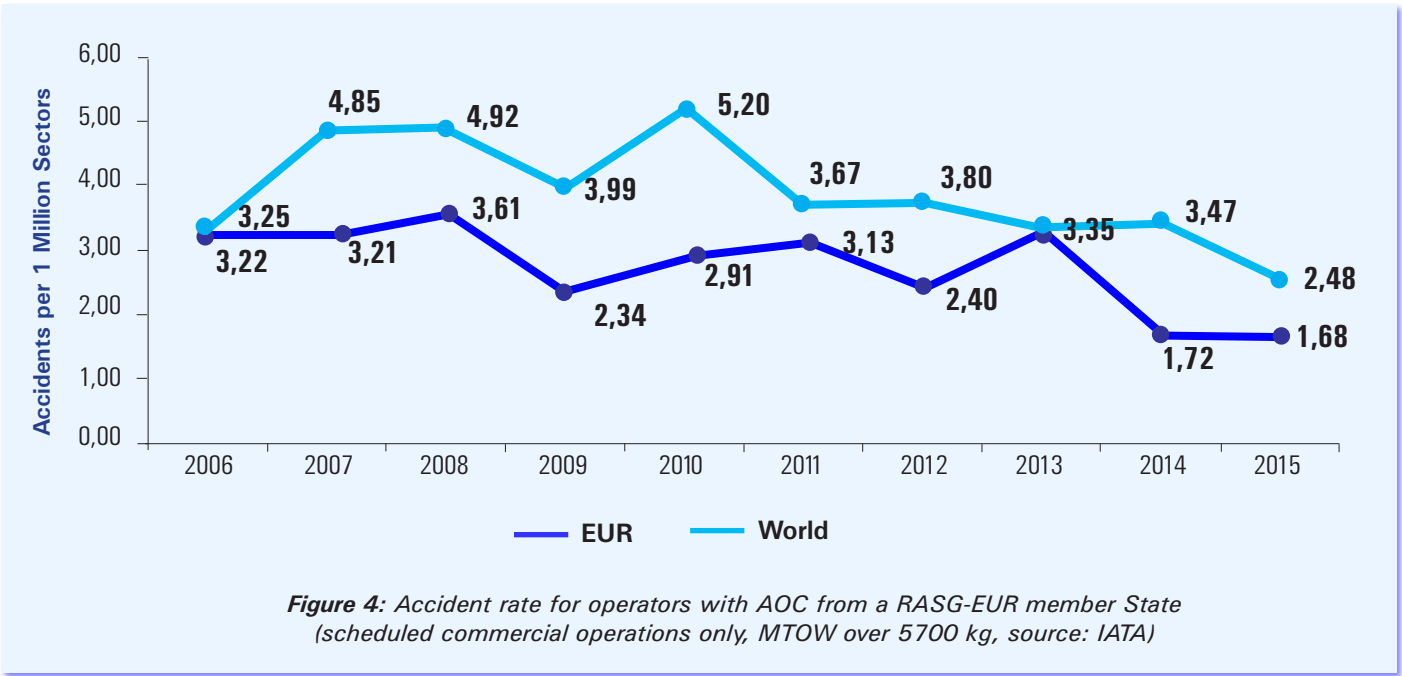
For 2015, the accident rate was lower in the RASG-EUR area compared to the world-wide data.

The overall negative trend shows that actions taken by the aviation community have effectively reduced accident numbers.

Jet

Figure 5: Accident rate for operators with AOC from a RASG-EUR member State
(scheduled commercial operations of jet aircraft only, MTOW over 5700 kg, source: IATA
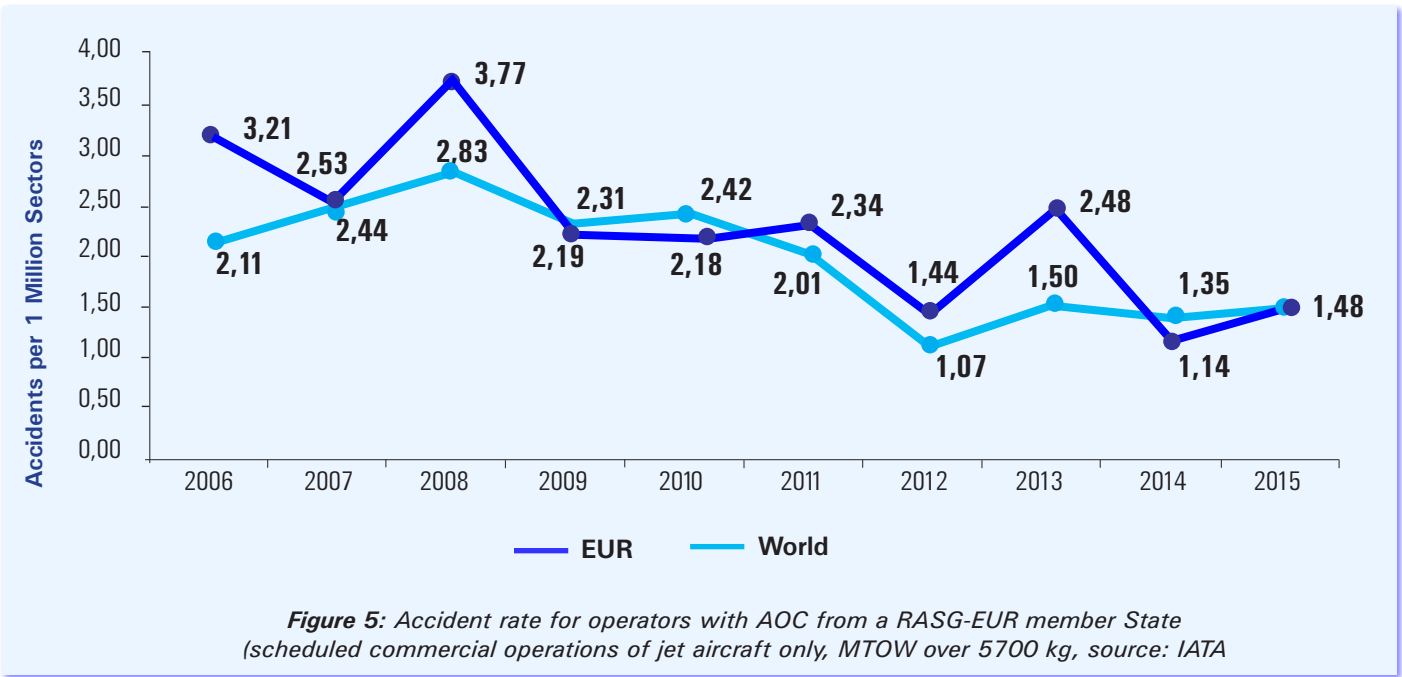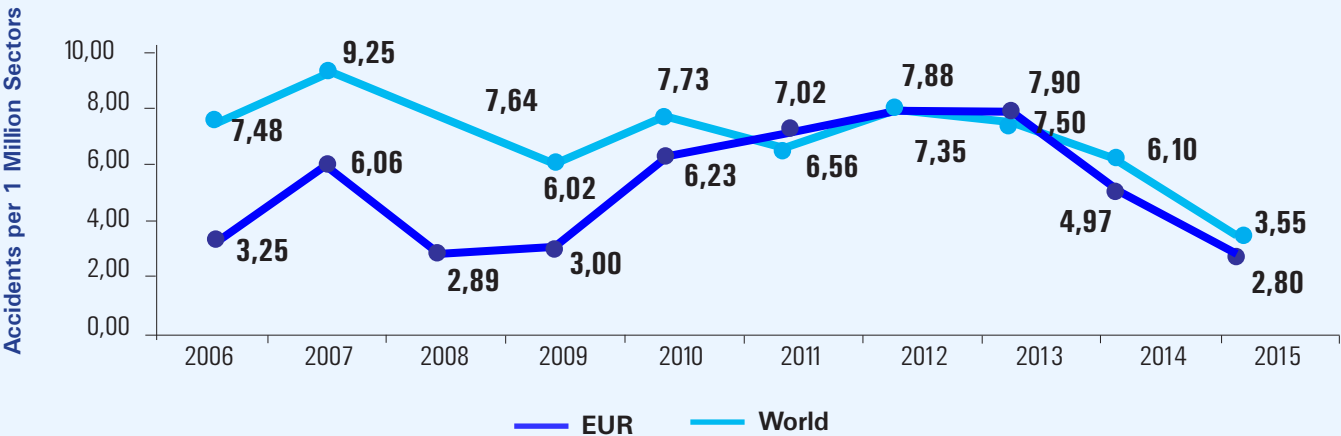
Turboprop

Figure 6: *Accident rate for operators with AOC from a RASG-EUR member State (scheduled commercial operations of turboprop aircraft only, MTOW over 5700 kg, source: IATA)*

It should be noted that accident rate data for turboprop aircraft is twice as high as for jet aircraft. This shows that more effort should be made in the area of safety improvements for turboprop aircraft operations.
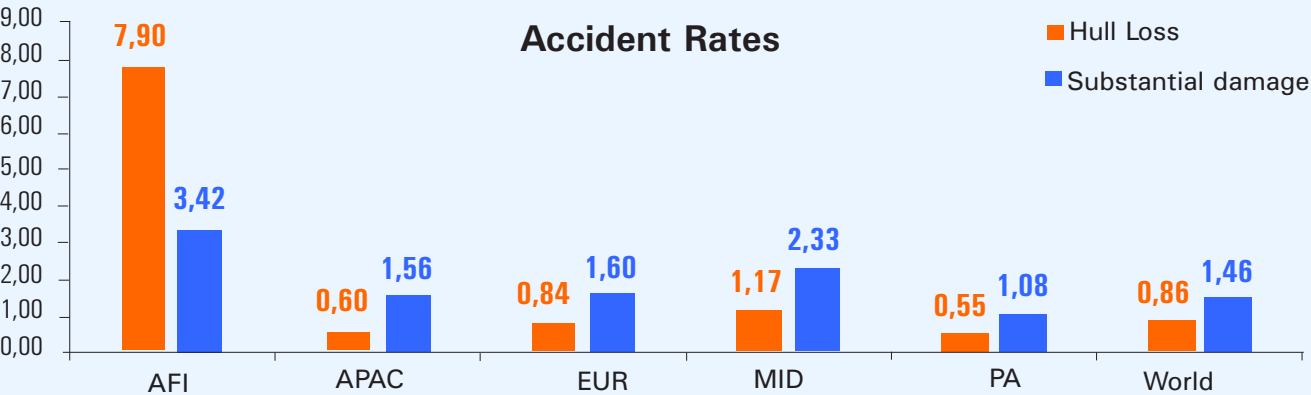
Figure 7: *Accident rates (scheduled commercial operations of turboprop aircraft only, MTOW over 5700 kg, source: IATA)*

2.1.2. Regional Fatal Accidents Rates

2.1.2.1. Fatal Accidents in RASG-EUR Area

Fatal accidents reported by RASG-EUR States

Number of accidents	2011	2012	2013	2014	2015
Number of accidents	5	3	2	1	1

Figure 8: Fatal accident reported by RASG-EUR member States
(scheduled commercial operations only, MTOW over 5700 kg, source: ICAO SPACE)
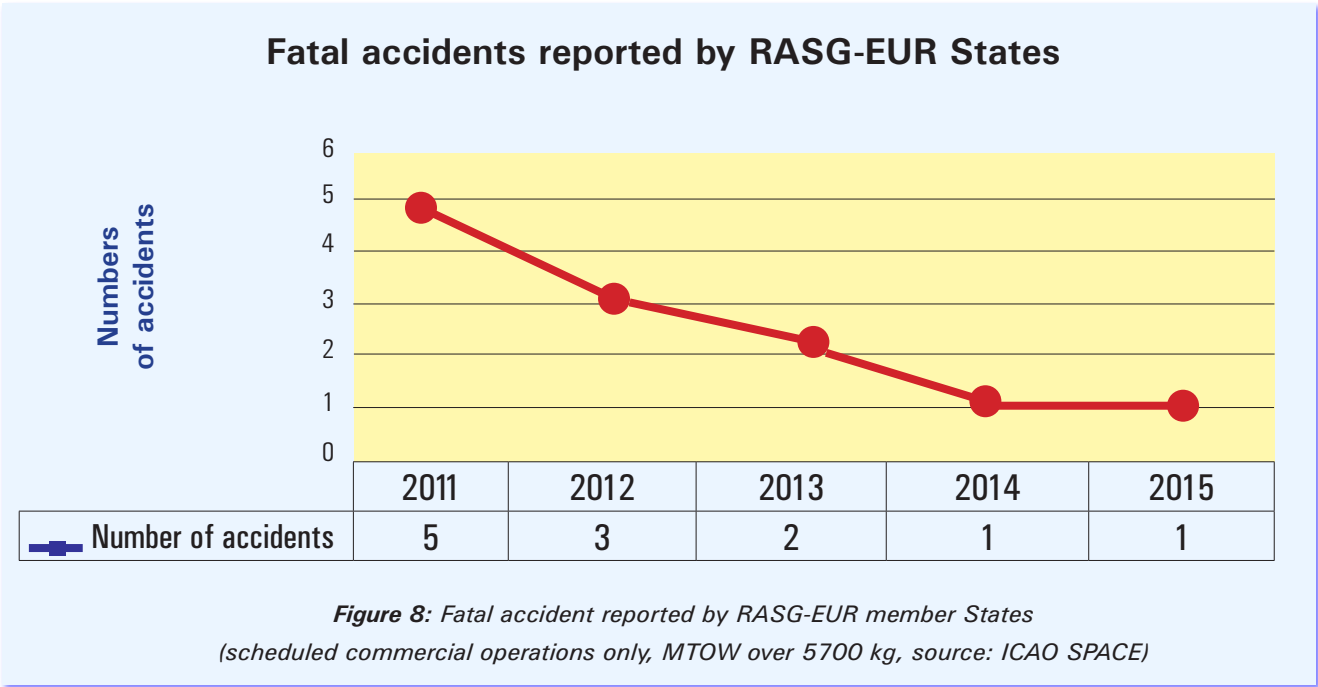
The ICAO data for fatal accidents occurring in RASG-EUR Member States shows a positive declining trend, reflecting the efforts made in the Region to create a safer environment for civil aviation.

Analysis of accident data provided by IATA regarding operators registered in RASG-EUR member States also shows a positive declining trend. The data for 2015 does not include the Germanwings accident for the reasons indicated above.

Figure 9: Fatal accident rate for operators with AOC from a RASG-EUR member State (scheduled commercial operations only, MTOW over 5700 kg, source: IATA)

Figure 10: Fatal accident rate for operators with AOC from a RASG-EUR member State (scheduled commercial operations of jet aircraft only, MTOW over 5700 kg, source: IATA)

Figure 11: *Fatal accident rate for operators with AOC from a RASG-EUR member State (scheduled commercial operations of turboprop aircraft only, MTOW over 5700 kg, source: IATA)*

The leading category of fatal accidents in RASG-EUR member States for the period 2011-2015 was Loss of Control In-Flight (LOC-I), followed by Controlled Flight Into Terrain (CFIT). It is important to note that Industry experts found the lack of proper safety management as a possible contributing factor in 60% of the fatal accidents, whilst a lack of State safety oversight capacities contributed to 53% of the cases. Most fatal accidents (60%) occurred in poor meteorological conditions. Overall, experts found that almost half of all fatal accidents could have been prevented by following standard operating procedures, avoiding vertical, lateral and speed deviations and improving overall crew performance.

2.1.3. Analysis of Accidents Involving Operators from RASG-EUR Member States
2.1.3.1. By categories of Accidents and Flight Phasesc
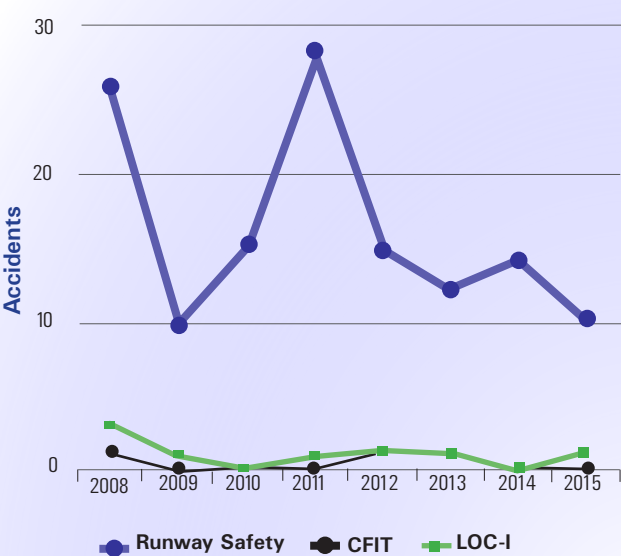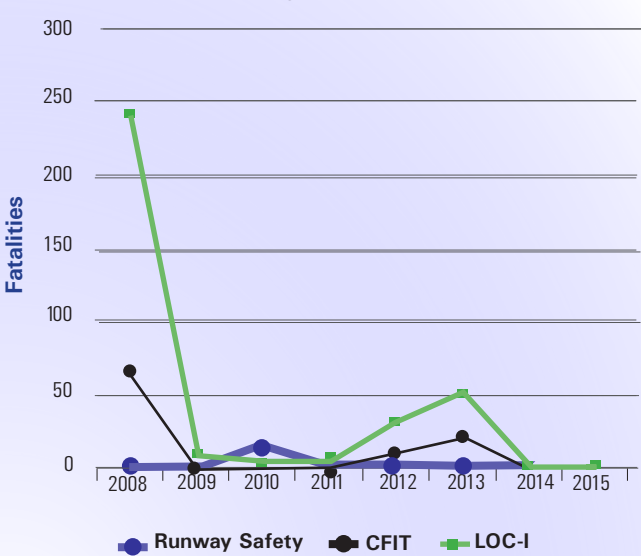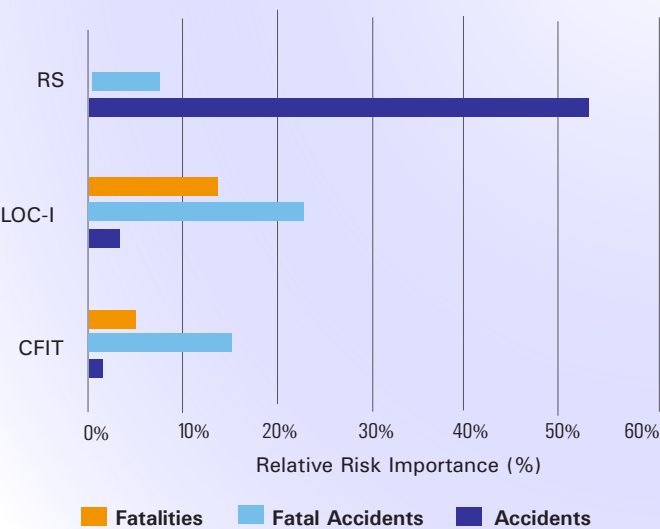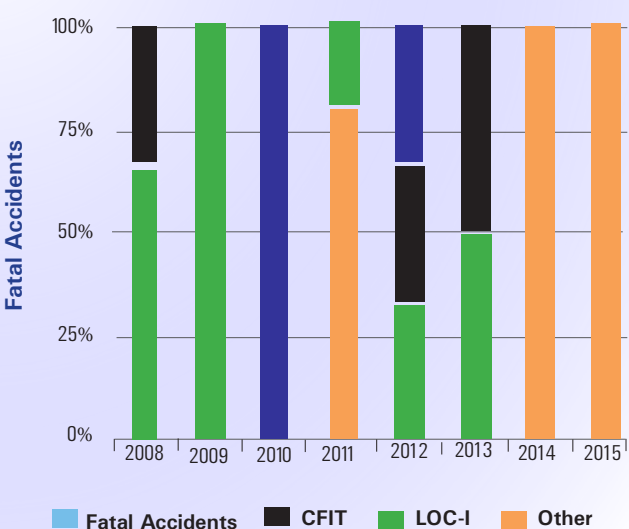
Figure 12: *Top 3 categories of accidents occurred in RASG-EUR member States
(2011-2015 data, source: ICAO SPACE)*

Figure 13: *Top 3 categories of accidents involving operators from RASG-EUR member States (2011-2015 data, source: IATA)*

Loss of Control In-flight **7%**
Controlled Flight Into Terrain (CFIT) **5%**
Off Airport Landing/Ditching **2%**
Runway / Taxiway Excursion **2%**
Undershoot **1%**
Hard Landing **1%**
Ground Damage **1%**
Tailstrike **1%**
Other End State **1%**
Gear-up Landing / Gear Collapse **1%**
In-flight Damage **0%**
Mid-air Collision **0%**
Runway Collision **0%**

0% 1% 2% 3% 4% 5% 6% 7% 8%

■ EUR ■ EUR (IOSA)

Figure 14: Top 3 categories of fatal accidents involving operators from RASG-EUR member States (2011-2015 data, source: IATA)

Both ICAO and IATA data show that, for the RASG-EUR area, the major risk areas contributing to the largest number of fatalities are LOC-I and CFIT, showing clear priorities for future safety developments in the Region. Runway safety, being the largest contributor in terms of the number of accidents, will remain under proper focus of the RASG-EUR's work.
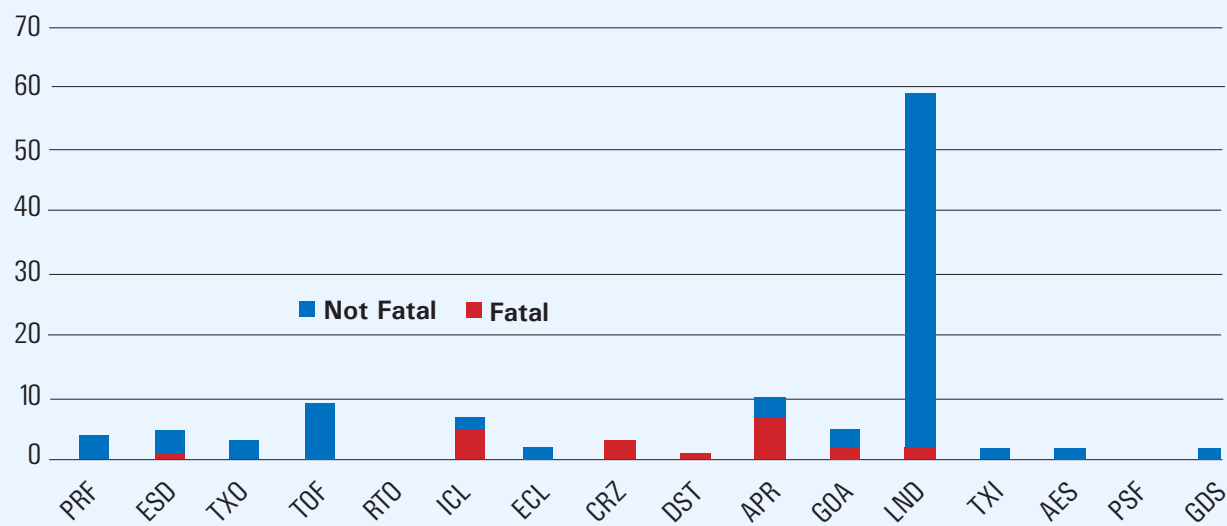
Figure 15: *Distribution of accidents involving operators from RASG-EUR member States by phase of flight (2010-2014 data, source: IATA)*

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. More than half of the accidents for the period 2011 – 2015 occurred in the landing phase of flight.

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

Loss of Control In-flight (LOC-I)

Figure 16: *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).*
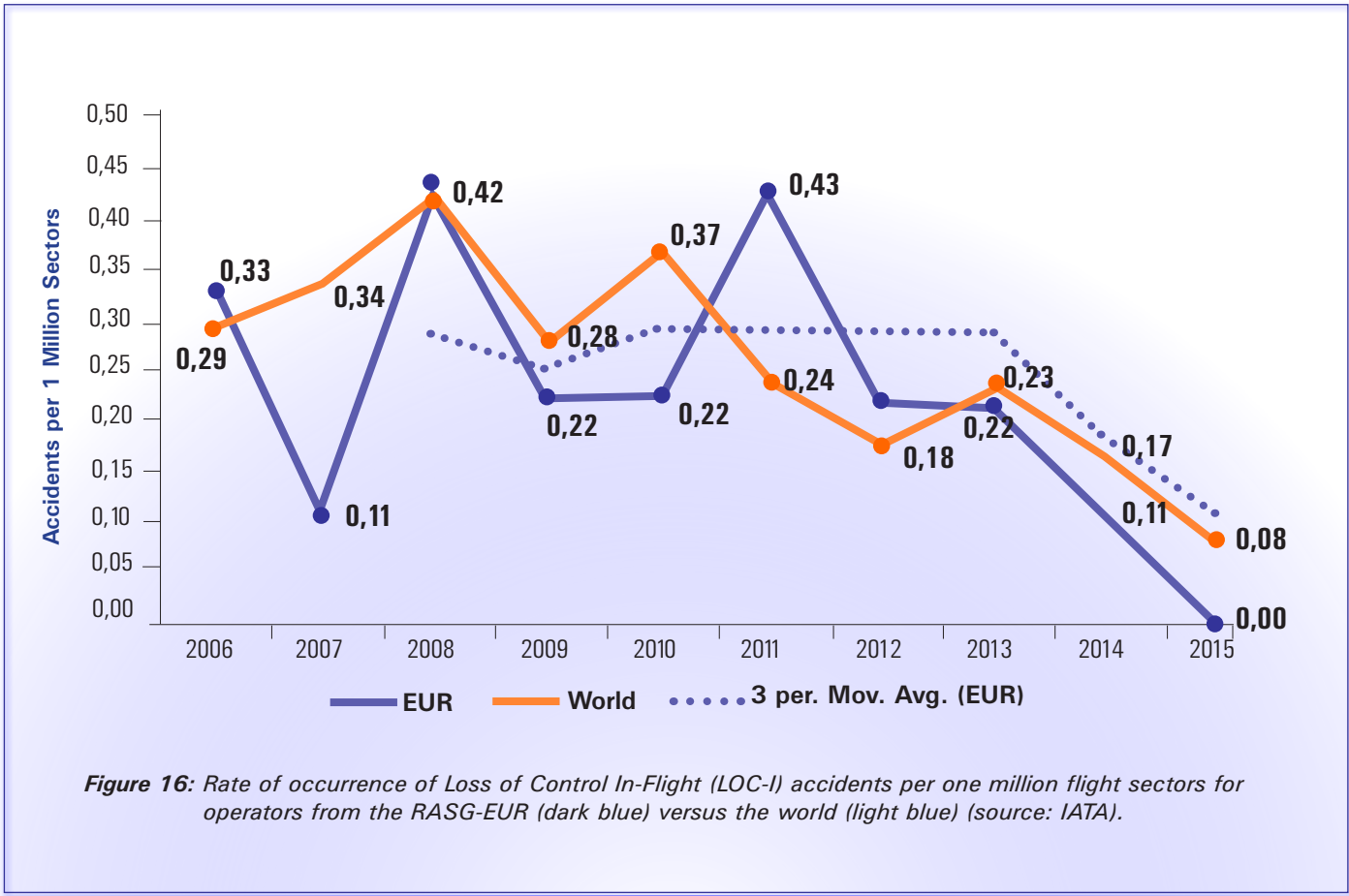
In 2015, the rate of LOC-I accidents in the RASG-EUR area was lower than the global average, and the trend shows a declining tendency.

Top Contributing Factors (2011-2015) Loss of Control In-flight	
Latent Conditions	
Safety Management	**56%**
Environmental Threats	
Meteorology	**67%**
Airline Threats	
Fire / Smoke (Cockpit/Cabin/Cargo)	**22%**
Aircraft Malfunction	**22%**
Flight Crew Errors	
Manual Handling / Flight Controls	**56%**
SOP Adherence / SOP Cross-verification	**56%**
Undesired Aircraft States	
Vertical / Lateral / Speed Deviation	**44%**
Countermeasures	
Overall Crew Performance	**56%**

Table 1: Top Contributing Factors for LOC-I accidents (scheduled commercial operations only, MTOW over 5700 kg, source: IATA)

LOC-I accidents come from a variety of scenarios and it is difficult to single out the most critical one. However, looking at accident data, LOC-I is often linked with the operation of the aircraft well below stall speed. Even with fully protected aircraft, stall awareness and stall recovery training, as well as approach to stall recovery training, needs to be addressed on a regular basis. Weather is also a key contributing factor to LOC-I accidents, with 67% of loss of control accidents in the RASG-EUR region having occurred in degraded meteorological conditions.

Upset recovery training, aerobatics and unusual attitude training included as part of an operator's flight crew training syllabus give crews a chance to experience potentially dangerous situations in a safe and controlled environment.

Crew training should emphasise solving complex, cascading failures that originate from a single source. Automation is a tool that can be helpful to flight crews, however it is never a replacement for the airmanship skills required to operate an aircraft. Training for scenarios that could lead to an upset (e.g. low-energy approaches, engine failures, etc.) must be continuously reinforced to address areas of safety concern.

Controlled Flight into Terrain (CFIT)
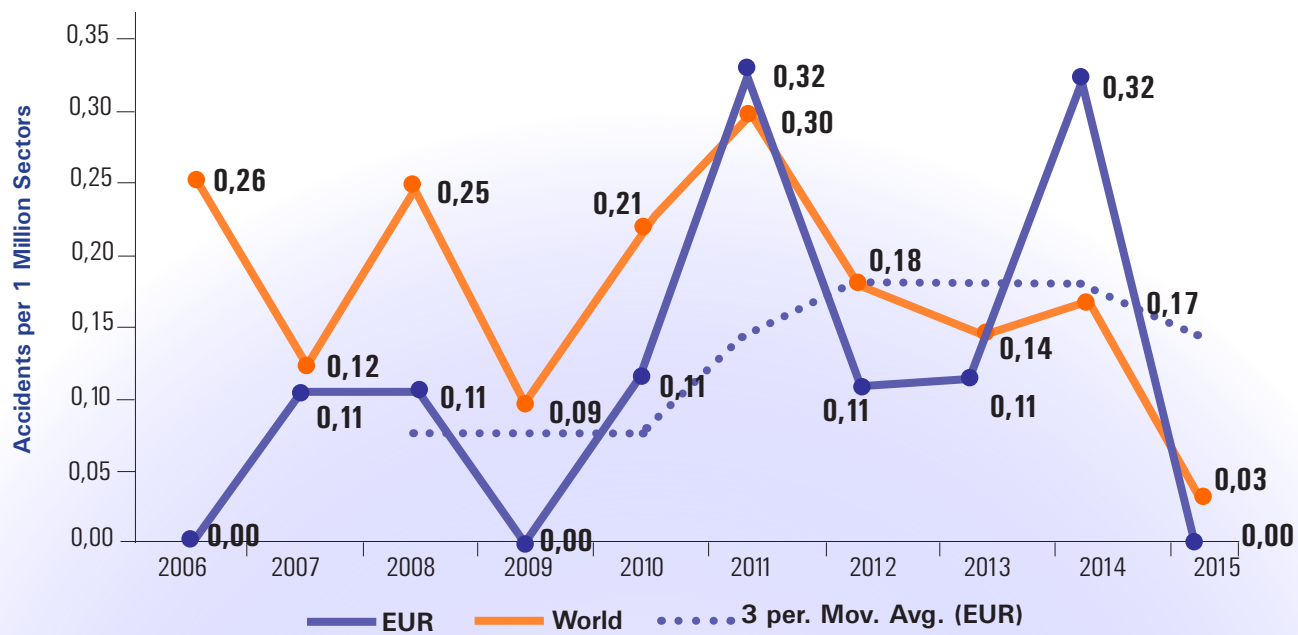
Figure 17: *Rate of occurrence of Controlled Flight into Terrain (CFIT) accidents per one million flight sectors for operators from the RASG-EUR (dark blue) versus the world (light blue) (Source IATA).*

In 2015, the rate of CFIT accidents for RASG-EUR operators was higher than the global average. The trend is not positive, indicating that more priority should be given to this category of accident in the near future.

Top Contributing Factors (2011-2015):
Controlled Flight into Terrain (CFIT)

Latent Conditions	
Regulatory Oversight	63%
Environmental Threats	
Meteorology	38%
Flight Crew Errors	
SOP Adherence / SOP Cross-verification	50%
Undesired Aircraft States	
Vertical / Lateral / Speed Deviation	38%
Countermeasures	
Overall Crew Performance	25%

Table 2: *Top Contributing Factors for CFIT (scheduled commercial operations only, MTOW over 5700 kg, source: IATA)*

It is important to note that Industry experts indicated that insufficient regulatory oversight was a major (63%) latent condition enabling CFIT accidents to happen. Hence, improving regulatory oversight capacities can lead to a decrease of the CFIT rate in the future. 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 13, the major sub-category of accident related to runway safety for Air Operators registered in the RASG-EUR was Hard Landing (HL) (23% of total accidents for last five years) superseding Runway Excursion (RE) (19% of total accidents for last five years) reflecting the positive effect of actions taken in the RASG-EUR to reduce RE related accidents. They are followed by ground damage (16%), gear-up landing/gear collapse (12%) and tailstrike (9%). Runway collisions for RASG-EUR Air Operators contribute to only 1% of all accidents, reflecting the efforts taken worldwide and in the RASG-EUR to reduce related accidents.

The data below represents the two major contributors mentioned above. In 2015, the rate of HL and RE accidents for the RASG-EUR Operators was 0 (zero). However, the trend remains worrying and requires additional effort to be taken in relevant areas.

Figure 18: *Rate of occurrence of HL accidents per one million flight sectors for operators from the RASG-EUR versus the world (source: IATA).*
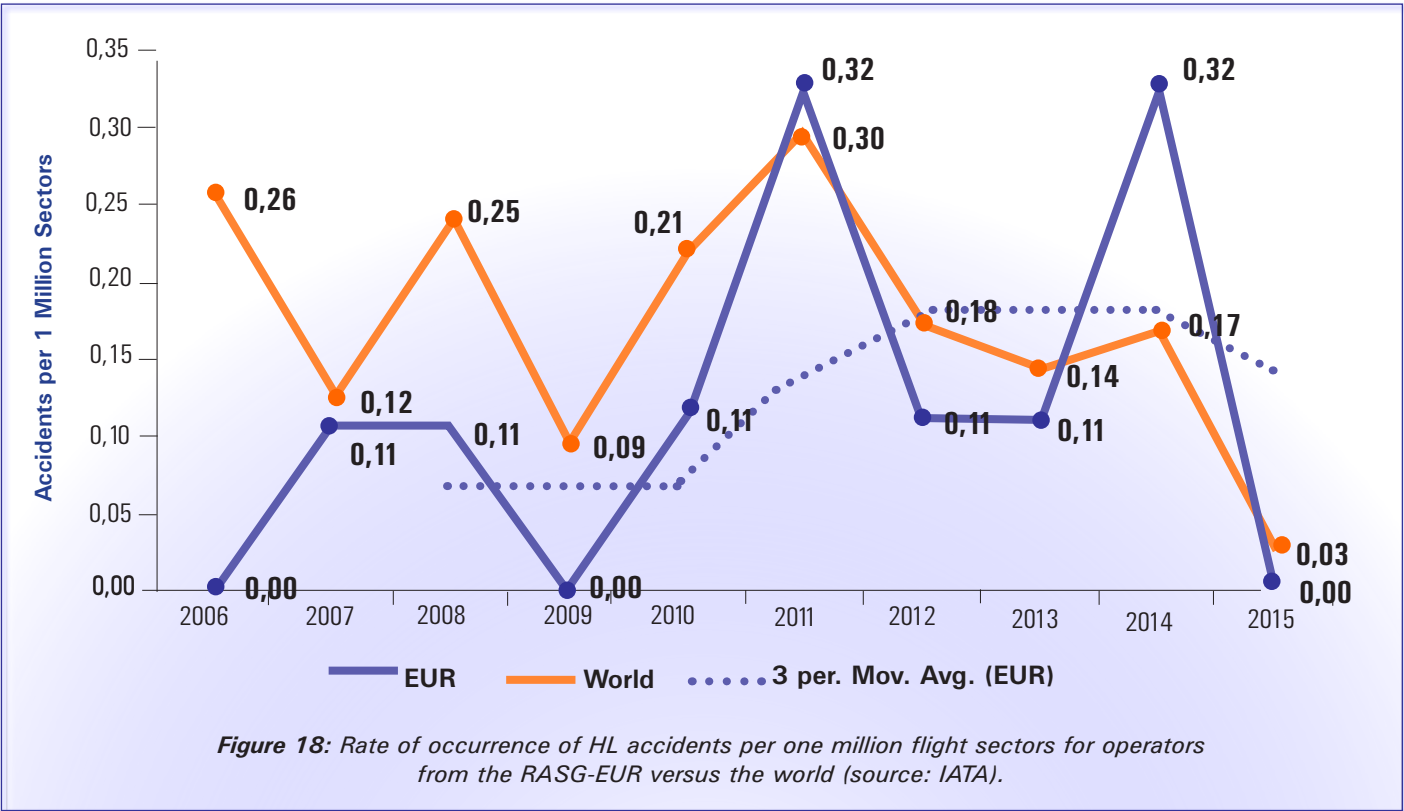
For hard landings, flight crew errors performed in poor meteorology conditions, combined with insufficient flight operations training systems and deficiencies in safety management systems (SMS), were found as the main contributors. In the case of RE, flight crew errors were also major contributors and improvements in regulatory oversight and SMS could be beneficial to prevent many RE occurrences.

Top Contributing Factors (2011-2015)
Hard Landing

Latent Conditions	
Flight Ops: Training Systems	32%
Environmental Threats	
Meteorology	52%
Flight Crew Errors	
Manual Handling / Flight Controls	76%
Undesired Aircraft States	
Long/floated/bounced/firm/off-center/crabbed land	52%
Countermeasures	
Overall Crew Performance	40%

Table 3: Top Contributing Factors for HL (scheduled commercial operations only, MTOW over 5700 kg, source: IATA)

Top Contributing Factors (2011-2015):
Runway / Taxiway Excursion

Latent Conditions	
Regulatory Oversight	25%
Environmental Threats	
Meteorology	40%
Flight Crew Errors	
Manual Handling / Flight Controls	40%
Undesired Aircraft States	
Long/floated/bounced/firm/off-center/crabbed land	35%
Countermeasures	
Overall Crew Performance	25%

Table 4: Top Contributing Factors for RE (scheduled commercial operations only, MTOW over 5700 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 2015, twenty USOAP-related activities were executed in RASG-EUR Member States[1], while one USOAP CMA mission was postponed.

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

State	Type of activity	Dates	Status
Armenia	Audit	15 - 25 Jun 2015	completed
Austria	ICVM	15 - 21 Jul 2015	completed
Azerbaijan	Audit	24 Aug - 2 Sep 2015	completed
Belarus	ICVM	15 - 21 Sep 2015	completed
Finland	Off-site Validation Activity	Jun 2015	completed
France	Off-site Validation Activity	Nov 2015	completed
Germany	Off-site Validation Activity	Nov 2015	completed
Hungary	Off-site Validation Activity	Sep 2015	completed
Ireland	Off-site Validation Activity	Jan 2015	completed
Israel	Off-site Validation Activity	Jul 2015	completed
Italy	Off-site Validation Activity	Sep 2015	completed
Kyrgyzstan	Off-site Validation Activity	Jul 2015	completed
Latvia	Off-site Validation Activity	Sep 2015	completed
Latvia	ICVM	3 - 10 Nov 2015	completed
Morocco	Audit	~~7 - 16 Sep 2015~~	postponed to 2016
Norway	Audit	16 - 20 Nov 2015	completed
Russian Federation	Audit	19 - 30 Oct 2015	completed
San Marino	Audit	29 Jun - 6 Jul 2015	completed
Switzerland	ICVM	19 - 23 Oct 2015	completed
Tajikistan	ICVM	26 - 31 Jan 2015	completed

Table 5: List of USOAP CMA activities in 2015 in RASG-EUR member States.

[1] Off-site Validation Activities of Finland, France, Germany, Hungary and Latvia were carried out during EASA Standardisation Inspections as per the Working Arrangement between ICAO and EASA

Overall (EI)
RASG-EUR

Avarage State EI: 74.34%

0 10 20 30 40 50 60 70 80 90 100

EI (%)

EI by Area
RASG-EUR

EI by CE
RASG-EUR

Figure 20: Overall status of EI in RASG-EUR member States as per end of 2015 (source: ICAO SPACE).

USOAP Audit Results

Figure 21: Status of EI per RASG-EUR member State as per end of 2015 (source: ICAO SPACE).
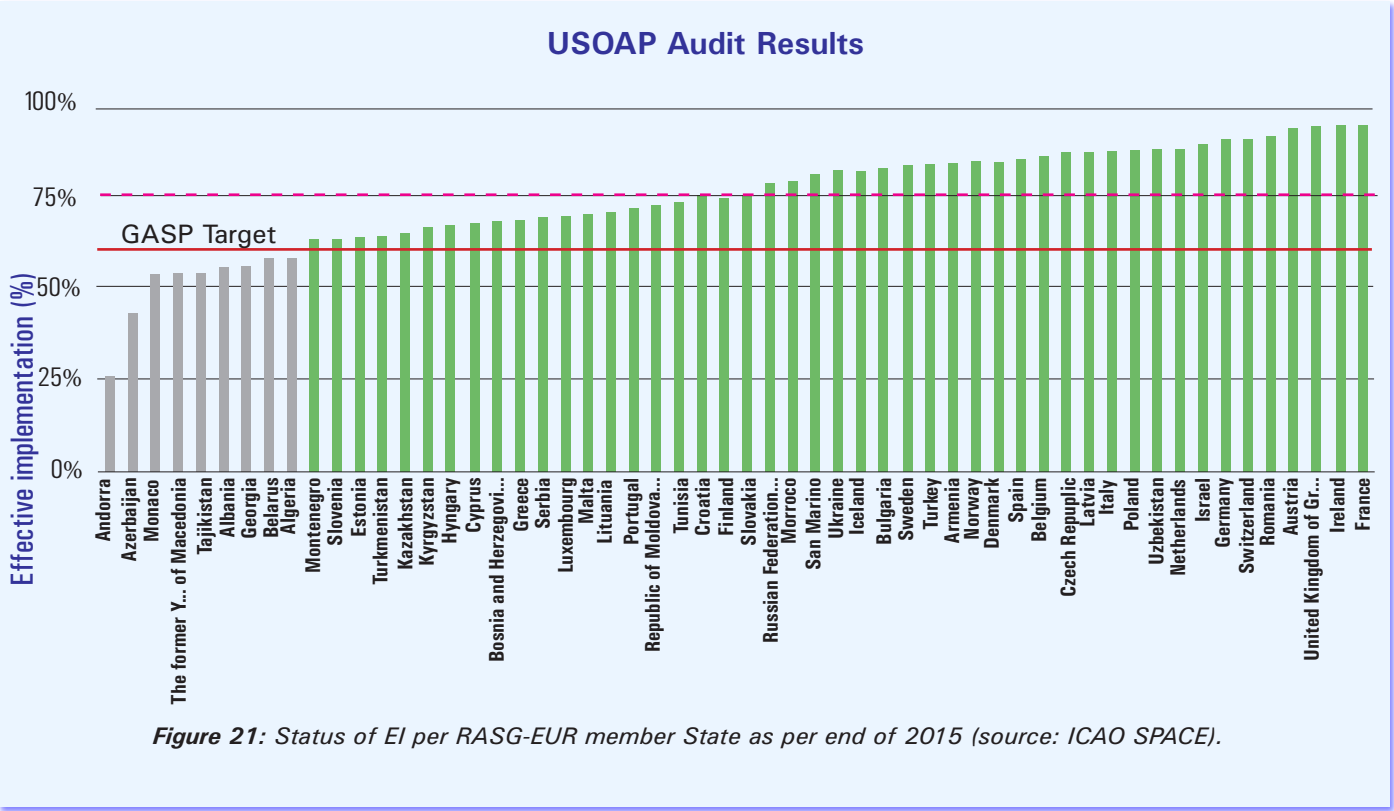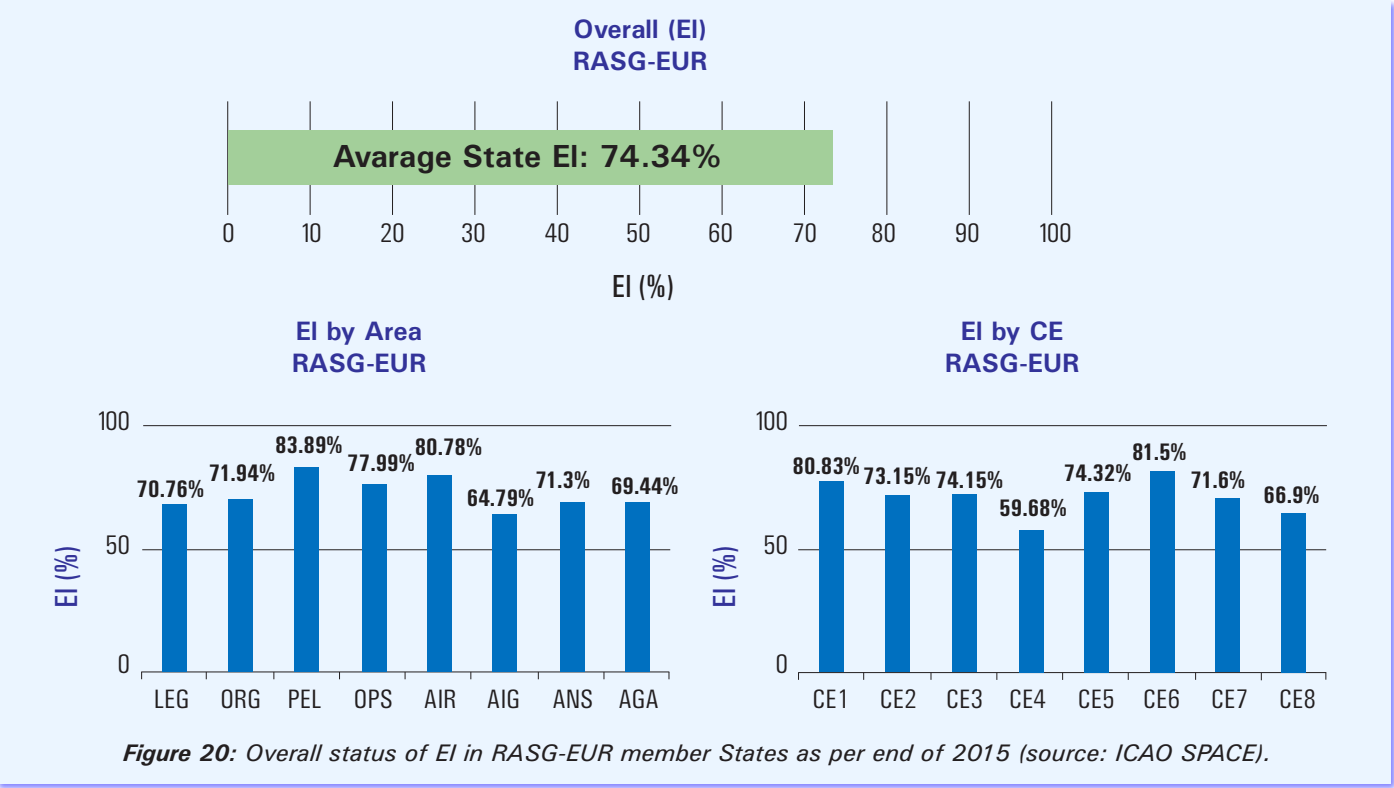
The overall level of effective implementation (EI) in the Region (74.34%) was higher than the global average (62.87%). However, the disparity between States is noteable, i.e. nine out of fifty-six States were below 60% EI in 2015. The USOAP results indicate that the areas of primary aviation legislation (LEG), aircraft accident and incident investigation (AIG), and aerodromes and ground aids (AGA), plus the critical elements (CE) that enable States to discharge their responsibility for safety oversight related to technical personnel qualification and training (CE-4), surveillance obligations (CE-7) and the resolution of safety concerns (CE-8) are those with the lowest level of EI.

Nevertheless, it should be noted that these are average figures for the Region and may not represent a fully objective picture 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 the European Aviation Safety Agency (EASA) is to monitor the level of implementation of the European aviation safety regulations in all EASA Member States[2]. This is to ensure that all EASA Members are able to discharge their oversight capabilities. It is achieved through an auditing process involving all EASA Member States' Authorities. In addition, the European Commission (EC) has tasked EASA with extending the process to those neighbouring States that have committed to progressively implement the European aviation safety regulations. Therefore, in addition to the 32 EASA Member States, EASA is currently standardising Albania, Armenia, Azerbaijan, Bosnia & Herzegovina, Georgia, Moldova, Monaco, Montenegro, Morocco, Serbia, the Former Yugoslav Republic of Macedonia, Turkey and Ukraine. In 2015 the scope of standardisations included:

- Airworthiness,
- Air Operations,
- Aircrew, including Licensing, Medical requirements and FSTD,
- Air Traffic Management / Air Navigation Services, including Air Traffic Controllers,
- Ramp Inspections.

Preparation for standardisation in Aerodromes started in 2015, in order to be ready as of 2018.

Continuous Monitoring Activities

All standardisation activities are now driven by continuous monitoring. Inspections were prioritised and planned based on the Agency's assessment of the Competent Authorities' ability to discharge their oversight responsibilities. The assessment model encompasses the 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. In 2015, the use of the model was extended to ANS; therefore the planning for 2016 relied completely upon its outcome.

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[2] 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.

With this new approach, the status of each State becomes clearer and the planning of inspections is carried out in a more targeted manner. It allows for the adaptation of the inspection programme and to focus the planned inspections on significant issues. The maximum interval between two consecutive comprehensive inspections remains at 4 years. Finally, it is recognised that continuous monitoring activities also have significantly increased transparency on the standardisation activities between EASA and the State.

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

Inspections Performed

In the course of 2015, 99 standardisation inspections were performed. A decreasing trend in the numbers of inspections is noted, and attributed to the effect of continuous monitoring, which reduces the need to perform on-site activities.

Inspection type	AIR	OPS	FCL	MED	FSTD	ATM/ANS	RAMP	Total
Comprehensive	10	16	9	9	9	7	8	68
Focussed	6	4	1	1	3	8	4	27
Ad-hoc	2	1	1					4
All types, 2015	**18**	**21**	**11**	**10**	**12**	**15**	**12**	**99**

Table 6: *2015 overviews of performed Standardisation inspections*

711 non-compliance findings were raised in 2015, including 3 immediate safety concerns. Due to the performance of cross-domain inspections, 42 findings can be attributed to more than one domain, resulting in an additional 117 findings when allocated to each domain and therefore the total increases to 828 findings. Approximately 28% of all findings (27% in 2014) were classified as significant deficiencies that may raise safety concerns if not duly corrected. In three cases, the Agency raised Immediate Safety Concerns.

Cross-domain Assessment of Authority Requirements (XDA)

In 2015, the Agency developed a single, cross-domain approach to the assessment of Authority Requirements with the objective of minimising the workload for Competent Authorities and EASA (one single inspection instead of five based on the same set of requirements), ensuring EASA internal standardisation across the five relevant domains and achieving synergies while conducting inspections. The programme is planned to be completed for EASA Member States within 2 years, i.e. by the end of 2016. The cross-domain assessment also checked the status of the implementation of the State Safety Plan (SSP) and its liaison with the European Plan for Aviation Safety (EPAS).

Airworthiness (AIR)

The Standardisation inspections conducted in the area of Airworthiness again confirmed the distribution of findings raised over the last four-year period. It shows that the findings mainly concentrate on the three critical elements related to oversight: CE-6, CE-7 and CE-8, in descending order.

Air Operations (OPS)

The Air Operations Standardisation inspections, including those performed as part of the cross-domain assessment, showed that the common issue was that Competent Authorities were in general late with the implementation of the Authority Requirements. Furthermore, non-compliances concentrated in the areas of oversight (CE-6 and CE-7).

Aircrew (Flight Crew Licensing (FCL), Medical MED, Flight Simulation Training Devices (FSTD))

Inspection results from 2015 show that there are some adjustments to be made regarding the implementation of the Aircrew Regulation. Comparing the results of the previous year with the main trends, critical elements CE-3 and CE-6 remain the main concern. It was further identified that some Competent Authorities did not have effective oversight of aero-medical examiners and centres.

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

The 15 inspections conducted last year showed that the most significant number of findings were related to CE-6 and CE-7. Out of the class D findings, 71 were in the area of these CEs and clearly show a lack of authority robustness in undertaking their certification and/or oversight responsibilities. However, it could be noted that current provisions from Annex 11 do not set certification requirements for ANSPs whereas certification is required by the EU regulatory system.

2.2.1.3. IATA Operational Safety Audit (IOSA)

The IATA Operational Safety Audit (IOSA) programme is an internationally recognised and accepted evaluation system designed to assess the operational management and control systems of an airline. The total accident rate for IOSA carriers in 2015 was considerably better than the rate for non-IOSA operators.

Figure 22: Rate of accidents per one million flight sectors for operators from the RASG-EUR (Source IATA).
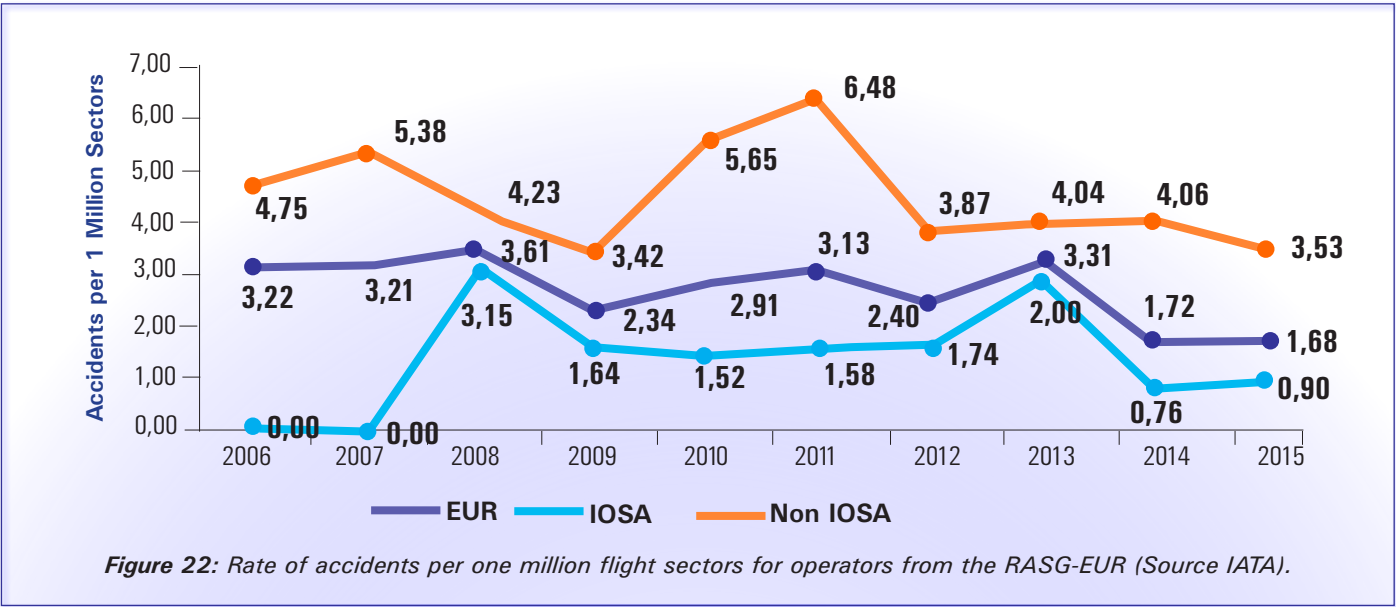
During IOSA audits of operators registered in RASG-EUR Member States, it was found that operators have very few (if any) findings. Amongst the ones found, the most frequent are those related to the implementation of effective quality assurance programmes; timely revision of initial and recurrent training materials; management and measuring of performance for third party service providers; management of recurring defects, and receipt of continuing airworthiness information.

Since September 2015, IOSA has integrated its Enhanced IOSA concept into its audit process. This new concept contains four main pillars, which are:

1. Continuity – Airlines will maintain continuing conformity with all IOSA standards throughout the registration period (24 months) by conducting on-going internal assessments (e.g. internal audits) as an integral part of their internal quality assurance programme. The results will be analysed and any areas of concern addressed, leading to increased levels of continuity in all aspects of operations.

2. Focus on Implementation – Internal assessments using IOSA standards will facilitate and enhance overall implementation and execution of operational policies, plans, processes and procedures, etc. The Audit Organisations will give special focus on the assessment of the implementation aspect of the IOSA provisions.

3. Reliability of Quality Assurance – Airlines will demonstrate the reliability and integrity of their internal quality assurance programme by conducting on-going internal assessments against ISARPs, using appropriately trained and qualified auditors.

4. Standardisation – The use of IOSA provisions, published auditor actions and IOSA auditing principles should result in a systemic standardisation of internal audit procedures and the overall audit process.

During 2015, there were more than 90 IOSA audits in the RASG-EUR Region. The average number of findings per audit was 10. Below are shown the Top 10 IOSA Findings from these audits.

ORG 2.1.1	System for the management and control of documentation
ORG 1.3.1	The management system defines the safety accountabilities, authorities and responsibilities of management and non-management personnel throughout the organization
ORG 3.4.13	Training and qualification program for auditors that conduct auditing under the quality assurance programme
ORG 4.1.14	Ensure the corporate Emergency Response Plan (ERP) is rehearsed periodically
MNT 1.11.2	Each maintenance agreement with an external maintenance organization that performs maintenance functions for the Operator specifies, either in the agreement or in a service level agreement or equivalent document, measurable maintenance safety and quality standards required to be fulfilled by the respective external maintenance organization.
ORG 3.4.7	If the Operator is currently on the IOSA Registry, the Operator shall have a process for the production of a Conformance Report (CR) that is certified by the accountable executive (or designated senior management official) as containing accurate information related to the audit of all ISARPs
FLT 1.6.1	System for the management and control of flight operations documentation and/or data used directly in the conduct or support of operations, to include the operations manual (OM), training manual, on-board library and other documents referenced in the OM that contain information and/or guidance relevant to the flight crew
GRH 1.5.1	A system for the management and control of documentation and/or data used directly in the conduct or support of ground handling operations.
ORG 3.4.1	Quality assurance programme that provides for the auditing of the management system, and of operations and maintenance functions
ORG 3.4.3	Process for addressing findings that result from audits conducted under the quality assurance programme

All these items can be used as opportunities to improve the management systems of the airlines, the goal being a more resilient organisation.

2.2.1.4. IATA Safety Audit for Ground Operations (ISAGO)

The IATA Safety Audit for Ground Operations (ISAGO) programme aims to reduce accidents, incidents and risks in ground operations. ISAGO is a standardised and structured audit programme of Ground Service Providers (GSP), i.e. ground handling companies operating at airports. It uses internationally recognised operational standards that have been developed by global experts. The audits are conducted by highly trained and experienced auditors.

The approach taken by IATA implements an Integrated Solution for Ground Operations that comprises of the development of harmonised ground handling operation standards and procedures published in the Airport Handling Manual (AHM) and the IATA Ground Operations Manual (IGOM); a standardised approach to the oversight of ground service providers under the umbrella of ISAGO; and the establishment of a data-driven IATA Global Aviation Data Management (GADM) system to perform comprehensive safety analysis and monitor safety performance.

In 2015, IATA embarked on a 'root and branch' review of its audit programme to provide greater assurance of meeting the objectives. The review will culminate in 2017 with the introduction of improvements, focussed on providing higher quality and more efficient audits. Significantly, ISAGO has recently established a strategy for the mandatory implementation of a safety management system (SMS) in ground handling operations by 2019. The SMS requirements are fully compliant with global regulations applicable to civil aerodromes and air operators. Details of the strategy and guidelines for the audit of a SMS within ISAGO are outlined on the IATA website.

Major findings worldwide so far indicate that GSPs need to make additional efforts in the areas of quality assurance, initial and recurrent personnel training, safety risk management, and document management and control. In operational areas, findings are commonly found in the provision of dangerous goods information to pilots-in-command, moving ground support equipment in the vicinity of aircraft, following airlines' cargo handling instructions and ensuring proper communication with airline representatives.

2.2.1.5. Data of Drone Incidents

EASA has carried out an analysis of RPAS occurrences in the European Central Repository (ECR), which identified a total 584 occurrences of all severity levels. 37 of these have been classed as accidents, although none involved fatalities and there have been only four minor injuries reported since 2011. A significant increase in occurrences during 2015 is noted. The application of the definition of accident in relation to RPAS has improved since new definitions were provided in Annex 13. However, the data in the ECR covers a period before this and therefore the definition of accident may not have been correctly captured in some of the older data.
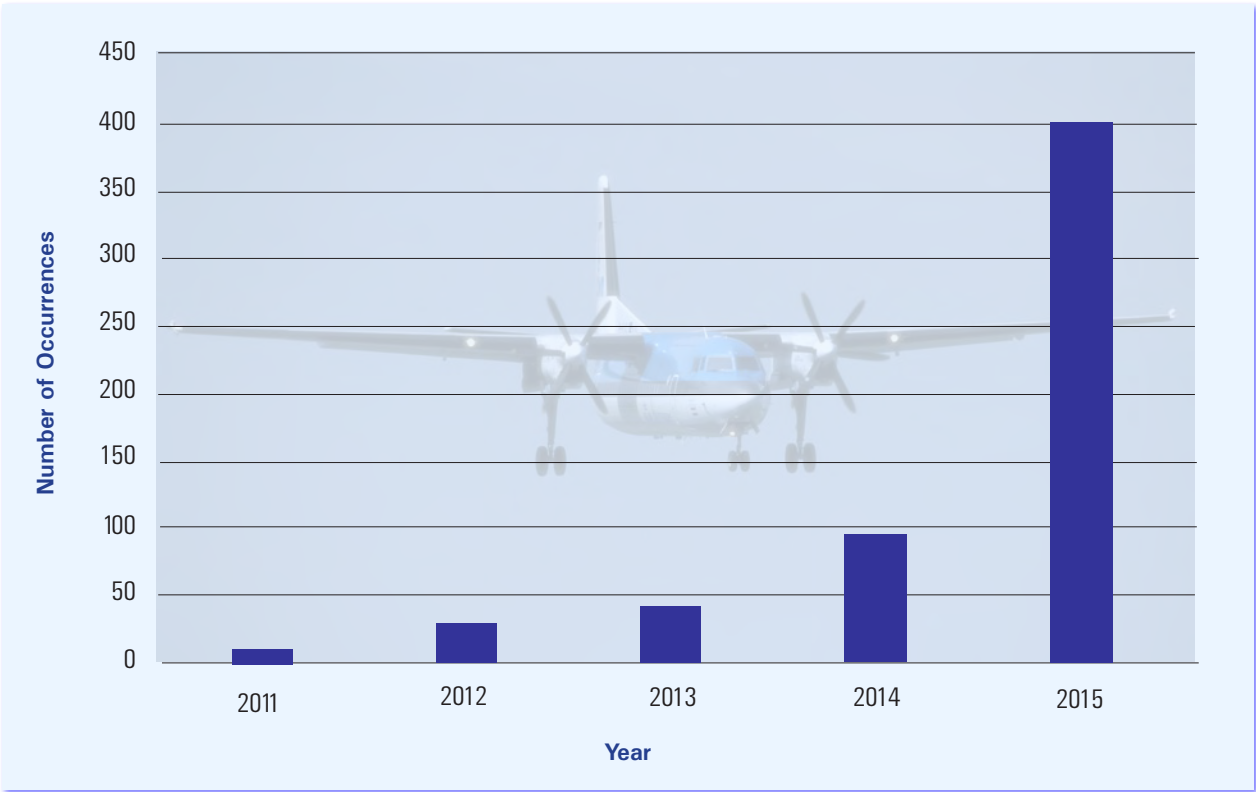
RPAS Safety Risk Portfolio

The initial RPAS Safety Risk Portfolio is shown below, which provides the full picture of the key risk areas and safety issues. It has been developed based on the data contained in the EASA Internal Occurrence Reporting System (IORS) Repository to ensure consistency of the information used.

					Airborne Conflict	Other System Failures	Aircraft Upset	Engine Failure	Third Party Conflict
	Outcome Percentage of Fatal Accidents (2011-2015)		0		0%	0%	0%	0%	0%
	Outcome Percentage of Non-Fatal Accidents (2011-2015)		21		65%	12%	8%	3%	3%
	RPAS		**Total number of accidents in 2011-2015 per safety issue**		**Key Risk Areas (Outcomes)**				
	Safety Issues	Incidents	Serious Incidents	Accidents	Airborne Conflict	Other System Failures	Aircraft Upset	Engine Failure	Third Party Conflict
Operational	Detection, Recognition and Recovery of Deviation from Normal Operations	2	2	5			●		●
	RPAS Handling and Flight Path Management	1	–	3	●		●		●
	RPAS Infringement of Controlled Airspace	72	2	–	●				●
	RPAS Proximity with Other Aircraft in Uncontrolled Airspace	45	1	–	●				●
Technical	Failure of Guidance and Control System	3	–	3	●	●	●		●
	Failure of Propulsion System	2	–	2				●	
	Failure of Power Sources	0	–	2		●	●		
Human	Pre-Flight Planning and Preparation	13	–	–	●	●	●	●	●
	RPAS Operator Knowledge of Aviation System	–	–	–	●	●	●	●	●
	Maintenance/manufacuring	–	–	–	●	●	●	●	●

RPAS – Key Risk Areas

- Airborne Conflict: In terms of occurrences, the highest number of occurrences reported so far has involved potential airborne collisions. While no collisions between RPAS and commercial aircraft where reported in EASA Member States, the situation is nonetheless being continually monitored.
- Other System Failures: A small number of occurrences have been reported concerning failures of guidance and control systems for RPAS.

The main domain priorities for RPAS in terms of safety issues are:

RPAS - Operational Safety Issues

- RPAS Infringement of Controlled Airspace. The first safety issue involves the risk of an RPAS infringing controlled airspace and colliding with an aircraft during approach or take-off. Work has already started to investigate the use of geo-fencing to prevent RPAS flying into controlled airspace in the first place. This safety issue is also linked to the human factor (HF) safety issues on RPAS operators' knowledge of the aviation system.

Human Factors Safety Issues

- Pre-Flight Planning and Preparation: The first HF safety issue involves the need for good pre-flight planning and preparation, so that an RPAS operator conducts any flight in a safe manner. Because RPAS operations involve many people not familiar with the aviation system, safety promotion will be important to make operators aware of good practices that they can easily follow.
- RPAS Operator Knowledge of the Aviation System: The second HF priority area is to ensure that anyone operating RPAS who is new to aviation is able to easily learn about the aviation regulatory framework as it applies to RPAS operations.

Ongoing actions on RPAS under the European Plan for Aviation Safety (EPAS)

EPAS Actions	Rulemaking	RMT.0230	Implementing rules for remotely piloted aircraft systems (RPAS)
	Task Force		RPAS Task Force to assess the risk of collision between drones and aircraft.

2.2.2. Analysis of Safety Data
2.2.2.1. EASA Safety Risks Analysis Data

During 2015, EASA put into place its Safety Risk Management (SRM) process to ensure the proper management of the global safety issues affecting the European aviation system (see paragraph 2.4.1.10 for details).

The most visible output of the SRM process is the Safety Risk Portfolios, which are domain-specific registers of relevant safety issues. Currently, there are 10 portfolios covering the Commercial Air Transport (CAT) operated by aeroplanes, helicopters and balloons and the General Aviation sector (aeroplane, helicopter, gliders…). During 2016, it is planned to complete the portfolios with the ones dedicated to ATM, Aerodrome and RPAS.

The figure below shows the Safety Risk Portfolio for CAT Aeroplanes as of May 2016. It is the result of the analysis of worldwide accident data to determine the most significant and recurrent global safety issues. The final figures in the chart represent occurrences of EASA Member State CAT Aeroplane Operators and occurrences of non-EASA Member State CAT Aeroplane Operators taking place in the EASA Member States' territory.

	Outcome Percentage of Fatal Accidents (2006-2015)		11		64%	45%	27%	10%	9%	0%	10%	0%
	Outcome Percentage of Non-Fatal Accidents (2006-2015)		283		7%	22%	36%	5%	1%	5%	30%	0%
	Commercial Air Transport - Aeroplanes		Total number of accidents in 2011-2015 per safety issue		Key Risk Areas (Outcomes and precursors)							
	Safety Issues	Incidents (ECR data)	Total Accidents	Fatal Accidents	Aircraft Upset in Flight	System Failures	Ground Collisions and Ground Handling	Terrain Conflict	Runway Incursions	Fire	Abnormal Runway Contact and Excursions	Airborne Conflict
		Serious Incidents										
Operational	Detection, Recognition and Recovery of Deviation from Normal Operations	569 / 22	12	2	●		●	●			●	
	Operations in Adverse Weather Conditions	9,209 / 37	33	1	●	●	●	●	●		●	●
	Ground Handling Operations	10,697 / 8	7	1	●		●	●	●	●	●	●
	Maintaining Adequate Separation Between Aircraft	10,001 / 43	8		●	●	●			●		●
	Pre-Flight Preparations/Planning and In-Flight Re-Planning	2,535 / 7	2		●			●	●		●	
	Aircraft Maintenance	1,318 / 7	1		●	●				●	●	
	Fuel Management	30 / 9						●				
	Birdstrikes and Bird Control	11,421 / 3			●	●	●			●	●	
	Calculation and Entry of Take-Off and Landing Parameters into Aircraft System	3 / 3			●		●					
	Handling and Execution of Go-Arounds	2 / 4			●			●			●	●
	Prevention and Resolution of Conflict with Aircraft Not Fitted With Transponders	95 / 2										●
	Dangerous Goods Handling	4 /					●			●		
Technical	Handling and Operation of the Aircraft Following a Technical Failure	564 / 15	12	1	●	●	●	●		●	●	
	False or Disrupted ILS Signal Capture	202 / 4			●			●				
	Contamination of Controls or Critical Surfaces	177 / 2			●		●			●		
	Damage Tolerance of RPAS Collisions	6 /				●				●		●
Consequences	Suitability of Recording Devices	19 / 3	5	2	●	●		●		●	●	●
	Survivability and Evacuation	18 / 2	6	1	●	●	●	●		●	●	
Human	Personal Readiness and Crew Impairment	1,718 / 40	1	1	●		●	●	●	●	●	
	Flight Crew Perception and Awareness Decision Making and Planning	34 / 11	5		●	●	●	●	●		●	●
	CRM and Communication	3,083 / 17	5		●	●	●	●	●	●	●	●
	Monitoring of Flight Parameters and Automation Modes	1 / 5			●		●	●				●
	Knowledge or Aircraft Systems and Use of Associated Procedures	/ 2			●	●	●	●	●	●	●	●
Organisational	Implementation of Reporting System and Safety Management	/ 2			●	●	●	●	●	●	●	●
	Oversight of Organisations	/			●	●	●	●	●	●	●	●

CAT Aeroplanes Main Domain Priorities - Top Safety Issues
The top safety priorities for CAT aeroplanes in terms of the specific safety issues are outlined below. These are based on both data analysis and expert judgement.

Operational Safety Issues
● Detection, Recognition and Recovery

This is the top safety issue in CAT aeroplanes. For aircraft upset, this involves the ability of the flight crew to identify potential loss of control situations and to take the correct recovery action. In terms of the prevention of abnormal runway contact events and runway excursions, the risk assessment of this safety issue will look in more detail at landing scenarios involving unstabilised approaches. It will also consider other pre-cursors that rely on the early identification of undesirable aircraft states and subsequent correct recovery action.

● Operation in Adverse Weather Conditions

This safety issue is defined as the ability and/or capability of the flight crew to manage the flight in adverse weather conditions. It covers flight planning, availability of meteorological information, aircraft dispatch, ground de-icing, aircraft systems, flight crew decision making and tools or procedures that assist the crew. Specifically, adverse weather is considered as atmospheric conditions that might normally be encountered during CAT operations and not necessarily extreme conditions. For the assessment, a number of scenarios are considered, such as; icing on ground, icing in flight, turbulence, wind-shear, cross-winds and heavy precipitation.

● Calculation and Entry of Take-Off and Landing Parameters into Aircraft Systems

Following a number of serious incidents in other parts of the world, as well as a number of incidents in EASA Member States, work in on-going on this safety issue to reduce the likelihood of it leading to both aircraft upset and runway excursion.

● Handling and Operation of the Aircraft Following a Technical Failure

A specific safety issue already identified associated with technical failure is the handling and operation of the aircraft by the flight crew following a technical failure.

● Maintaining Adequate Separation with Aircraft (In the Air and on the Ground)

The most common safety issue in this key risk area, that will now be subject to a full assessment with regards to the risk of a ground collision, is the maintenance of adequate separation with aircraft, both between aircraft on the ground and between aircraft and vehicles/ground equipment. The safety issue also covers the prevention of mid-air collisions.

● Ground Handling Operations

Closely related to the prevention of ground collisions and other ground handling events, is the safety issue of ground handling operations, which has an influence on a number of different safety outcomes. For example, incorrect loading that might lead to a loss of control.

● Prevention and Resolution of Conflict with Aircraft Not Fitted With Transponders

This safety issue covers 2 specific scenarios: airborne conflict risks between CAT aeroplanes and light aviation in uncontrolled airspace, and airborne conflict risks with RPAS. Various initiatives are in progress on the RPAS requirement and concept of operation.

Human Factors Safety Issues

● Personal Readiness and Crew Impairment

This safety issue is a priority analysis area, especially in relation to crew impairment in response to the French BEA's safety recommendations on the Germanwings accident. This safety issue includes the personal readiness aspects, such as flight crew knowledge and training, as well as crew impairment due to a range of causes including fatigue, medical or psychological factors.

● Flight Crew Perception and Awareness

During the initial analysis of aircraft upset, perception of aircraft attitude and awareness of aircraft status and automation modes were identified as key factors and on which further analysis is underway.

● CRM and Communication

The final priority safety issue in the area of human factors is related to crew resource management (CRM) and communication. There have recently been changes to CRM training developed under RMT0411[3] (EASA rulemaking task referring to the review of the AMC and GM on CRM training for flight crew, cabin crew and technical crew) and its implementation needs further promotion and continual monitoring.

More information on the EASA SRM process and the Safety Risk Portfolios can be found here:
http://www.easa.europa.eu/document-library/general-publications/annual-safety-review-2016

2.2.2.2. STEADES Data

The Safety Trend Evaluation Analysis and Data Exchange System (STEADES) is IATA's aviation safety incident data management and analysis programme, and one of the data sources of the Global Aviation Data Management (GADM). STEADES provides rates on key safety performance indicators, helping airlines to benchmark and establish safety performance targets in accordance with ICAO SMS requirements.

With a bigger participation of operators from RASG-EUR Members States in STEADES and following the resolution of safety data sharing concerns and confidentiality issues, STEADES' proactive safety data will be included in future RASG-EUR Safety Reports. Meanwhile, authorised users can request access to information from IATA directly: www.iata.org/steades.

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[3] https://www.easa.europa.eu/system/files/dfu/ToR%20RMT.0411%20%28OPS.094%29%20Issue%202.pdf

2.2.2.3. EVAIR

EVAIR is the first voluntary ATM incident data collection scheme organised at Pan-European level. Traditionally, it monitors level busts, runway incursions, missed approach/go-around, ACAS RAs, callsign confusion, air-ground communication, loss of communication and laser threats. For these events, EVAIR provides different levels of main causal factors which contributed to the event.

7,700 pilots' reports were provided to EVAIR

for the summer seasons 2011 – 2015. Over the last three summer seasons, EVAIR recorded a drop in the number of airlines' reports. The main reasons behind this decrease were improved performance in some areas, where traditionally higher number of reports were recorded, and personnel changes within the air operators where new staff have not been informed about the cooperation with EVAIR.

Figure 23: Number of reports.
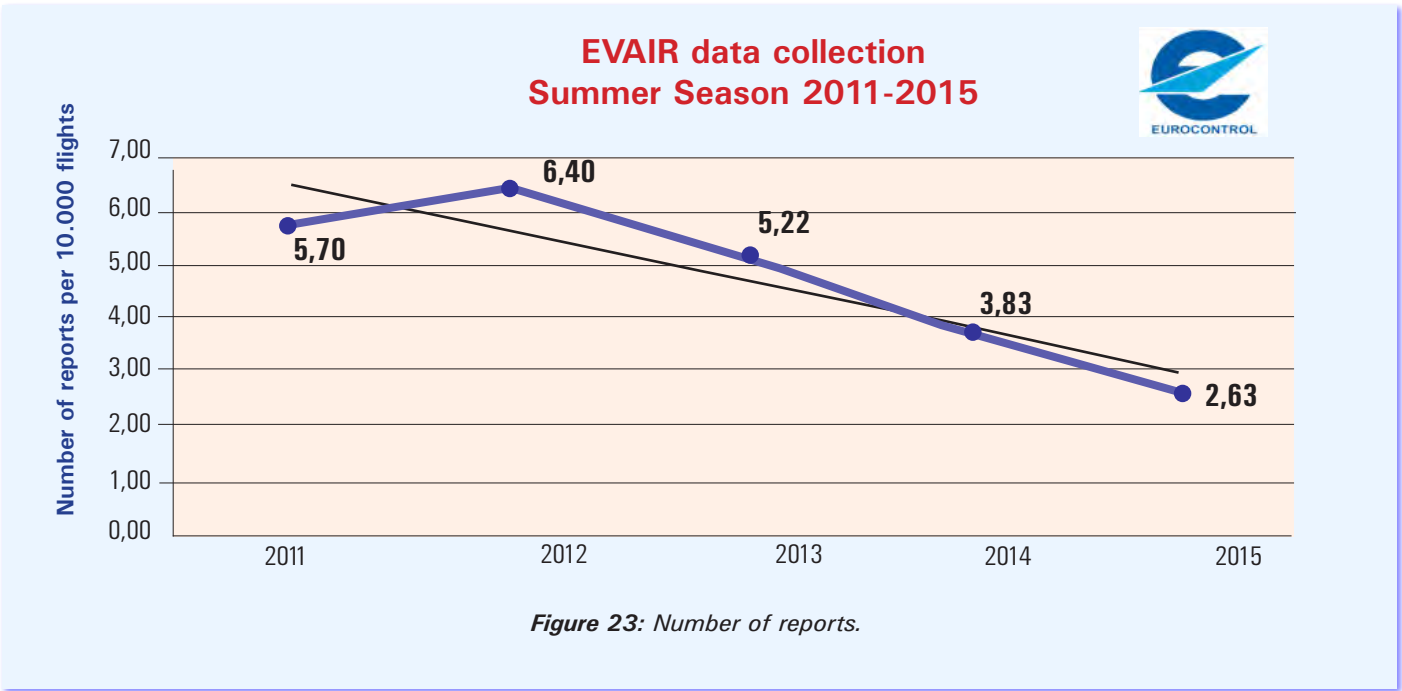
EVAIR and STEADES also provide a comparison between the European and global ATM situation in a selected number of areas in the EVAIR Safety Bulletins.

In addition to airlines, ANSPs provide ATM

reports to EVAIR. Special cooperation is given to callsign similarity/confusion, where 15 ANSPs regularly provide reports. Over the period 2011-2015, EVAIR received more than 11,000 call sign similarity/confusion reports.

Monitored Areas – Attention on RPAS/Drones and GPS Outages

EVAIR is increasingly focused on the significant upsurge in drone and GPS outage occurrences. All RPAS/drones reports collected by EVAIR occurred at low level altitudes within the approach phase (mainly final approach), whereby drones' flights were not coordinated with ATC.

Concerning GPS outages, the problem was recorded for the first time in 2013. The most affected area is between the Black Sea – Caspian Sea axis and approx. five hundred NM North and North West from this axis. The duration of the lost GPS signal ranges from a few minutes up to three hours. Recently, EVAIR received approval from the ANSPs of the region to disclose the occurrence locations so that, in future, EVAIR will start publishing a map with the GPS outage 'hot spots', thus giving necessary information to the AOs to be prepared on the potential problem and the need to use other types of navigation when flying through the affected area. In coordination with EUROCONTROL navigation experts and IATA, reports are used for further analysis and identification of the potential problems behind these outages.

The full inventory of EVAIR statistics can be found at www.eurocontrol.int/services/evair.

2.2.3. State Safety Programme (SSP)

Table 7: Progress in SSP implementation as defined by States in RASG-EUR with EI > 60% (source: ICAO).
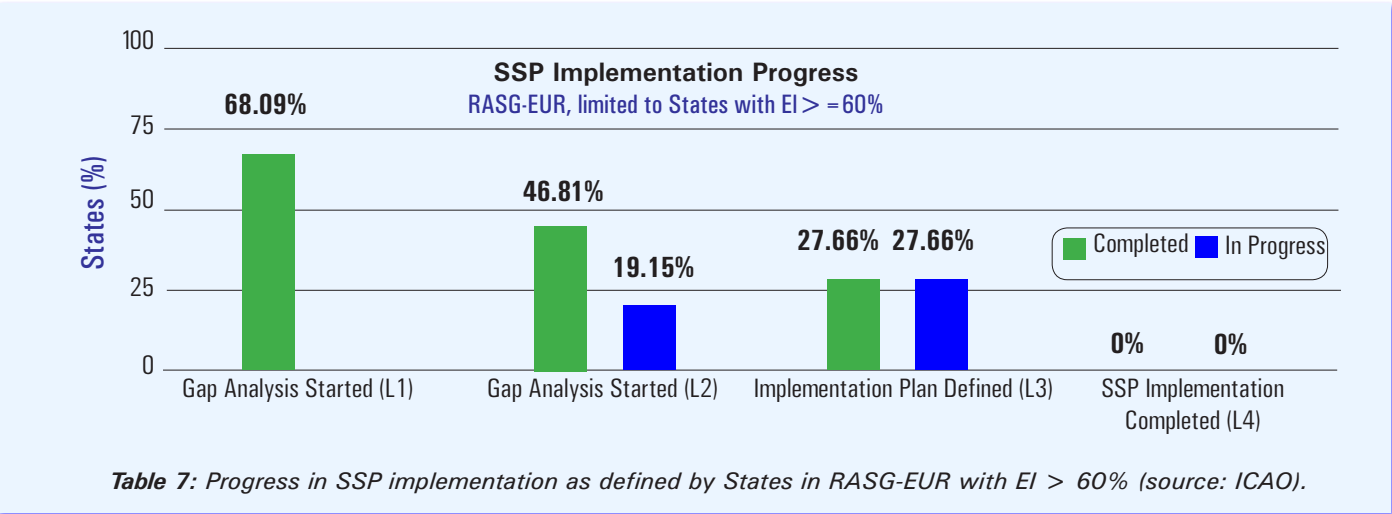
The deadline for SSP implementation in the Region by States with EI > 60% is the end of 2017. The progress of implementation reported by RASG-EUR Member States through the ICAO SSP Gap Analysis web based tool raises questions and possible concerns. In 2015, only 27.66% of States reported to have an implementation plan defined. This is an improvement compared to the 2014 data of 19.57%. However, progress still seems to be insufficient to reach the target timely. Hence, certain regionally coordinated actions should be planned for 2015-2016 to foster the timely implementation of SSPs in line with Annex 19 requirements and the strategy set out in the GASP. Such actions can include, amongst others, educational workshops and training courses.

2.2.4. Effectiveness of Safety Management (EoSM)

European Safety Performance

The detailed process used to assess and review the national/FAB Performance Monitoring Reports from a safety perspective, as well as results of safety performance analysis, measured by Safety Performance Indicators (SPIs), is published via the PRB annual monitoring report, which includes Volume 4 – Safety. Additionally, the on-line ANS performance monitoring dashboard (EU-wide level, 2015) can be consulted at: http://www.eurocontrol.int/prudata/dashboard/rp2_2015.html.

The Effectiveness of Safety Management (EoSM) SPI measures, at a State level, the capability of States to manage the SSP and, at a service provision level, the service provider's capability to manage an effective SMS within the five following management objectives:

- State safety policy and objectives,
- safety risk management,
- safety assurance,
- safety promotion,
- safety culture.

The EoSM indicator is measured by calculating scores and levels based on the verified responses to questionnaires completed by the State/Competent Authorities and the ANSPs respectively. This is done in accordance with EASA Acceptable Means of Compliance and Guidance Material (AMC/GM) for the implementation and measurement of Safety KPIs[4].

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[4] http://www.easa.europa.eu/document-library/acceptable-means-of-compliance-and-guidance-materials/amcgm-skpi-issue-2-amendment

EoSM Score and EoSM Level (States)
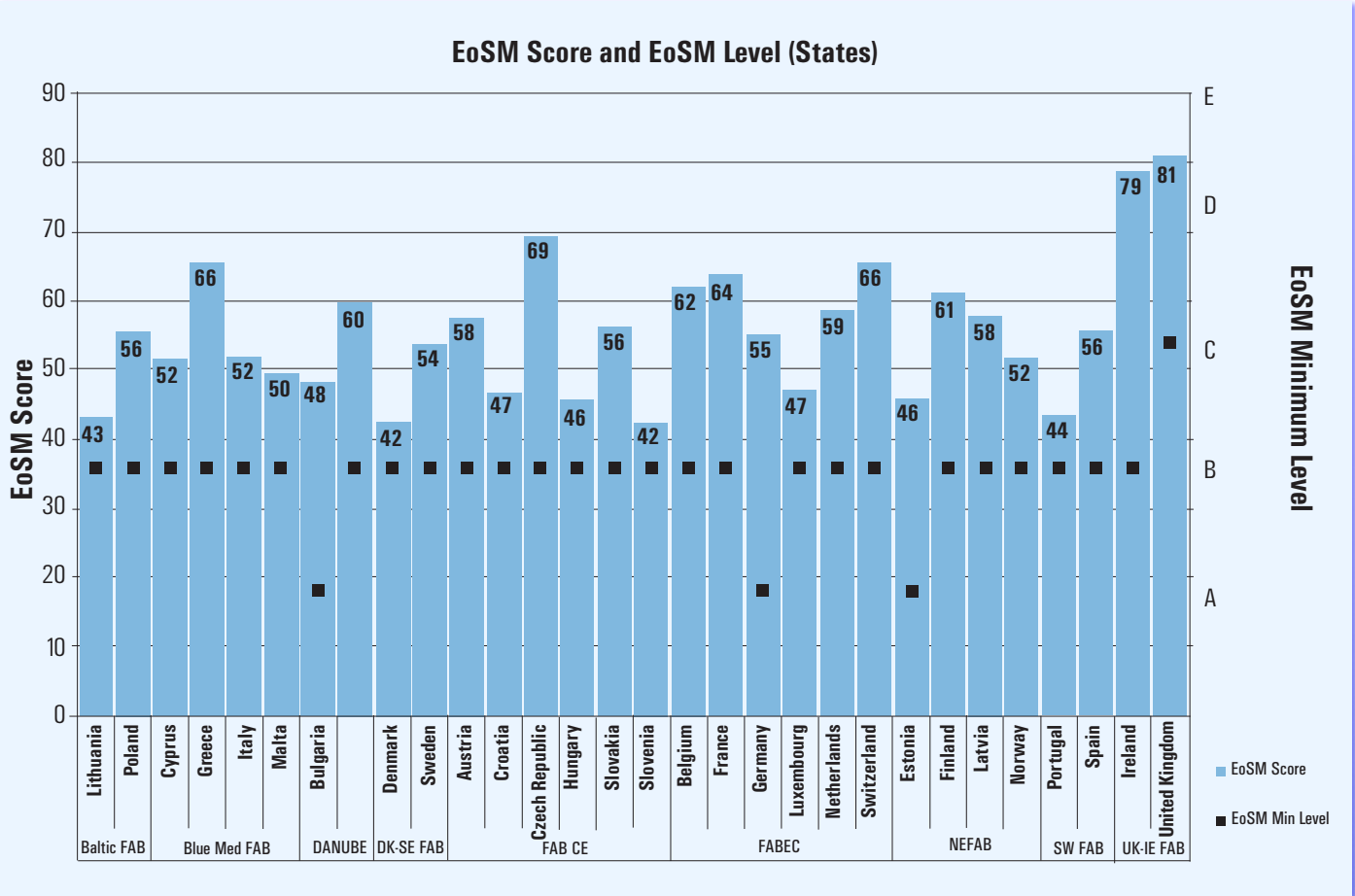
The Figure above shows the EoSM results of States in 2015. It depicts both the EoSM overall Maturity Score vs. the EoSM Maturity Level achieved at State level. The graph supports the observation that some core elements of the safety oversight system are still missing in many States. These elements are being closely monitored by EASA as part of its obligations.

Further information is available in the Performance Review Report 2015 and the on-line ANS performance monitoring dashboard.

2.3. Predictive Safety Analysis

Reactive and proactive safety will not be sufficient to ensure the maintenance or improvement of current safety levels in the European aviation system. For that reason, it is necessary to develop strategies and programmes that allow stakeholders to assess and implement safety actions in a more predictive environment. There are significant challenges ahead and stakeholders will need to take advantage of new regulatory approaches and technological developments, such as continuous monitoring or massive data engines, to predict possible adverse trends or to detect potential areas of conflict not yet realised.

The Data4Safety (D4S) is the European "Big Data" Programme for civil aviation, aiming to achieve the above task. The objective of the D4S initiative is to organise the already growing number of available datasets from the main operational stakeholders in the European aviation system in a coherent manner, to enable the deployment of safety intelligence over this mass of safety data. The resulting common European platform will be game-changing and would support Europe in moving from being reactive to proactive, and paving the way towards predictive safety management. Beyond safety, the merged data analysis capabilities could be used to determine the interdependencies between performance indicators in the context of ATM performance, environmental protection and, in the longer term, be extended to other modes of transport, such as maritime and railways.

The project is being developed in a phased-approach that consists of:

1. Feasibility study. It showed the technical feasibility of the project and the strong support from the European Airlines, ANSPs and Aviation Authorities, the main potential partners – June/July 2015

2. Project definition and funds securing. The project will be initiated under research funds (Proof of Concept phase), though it will gradually move into a full operational funding scheme self-sustainable by the project members (full deployment) – July 2015/ October 2016

3. Proof of Concept. It aims at demonstrating the technological and financial feasibility of the project and its benefits at a reduced scale. At this stage, only a reduce number of stakeholders will participate – 2016/2019.

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

2.4. Safety promotion

2.4.1. Activities Aiming to Reduce Risks of Several Categories of Accident

2.4.1.1. Mandatory and Voluntary Occurrence Reporting

One of the major outcomes of the pilot implementation project run in Georgia within the work performed by the ICAO European Regional Expert Team's (IE-REST) Taxonomy and Safety Data Analysis Group (IE-TSG) was the development of the Guidance Material for Regulatory Framework on Occurrence Reporting. Availability of occurrence data is essential for the timely development and implementation of preventive safety measures to minimise the likelihood or severity of aviation accidents. The developed guidance material incorporates the practical experience of the Civil Aviation Agency in Georgia in the area of establishing, enabling and maintaining efficient occurrence reporting system in the State.

The RASG-EUR safety advisory containing the guidance described above is expected to be published for general access after approval by the 4th Meeting of the RASG-EUR in November 2016.

2.4.1.2. Usage of Flight Data Analysis

The work of the IE-REST's Flight Data Analysis and Air Operator Safety Management System Group (IE-FDG) resulted in the successful implementation by Air Astana (Kazakhstan) of the Flight Data Analysis Programme (FDAP). Implementation of effective FDAP, as a process of analysing recorded flight data in order to improve the safety of flight operations, is one of key elements of an effective SMS for Air Operators. The group agreed that the publication of Air Astana's FDAP as the RASG-EUR safety advisory will enable other carriers to capitalise on their experience. The relevant safety advisory is expected to be published for general access after approval by the RASG-EUR in November 2016.

2.4.1.3. 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 the ICAO EUR Region.

The EPAS is a key component of the SMS at European level, and it is constantly being reviewed and improved.

As an integral part of EASA's work programme, the Plan is developed by EASA in consultation with the EASA Member States and industry. It is implemented by the EASA Member States on a voluntary basis through their State Programmes and Plans. The current EPAS edition covers the 5-year period from 2016 to 2020. The EPAS is updated every year by EASA.

More information on the EPAS can be found here: https://www.easa.europa.eu/system/files/dfu/209275_EASA_EPAS.PDF

2.4.1.4. European Strategic Safety Initiative (ESSI)

The European Strategic Safety Initiative (ESSI) is the joint initiative between industry and European authorities to develop safety promotion activities and material for the aviation community and, in particular, in support of the EPAS. In 2015, EASA also launched its own safety promotion brand, while the ESSI continued developing safety promotion material targeting safety risks and best practice material regarding for instance safety management systems.

The ESSI is composed of three domain-specific branches, Commercial Air Transport (ECAST), Helicopter (EHEST) and General Aviation (EGAST), which operates independently to fit the specificities of each domain.

In 2015, EHEST delivered the following material:

- EHEST Report on 2006-2010 Accidents;
- EHEST Helicopter Flight Instructor Manual;
- Safety Workshop at HELITECH Intl 2015, London;
- EHEST promotional clip edition 2;
- Leaflet HE 9 – Automation and Flight Path Management;
- Leaflet HE 10 – Teaching and Testing in Flight Simulation Training Devices (FSTD);
- Leaflet HE 11 – Training and Testing of Emergency and Abnormal Procedures in Helicopters.

EGAST contributes to meeting the General Aviation (GA) Roadmap objectives. In 2015, EGAST delivered the following material:

- Leaflet GA 10 – In-flight Icing;
- Leaflet GA 11 – Flying Displays for Pilots (pre-publication series).

In 2015, ECAST published three main deliverables, two of them developed by the European Operators Flight Data Monitoring Forum (EOFDM):

- ECAST EOFDM Study for Runway Excursion Precursors;
- ECAST EOFDM Study of Precursors for Loss of Control In-Flight;
- EASA-ECAST Flyer on Lithium Battery Related Fire Risk (see below).

During 2015, EASA published additional safety promotion material:

- GA Flying Safely, Loss of Control In-flight in GA
  http://easa.europa.eu/easa-and-you/general-aviation/flying-safely/loss-of-control)

- GA Roadmap
  http://www.easa.europa.eu/easa-and-you/general-aviation/general-aviation-road-map
  GA Leaflets: Flying in the EU
  http://easa.europa.eu/easa-and-you/general-aviation/ga-leaflets

- Flying a Drone poster and video
  https://easa.europa.eu/easa-and-you/civil-drones-rpas

- Lithium batteries
  http://essi.easa.europa.eu/ecast/?page_id=1618

2.4.1.5. Safety Promotion Activities in RASG-EUR Member States

Airspace AVOID

Early in 2015, the mobile phone application "AirspaceAVOID" was launched in The Netherlands. The application is free for download to mobile phones.

The app will request pilots to enter their intended routing through Dutch airspace and will subsequently show pilots all relevant NOTAM information along the route, the types of airspace around the aircraft (within 30NM) and will give a warning when an aircraft is about to come close to controlled airspace and/or restricted or danger areas.
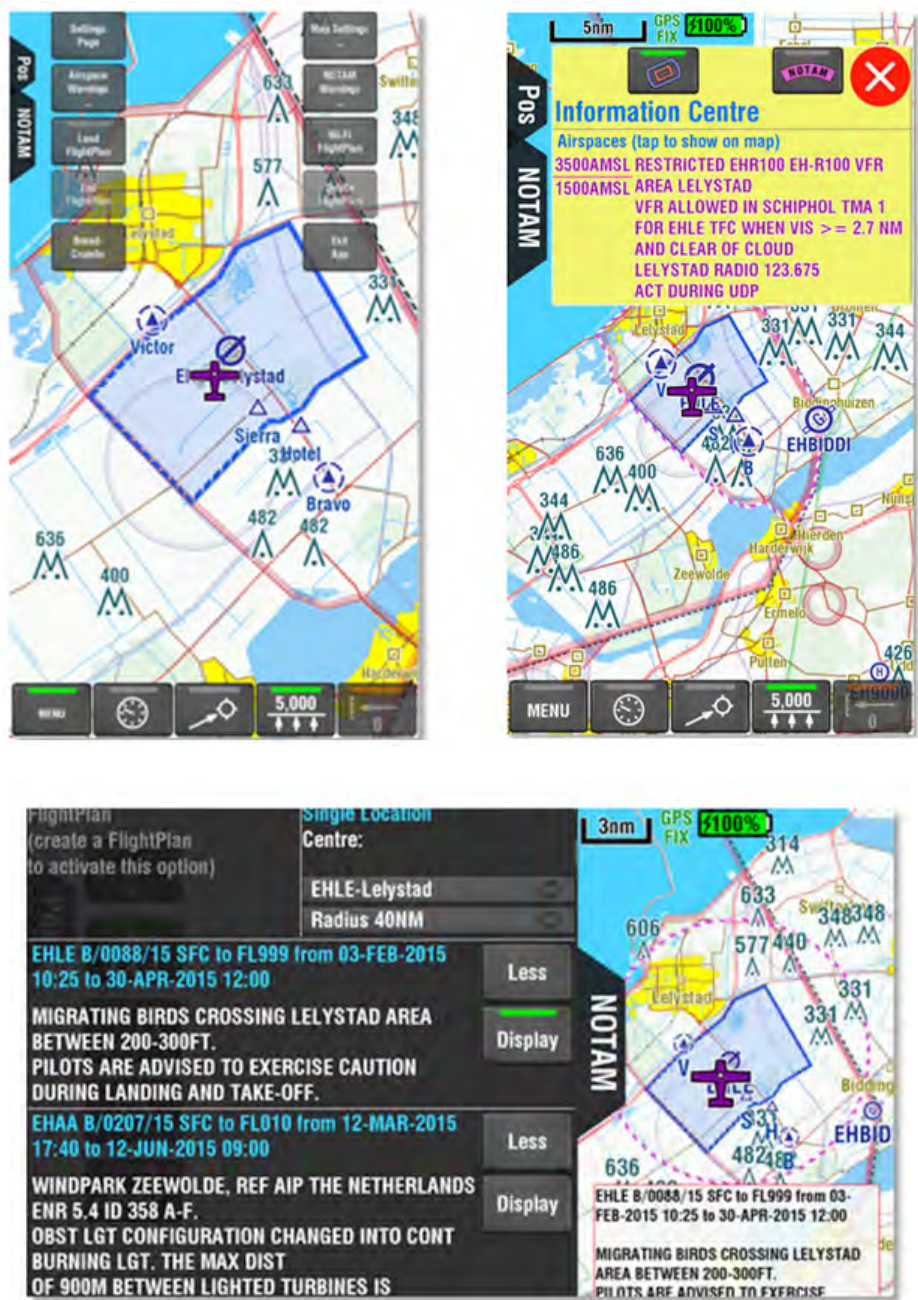
Example screens Airspace AVOID

The application for Dutch airspace was developed by PocketFMS in collaboration with LVNL, AOPA, NLR, Dutch Government, Royal Dutch Airforce and the Recreational Pilots Association in The Netherlands, and is part of the action plan to reduce the number of airspace infringements in Dutch airspace. A similar application was developed for NATS UK and there should be possibilities to have software available for other countries as well.

The most important activity that LVNL did as a service provider during the development of the app was to test the software: speed of publication of NOTAMs (within 5 minutes), quality and completeness of aeronautical information, quality and completeness of NOTAM information.

A glimpse of the tool can be found on the following website: http://www.pocketfms.com/airspaceavoid/

Safety promotion Case Finland:
GA Risk Survey & Safety Project

After the crash at Jämijärvi, Finland on 20th April 2014 that claimed eight lives, the Minister of Transport commissioned Trafi (CAA Finland) to conduct an extensive survey of the risks of general aviation and evaluate the need for further action items to improve GA safety. The risk survey was published in October 2014 followed by the launch of a one year GA project.

The goals of the GA safety project were:

● to create for Finnish GA a safety work operating model and methods (including assigned responsibilities) that promote a scheme where the GA community takes responsibility for improving its own safety and are established jointly with the GA community;

● to create for Trafi a model through which Trafi can support safety work in GA, taking into account Finland's commitment to the development of the safety of GA in the context of the EASA and prioritisation of national CAA safety work;

● to ensure that the proposed actions of the GA risk survey are put into practice as applicable within four key sectors that were identified: strengthening community spirit in the aviation community, developing training into a coherent whole, increasing and harmonising co-operation within the aviation community and sharing best practices and increasing efficient safety promotion

● bold experimentation with new practices; jointly planned, practical and effective actions and long-term models for safety work.

The GA safety project was above all a project aimed at cultural changes. The summary of lessons learned in the GA project are the principals that also work in other areas of aviation safety. In order to get results with and within the community, trust is something that every participant must earn, by doing things that are said and keeping promises that are made. Aviation clubs are in a central role in safety work. To support them and together with community a Safe operations model for aviation clubs was developed.

Safety promotion was found to be in an essential role in improving safety. Cornerstones for that are multi-channel safety promotion in active use and effective channels and fora for sharing information, materials and practices. For example, a training material databank and co-operation in analysing occurrences were launched during the project.

All the results, lessons learnt, the recreational aviation risk survey and the project final report are published on the Trafi web pages and can be shared and hopefully used and found useful:
http://www.trafi.fi/ilmailu/harrasteilmailun_turvallisuus

2.4.1.6. Safety Culture

Implementation of Regulation (EU) No. 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation

The objective of Regulation (EU) No. 376/2014 is to ensure that the necessary safety intelligence is available to support the safety management efforts of the whole European aviation community. The information provided through the collection and analysis of occurrence reports under this Regulation should allow the industry and the regulators to be informed about the risks they are facing and to take decisions supported with relevant knowledge and information.

The Regulation establishes a framework, across aviation domains and at each level (industry, national and European), to ensure the collection of as-complete-as-possible safety occurrence data and its analysis, with a view to supportting the full spectrum of safety management activities, including the adoption and implementation of mitigation actions where relevant.

The reporting, analysis and follow-up of occurrences is supported by a broader safety risk management process that helps to identify the main safety issues and risks. This process involves continuous dialogue between the industry and their competent authorities and the full engagement of all involved – industry, EASA and the Member States – as part of routine safety management activities. This notably includes the provision of feedback and lessons learned to improve safety and strong legislative measures to promote Just Culture across EASA Member States.

This Regulation aims to ensure that the industry is aware of the risks it is facing and takes relevant measures to mitigate those risks. It should also allow the Member States to be informed about the risks it is facing at national level and to identify national measures that may be necessary to ensure aviation safety from a broader national perspective. In addition, it intends to ensure that the Member States, EASA and the EC are collectively informed of the risks faced by the European Union as a whole and may decide, on the basis of a joint analysis, to adopt relevant mitigation actions to maintain or improve the level of aviation safety from a European perspective, either under the EPAS or under the individual SSP of the European States.

More information on the Regulation (EU) No. 376/2014, including the reporting forms and detailed guidance material, is available in the European Aviation Reporting portal:
www.aviationreporting.eu

Maastricht UAC – Just Culture Policy

EUROCONTROL established a corporate Just Culture Policy in September 2014, signed by its Director General. This Policy was the result of work conducted by staff within the organisation and through consultation with the social partners.

It highlights:
- The need for EUROCONTROL to be a learning organisation in order to improve safety levels,
- That humans are an essential part of the ATM system and they provide flexibility and resilience to cope with unforeseen circumstances,
- The need to deal fairly and justly with human error – human error is the starting point to find out what is going on in the overall System,
- The organisation will take responsibility for the full application of Just Culture principles,
- The organisation commits to engage with the judiciary authorities and inform through all relevant channels, including the media, national governments, international organisations and the general public that a just and fair culture that respects the Rule of Law is a fundamental principle of a civilised society and the only acceptable way to effectively maintain and further improve our safety levels.

Following the launch of the Policy, the organisation started the establishment of the underpinning support arrangements to institute the Policy as part of its management systems. This includes legal, social and financial support mechanisms for staff, as well as training in Just Culture principles and what they mean in practice.

The support arrangements are, however, proving challenging to agree with social partners, caused by different parts of the organisation having diverse interpretations of what the principles mean, varying levels of maturity of investigation procedures, and reservations on the role/membership of the Just Culture Committee and the perception it replaces a role performed by Social Partners. EUROCONTROL continues to work to resolve these issues in order to fully implement the Policy.

2.4.1.7. NSA HR Application for CAAs / NSAs

Over the last two years, EUROCONTROL has developed two human resources (HR) applications for National Supervisory Authorities (NSAs), helping them to carry out HR assessments required by SES Legislation and ICAO. This work has been done with the active involvement of the FABCE States (Austria, Bosnia and Herzegovina, Croatia, Czech Republic, Hungary, Slovakia and Slovenia), Denmark, Georgia and Lithuania. These applications support and facilitate Civil Aviation Authority (CAA) and NSA management decision-making ANS oversight domain processes at State, FAB (Functional Airspace Block) and regional level to ensure that staff shortages can be minimised and alleviated. Specifically these are:

■ **Applications for the ANS Oversight Domains**
  - in the HR Domain
  - Supporting both the EC regulatory requirements and provisions laid down in ICAO SARPs

■ **NSA HR Assessment: provides**
  - A methodology to determine and plan NSA staffing levels
  - Comprehensive overview of the HR components
  - Trends/results platform on HR issues impacting an NSA
  - Multiple use at individual State level or a group of States

■ **Pool of Experts Management : provides**
  - Multiple use at State level with different regulatory/supervisory entities or a group of States
  - An efficient way manage a pool of experts
  - A learning platform to demonstrate how a pool of experts can be managed

The lessons learned from the trialling States, plus ICAO's initiative on developing CAA HR tools, have opened possibilities for synergies that will maximise benefits to the aviation regulatory community in the HR domain. These applications can be used by States today to carry out their ANS Oversight HR Assessments required by the SES legislation and ICAO SARPs and as a mechanism to share resources. At the end of 2015, there were 10 States actively using the application, with a further 10 States expected to join in 2016.

For further information on the applications, please go to http://www.eurocontrol.int/news/helping-national-supervisory-authorities-develop-new-hr-applications

2.4.1.8. Safety-related training

2.4.1.8.1. EASA Technical Training

EASA's Technical Training aims to support stakeholders in achieving and maintaining the highest possible levels of competency, and in remaining current on the latest developments in aviation safety. The Agency therefore develops and provides state-of-the-art training courses – both online and class room delivery – to its Staff and its stakeholders, including personnel from National Aviation Authorities (NAAs) and other aviation sectors.

In 2015, EASA conducted over 100 technical training courses with the participation of more than 900 aviation professionals from a wide range of aviation sectors.

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

For further information, contact the ELG Training Team: elg@easa.europa.eu, or visit the EASA website. http://www.easa.europa.eu/easa-and-you/technical-training/technical-training-offered-us.

2.4.1.8.2. 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 NAAs staff.

The EASA Virtual Academy only includes regulatory courses that support the qualification of NAAs personnel involved in approval and oversight activities (inspectors). The courses are provided by qualified external training organisations, selected by EASA through an approval procedure.

http://www.easa.europa.eu/easa-and-you/technical-training/easa-virtual-academy

2.4.1.8.3. Flight Safety Oversight Inspectors Training in the Region of the Member States of the Agreement (IAC)

The subject of conducting ramp inspections of foreign aircraft was included in the agenda of the project seminars for the first time in 2011 by the CAAs of the States of the region as one of the urgent tasks in the field of improving flight safety in the region.

On the basis of the coordinated schedule, SAFA workshops have been held in the States of the region so as to ensure a vast territory coverage and the participation of the maximum number of civil aviation inspectors. In 2015, two SAFA workshops were held in Chisinau and Novosibirsk, and about 80 civil aviation inspectors took part in these workshops.

Thus, for the past years practically all the States of the region and the Territorial Departments of the Russian Federation have received assistance in civil aviation inspector training according to the SAFA programme within the framework of the COSCAP-CIS Project. The number of inspectors who received training at these seminars, totalled more than 800 persons.

2.4.1.8.4. A-320 General Familiarization Course (IAC)

In the course of the close collaboration between the ICAO-IAC Regional Project (COSCAP-CIS) with its main financial partner – Airbus – an urgent need of the regional CAA experts' familiarisation with the main, most prolific aircraft of the company, the A320, was identified in recent years.

The Airbus Company and its training centre in Hamburg proposed conducting on the basis of the COSCAP-CIS project two courses with a duration of one week each as per the standard programme of the centre. The programme was fully supported by the Rostransnadzor and Rosaviatsia management and the courses, which were attended by 80 civil aviation inspectors, took place in October 2015.

The main topics discussed during the courses were;

- Mechanical, hydraulic, electrical, fuel, pneumatic systems as well as the airframe structure of the Airbus family;

- Navigation, radio navigation, automatic landing and take-off systems, as well as communications, air conditioning, firefighting, ice and rain protection, FDA systems and data reservation with its displaying in the cockpit:

- CFM-56-58, PW 6000, PW 11276-JM engines construction and their electronic control and regulation systems, as well as the Honeywell 13A-A(BCY) auxiliary power units;

- Different types of composite materials used (carbon, glass and aramid fibres), their pros and cons.

2.4.1.8.5. EUROCONTROL IANS Training and Training Tools

Building on more than 45 years of expertise, the EUROCONTROL Institute of Air Navigation Services in Luxembourg delivers high-quality training courses, tools and services in ATM to the aviation community.

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

The CNS training is vital in implementing across Europe a harmonised system deployment of CNS and data processing infrastructure in support of the SES regulations. The courses range from Data Link and Voice Communications to Surveillance Services and PBN.

The Network Operations courses contribute to a harmonised implementation of the SES Implementing Rules and also support the Network Manager in the execution of its obligations under the NM IR. Courses are available in areas such as Airspace Management, Airports, Information Management, Environment and Human Factors. ATM Security, and Stress and Fatigue Management are new titles in the portfolio.

The Safety Management training helps providers of ATM/ANS services to understand how to safely manage their services in a manner which adds value and is compliant with EU legislation. The courses covers all aspects of safety, and are continuously adapted to new regulations laying down common requirements for ATM/ANS service providers and the oversight thereof. More than 1,000 course participants are being trained yearly.

The National Supervisory Authorities (NSA) training programme is designed to support States' obligations as regards ATM/ANS oversight activities. It provides participants with a solid foundation in every core NSA function as required by EU law, and with an awareness of on-going regulatory developments. Over 500 course participants are trained annually.

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

● The test of English Language Proficiency for Aeronautical Communication (ELPAC) is designed to help ANSPs, Aircraft Operators, 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 compliant with applicable SARPs.

● The First European Air Traffic Controller Selection Test (FEAST) assesses the relevant knowledge, skills and abilities of applicants for ATC training. The FEAST Service is currently used by 45 organisations. Some 55,000 candidates have completed the selection tests since the start of the service, which is available to both civil and military ANSPs as well as certified ATC aviation training academies and universities.

IANS recently received its recognition as Regional Training Centre of Excellence (RTCE) at ICAO's Global Aviation Training Symposium in Seoul. With that it became one of only 20 aviation training centres to achieve this status. IANS is now regional TRAINAIR PLUS Full Member, bringing additional partnership with ICAO to develop ICAO Training Packages.

2.4.1.9. CANSO Guidance on Human Performance

Within the air traffic industry, human performance is a key driver for business and safety performance. Without people and effective human performance, there is no air traffic business. A Standard of Excellence for Human Performance has been produced on behalf of CANSO which follows the same format as the CANSO Standard of Excellence for Safety Management Maturity. Twelve elements of human performance have been identified and, for each, a scale of increasing maturity has been developed. This has been tested with a dozen ANSPs worldwide, all of whom found it relevant, useful and relatively easy to apply. For the first time, it gave them an "outsider's" view on where their strengths and weaknesses are in managing human performance.

Work is now underway by a CANSO Task Force to fully align the Human Performance Standard of Excellence with that for Safety Management Maturity. This work will ensure that there are no overlaps between the 2 standards and that there is a consistent and objective way of measuring an ANSP's level of maturity against each of the 12 human performance elements. The work is planned to be completed by the end of 2017 and will then be followed by the production of guidance material. This will enable ANSPs to determine what they need to do to improve their human performance to a level that is appropriate for the size and maturity of the ANSP.

2.4.1.10 . EASA Safety Risk Management Process

In the course of 2015, EASA developed and implemented the process to manage aviation safety risks in an integrated manner, with the objectives of:

- Prioritising safety actions which are most efficient in reducing risk levels
- Ensuring adequate internal and external coordination on both key aspects which are 1) the identification and assessment of safety issues and 2) the programming of safety actions.
- Providing transparency on why the Agency takes certain actions

The scope of this process is limited to "global safety issues" that may affect European aviation products, services, or European passengers.

The process is composed of the following steps:

1) Identification of safety issues,
2) Assessment of safety issues,
3) Definition and Programming of Safety Actions,
4) Implementation of Safety Actions, and
5) Measurement of Safety Performance.

All outputs of these steps are documented in the Safety Risk Portfolio for each domain (Commercial Air Transport Aeroplane, Helicopter Off-Shore, Balloon, ATM, Aerodrome, etc.). All European Stakeholders are part of the process, providing inputs and advise at three different levels.

2.4.1.11. Collaborative Approach for Safety Oversight

2.4.1.11.1. EASA Technical Cooperation with ICAO EUR States

In 2015, 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:

EASA ENP Project

The aim of the EASA ENP project is to promote awareness of ENP countries in the work of EASA in the interest of aviation safety. In 2015 the project only worked with Belarus.

TRACECA

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

The project was concluded in 2015.

IPA-3 PROGRAMME

The project aims to support the establishment of a sustainable and well functioning institutional/organisational and operational civil aviation system in each partner country. The project is structured in three key pillars (Organisation/Management Initiative/Competency Development) to address these three key areas.

EUROMED

This project includes several EUR countries, namely Algeria, Israel, Morocco and Tunisia.

The project brings EU and partner states' safety expertise together, provides training and short-term experts, and addresses specific technical issues through dedicated working groups and meetings.

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:

2.4.1.11.2. Technical Assistance for Kazakhstan

As confirmed in 2016, a series of assistance and capacity-building measures under the 'No Country Left Behind' Initiative have led to the resolution of the remaining civil aviation Significant Safety Concern (SSC) in Kazakhstan.

The SSC in question (OPS) had been identified through the ICAO USOAP audit conducted in April 2009, which resulted in two SSCs in the area of aircraft operations (OPS) and aircraft airworthiness (AIR). Following a Coordinated Validation Mission (ICVM) conducted in Kazakhstan in June 2014, the AIR SSC was removed but confirmed the OPS SSC.

ICAO's assistance programme to Kazakhstan has been led by the EUR-NAT Office and implemented through an agreed tailored plan of actions and a collaborative effort including a Technical Cooperation project funded by the Government, supplemented by training provided by experts contributed by Portugal, Turkey, Singapore, Ukraine, Georgia and the Air Navigation Bureau, with part of the funding arranged through the ICAO Safety Fund (SAFE). The assistance resulted in higher levels of implementation in Kazakhstan in the areas of AIR and OPS to effectively carry out its safety oversight responsibilities.

Under the 'No Country Left Behind' Initiative, similar support in aid of more effectively implemented ICAO civil aviation standards is being planned to many other member States in the RASG-EUR region.

2.4.1.12. Pilot training

A successful implementation trial for evidence-based training (EBT) performed within the framework of the activities of the IE-REST Pilot Training Group (IE-PTG) continues in Air Astana (Kazakhstan). The Air Operator expects that it will enable the implementation of more effective training to improve operational safety, focusing on the recurrent training of airline pilots.

The development of EBT arose from an industry-wide consensus that, in order to reduce the aircraft hull loss and fatal accident rates, a strategic review of recurrent and type-rating training for airline pilots was necessary. The aim of EBT is to develop and evaluate the identified competencies required to operate safely, effectively and efficiently in a commercial air transport environment whilst addressing the most relevant threats according to evidence collected in accidents, incidents, flight operations and training.

To facilitate the implementation of EBT, the IE-PTG continues to organise workshops on the subject, and in October 2015 the challenges and progress on the implementation of EBT were discussed. The experience of airlines in an advanced stage of implementation was shared with experts from all the RASG-EUR member States and beyond.

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

2.4.2.1. EPAS Activities

The EPAS contains several actions aimed at reducing the risk of LOC-I. The table below summarises the most relevant ones.

Key Actions in 2015:

- Review and promote training provisions on recovery from upset scenarios – Publication of Safety Information Bulletins SIB 2015-17R1, SIB 2015-13, SIB 2015-07 and launch of Rulemaking Tasks RMT0581, RMT0582;

- Member States to address loss of control in-flight by taking actions at national level and measuring their effectiveness – assessment of EASA MS SSP within the Cross-domain Standardisation programme.

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

The specific feature of the region where the member States of the Agreement are situated is that, in most of them during a significant period of the year, cold weather with precipitation in the form of snow, sleet and ice formation prevails. Therefore, the issue of anti-icing treatment of aircraft was given special attention within the framework of the ICAO-IAC Regional Project (COSCAP-CIS).

Under the auspices of the project and within the framework of the Civil Aviation Safety Team (CAST-CIS) several meetings of leading experts in this field were conducted and methodical recommendations "Airplane protection from icing up on the ground", presented both in Russian and English languages, developed by a team of authors, were reviewed and thoroughly discussed. After that the recommendations were finalised and sent for approval of Airbus experts, who made a number of observations and then approved these recommendations.

The finalised and approved CAST-CIS methodical recommendations were forwarded to all regional CAAs and leading airlines in autumn 2015 with the recommendation to apply them during the autumn-winter navigation period of 2015-2016.

These methodical recommendations were also placed on the IAC web-site (http://www.mak-iac.org/upload/iblock/a01/final_recomendation.pdf).

It should be mentioned that the updating of the methodical recommendations continues on the basis of the development of new technologies and materials, as well as taking into consideration the comments and suggestions received after the approbation of these recommendations. The draft of amendments to the recommendations is planned to be submitted for the consideration by the CAST-CIS group in September 2016, so that the updated version of them to be ready by the autumn-winter navigation period of 2016-2017.

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

The EPAS contains several actions aimed at reducing the risk of CFIT. The table below summarises the most relevant ones.

Key Actions in 2015:
- Incorporate terrain awareness warning systems in small turbine-powered aeroplanes – launch of RMT0371, RMT372
- Member States to address CFIT by taking actions at the national level and measuring their effectiveness – assessment of EASA MS SSP within the Cross-domain Standardisation programme.

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

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

The IE-RSG has developed guidance for developing and implementing effective Standard Operating Procedures (SOPs), focusing on the prevention of accidents and incidents during descent and landing, specifically the prevention of hard landings and runway overruns. It was found that crew performance contributes greatly to runway safety events and, hence, implementation of proper SOPs could serve as safety barrier. In order to simplify and produce a unified approach to the formation of airline's SOP, as well as to identify gaps in the issue of accident prevention, the IE-RSG concluded that it would be useful to develop recommendations for the formation of SOP based on best practices and experiences of other countries, including:

a) Handbook to reduce the number of accidents during approach and landing (ALAR TOOL KIT); and

b) FAA Advisory Circular № 120-71A "Standard operating procedures for flight deck crew members".

The RASG-EUR safety advisory containing the guidance described above is expected to be published for general access after approval by the RASG-EUR in November 2016.

In order to support the implementation of runway safety enhancement initiatives a Runway Safety conference was held in Moscow in 2015. 200 specialists from 105 agencies and organisations attended the conference. The conference covered two areas:

1. Runway safety and airport infrastructure, covering topical questions on the implementation of the SMS by the operator of the certified aerodrome.

2. Runway safety, covering aspects of flight operations, problems in development of standard operating procedures as well as methods for the evaluation of piloting technique during approach and landing.

To facilitate the implementation of the runway safety enhancement initiative, the CAA of the Russian Federation, with the support of the IE-RSG, organises regional workshops for aerodrome operators. In 2015, workshops were held in Moscow and Cherepovets.

2.4.4.2. EPAS Activities

The EPAS contains several actions aiming to reducing the risk of Abnormal Runway Contact, Runway Incursion and Runway Excursion. The table below summarises the most relevant ones.

Key Actions:
- Require on-board technology to reduce runway excursions;
- Improve aircraft performance in Commercial Air Transport operations – launch of RMT.0296
- Assess the need to install and use predictive wind shear systems – launch of RMT.0369, RMT.0370
- Promote the European Action Plan for the Prevention of Runway Excursions (EAPPRE);
- Member States to address runway safety by taking actions at national level and measuring their effectiveness. – assessment of EASA MS SSP within the Cross-domain Standardisation programme.

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

RWSL is a step forward in improving situational awareness of pilots and vehicle operators, with the aim of reducing the number and gravity of runway incursions. RWSL is a fully automatic, advisory safety system designed to provide crews with an immediate, accurate and clear indication of the runway occupancy status.

RWSL indicates when a runway is unsafe to enter or cross through the use of in-pavement warning Runway Entrance Lights (RELs) and when it is unsafe to take off through the use of in-pavement warning Take-off Hold Lights (THLs).
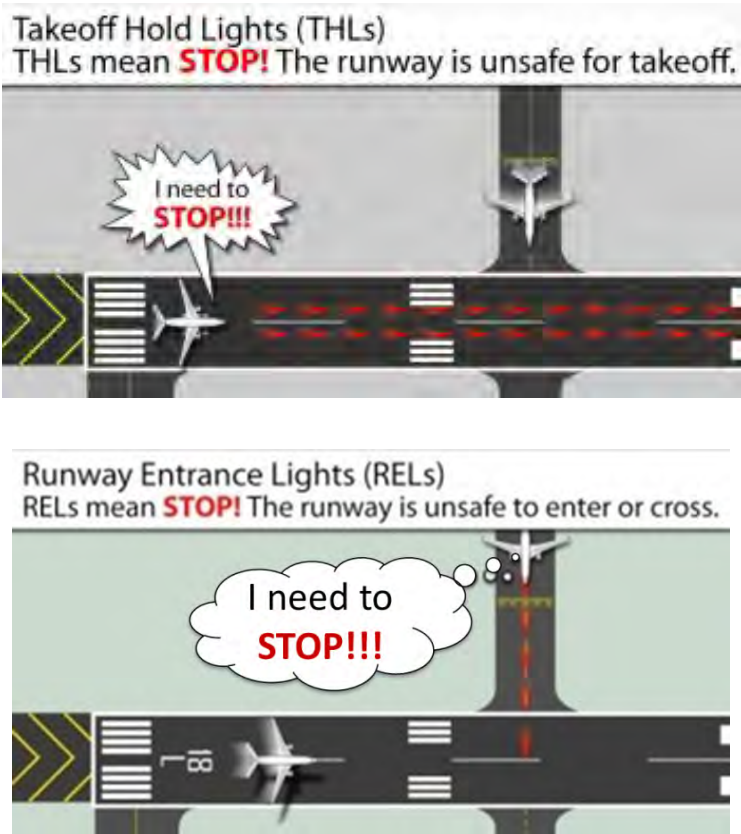
Click here to view all the different training scenarios on EUROCONTROL's website.

The close cooperation between the DGAC, DSNA, Aéroports de Paris and EUROCONTROL has enable a real step forward to be made in improving situational awareness for both flight crews and vehicle drivers when approaching runway thresholds and holding points.

Click here to download the RWSL operational leaflet:

http://www.developpement-durable.gouv.fr/Runway-Status-Lights-at-Paris-CDG.html

2.4.4.4. Joint-Use Civil Military Aerodromes

One approach to tackle the projected runway 'capacity crunch' is for the industry to make more use of joint civil-military aerodromes. Before joint civil-military operations can be sanctioned, there are a number of institutional, legal, operational, financial and technical challenges that must be met and overcome, including those related to runway safety. Fundamentally, the following points need to be addressed:

● The proposed solutions should support the various stakeholders' obligations and safety objectives.

● There must be a comprehensive understanding of the applicable regulatory framework to improve existing solutions.

● National requirements relevant to public security and defence must be accommodated.

It is for State civil and military authorities to decide how they can best ensure that, as far as practicable, joint-use civil-military aerodromes offer a level of safety that is at least as effective as that required by the essential requirements of the European Union (Regulation (EC) No. 216/2008). Non-binding EUROCONTROL Guidelines "Supporting the Civil Use of Military Aerodromes" (CUMA) published in 2009 can help State authorities meet the essential requirements. The CUMA Guidelines contain 78 Recommendations, including 2 specifically targeting runway safety. Key amongst the latter is the implementation of the European Action Plan for the Prevention of Runway Incursions (EAPPRI[5]) which in itself contains additional information related to improving runway safety on joint-use civil-military aerodromes.

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[5] EUROCONTROL will lead a cross-industry development of EAPPRI during 2016 with a view to releasing a new version 3.0 of the document during 2017.

Some of the specific areas of interest that need to be addressed include:

- Establishing the aerodrome operating authority – two authorities (civil and military) will need to be involved and it is critical that they clearly understand their respective key roles and responsibilities.
- The mixed type of operations and aircraft, and associated radio equipment and procedures represent a special set of potential hazards.
- Disparities with ground infrastructure items such as aerodrome markings and lighting also need to be examined to ensure that, as far as possible, they align with ICAO and EU standards and do not present an unacceptable risk to safe runway operations on joint-use aerodromes.

Local workshops with aerodromes considering changing to joint-use civil-military status have also shown that some military SMSs are either immature or non-existent. This is a fundamental shortcoming that must be tackled; the ultimate aim should be to integrate and align SMSs as much as possible to ensure the optimum level of mutual cooperation. A military Safety Manager with a broader portfolio (in the SMS) than the traditional military Flight Safety Officer can provide more general support. In addition, the establishment of a Military Aviation Authority (MAA) to work and coordinate with the equivalent CAA has proven to be an optimal way to foster closer collaboration at the State level.

At the operational level, the establishment of a local runway safety team (LRST), which must include both civil and military personnel, is an important runway safety enhancement mechanism especially on joint-use aerodromes where there is, by definition, a wider range of affected stakeholder groups

2.4.5. Activities Aimed at Reducing Risks of Other Categories of Accidents

2.4.5.1. Guidance material for the continued safety monitoring of the RVSM airspace

The implementation of RVSM in the European Air Navigation Region provided the benefits of additional en-route capacity and improved fuel efficiency for aircraft operators. Such a major transformation of the separation minima required extensive safety analysis of the inherent increase in the risk of mid-air collision, which resulted in the definition of more stringent aircraft altitude keeping performance requirements. A monitoring programme was also initiated to ensure that both the technical and operational safety issues of the new separation standard were appropriately identified and addressed prior to implementation.

In order to ensure that necessary activities remain in place for the post implementation safety monitoring, responsibilities conducted by an Regional Monitoring Agencies (RMAs) on behalf of, and supported by, accredited States, EUR Doc 034 Guidance material for the continued safety monitoring of the European RVSM airspace, were developed and published at the ICAO EUR/NAT webpage: http://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx (section: EUR documents).

The purpose of this document is to describe the post-implementation safety monitoring activities for RVSM airspace, the respective roles and responsibilities of RMAs and States and the importance of a collaborative approach to ensure the continued safe operation of RVSM in the European Air Navigation Region.

The specific purpose of this guidance material is to:

a) Encapsulate the regulatory requirements contained in Annexes 6 and 11 to the Chicago Convention and to describe a practical safety monitoring framework in order to meet the particular demands of the European RVSM airspace;

b) describe the principal roles and interfaces of the EANPG, accredited member State and the RMA to provide an effective framework for all safety monitoring and oversight activities;

c) describe the data exchange and coordination requirements between the RMA and State NSAs, as well as recommended working practices; and

d) provide recommendations for appropriate action in the event of operator non-compliance with RVSM approval or performance requirements.

The proper implementation of the document is considered to be an important measure for prevention of possible mid-air collisions through proactive data collection, analysis and actions taken.

2.4.5.2. Belarus PANS OPS Workshop

An ICAO Workshop dedicated to the topic of strengthening the safety oversight system in the area of PANS-OPS was held from 27 to 30 April 2015 in Minsk, Belarus. The Workshop was attended by about 80 participants from the EUR Region and was hosted by the CAA of Belarus.

The workshop was convened in follow-up to the discussions and recommendations of the 2nd ICAO HLSC inviting ICAO to assist States in enhancing their PBN oversight capabilities in order to facilitate the implementation of PBN as an ICAO GANP priority and also as a contributory factor in addressing one of the GASP priorities, namely reducing CFIT, specifically at the approach phase of flight. PANS-OPS oversight is an integral and critical part of PBN oversight and implementation. Through the ICAO USOAP database and a specific survey conducted by the ICAO EUR PBN task force, it was determined that the level of EI by EUR States of ICAO PANS-OPS provisions is on average about 50%. The Workshop assisted in identifying the main problem areas and causes for such low level of compliance. It also allowed the sharing of experience and lessons learnt, and discussing and agreeing on regionally coordinated actions to tackle this problem. One such action, which will be further addressed by ICAO EUR/NAT in coordination with other international organisations and States, is to establish a regional network to share expertise among EUR States in the area of PANS-OPS oversight.

2.4.5.3. Work on Conflict Zones

Since the tragic event of the downing of Malaysian Airlines flight MH17 over Ukraine, there is a general consensus within the international community that improvements should be made in the way stakeholders share information on risks arising from conflict zones.

In this context, it was decided to establish a European High Level Task Force to respond effectively to risks associated with overflight of zones of conflict or armed insurgency. The Task Force concluded the work issuing the following recommendations:

- **STATE Actions:** EU Member States are recommended to set up national systems for addressing Risks to Civil Aviation from Conflict Zones in which relevant information is shared with operators. In addition, EU Member States should cooperate in sharing conflict zone information with the view to enable the development of common EU risk assessments (facilitated by Commission services) and to enable the timely sharing of information on rapidly emerging new threats.

- **EASA Actions:** EASA should put in place a process allowing the publication of information and recommendations related to conflict zone risks, based on common EU risk assessments, or based on threat information.

- This should be done in close coordination with Member States, taking into account the needs for both consultation and for timely dissemination including for emergency cases.

- **Intelligence Agencies Actions:** Within the boundaries of a States' legal structure, the intelligence agencies should support national systems for addressing risks arising from conflict zones and should support the State's contribution to the sharing of information at EU level on rapidly emerging new threats.

- **European Commission Actions:** Commission services should facilitate the exchange of risk analysis and the development of common EU risk assessments, with the support from Member States, EASA, EUROCONTROL and the European External Action Service (EEAS).

- **Operator Actions:** Operators should make use of available information and recommendations on conflict zones, and incorporate this information into their risk assessment or decision making processes. Furthermore, they should share their own risk assessment information with the national authorities, and are encouraged to also share this information with the RCZ Network.

The full report is available through the following link:
https://www.easa.europa.eu/system/files/dfu/Task%20Force%20on%20Conflict%20Zones%20-%20Summary%20and%20Recommendations.pdf

2.4.5.4. GWI Task Force

Under a mandate of the EC, EASA and 14 senior representatives from airlines, flight crew associations, medical advisors and authorities, established a Task Force to look into the accident of Germanwings flight 9525 including the findings of the French Civil Aviation Safety Investigation Authority's (BEA) preliminary investigation report.

As a result of its work, the Task Force delivered a set of 6 evidence-based recommendations to the EC on 16 July 2015, balancing medical secrecy and safety, and applying proportionality between safety objectives and technical solutions:

- **Recommendation 1:** 2-persons-in-the-cockpit recommendation is maintained. Its benefits should be evaluated after one year. Operators should introduce appropriate supplemental measures including training for crew to ensure any associated risks are mitigated.

- **Recommendation 2:** All airline pilots should undergo psychological evaluation as part of training or before entering service. The airline shall verify that a satisfactory evaluation has been carried out. The psychological part of the initial and recurrent aeromedical assessment and the related training for aero-medical examiners should be strengthened. EASA will prepare guidance material for this purpose.

- **Recommendation 3**: Mandate drugs and alcohol testing as part of a random programme of testing by the operator and at least in the following cases: initial Class 1 medical assessment or when employed by an airline, post-incident/accident, with due cause, and as part of follow-up after a positive test result.

- **Recommendation 4:** The establishment of robust oversight programme over the performance of aero-medical examiners including the practical application of their knowledge. In addition, national authorities should strengthen the psychological and communication aspects of aero-medical examiners training and practice. Networks of aero-medical examiners should be created to foster peer support.

- **Recommendation 5:** National regulations to ensure that an appropriate balance is found between patient confidentiality and the protection of public safety.

- The creation of a European aeromedical data repository as a first step to facilitate the sharing of aeromedical information and tackle the issue of pilot non-declaration. EASA will lead the project to deliver the necessary software tool.

- **Recommendation 6:** Recommendation 6: The implementation of pilot support and reporting systems, linked to the employer's SMS within the framework of a non-punitive work environment and without compromising Just Culture principles. Requirements should be adapted to different organisation sizes and maturity levels, and provide provisions that take into account the range of work arrangements and contract types.

The full report is available at: http://ec.europa.eu/transport/modes/air/news/doc/2015-07-17-germanwings-report/germanwings-task-force-final-report.pdf

2.4.5.5. Civil-Military Coordination Contribution to Safety

An important factor to establish enhanced safety levels in aviation including ATM is appropriate civil-military coordination.

EUROCONTROL promotes and contributes to a significant range of civil-military coordination activities which decisively support safety objectives. Besides the well-recognised activities in the Flexible Use of Airspace (FUA) and Airspace Management domains, the efforts to improve CNS interoperability and to reduce equipage exemptions have a major impact on safety. This is a key enabler for the seamless accommodation of military flights operating in a mixed-mode environment.

With roughly 10,000 military aircraft flying in European airspace, there is a clear need for civil-military coordination in the safety domain since civil and military airspace users share the airspace as one common resource under the FUA concept. It is important, therefore, that any kind of regulatory and/or technical developments are coordinated between civil and military from the outset to avoid potential negative impacts on aviation and ATM safety. In order to improve civil-military cooperation, EUROCONTROL has involved more proactively military stakeholders in safety activities related to loss of air-ground communications (COMLOSS), airspace infringement, runway incursions etc., including the use of the EUROCONTROL SKYBRARY and EVAIR repositories.

ASM activities related to AFUA, such as LARA ((http://www.eurocontrol.int/services/local-and-sub-regional-airspace-management-support-system-lara) deployed in more than 20 member States) and CIMACT(http://www.eurocontrol.int/services/civil-military-atm-co-ordination-tool-cimact) are all aiming at improving situation awareness and coordination among civil and military – and improved safety as a consequence.

In the CNS interoperability domain, the abovementioned effort to limit equipage exemptions for State aircraft and to promote interoperability will pay off in terms of safety improvements. Concrete efforts included the agreement of a sound migratory roadmap, direct support to military aircraft modernisation programmes, production of technical guidance for military operators and ground breaking work, in the context of SESAR, to create conditions to enhanced and secure civil-military data sharing in the context of net centric SWIM structures.

Current initiatives taken are already paving the way for future improvements. They mainly focus on the Military community involvement throughout the development process of new safety initiatives. The scope should also aim to identify and recommend SMS enhancements, as well as improvements related to the sharing of best practices, supporting the ICAO GASR and to include all relevant safety aspects and their civil-military coordination needs into the development and deployment of SESAR.

Another important area is performance monitoring. EUROCONTROL has been paramount to facilitate the resolution of transponder anomalies or altimetry (RVSM) deficiencies involving State aircraft operating as GAT. Together with the on-going promotion of adequate ATM/CNS equipage levels (e.g. 8.33 kHz radios, FM Immunity, Mode S, ACAS/TCAS 7.1, etc.) for State aircraft flying in a mixed-mode context, those initiatives must be recognised as safety-critical.

2.4.5.6. Additional EPAS Activities

The EPAS addresses several safety actions over other key risk areas.

Fire, smoke and fumes: Uncontrolled fire on board an aircraft, whether in-flight or on the ground, is one of the most severe hazards in aviation: the former can ultimately lead to loss of control as a result of structural or control system failure, or due to crew incapacitation; the latter can lead to major casualties if evacuation and emergency responses are not swift enough.

Mid-air collisions: No major mid-air collisions have occurred in Europe in recent years, yet loss of separation related occurrences are the second most critical cause of all non-fatal accidents and serious incidents in Europe.

Design and maintenance improvements: Design improvements can limit the probability of technical failures, which are the leading cause of accidents and serious incidents in Europe, and the second highest cause of fatal accidents (after post-crash fires).

Ground safety: Ground safety includes both ground collisions and ground handling. Ground handling occurrences are the fourth most common cause of fatal accidents. They also cause significant damage to aircraft and equipment.

New products, systems, technologies and operations: In the years to come, regulatory updates will be needed to manage the introduction of new products, systems, technologies, types of operations and associated trends, as well as to mitigate their risks on aviation safety.

Regulatory and oversight considerations: EASA's new, strict oversight requirements for Member States, developed under the Agency's 1st and 2nd Extension, have introduced the concept of risk-based and cooperative oversight, which must now be supported through implementation.

Information on actual deliverables will be presented in future versions of the RASG-EUR annual safety reports.

2.4.6. Ongoing Work on New Challenges

2.4.6.1. ICAO EUR Ops Bulletin No. 2015_002 – Guidelines to Airspace Users on State Aircraft Operations in High Seas Airspace over the Baltic Sea

As a follow-up to the ICAO Civil/Military Cooperation Symposium which was held at the ICAO EUR/NAT Office in April 2015, the Sixty-Second Meeting of the EANPG Programme Coordinating Group (COG/62) established the Baltic Sea Project Team (BSPT).

Based on the initial proposal from the Russian Federation and considering the recommendations from the EASA Report (Report-EDO.1-2015) on occurrences over the High Seas involving military aircraft in 2014, the BSPT was tasked with addressing the following aspects amongst all involved stakeholders (States, NATO, EUROCONTROL, EASA, IATA, etc.) in the Baltic Sea area:

a) Create a forum to provide a better understanding of the key activities performed by all the parties involved, at the operational level.

b) Create a list of known incidents and/or operational issues where interactions occur between civil aircraft and State aircraft when State aircraft operations are conducted only partially in accordance with ICAO Provisions and, as a consequence, flight safety may be impaired.

c) Having created the list of operational issues and incidents, identify suitable mitigations to reduce the risk that is created to a tolerable level.

d) Make proposals to amend procedures that result in operational improvements to flight planning, notification or conduct of flights in the vicinity of TMAs or those flights that have the potential to create an operational impact.

e) Create a list of suitable Focal Points who are likely to be available at short notice out of normal working hours to facilitate decision making, dialogue or efficient information flow. Create the appropriate escalation process to be followed in the event of abnormal circumstances.

f) Make recommendations for any changes that the BSPT consider to be appropriate for changes to current regulations or the need for new ones.

g) Notify to ICAO EUR/NAT Office those residual issues that go beyond these Terms of Reference.

One of the major achievements of the BSPT was the publication of ICAO EUR OPS-Bulletin 2015 002. The bulletin is made available at the ICAO EUR/NAT webpage: http://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx (EUR documents - > EUR OPS bulletins).

The purpose of Bulletin 2015_002 is to promulgate guidelines to airspace users in order to raise their awareness on State aircraft operations under due regard, or when State aircraft operations are conducted only partially in accordance with ICAO provisions, especially in the High Seas airspace over the Baltic Sea.

2.4.6.2. RPAS Operational Concept and Integration

Drones should be integrated into the existing aviation system in a safe and proportionate manner, and this integration should foster an innovative and competitive European drone industry, creating jobs and growth, in particular for Small and Medium-sized Enterprises (SME). The proposed regulatory framework should set a level of safety and environmental protection acceptable to society and offer enough flexibility for the new industry to evolve, innovate and mature.

Therefore, the exercise is not simply transposing the system put in place for manned aviation but creating one that is proportionate, progressive, risk based and the rules must express objectives that will be complemented by industry standards. Considering the broad range of operations and types of drones, it is proposed to establish three categories of operations and their associated regulatory regime: Open, Specific and Certified. The "Open" operation category of drones should not require an authorisation by an Aviation Authority for the flight but stay within defined boundaries for the operation (e.g. distance from aerodromes, from people, etc.). The "Specific" operation category will require a risk assessment that will lead to an Operations Authorisation with specific limitations adapted to the operation. The "Certified" operations will be required for operations with a higher associated risk or might be requested on a voluntary basis by organisations providing services such as remote piloting or equipment such as "detect and avoid".

Protection of other public interests such as privacy and security entailed by drone operations will need to be addressed at the same time as the safety risk and will be dealt with at national level.

The regulatory framework may envisage provisions to reduce those risks. The developing regulations need to be complemented by safety promotion actions to support the Member States.

The further development of drones and their integration in non-segregated airspace will pose new challenges and a significant amount of further research needs to be performed. The ATM/ANS aspect of the concept of operation will need to be further developed. Also, the harmonization of regulations and availability of spectrum is fundamental to the success of drones. Finally, the development of the drone market and the development of the technologies need to be carefully monitored and the planning adapted.

The full paper on the Concept of Operation for Drones is available here:

https://www.easa.europa.eu/easa-and-you/civil-drones-rpas

3. 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)*	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	Percentage of resolved SSCs in the Region / number of new SSCs	All SSCs resolved by end 2014 and no new SSC
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/ serious incident investigations[6]	Yearly regional rate of accidents and serious incidents, 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 3: Safety metrics and targets as defined by RASG-EUR

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[6] During the fifth meeting of the European Regional Aviation Safety Group Coordination Group (RCOG/05) agreed that the scope of ST6 should be reduced to accidents investigation only due to absence of validated data to support monitoring of serious incident investigations in the region.

	Value for reference period	**Value for 2015**
ST1 – Accident rate in commercial air transport	2009-2013 regional average: 3.84 accidents per million departures	2011-2015 average: 3.72 accidents per million departures For information: 2015 accident rate: 3.1 (25 accidents, 1 fatal accident, 150 fatalities) 2014 accident rate: 3.0 2013 accident rate: 3.0 2012 accident rate: 4.0 2011 accident rate: 5.8 2010 accident rate: 3.6 2009 accident rate: 2.8
ST2 – CAA resources	52.976%	56.366%
ST3 – Certification, surveillance and resolution of safety concerns	CE-6: 81.526% CE-7: 67.236% CE-8: 70.396% Average EI: 73.056%	CE-6: 81.026% CE-7: 67.646% CE-8: 70.366% Average EI: 73.016%
ST4 – SSC resolution	2 States with total of 3 SSCs: - 1 with 2 SSCs, - 1 with 1 SSC	0 SSC resolved / 2 SSCs unresolved / 1 new SSC 2015 situation: 3 States with total of 3 SSCs *(1 SSC each)*
ST5 – SSP implementation	N/A	"Gap analysis started": by 68.096% of States above 606% EI
		"Gap analysis completed": by 44.686% of States above 606% EI
		"Implementation plan defined": by 25.536% of States above 606% EI
		"SSP implementation completed": by 06% of States above 606% EI
ST6 – Accident / serious incident investigations	No validated data available for 2013	There were 25 accidents reported to ICAO in 2015 with State of occurrence in EUR/NAT region. 16 accidents were found to have investigation launched. For the residual 9 no information was found if the investigation is launched, i.e. current rate is 646%

Table 4: *2014 values for safety targets adopted by the RASG-EUR (source: ICAO).*

4. Executive Summaries of Publicly Available Regional Annual Safety Reports

## EUROCONTROL Annual Safety Report

General Considerations

The analysis of the ATM safety performance contained within this report is based on the Annual Summary Templates (AST) submitted to the EUROCONTROL Safety Regulation Commission (SRC) by 40 Member States by the end of March 2016.

Accidents with Direct and Indirect Contribution

The SRC Annual Safety Report covers accidents involving aircraft above 2250 kg MTOM, irrespective of whether the ATM domain contributed or not to the event.

In 2015, the safety data received from the AST reporting mechanism and available information from ICAO indicates there were a total of 82 accidents, out of which 17 were fatal.

Accidents in EAC with ATM contribution and traffic levels - aircraft above 2250 kg MTOM
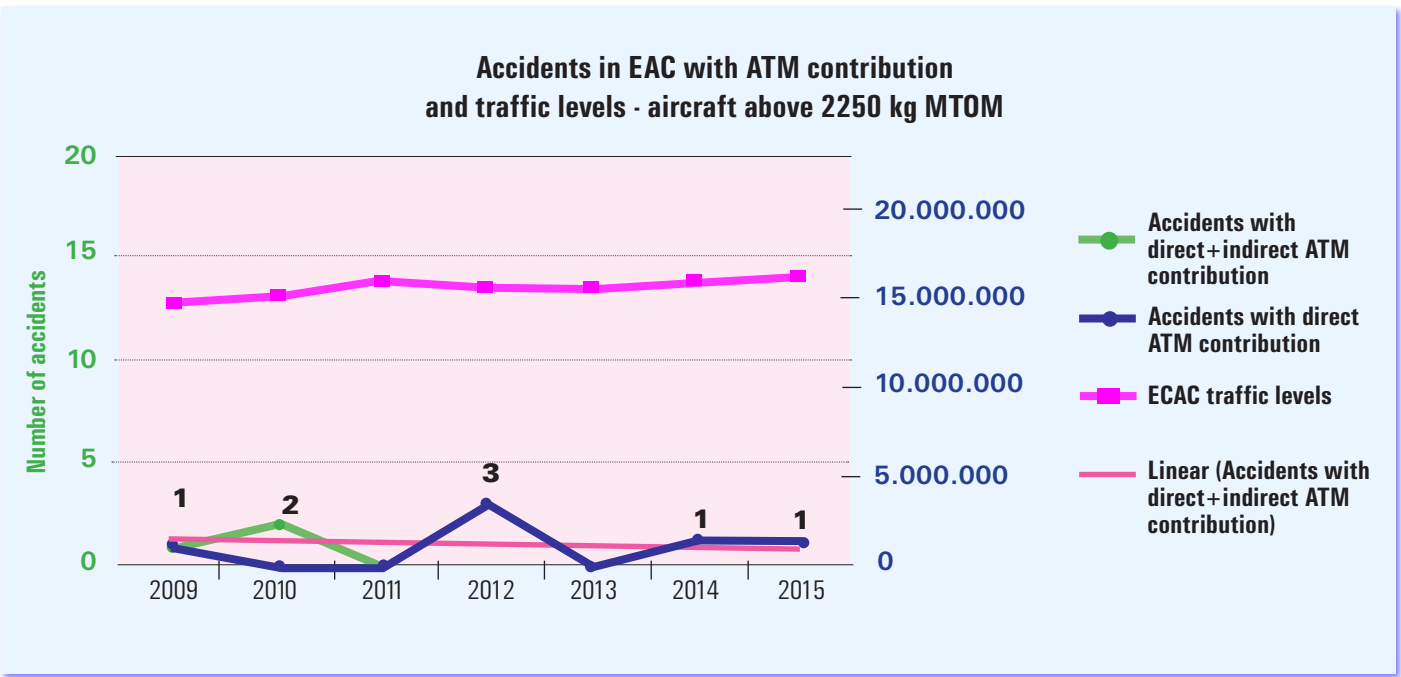
It is important to note however, that with the traffic level increasing by 2% compared to the previous year, one of the reported accidents had a Direct ATM contribution. This accident was classified as a non-fatal collision on the ground.

ATM-Related Incidents

An increase of 4.7% is noted in the number of ATM related occurrences in 2015. If we consider the traffic growth, the increase is slightly lower (2.7%).

Total ATM Related Incidents
(Occurrence per Million Flight Hours and Severity)
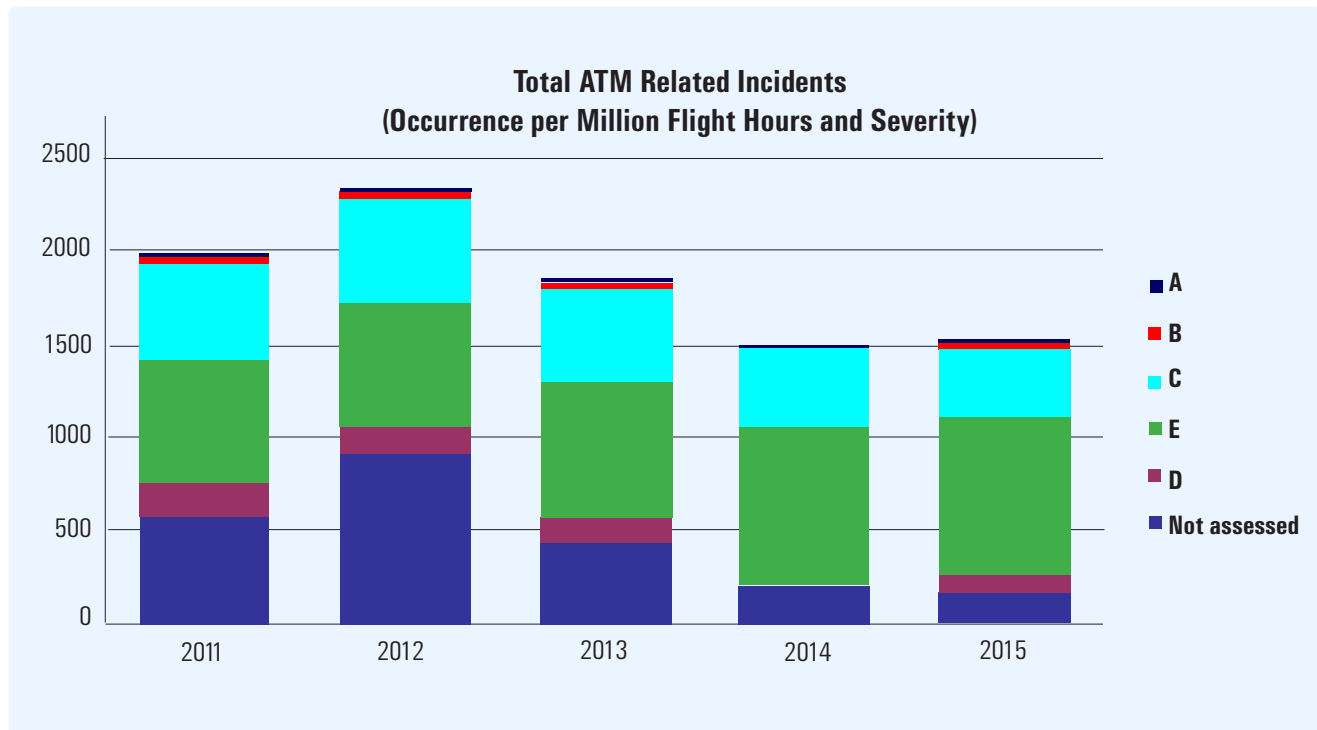
In respect of the evolution of the risk posed by the reported incidents to the ATM system, it is to be noted that there is a small decrease in the number of reported occurrences in almost all the risk-bearing categories. In absolute numbers, the serious incidents (severity class A) decreased by over 12%, whilst the major occurrences (severity class B) were at the level of 2014.

The preliminary 2016 SRC Annual Safety Report addresses the ATM related operational safety issues identified in the AST reported data and highlighted by the AST Focal Points (AST-FP) during the open debates on the Key Risk Areas in their Member States.

Like in the previous years the following types of ATM related occurrences had been at the core of the analysis:
- Separation Minima Infringements
- Runway Incursions
- Airspace Infringements
- Level Busts

One of the particular areas of interest is how the use of the RAT methodology affects the level of severity assessment of the ATM related occurrences by Member States. The methodology is obligatory to be used for those occurrences within the scope of the Performance Scheme Regulation.

In addition, the SRC Annual Safety Report addresses the new emerging risk areas such as Laser illumination and RPAS/Drones.

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 2015

The IAC has released its flight safety report for contracting States of the agreement on civil aviation and airspace usage. The report covers accident investigation analysis data. The full version of the report can be consulted at http://www.mak-iac.org/upload/iblock/ba9/bp15-2.pdf

International Air Transport Association (IATA) Safety Report for 2015

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 found at http://www.iata.org/publications/Pages/safety_report.aspx.

EASA Annual Safety Review for 2015

The document summarises the main points of the Annual Safety Review, while the full version is available as an electronic document on the EASA website. The review has been published since 2005 and this edition continues the evolution of the review from previous years with further safety risk portfolios being provided. The analysis in this year's review aims to identify the most common key risk areas (outcomes) and associated safety issues that lead to accidents in each of the different operational domains of aviation. The review also provides a link between the analysis and the current actions in the EPAS. In the safety risk portfolios, event types in the ECCAIRS/ADREP Taxonomy have been matched as closely as possible to the different safety issues. However, perfect matches were not possible in all cases and therefore the numbers should on be taken as indicative of the general number of occurrences that relate to each safety issue.

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[7] It should be noted that Georgia is not one of the agreeing States forming IAC.

This section provides a general overview of aviation safety in the EASA MS. It compares the number of fatal accidents and fataThis section provides a general overview of aviation safety in the EASA Member States. It compares the number of fatal accidents and fatalities in each operational domain in 2015 with the annual average for the past 10 years. The top five operational domains in terms of the number of fatalities in 2015 were:

Commercial Air Transport Aeroplanes

In 2015, CAT aeroplane accidents were responsible for the highest number of fatalities across all aviation domains. In 2014, there were 2 fatal accidents, which continues the trend of not more than two fatal accidents in CAT Aeroplanes per year since 2005. This operational domain is the greatest focus of EASA's safety activities and the reorganisation of the collaborative groups and advisory bodies will help the Agency to learn more about the safety challenges faced by airlines and manufacturers.

Non Commercial Aeroplanes

In terms of fatal accidents, the second highest number occurred in non-commercial operations with aeroplanes. This domain also had the second highest number of fatalities with 65, which is less than the 10-year yearly average of 79. The General Aviation Roadmap is key to the Agency's strategy for non-commercial aeroplane operations and the establishment of a Collaborative Analysis Group (CAG) in this area to support the work of the current General Aviation Sub Safety Consultative Committee will help to identify the most effective safety actions.

Gliders/Sailplanes

Glider/sailplane operations had the third highest number of fatalities with 27 and the second highest number of fatal accidents, of which there were 24. Both the number of fatalities and the number of fatal accidents were slightly higher than the 10-year average.

Aerial Work/Part SPO Aeroplanes

In 2015, there were two major accidents involving aerial work/Part SPO operated aeroplanes. One was an airborne collision between two LET-410 aircraft taking part in Parachuting operations in Slovakia that resulted in 7 fatalities. The other occurred at the Shoreham Air Show in the United Kingdom and resulted in 11 ground fatalities. These two accidents led to a much higher number of fatalities compared with the 10-year annual average despite there being the same number of fatal accidents. Following the Shoreham accident, the UK CAA completed a review of public air display arrangements and an associated actions report. In addition, EASA is currently performing specific analysis on parachuting operations in collabo-ration with experts from this domain to understand more about the risks and consider how improvements can be made.

Non-Commercial Helicopters

Non-commercial helicopter operations had the fifth highest number of fatalities, which was a reduction of more than 50% when compared with the 10-year annual average.

DOMAIN	Fatal Accidents 2015	Fatal Accidents Annual 10 Year Average	Fatalities 2015	Fatalities Annual 10 Year Average
CAT Aeroplanes	1	1.3	150	64.2
Offshore	0	0.4	0	3
CAT Helicopters	1	2	4	9.1
AW/ Part SPO Aeroplanes	7	7	23	11.3
AW/ Part SPO Helicopters	2	4.3	4	8.5
Non-Commercial Aeroplanes	41	42.2*	65	79*
Non-Commercial Helicopters	6	8.2*	7	14.5*
Balloons	2	0.6*	3	1.8*
Gliders	24	22.3*	27	25.9*
RPAS	0	0*	0	0

*Annual average is 5 years only from 2011-2015

The full report s available at:
http://www.easa.europa.eu/document-library/general-publications/annual-safety-review-2016

National Annual Flight Safety Reports
Links to RASG-EUR member States safety reports for 2015 (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, although growing traffic numbers and reduced separations will require proper attention to maintain the progress towards the safety targets set. Hence, the RASG-EUR 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 – remain unchanged. The priorities of the RASG-EUR regarding safety developments can, therefore, not be altered.

→ The disparity between States in terms of the overall levels of EI of ICAO SARPs remains an area of specific concern as it principally affects the States' obligations in safety oversight.

→ The deadline for SSP implementation in the Region by States with EI > 60% is end 2017. Yet the progress observed is insufficient to achieve the targets set out in the GASP, meaning that regionally coordinated actions are becoming an urgent requirement.

→ Even so, States and international and regional organisations throughout the Region continue to heavily invest in a broad range of safety enhancement initiatives at strategic and tactical level, comprising training and comprehensive technical assistance.

→ The RASG-EUR encourages its stakeholders to further improve the regional safety record in a collaborative manner, including safety intelligence to monitor, review and improve KPIs / SPIs. The development of a credibility rating of States vis-à-vis the results of oversight activities should be encouraged.

→ Regional implementation of Safety Tools for information collection, network safety investigation processes and knowledge sharing is required to enable the shift to proactive and predictive ways to managing safety.

List of Acronyms

ACAS – Airborne collision avoidance system

ADREP – Accident and incident data reporting (ICAO)

AGA – Aerodromes and ground aids

AIG – Aircraft accident and incident investigation

AIR – Airworthiness

ALAR – Approach-and-landing accident reduction

AMC – Acceptable means of compliance

ANC – Air Navigation Commission (ICAO)

ANS – Air navigation services

ANSP – Air navigation service provider

AOC – Air operator certificate

AST – Annual summary template

ATM – Air traffic management

CAA – Civil aviation authority

CAC – Civil Aviation Committee (Kazakhstan)

CANSO – Civil Air Navigation Services Organisation

CAST – Commercial aviation safety team

CE – Critical element

CFIT –- Controlled flight into terrain

CIS – Commonwealth of Independent States

CMA – Continuous monitoring approach

CNS – Communication, navigation and surveillance

COSCAP – Cooperative Development of Operational Safety and Continuous Airworthiness Programme

DGAC – Direction générale de l'aviation civile (France)

DIP – Detailed implementation plan

DSNA – Direction des Services de la Navigation aérienne (France)

EANPG – European Air Navigation Planning Group

EASA – European Aviation Safety Agency

EC – European Commission

ECAC – European Civil Aviation Conference

ECAST – European Commercial Aviation Safety Team

ECCAIRS – European Coordination Centre for Accident and Incident Reporting Systems

EGAST – European General Aviation Safety Team

EHEST – European Helicopter Safety Team

EI – Effective implementation

ENP – European Neighbourhood Policy

EoSM – Effectiveness of safety management

ESSI – European strategic safety initiative

EU – European Union

EUR/NAT – Europe and North Atlantic

EVAIR – EUROCONTROL Voluntary ATM Incident Reporting

FAA – Federal Aviation Administration (US)

FAB – Functional airspace block

FABEC – Functional Airspace Block Europe Central

FDA – Flight data analysis

GA – General Aviation

GADM – Global Aviation Data Management (IATA)

GASP – Global aviation safety plan

GASR – Global aviation safety roadmap

GOA – Go-around

GPS – Global positioning system

GSP – Ground service provider

HLSC – High level safety conference (ICAO)

HR – Human resources

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

IOSA – IATA Operational Safety Audit

IPA – Instrument for Pre-accession Assistance

ISAGO – IATA Safety Audit for Ground Operations

KPI – Key performance indicator

LEG – Primary aviation legislation

LI – Lithium

LOC-I – Loss of control in flight

LRST – Local runway safety teams

MH17 – Malaysia Airlines flight number 17

MTOW – Maximum take-off weight

NSA – National supervisory authority

OPS – Aircraft operations

ORG – Civil aviation organisation

PBN – Performance based navigation

PEL – Personnel licensing

PQ – Protocol question

PRB – Performance review body

PRU – Performance review unit

RA – Resolution advisory

RASG-EUR – European regional aviation safety group (ICAO)

RAT – Risk analysis tool

RE – Runway excursion

RPAS – Remotely piloted aircraft systems

RS – Runway safety

RVSM – Reduced vertical separation minima

SAFA – Safety assessment of foreign aircraft

SARP – Standard and recommended practice (ICAO)

SEI – Safety enhancement initiative

SES – Single European Sky

SMS – Safety management system

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)

TCAS – Traffic collision and avoidance system

TRACECA – Transport Corridor Europe-Caucasus-Asia

USOAP – Universal Safety Oversight Audit Programme (ICAO)

Annex A

Links to RASG-EUR member States safety reports for 2015

Country	Organisation	Language	Link
Belgium	BCAA	Dutch English	http://mobilit.belgium.be/nl/luchtvaart/belgisch_veiligheidsprogramma/veiligheidsplan
		French English	http://mobilit.belgium.be/fr/transport_aerien/programme_belge_de_securite/plan_de_securite
Bosnia and Herzegovina	BHDCA	Bosnian / Croatian / Serbian	http://www.bhdca.gov.ba/website/dokumenti/Bezbjednost_letenja/Izvjestaj%20o%20dogadjajima%202015.pdf
Czech Republic	CAA	Czech	http://www.caa.cz/urad/vyrocni-zpravy
Estonia	CAA	Estonian	http://ecaa.ee/public/Ohutuskokkuvote_2015_1ver.pdf
France	DGAC/DSAC	French	http://www.developpement-durable.gouv.fr/Rapport-sur-la-securite-aerienne.html
Ireland	IAA	English	https://www.iaa.ie/publications/docs/default-source/publications/annual-safety-review-aviation-in-ireland-2014
Romania	CIAS	English	http://www.cias.gov.ro/images/studii/2015_Annual_Safety_Report.pdf
Slovak Republic	CAA	English	http://letectvo.nsat.sk/navigacne-sluzby/vyrocne-spravy-o-dohlade-nad-bezpecnostou/
Spain	AESA	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/
Ukraine	SAA	Ukrainian	http://avia.gov.ua/documents/diyalnist/Obslugovuvannja-povitrjanogo-ruxu/Sertif%D1%96kac%D1%96ja-ta-nagljad/21sert-nagljad/25306.html

Annex B

List of Accidents 2015

Date	Aircraft Type	State of Occurrence	RASG Region	Fatalities	Accident Category
2/1/2015	Saab340	UnitedKingdom	RASG-EUR		RS
20/1/2015	Fokker 100	Germany	RASG-EUR		SCF
30/1/2015	Airbus A320	Italy	RASG-EUR		TURB
2/2/2015	BAe Jetstream	Greece	RASG-EUR		RS
25/2/2015	Boeing 737	France	RASG-EUR		TURB
5/3/2015	Let 410	Italy	RASG-EUR		RS
15/3/2015	Antonov 24	Russian Federation	RASG-EUR		RS
22/3/2015	ATR 72	Spain	RASG-EUR		TURB
24/3/2015	Airbus A320	France	RASG-EUR	150	OTH
25/4/2015	Airbus A320	Turkey	RASG-EUR		RS
2/5/2015	Boeing 737	Poland	RASG-EUR		RS
25/5/2015	Boeing 737	Russian Federation	RASG-EUR		RS
23/6/2015	Airbus A321	UnitedKingdom	RASG-EUR		RS
19/7/2015	Airbus A321	UnitedKingdom	RASG-EUR		RS
16/8/2015	BAe 146	UnitedKingdom	RASG-EUR		RS
11/9/2015	ATR 72	Italy	RASG-EUR		SCF
19/9/2015	Airbus A321	Germany	RASG-EUR		SCF
30/9/2015	ATR 72	Ireland	RASG-EUR		RS
30/9/2015	Bombardier Dash8	Germany	RASG-EUR		RS
9/10/2015	Boeing 737	UnitedKingdom	RASG-EUR		RS
22/11/2015	Boeing 737	Kyrgyzstan	RASG-EUR		RS
24/11/2015	Boeing 737	Germany	RASG-EUR		TURB
5/12/2015	Embraer 145	UnitedKingdom	RASG-EUR		RS
24/12/2015	Airbus A310	Turkey	RASG-EUR		RS

Accident Categories

Code	Description	Code	Description
CFIT	Controlled flight into/towards terrain	TURB	Turbulence encounter
RS	Runway safety	OTH	Other
LOC-I	Loss of control in-flight	UNK	Unknown
F-NI	Fire – non-impact	SCF	System component failure