



European Aviation Safety Plan 2014-2017



European Aviation Safety Agency

Report

*European Aviation Safety Plan
2014-2017*

Draft



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1 2013 Performance at a glance

This section focuses on three aspects of the Plan: the composition of the actions from various perspectives, the Plan performance measured against the original planning established at the beginning of the year and the level of implementation among the various States.

EASp composition

The third edition of the European Aviation Safety Plan (EASp) contained **88 actions**. Almost half of the actions contained mitigate operational risks, being the majority of them classified as safety promotion actions (55%). These actions include launching promotion campaigns, developing safety videos, training syllabi, leaflets and guidance material, holding specific workshops or financing research projects among others.

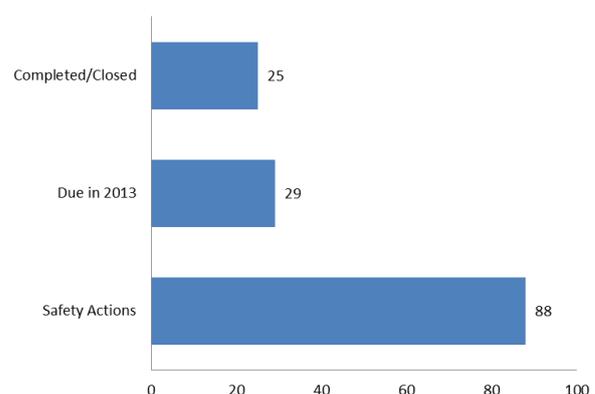
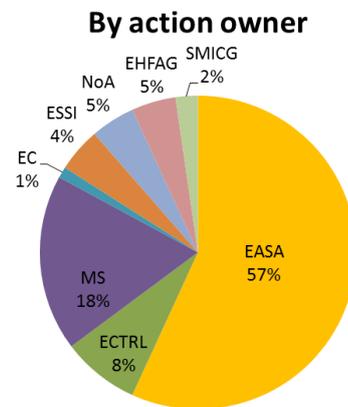
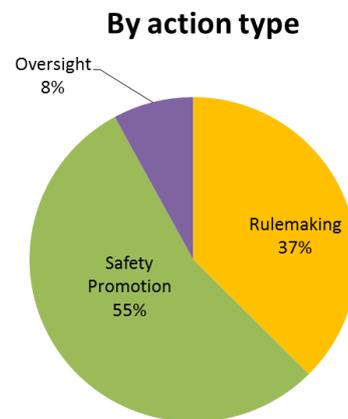
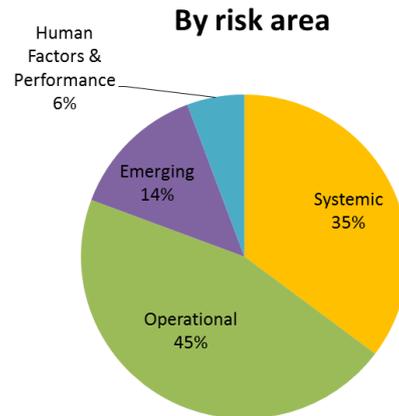
The two major owners of EASp actions are the Agency (57% of the actions) and the Member States (18% of the actions). Other EASp stakeholders are Eurocontrol, the Strategic Safety Initiative's (ESSI) Teams, the European Human Factors Advisory Group (EHFAG), the European Commission (EC), the Safety Management International Collaboration Group (SMICG) and the Network of Analysts (NoA). An overview of the EASp composition is provided in the right side diagrams.

EASp performance

When it comes to delivering results, twenty nine (29) actions were due to be completed in 2013. Twenty five (25) have been delivered during the year including three actions delivered ahead of schedule.

Among the actions finalised in 2013 we find:

- The opinion requiring aerodrome operators (of such aerodrome that will require certification) to implement and maintain a management system as well





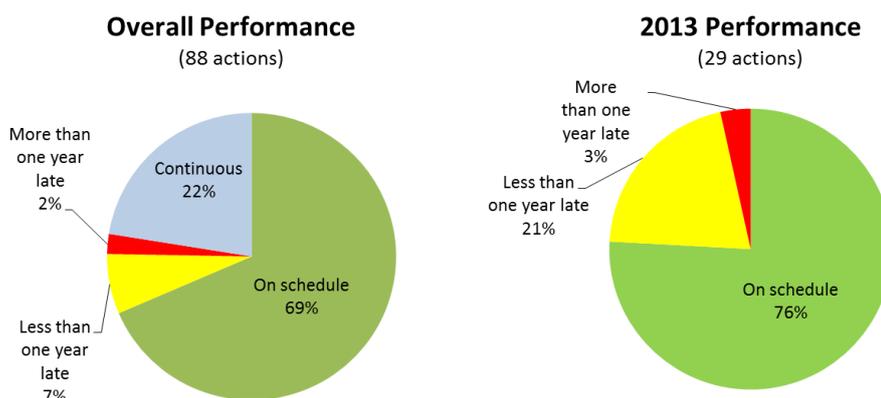
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- as the authorities responsible for their oversight have now been published;
- Progress has been made on paving the way for safety performance measurement: The SMICG has published guidance material for service providers while the NoA has agreed the first SPI definitions with States;
 - EASA and Member States have taken part in the International Committee for Aviation Training in Extended Envelopes (ICATEE) and Loss of Control Aviation Rulemaking Team (LOCART). ICATEE recently delivered a draft Upset Prevention and Recovery Manual to ICAO;
 - A workshop on loss of control prevention and recovery training was organised on 28 February and 1 March at the Agency. The workshop invited the major stakeholders who discussed on issues like theoretical training, on aircraft upset prevention and recovery training (UPRT), Flight Simulation Training Devices, realistic stall prevention and training scenarios development and manual flying skills. Actions coming out of the workshop have been identified and a new EASp action is proposed;
 - The EHEST has finalised a tool to assess the impact of technologies on mitigating helicopter safety issues;
 - A safety conference to exchange views on icing – both on ground and in the air - and identify mitigation opportunities has been organised in October;
 - One uniform standardisation process for all fields of aviation as covered by the Basic Regulation and related Implementing Rules is now developed;
 - The EHFAG has reviewed the rulemaking programme for 2013 to 2016 and identified tasks that have potential HF considerations.

Overall, 69% of the actions are on schedule according to the initial Plan. Significant efforts have been made to deliver results on-time. A number of actions (22%) are continuous activities that are reported every year till the desired results are achieved. They include many of actions under the leadership of States.

Among the 29 actions due in 2013, 22 actions have been completed, while 6 actions have been postponed into next year and one has been moved beyond 2014.

The above diagrams summarise the overall performance of the Plan and the results achieved in 2013.



Level of Implementation in the States

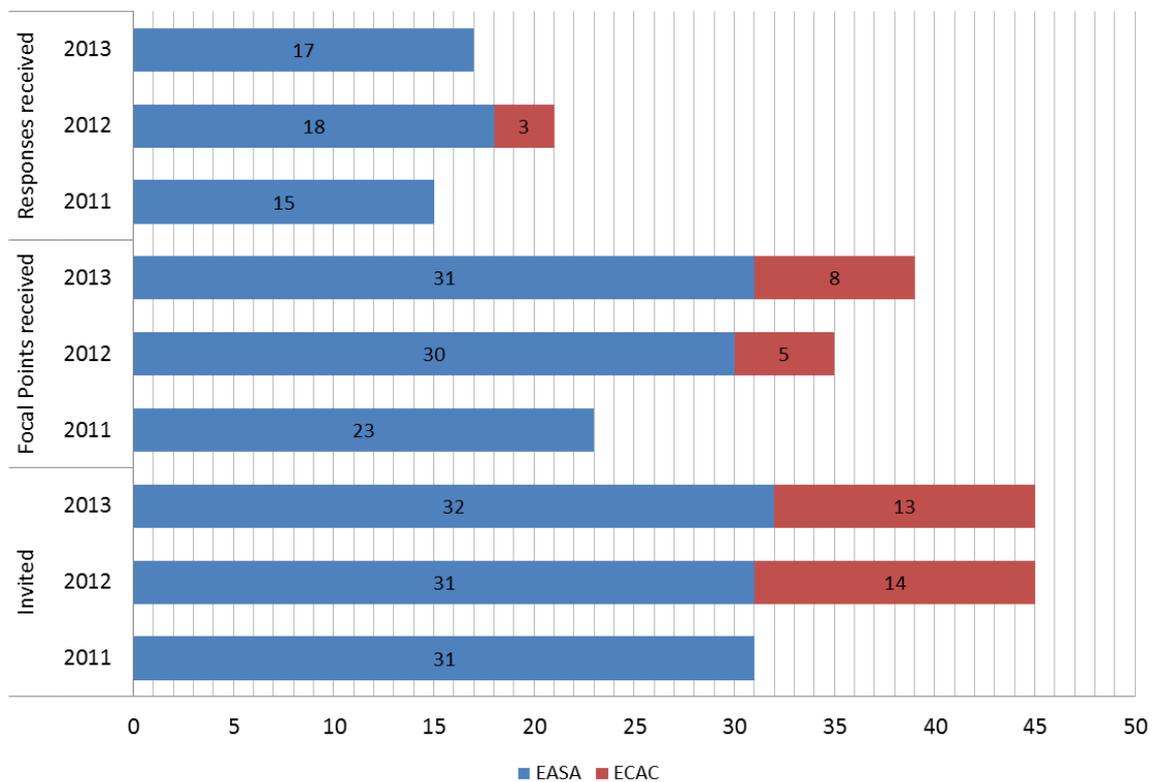
The implementation of the EASp is now extended to 45 States: 32 EASA States plus the 13 States outside the EASA system that are members of ECAC. Like in previous years, a request was sent out to those States that have nominated a focal point in order to retrieve the status



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of the various actions under their leadership (15 actions). **Thirty one** (31) EASA States plus **eight** (8) non-EASA States have nominated focal points, thus formalising their commitment to the EASp. This represents an increase of 4 focal points from the previous year. Seventeen (17) action reports have been received in 2013, 4 less than in 2012. The commitment of States over the three years of EASp implementation is summarised in the below pictures.

	<i>Focal Points</i>	<i>Action reports</i>
Total	39	17
Variation from previous year	+4	-4



In 2013, responses on the status of EASp implementation have been received from Belgium, Bulgaria, Croatia, Finland, France, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Spain, Sweden and Switzerland.

Focal points have been received from all EASA States except Cyprus plus Albania, Monaco, Montenegro, Bosnia and Herzegovina, Macedonia, Moldova, Serbia and Turkey.



2 Introduction

Europe has started to implement a *Safety Management System* to become more pro-active in the identification of hazards and with the ultimate goal of further reducing our already good safety record. This system complements the existing system of developing safety regulations, complying with them and investigating accidents and serious incidents when they occur.

One of the key elements of an SMS is managing safety risks, which means identifying hazards, assessing the risks and making decision on the best course of action to mitigate those risks. Industry organisations and States are also required to do this within the scope of the activities they have to manage.

At the European level this process is carried out in coordination with States and industry because they are part of one aviation system and now documented in a safety plan. That document is the **European Aviation Safety Plan**, the EASp. The Plan starts by identifying those areas in which coordinated action will make a difference in avoiding accidents and serious incidents, which is the ultimate goal that links all the activities together.

The planning activity is followed up by a reporting activity, in which progress on the actions is evaluated and also documented. This feedback loop ensures that the process to manage risks continuously improves.

2.1 Objectives and principles

The main objective of the Safety Plan is to create a common focus on European aviation safety issues as a continuation of the European work to increase aviation safety and to comply with ICAO standards. The fourth edition continues the approach of compiling the on going work in Europe, hence improving traceability and reinforcing commitment to the current initiatives. This will contribute to avoiding the duplication and overlapping of safety initiatives and competition for resources.

While some safety issues stay at national level and are addressed within State Safety Programmes (SSP), there are other instances where common issues of pan-European scope require a collective action. The latter actions are the scope of the present publication.

The fourth edition of the European Aviation Safety Plan covers the 4-year period between 2014 and 2017. The objective of this edition is twofold: on one hand it informs stakeholders on the progress made on the actions during 2013; on the other hand it incorporates new actions to mitigate the already identified safety risks. The initial framework has been slightly updated in this edition as explained in section 2.2.1.

The Safety Plan is built on the principle that the planning for the first year (2014) is a commitment and that the planning for the following years (2015-2017) might be subject to changes depending on changing priorities and availability of resources. Following this principle, the present 4-year Safety Plan commits the stakeholders to the actions planned for finalisation in 2014. These actions are highlighted throughout the document. The actions for the following years (2015-2017) will be reviewed in light of experience. The Agency's Rulemaking programme is also based on this principle.



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2.2 Main risk areas: the Safety Plan Framework

The first edition of the Safety Plan was developed by taking into account Member States safety concerns. In order to support the timely publication of the Plan, a request was sent to the 31 EASA Member States in the first quarter of 2010. They were asked to provide the top 5 safety concerns in their State as well as the process by which they had determined them. A total of 15 responses were received from Member States in May 2010. Additionally, input was aggregated with safety information from Eurocontrol, ECAST and the Agency since these organisations have a pan-European view on safety. The first results were presented to EASAC in June 2010.

The inputs collected were further analysed and classified into three different areas according to the type of issues they highlighted. All of the responses received were placed into one of the following areas:

- a) **Operational Issues**, which are closely related to the events that are reported during operation. The relationship between this type of issues and the final outcomes or end states can be supported by data.
- b) **Systemic Issues**, which affect the aviation as a whole. These issues play a role in accident and incident causation. They underlie operational issues; thus their improvement has an implicit effect on operational causes.

The above issues can be considered as the reactive elements of the Safety Plan since they address problems that have already happened and for which data is to some extent available. In order to balance the composition of the Plan with a more proactive or forward looking element, a third category of issues named **emerging issues** was also proposed.

- c) **Emerging issues**. This area gives some consideration to safety issues derived from operations or regulations that have not been fully deployed and where data is not always available.

SAFETY PLAN FRAMEWORK		
SYSTEMIC ISSUES	OPERATIONAL ISSUES	EMERGING ISSUES
Working with States to implement and develop SSPs Working with States to foster the implementation of SMS in the industry Safety Management enablers Complexity of the system Competence of personnel	COMMERCIAL AIR TRANSPORT BY AEROPLANES	New products, systems, technologies and operations
	Runway Excursions	Environmental factors
	Mid-air collisions	Regulatory considerations
	Controlled Flight Into Terrain	
	Loss of Control In Flight	
	Runway Incursions	
	Fire, smoke and Fumes	
	OTHER TYPES OF OPERATION	
	Helicopters	
	General Aviation	
HUMAN FACTORS AND PERFORMANCE		



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Finally **human factors and human performance** affect all the safety topics discussed within the above areas and it is important to recognise that addressing human factors will bring safety improvements across all those issues. Due to the fact that they have an effect across all domains and the difficulty of associating them to one of the above broad areas, they will be addressed separately in the Safety Plan.

The proposed approach and list of issues was presented to EASA Management Board in June 2010 and constitutes the **Safety Plan Framework**.

2.2.1 Safety Plan Framework update

In this edition of the EASp, the operational issues affecting commercial air transport by airplanes have been slightly reorganised. Up until now the section has been organised in six major accident categories (note that ground collisions include both runway incursions and the safety of ground operations). They represent the various ways in which a CAT aircraft accident can happen.

It has been highlighted that safety of ground operations is not an outcome category as originally intended. However events that occur during ground operations (e.g. inappropriate aircraft loading) can lead to one of the outcome categories already identified (e.g. loss of control) and therefore can be reallocated within the other areas.

Additionally on-board fire was not specifically identified as an outcome category in previous editions. It can be argued that fire on-board has the potential to lead to a loss of control in flight. However it would be also valid to separate this type of accidents into an individual category since the way to address them may benefit from a different approach than in other types of loss of control accidents. The first actions to address on-board fire are proposed in section 4.1

Consequently it is proposed that in the fourth edition of the EASp the safety of ground operations will not appear in the general framework (which does not mean that they will not be addressed in the EASp), while **fire, smoke and fumes** will be incorporated as a new outcome category, hence CAT by airplanes will focus on the following six risk areas:

- Runway Excursions
- Mid-air collisions
- Controlled Flight Into Terrain
- Loss of Control In Flight
- Runway Incursions
- Fire, smoke and fumes

2.3 Continuous update

In collaboration with all the stakeholders, the Safety Plan is reviewed every year. The review consists of two main activities:

- a. Firstly, the status of the standing actions is assessed. An action is considered complete when the proposed deliverable is delivered. When the action could not be closed during the due date or a deviation from the Plan is expected, the causes have been recorded and a modification has been proposed. This allows measuring the



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progress and effectiveness of the Safety Plan. A progress report is included in **Annex A**.

- b. Secondly, the initial list of actions proposed in the previous edition has been updated with the incorporation of new actions after consultation with all stakeholders. These new actions have been placed within the existing framework. They take into consideration new safety initiatives aimed at mitigating the existing risks.

2.4 The European Aviation Safety Programme

On 26 January 2011, the European Commission organised a conference to discuss the future of European Union's Aviation Safety Management towards 2020 and to hear the views and experiences of the various stakeholders in aviation safety. The conference debated the issues surrounding moving from a largely reactive system towards a proactive system based upon proven safety management.

With the results of the debate, the EC developed a Communication¹ to the Council and the European Parliament called "*Setting up an Aviation Safety Management System for Europe*". The Communication sets the strategy for aviation safety in Europe for the coming years and supports the aim, set out in the Transport White Paper², to raise the EU aviation safety performance to a level that matches or exceeds the best world standard.

According to the Communication this is achieved by adding a pro-active element to the current EU aviation safety system and publishing annual updates to the European Aviation Safety Plan detailing progress made in addressing identified safety risks at EU level. This is the scope of the present publication.

This Communication is accompanied by a Commission Staff Working Paper³ describing the current aviation safety framework at European level. It was prepared jointly by the Commission and EASA and is called the European Aviation Safety Programme. The work is based on the manual presented to the EASA MB at the end of 2010.

The Communication, the Commission Staff Working Paper and the present document constitute the main elements of the Safety Management System at European level: a strategy, a Safety Programme and a Safety Plan.

2.5 Content of the Plan

The Safety Plan is divided in four areas, each one addressing the main safety topics presented in the Safety Plan framework.

- Section 3 addresses Systemic Issues
- Section 4 addresses Operational Issues
- Section 5 addresses Emerging issues

¹ EC COM(2011) 670 final of 25.10.2011 - Setting up an Aviation Safety Management System for Europe.

² COM(2011) 144 - WHITE PAPER - Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system

³ EC SEC(2011) 1261 final of 25.10.2011 – The European Aviation Safety Programme.



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- Section 6 addresses *Human Factors and Performance*, which affect all of the above areas.

Within each of the above sections, the following information is provided:

- A table with the actions delivered during 2013.
- A summary of the key achievements made during 2013 together with the main challenges encountered.
- A summary of the actions under the leadership of the States.
- A proposal for new actions to be incorporated on the EASp 2014-2017. Commitments for 2013 are highlighted in yellow.

The present document is complemented by several Annexes:

- **Annex A** contains a **status report** on the progress made on the Safety Plan throughout 2013. In this section the following information is provided for each action item: a summary of the work done, the leader of the action, an assessment on whether the action is progressing according to the Plan, possible deviations from the Plan should they exist and an identification of the key deliverables.
- **Annex B** focuses on the actions owned by States and summarises the feedback provided throughout the year.
- **Annex C** contains the results of an SSP Phase Implementation survey aimed at highlighting where States are with SSP implementation.

At the end of the document several attachments clarify the acronyms and define the terms used throughout the document (attachment A), and provide a brief description of the different working groups and initiatives at European level dealing with aviation safety (attachment B).

2.6 EASp summits

Coordination with the States participating in the implementation of the EASp is key to keep the risk management exercise relevant. With this aim the *EASp implementation and review summits* have been created. They are a vehicle to consult on the Plan with the States.

They consist of face to face meetings between the States, the European Commission and the Agency, take the pulse of the implementation and discuss safety risks affecting the system. They also allow States to present their work and learn from each other.

The EASp summits are held twice a year. The first two summits took place on 29th May and 16th November 2012 providing with an opportunity to introduce the approach to new colleagues of several States. In 2013 two more summits have been held on 18th June and 7th November. The material discussed and main outcomes can be found [here](#).

2.7 Governance

The content of the Safety Plan is developed by EASA under the supervision of EASAC. The Committee created in 2009 brings together safety experts from the Member States, the European Commission, Eurocontrol, the Performance Review Body (PRB), industry and EASA. Their role is to provide advice on how to address the identified safety risks at EU level.

Once it is reviewed and approved by EASAC, the Safety Plan is submitted to the EASA MB for endorsement. After it is endorsed, it becomes a public document that is implemented on a voluntary basis by all the stakeholders.



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2.8 Information and Promotion

A dedicated web site (www.easa.europa.eu/sms) has been created to publish the key deliverables and update on the major developments. Inquiries concerning the EASp can be addressed via a dedicated mailbox (easp@easa.europa.eu)

The Agency, in cooperation with all the stakeholders, continues to further disseminate the approach. To this end, a [brochure](#) was developed and handed out at various safety events. The brochure briefly explains the key aspects of the EASp and points out where to get the information.





3 Systemic Issues

Systemic issues are system-wide problems that affect aviation as a whole. Their association to a particular safety event or circumstance is not always obvious. In most scenarios, they become evident by triggering factors and play a significant role in the development of safety occurrences. They often relate to deficiencies in organisational processes and procedures.

Completed actions		
No.	Issue	Finished action
SYS1.5	Incorporation of SSP in all domains of aviation.	SSPs and enablers have been incorporated in the requirements for aerodrome oversight authorities.
SYS2.3	Incorporation of SMS in all domains of aviation.	SMS and enablers have been incorporated in the requirements for aerodrome operator organisations.
SYS3.5	Lack of a methodology to define SPIs.	A comprehensive model for the measurement of safety performance has been developed by the SMICG including guidance for service providers
SYS3.13	Frequency of information to support the management of safety.	EASA publishes a safety dashboard on its website with the intent to provide regular statistics on the state of safety in Europe and worldwide.
SYS3.14	All domains, except ATM, lack indicators and targets on key performance areas in order to achieve and maintain required safety levels.	High-level SPIs for use at European and national level in all domains of aviation safety have been developed by the Network of Analysts (NoA).
SYS5.5	Reduce possible differences in training implementation among States.	A Training Implementation Policy has been developed by the EASA Internal Group on Personnel Training (IGPT)
SYS5.7	Issue of increasing pilot reliance on automation.	EASA, through the IGPT, has studied and promoted possibilities for mitigating the risk of increasing pilot's reliance on automation through the proposals derived from the cockpit automation survey.

Progress made during 2013

Working with Authorities and Organisations to implement Safety Management

Managing safety in a systematic and proactive way will allow authorities and organisations to act on hazards before aviation accidents occur. This is a global move as the adoption of the new ICAO Annex 19 compiling all safety management provisions reflects.

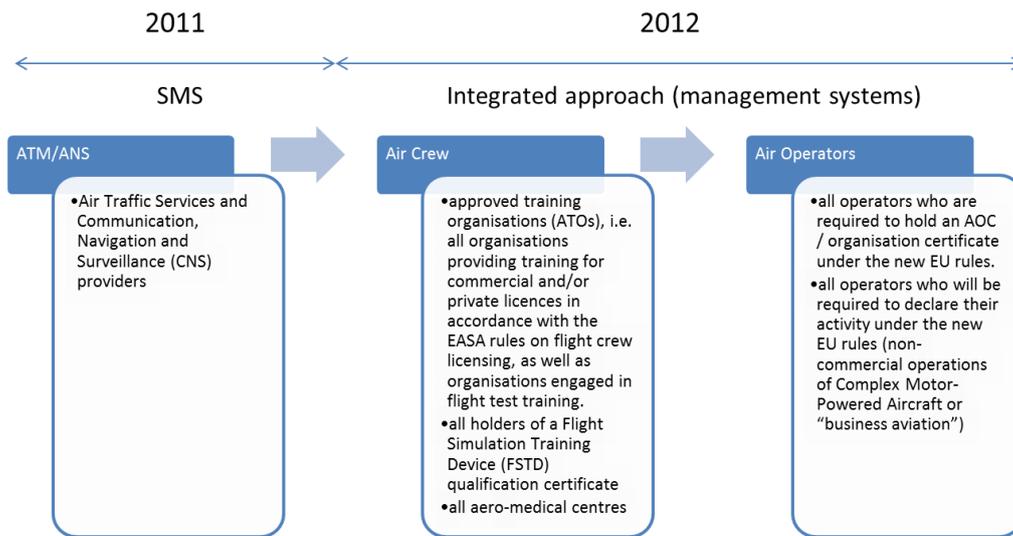
This move is an integral part of the EASp as the EU is in the process of setting up the regulatory framework that will require organisations and authorities to implement a management system that incorporates safety in it. While the management system that



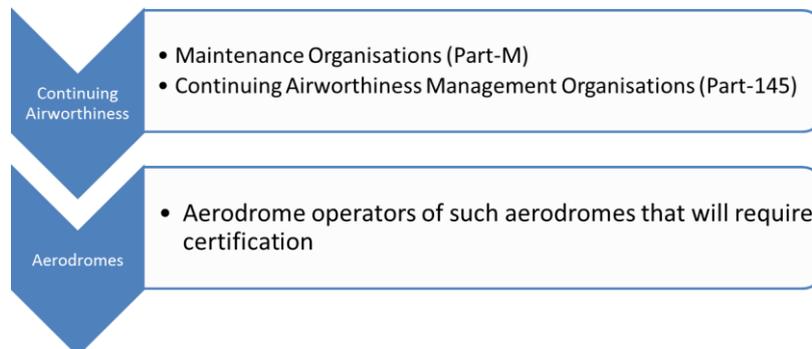
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organisations have to implement will address the 14 SMS framework elements contained in Annex 19; the management system to be put in place by the authorities will contain specific provisions to support the implementation of SSP without specifically mandating States to have one such programme.

In 2011 existing SMS requirements in the domain of ATM/ANS were transposed into EU regulation. It was not however till 2012 when the new integrated approach started to be introduced in the domains of air crew and air operations serving as a model for other domains. The adaptation of the management systems of authorities and organisations has started and will take some time.



Similar requirements in the domain of continuing airworthiness and aerodromes are being developed. In the former domain NPA 2013-01 has been published covering maintenance organisations and continuing management organisations. In the latter domain, Opinion 01/2013 has been issued foreseeing that aerodrome operators of such aerodromes that will require certification shall implement and maintain a management system. Until the entry into force of the corresponding EU Regulation the national rules which are in place at the level of the different Member States will continue to apply.



As actions SYS 1.3b and SYS2.2b reflect, the approach has been extended and now covers Maintenance Training Organisations (Part-147) and Competent Authorities (Part-66) through the publication of NPA 2013-19.

Similar work has been started on initial airworthiness (SYS1.3a and SYS2.2a). In this case two different types of activities are on-going: on one hand the integrated approach to SMS will be



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extended to Design and Manufacture Organisations. This work will start by launching several pilot projects to acquire experience. On the other hand, the level of involvement (LOI) of the Agency on product certification will be subject to a risk-based regime. The first NPAs on LOI are expected this year.

Additionally a second regulatory phase seeking to align the ATM/ANS domain with the integrated management approach adopted in air crew and air operations has already started. Opinions are expected in 2014.

Safety Management Enablers

Besides identifying hazards and assessing the associated risks, SMS seeks to close the loop by measuring achievements. In order to do that organisations and States have started to engage in developing safety performance indicators (SPIs). Several EASp activities contribute to pave the way to measure performance.

- The [Safety Management International Collaboration Group](#) (SMICG), has published guidelines to assist service providers in the definition and implementation of a set of safety performance indicators (SYS3.5).
- At European level a performance scheme has been made mandatory in Regulation 691/2010 for ATM. The European Commission is getting ready to contract a study (SYS3.7) to explore the possibility of extending the approach beyond ATM. The study is envisioned in 2015.
- Additionally the Network of Analysts (NoA) has already defined high-level SPIs that can be used at European and national level.

The monitoring or real time flight data plays an important role in anticipating deviations with the potential to lead to aviation accidents. The EASp also includes two actions (SYS3.11 and SYS3.12) intended to promote that FDM programmes priorities consider operational issues identified at the European and national levels. The European Authorities Coordination Group on Flight Data Monitoring ([EAFDM](#)) has already developed guidance for authorities on setting up a national FDM forum with their operators. The group is also working on a list of standard FDM events relevant for the prevention of the major risk areas identified in the EASp, as well as guidance on how to oversee FDM programmes. The guidance material is expected to be published this year.

Competence of personnel

Having the right competencies and adapting training methods is recognised as a key area in the EASp, hence a new systemic threat was created last year to tackle such issues like the increasing pilot reliance on automation, the modernisation of training provisions or the differences in training implementation among States.

In response to the issue of increasing pilot's reliance on automation, EASA has published three SIBs that address Manual Flight Training and Operations, Stall and stick pusher training and Mode awareness and Energy State management, thus closing action SYS5.7. The training issues addressed in them are closely related with the EASp activities to address loss of control avoidance and recovery training described in the following section of this report.

Work to develop a training implementation policy to reduce the differences in training implementation among States has concluded (SYS5.5). A training implementation working group was established within the EASA Internal Group on Personnel Training (IGPT) to work on



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the issue, that was discussed with NAAs in a Workshop on 27 June 2012. The results of the workshop have been the basis to develop the [Policy](#) that is now available. The resulting Training Implementation Policy addresses the implementation of rules regarding training, testing and checking.

Two actions (SYS5.1 and SYS5.3) focus on modernising training methods and competence provisions across several domains: flight crew licensing, operations, maintenance and ATM/ANS. New training methods like competence based training (CBT), evidence based training (EBT) and distance learning are being evaluated and training standards will be adapted in the coming years as necessary.

Coordination with Member States

In the new ICAO Annex dedicated to safety management, the role played by the State in managing safety at the State level has been reinforced, stressing the concept of overall safety performance in all domains, in coordination with service providers.

The near-term objectives of the GASP 2013 focus on the implementation of an effective safety oversight system by 2017 in all States. Using the Universal Safety Oversight Audit Programme (USOAP) effective implementation (EI) as an indicator of State safety oversight system maturity, the GASP stipulates that States with an EI above 60% should begin SSP implementation if they have not already. This is the case of the majority of the States implementing the EASp.

Phase I	Phase II	Phase III	Phase IV
<p>SSP element 1.2 (i)</p> <ul style="list-style-type: none"> a. Identify SSP Place Holder Organisation and Accountable Executive. b. Establish SSP Implementation Team. c. Perform SSP Gap Analysis. d. Develop SSP Implementation Plan e. Establish SSP coordination mechanism. f. SSP Documentation including the State's SSP framework, its components and elements. 	<p>SSP element 1.1 National aviation legislative framework.</p> <p>SSP element 1.2 (ii)</p> <ul style="list-style-type: none"> a. A Safety management responsibilities & accountabilities b. State Safety Policy & Objectives <p>SSP element 1.3 Accident and serious incident investigation</p> <p>SSP element 1.4 (i) Establish basic enforcement (penalty) legislation.</p> <p>SSP element 3.1 (i) State safety oversight and surveillance of its service providers.</p> <p>SSP element 2.1 (i) SMS education & promotion for service providers.</p>	<p>SSP element 1.4 (ii)</p> <ul style="list-style-type: none"> c. Provision to prevent use or disclosure of safety data for purposes other than safety improvement. d. Provision to protect the sources of information obtained from voluntary confidential reporting systems. <p>SSP element 3.2 (i)</p> <ul style="list-style-type: none"> a. Safety data collection & exchange systems b. Establish high consequence (or Tier 1) State safety performance indicators and target/alert levels. 	<p>SSP element 2.2 Service provider safety performance indicators.</p> <p>SSP element 3.1 (ii) Incorporation of service providers' SMS and safety performance indicators as part of routine surveillance program.</p> <p>SSP element 3.2 (ii)</p> <ul style="list-style-type: none"> a. Implement voluntary/confidential safety reporting systems. b. Establish lower consequence safety indicators with target/alert level monitoring as appropriate. c. Promote safety information exchange with and amongst service providers and other States. <p>SSP element 3.3 Prioritize inspections and audits based on the analysis of safety risk or quality data where applicable.</p> <p>SSP element 3.1 (iii) Establish internal review mechanism covering the SSP to assure continuing effectiveness and improvement.</p>
<p>SSP element 4.1 Internal training, communication and dissemination of safety information.</p> <p>SSP element 4.2 External training, communication and dissemination of safety information.</p>			

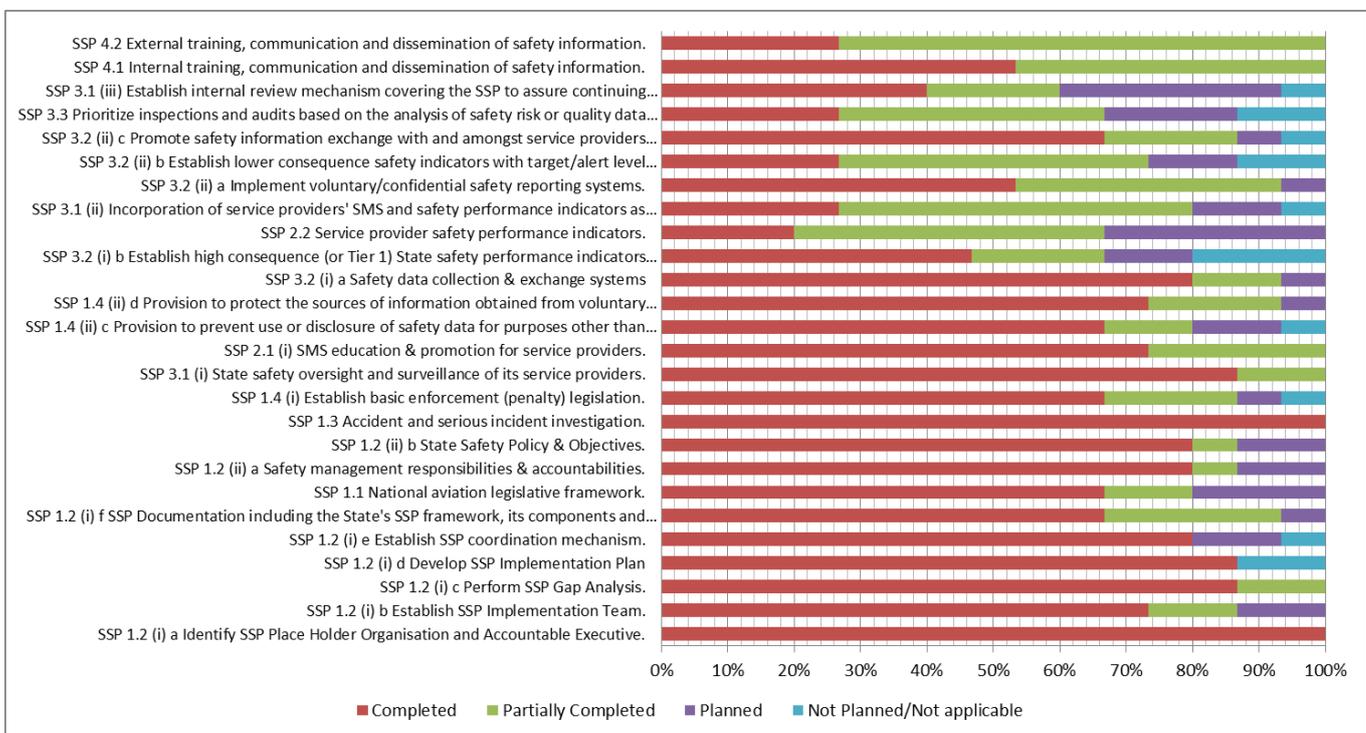


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Action SYS1.7 encourages States to expedite SSP implementation (due in 2014). Until now **16 SSP documents** and **10 Safety Plans** have been made available to the Agency as part of the implementation of the EASp. Web links to these documents can be found [here](#).

In 2013 a new survey has been distributed to the States in order to assess where they are with SSP implementation. This year the 4 phase approach suggested in the 3rd edition of the Safety Management Manual was used. The survey customised to the EASA safety system and accompanied with guidance text. An overview of the various SSP elements included in each phase is provided in the above table.

The aggregated results show that some elements like identifying the SSP place holder organisation, performing an SSP Gap analysis, developing an implementation plan, establishing an accident and incident investigation body or performing oversight and surveillance of service providers are already in place in at least 80% of the States that provided a response.



On the other hand, SSP elements like establishing service providers performance indicators, incorporating service providers' SMS and safety performance indicators as part of routine surveillance program, establishing lower consequence safety indicators with target/alert level monitoring, prioritising inspections and audits based on the analysis of safety risk or quality data or providing external training, communication and dissemination of safety information were implemented in less 30% of the States that provided a response.

More details can be found on Annex C – SSP Phase Implementation Survey Results.

Action SYS3.11 encourages States to set up a regular dialogue with their national aircraft operators on flight data monitoring (FDM) programmes. Among the States that provided a response, five of them have organised meetings with aircraft operators that promote FDM in 2013 or 2012. Five more States expressed their intention to organise these types of meetings



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in the future. Discussions on FDM events relevant for preventing the major operational risks identified in the EASp are held in 5 States. More details can be found on Annex B- *EASp implementation in the States*

New actions

Competence of personnel

Unavailability of adequate personnel in Competent Authorities of The Standardisation Annual Report 2012 (issued in March 2013) highlighted that the availability of adequate staff in NAAs, in terms of qualification and number, is the main reason for some of the difficulties related to the process of granting approvals, licenses or certificates and to the continued surveillance of approved organisations that were encountered in the last campaign. This problem has also been highlighted by some States at the occasion of the EASp summits.

This weakness which has been perceived in most of the domains, but in particular in Air Operations, can have severe safety consequences because authorities risk controls may not be applied properly.

Desired outcome

Facilitate the availability of adequate staff at the NAAs, in terms of both qualification and number available.

Proposed actions

1. Foster Member States to discharge their safety oversight responsibilities by hiring sufficient and competent staff (States).
2. EASA to support Competent Authorities
 - a. in defining the right competences needed to properly discharge their safety oversight responsibilities, and
 - b. in providing training to their staff
3. Promote the concept of 'pooling' available expertise among NAAs in order to make subject matter experts available in a cost effective way, to those States that need resources
4. EASA Standardisation to monitor the availability of staff at the NAAs.

New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
SYS5.8	<i>Unavailability of adequate personnel in Competent Authorities</i>	Foster Member States to discharge their safety oversight responsibilities by hiring sufficient and competent staff	MS	2013	O	Mitigation proposals developed
SYS5.9	<i>Unavailability of adequate personnel in Competent Authorities</i>	EASA to support Competent Authorities a.in defining the right competences needed to properly discharge their safety oversight responsibilities, and b.in providing training to their staff	EASA	?	SP	Description of support activities



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New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
SYS5.10	<i>Unavailability of adequate personnel in Competent Authorities</i>	Promote the concept of 'pooling' available expertise among NAAs in order to make subject matter experts available in a cost effective way, to those States that need resources	EASA and MS	?	SP	Report on the concept
SYS5.11	<i>Unavailability of adequate personnel in Competent Authorities</i>	EASA Standardisation to monitor the availability of staff at the NAAs	EASA	Annually	O	Report



4 Operational Issues

Operational issues are brought to light by the reporting and analysis of occurrence data. The Safety Plan starts by addressing the main risks that affect commercial air transport operations, especially those carried out by aeroplanes. Additionally an effort has been made to capture actions that address other types of operation; thus acknowledging the existing initiatives at European level.

Issues affecting commercial air transport operations carried out by airplanes are classified in various areas which correspond with the main accident categories. This does not mean that only causes of actual accidents are dealt with in the EASp, but also hazards with the potential to lead to any of the identified categories. The categories represent the various final outcomes that need to be avoided.

It is also important to recognise that certain issues like unstable approaches, the encounter with hazardous weather conditions or inappropriate actions performed by the crew have an impact on more than one risk area. Human factor issues also affect different areas and are addressed in section 7.

Completed actions		
No.	Issue	Finished action
AER1.3	Requirements for RE need to be transposed in certain areas.	European requirements addressing RE for aerodrome operators organisations, aerodrome operations and aerodrome design are now published.
AER1.4	Requirements for RE need to be transposed in certain areas.	European requirements addressing RE for ATM/ANS provision are now published. They aim to ensure the provision of safe and efficient air traffic services within the single European sky.
AER2.5	Requirements for MAC need to be transposed in certain areas	European requirements addressing MAC for ATM/ANS provision are now published. They aim to ensure the provision of safe and efficient air traffic services within the single European sky.
AER4.1	Protection From Debris Impacts and Fire.	A new paragraph of CS-25, which would cover the protection of the whole aircraft against the threat of tire/wheel failure has been developed. Identified as a common priority for JAA-FAA-TCCA joint rulemaking
AER4.8	Response to upset conditions in order to prevent LOC-I.	EASA and Member States supported, encouraged and followed up initiatives such as ICATEE to contribute to developing solutions aimed to reduce LOC-I, revising and promoting upset recovery guidance material, and influencing the adoption of future ICAO SARPs.
AER4.10	Response to unusual attitudes in order to prevent LOC-I.	A Workshop to identify and promote requirements and guidance in Part FCL and Part OPS related to the prevention of LoC accidents was organised in 2013 and has allowed to identify needs for future improvements.
AER4.15	Icing	A safety conference to exchange views on the safety issue and identify mitigation opportunities has been organised in October.
AER5.3	Runway incursions.	Implementing Rules based on transferred tasks from the JAA and the EUROCONTROL EAPPRI report have been developed and are now going through Comitology.
AER5.6	Transposition of requirements into EU regulation in the domain of Aerodromes to improve safety of ground operations.	Requirements for aerodrome operator organisations and oversight authorities are now published.



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Completed actions		
HE1.4	Impact of technologies in mitigating helicopter safety issues.	EHEST has finalised a first version of a tool to assess the impact of technologies on mitigating helicopter safety issues.
GA1.6	Priorities to focus GA work not formally established	Based on data received from EASA Member States, the Agency identified and published in the Annual Safety Review the main accident categories affecting general aviation aircraft below 2250 kg in Europe.

4.1 Commercial Air Transport by Aeroplanes

Progress made during 2013

To mitigate the risk of *runway excursions* a European Action Plan for the Prevention of Runway Excursions (EAPPRE) was delivered at the beginning of 2013. The Plan offers a comprehensive view on the issues that lead to runway excursions and proposes actions for authorities, various industry organisations (operators, service providers, aerodromes) and also for the Agency. Two EASp actions (AER 1.9 and AER 1.10) are aimed at following-up the EAPPRE both at Member State and EASA level. The follow-up is coordinated with Eurocontrol implementation mechanisms.

An opinion proposing European requirements to mitigate Runway Excursions has been published in 2013 and targets aerodrome operators organisations, aerodrome operations and aerodrome design whereas the requirements targeting ATM/ANS provision are already adopted (AER1.4)

The *loss of control* of the aircraft in flight continues to be the category with the major number of fatal accidents in Europe. Among the hazards with the potential to develop into a loss of control addressed in the EASp are: icing, unusual airplane attitudes and erroneous weight and centre of gravity information.

The Agency is now updating its certification specifications with a view to improve safety of large aeroplanes and engines in icing conditions (AER4.2). Icing (both on-ground and in the air) was the subject of the safety conference organised by the Agency in October 2013 (AER4.15). Rulemaking tasks to mitigate the ground contamination of aircraft surfaces are scheduled to start in 2015.

In certain situations, flight crews are faced with *unusual airplane attitudes*, one of the scenarios that has the potential to develop into a loss of control. Training plays a key role in these situations and hence several actions of the EASp address training:

- European-wide requirements that address training of and recovery from unusual attitudes have been published.
- EASA and Member States have taken part in the International Committee for Aviation Training in Extended Envelopes (ICATEE) and Loss of Control Aviation Rulemaking Team (LOCART). ICATEE recently delivered a draft Upset Prevention and Recovery Manual to ICAO.
- A workshop on loss of control prevention and recovery training was organised on 28 February and 1 March at the Agency. The workshop invited the major stakeholders who discussed on issues like theoretical training, on aircraft upset prevention and recovery



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training (UPRT), Flight Simulation Training Devices, realistic stall prevention and training scenarios development and manual flying skills. Actions coming out of the workshop have been identified and a new EASp action is proposed in the following section.

Another scenario that has led to loss of control accidents is having erroneous weight and/or centre of gravity information. Two actions of the EASp (AER4.11 and AER 4.12) propose mitigation solutions either through regulation (i.e. equipping aircraft with a weight and centre of gravity measuring system) or through research (i.e. EFB applications).

Implementation of mitigation measures proposed in other European Action Plans already available is being followed-up with States in close coordination with Eurocontrol in the areas of runway incursions and airspace infringement risk. More information is available on Annex B.

The second extension rules will incorporate European requirements that will contribute to mitigate the risk of runway excursions, mid-air collisions, runway incursions and will enhance the safety of ground operations.

Eurocontrol is leading the development of guidance material for ground-based safety nets (AER2.2 and AER2.3).

Coordination with Member States

The responses received from Member States to the request on the status of their actions are included in *Annex B - EASp implementation in the States*. The Annex details to what extent the risk areas proposed in the EASp are also being incorporated in risk portfolios at national level and how coordination should be organised in the future.

The below diagram summarises the responses received from 16 Member States on the operational risks identified in the EASp. In general the majority of States are also incorporating the EASp risk areas in their risk portfolios and provide useful feedback on the actions taken at their level. When the management system of a State does not justify the incorporation of an area this is also highlighted. This has been the case of States where only a specific type of operation was relevant or where the size of the activity was rather small.

The below table highlights the number of States that reported to be implementing actions to address the areas of the EASp.

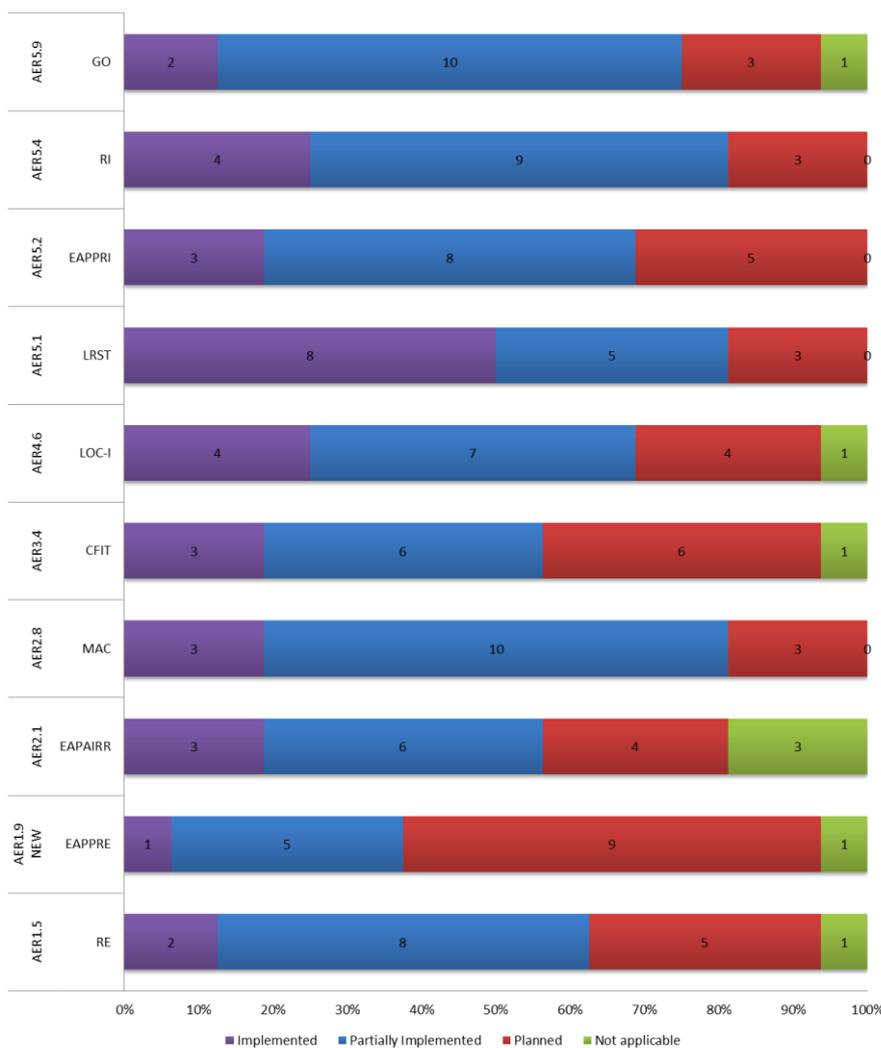
Main EASP area	Number of States working on the issue
RE	10
LOC-I	11
RI	13
MAC	13
GO	12
CFIT	9



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In the majority of cases Local Runway Safety Teams have been set up at the certified aerodromes. They play a key role in addressing runway safety. On the other hand, the implementation of the EAPPRE (issued at the beginning of the year) is now starting. A list of hazards with the issues being addressed in each of the States is published in Annex B.

Since coordination with States is considered vital, two additional EASp summits have been organised in 2013 (information on the events is available [here](#)). The feedback provided by States will be discussed during the 4th EASp implementation and review summit on 7 November.



MAIN EASp AREAS

- RI**=Runway Incursions;
- LOC-I**=Loss of Control in Flight;
- CFIT**=Controlled Flight Into Terrain;
- MAC**=Mid-air Collisions;
- RE**=Runway Excursions;
- GO** = Safety of Ground Operations,

LRST = Local Runway Safety Teams;

EUROPEAN ACTION PLANS

EAPPRI= European Action Plan for the Prevention of Runway Incursions;

EAPPRE= European Action Plan for the Prevention of Runway Excursions;

EAPAIRR= European Action Plan for Airspace Infringement Risk Reduction



New actions

Runway Excursions

Runway overrun during landing

Between 1991 and 2010, EASA Member State operators had on average close to 1 fatality per year due to runway excursions at landing. The number of these occurrences has increased in line with the growth in traffic. As aviation traffic is expected to continue to grow worldwide as well as in Europe (albeit at a lower rate), the number of runway excursions can also be expected to increase further.

According to IATA's 2009 Safety Report, runway excursions represented 25% of all the events that occurred in 2008 and it is notable that the rate of reported accidents and serious incidents involving runway excursions has increased during the last decade. Statistically, around 80% of the occurrences happen during landing and 20% during the take-off phase.

Flying an unstabilised approach, landing too fast, too far down the runway, or conducting an extended flare, delayed or incorrect flight crew action on braking systems, late or no decision to abort landing, are identified as contributing factors to those accidents.

One of the results of the combined and sustained efforts of authorities and industry organisations to prevent runway excursions is the [European Action Plan for Prevention of Runway Excursions](#) (EAPPRE) (Edition 1.0 - January 2013). The document provides recommendations on the use of 'all practicable means available ranging from the design of aircraft, airspace, procedures and technologies, to relevant training for operational staff associated with runway excursion prevention.'

Among the recommendations, the following were issued:

— Ref. 3.5.3 (for aircraft manufacturers):

'On-board real-time performance monitoring and alerting systems that will assist the flight crew with the land/go-around decision and warn when more deceleration force is needed should be made widely available.'

— Ref. 3.7.11 (for EASA):

'Develop rulemaking for the approval of on-board real-time crew alerting systems that make energy based assessments of predicted stopping distance versus landing distance available, and mandate the installation of such systems'.

Safety Recommendations have been issued to 'actively pursue with aircraft and avionics manufacturers the development of technology to reduce or prevent runway excursions and, once it becomes available, require that the technology be installed' (NTSB recommendation n^oA-11-28 to the FAA, 2011).

The subject has been well studied through the past years and aviation



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stakeholders showed their interest in this topic by cooperating to find solutions that address this safety issue. Today, some systems have been developed, certified and put into service on large aeroplanes to protect against the risk of runway excursion.

On-board means are now capable of performing calculation in real time in order to assess the real time runway overrun risk and aid the flight crews' awareness and subsequent decision making. Moreover, the enhanced awareness provided by such an on-board means allows developing effective avoidance on-board capability in order to help the flight crew to use all required and available retardation means in a timely manner.

Desired outcome

Reduce the number of runway overrun events during landing

Proposed actions

- 1. Mandating existing technology to be installed on large aeroplanes (RMT.0047) –newly designed or newly produced.**
 - a. Amending of CS-25 for new designs**
 - b. Amending of CS-26 for already certificated Large aeroplanes**

Follow-up actions

2. Installing new technology (Large aeroplane's manufacturers)
3. Train flight crews on the use of the new technologies (Training organisations and air operators)
4. Proactively monitor the number of runway overrun events during landing and the ones that were avoided by the new technology (States)

New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
AER1.8	<i>Runway overrun during landing</i>	Mandating existing technology to be installed on large aeroplanes) –newly designed or newly produced	EASA	2017	R (RMT.0047)	Decision

Loss of control in flight

Flight crew are not adequately trained to respond to loss of control.

Globally approximately 20% of all fatal accidents in Commercial Air Transport (CAT) operation with aeroplanes over the past 10 years can be attributed to loss of control in flight. The approximate global rate is 5.4 accidents per 10,000,000 flight movements or 1 fatal accident per year. Within Europe the rate is 1.6 fatal accidents per 10,000,000 flights or 1 fatal accident every 3 years.

According to a SAE Aerospace Information Report (AIR6237) published in April 2013, which reviewed worldwide loss of control accidents between 1981 and 2010, the top 5 primary causes were aerodynamic stalls, spatial disorientation, flight crew handling issues, flight control issues and atmospheric disturbances.



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Moreover, several safety recommendations have been received in the past years that address loss of control and more specifically improvements in pilot training and checking.

The following table depicts some of the work that has already been done or is on-going to address some of the hazards that contribute to Loss of Control scenarios:

Hazard	Activity
Challenges presented by the increasing reliance on automation	Publication of an EASA Automation Policy (updated on May 2013) – EASp EME4.4
Degradation of manual flying skills	Continued promotion of the Automation Policy – EASp SYS5.6 SIB 2013-05 Manual Flight Training and Operations, published on 23 April 2013
Inappropriate reaction to stall indication or stick pusher events	SIB 2013-02 Stall and Stick Pusher Training was published on 22 Jan 2013
Mismanagement of the energy state of the aircraft due to lack of awareness of the automation mode	SIB 2010-33 Flight Deck Automation Policy - Mode Awareness and Energy State Management, published on 18 Nov 2010
Flight crew handling of unexpected and unusual situations	RMT .0411 Update requirements for Crew Resource Management (CRM) Training, initiated in November 2012.
Icing conditions	RMT.0058 Large Aeroplane Certification Specifications in Super-cooled Large Drop, Mixed phase, and Ice Crystal Icing Conditions. – EASp AER4.2

In addition, a safety conference (October 2011) and a dedicated workshop (28 Feb and 1 March 2013) were organised in Cologne with the intention to bring stakeholders together and discuss the main issues and progress made so far. Furthermore this year's safety conference focused on icing, which is one of the known precursors to loss of control.

At the global level ICAO has already made substantial progress supported by the Loss of Control Avoidance Recovery (LOCART) and International Committee for Aviation Training in Extended Envelopes (ICATEE) working group initiatives. They have put the focus on preventing and recovering from upset scenarios.

Desired outcome

Pilots have the competencies to prevent and/or recover from a loss of control in flight and successfully apply them.



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The proposed set of actions propose to close the loop of the implementation of the mitigation measure with affected stakeholders as follows:

Proposed actions

1. **Develop regulations which ensure that initial and recurrent pilot training and checking is adequate to provide a pilot with the knowledge, skills and attitude to be competent in preventing and, if necessary, recovering from a loss of control in flight situation (EASA)**

Follow-up actions

2. Transfer new competencies introduced in the regulation to pilots (States)
3. Check that new competencies have been acquired (EASA Standardization and States)
4. Proactively monitor situations with the potential to lead to loss of control events in which pilot training was a contributor. (States)

The proposed mitigation measures include an integrated approach addressing initial and recurrent training with increased focus on prevention by specific upset prevention and recovery training (UPRT) covering theoretical, FSTD training and possibly on-aeroplane training. It is also proposed to address instructor qualifications in this context.

New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
AER4.6	<i>Flight crew are not adequately trained to respond to loss of control..</i>	Develop regulations which ensure that initial and recurrent pilot training and checking is adequate to provide a pilot with the knowledge, skills and attitude to be competent in preventing and, if necessary, recovering from a loss of control in flight situation.	EASA	TBC	R (RMT.0581)	Opinion/Decision

Fire, smoke and fumes

Uncontrolled fire, smoke or fumes on-board aircraft

On-board fire, smoke and fumes is proposed to be added as a new category of accidents in the 4th edition of the EASp and will form an integral part of subsequent EASp editions. Uncontrolled fire on board an aircraft, especially when it is in flight, represents one of the most severe hazards in aviation. Post-crash fire is not addressed in this section.

In-flight fire can ultimately lead to loss of control, either as a result of structural or control system failure, or again as a result of crew incapacitation. Fire on the ground can take hold rapidly and lead to significant casualties if evacuation and emergency response is not swift enough.

Smoke or fumes, whether they are associated with fire or not, can lead to passenger and crew incapacitation and will certainly raise concern and invite a



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response.

A statistical analysis of commercial jet aircraft accident data shows that in-flight fire was responsible for the fourth highest number of on-board fatalities and was the seventh most frequent cause of accidents in 2005 (Boeing, 2005). Since 2005 there have been two B747 freighter fires that resulted in the loss of the aircraft and flight crews, but no fatal fires aboard passenger airplanes. Consequently, the ranking of in-flight fires has decreased since 2005 due to the reduction in passenger fatalities. Had the freighter fires occurred in passenger aircraft causing fatalities the rankings would certainly have been different.

In addition, data from recent years indicate the probability of passengers experiencing an in-flight smoke event is greater than one in 10,000. In the United States alone, more than one airplane a day is diverted due to smoke (Shaw, 1999).

There have been 3 major accidents in the past 10 years attributed to the carriage of Lithium batteries which caught on fire (UPS DC-8, UPS 747, and Asiana 747). Since the early 1990s, there have been dozens of incidents of batteries igniting in flight or during cargo handling. The trigger for many of the fires is not well understood and the issue is being closely monitored.

The Agency is involved in various certification and rulemaking activities regarding the mentioned topic as well as in the ICAO Dangerous Goods Panel, where updates on the ICAO *“Technical Instructions for the Safe Transport of Dangerous Goods by Air”*, doc. 9284, are proposed.

Several Safety recommendations have been addressed to FAA and EASA concerning redesign of transport checklist pertaining to smoke/fire/fumes, review of the cargo fire certification requirements, smoke removal requirements, flight crew training for in-flight fire, standardisation of the battery packaging regulation, research on fire suppression systems.

Early this year the Flight Operation Groups have published an update of the RAeS’s specialist document *“Smoke, Fire and Fumes in Transport Aircraft”*. The purpose of the paper is to serve as a reference document on current risk and proposed mitigations for smoke and fire events on commercial transport aeroplanes. The previous version was published in February 2007 and in the 2013 update edition a new section on lithium batteries, composite materials and predictive technologies have been added together with new recommendations to reflect the current risks.

RAeS’s recommendations to reduce the severity and effects of in-flight fires focus on:

- Equipment design and airworthiness;
- Protective equipment;
- Maintenance;



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- Pilot procedures;
- Flight and cabin crew training.

Desired outcome

Evaluate the RAeS report with a view to identify new opportunities for improvement to mitigate the risk posed by on-board fires.

Proposed actions

EASA will address RAeS recommendations stemming from the report. NAAs should check that regulations related to smoke and fire are being complied with and will include Fire as a new area in their risk portfolios.

New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
AER6.1	<i>Uncontrolled fire, smoke or fumes on-board aircraft</i>	EASA will address RAeS recommendations stemming from the report <i>Smoke, Fire and Fumes in Transport Aircraft</i>	EASA	2015?	R, SP, O	Report on recommendations addressed
AER6.2	<i>Uncontrolled fire, smoke or fumes on-board aircraft</i>	Safety Issue shall be addressed by the MS on their SSPs. This will include as a minimum agreeing a set of actions and measuring their effectiveness.	MS	Continuous	SP	SSP Publication

4.2 Helicopter Operations

Progress made during 2013

The European Helicopter Safety Team (EHEST) continuously cooperates with the International Helicopter Safety Team (IHST) to develop risk awareness, safety promotion and training material. The [EHEST website](#) contains videos addressing major helicopter specific issues like loss of control in degraded visual environment (DVE), operations in the vicinity of electric infrastructure as well as leaflets with safety considerations for helicopter pilots.

In 2013 the EHEST has finalised the layout of the Technology matrix tool. The tool allows to assess the impact of technologies on mitigating helicopter safety issues (HE1.4). Around 150 technologies in 11 categories have been identified for their capability to mitigate safety issues. In late September about 60 of these had been rated, of which 14 were highly promising and 33 were moderately promising. More technologies will be rated up to the year's end. The status of the work progress was presented at the Avionics Europe event in Munich on 21st February 2013 and at the Safety Workshop during the Helitech Helicopter Expo in London on 24th September 2013.

Coordination with Member States

Action HE1.3 encourages NAAs in partnership with industry representatives, to organise Helicopter Safety events annually or every two years and to promote the EHEST materials. Among the States that provided a response 9 States have organised helicopter safety events. In the majority of cases EHEST material was promoted and distributed. Dedicated helicopters working groups/teams exist in at least 3 States in some cases also addressing general aviation issues.



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New actions

Helicopter priority areas not identified in the EASp

While the commercial air transport section of the EASp is organized in six areas within which issues and actions are identified, the helicopter section is lacking a similar structure.

Desired outcome

Establish priorities to focus action to mitigate safety issues affecting helicopter operations in future editions of the EASp

Proposed actions

Make a proposal to arrange the helicopter section of the EASp and seek an agreement with the Helicopter community

New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
HE1.5	<i>Helicopter priority areas not identified in the EASp</i>	EASA to make a proposal to arrange the helicopter section of the EASp and seek an agreement with the Helicopter community	EASA and EHEST	2013	SP	Working Paper with proposal

4.3 General Aviation

Progress made during 2013

EGAST develops and shares good practices and safety promotion material for the GA pilots and community in Europe. The latest material includes leaflets on issues like bird strikes and piston engine icing or a video on the human factor aspects related to landing gears. They can be found on the [EGAST website](#).

Based on data received from Member States, the Agency has already identified in 2013 the main accident categories affecting general aviation aircraft below 2250 kg in Europe (GA1.6). The categories have been published in a dedicated section of the Annual Safety Review and will be used to start discussions with the GA community on where to focus further work on General Aviation within the EASp.

Coordination with Member States

Action GA1.5 encourages that national authorities play the leading role in establishing and promoting local implementation priorities and actions to prevent the risk of airspace infringement involving General Aviation. Various States reported airspace infringements involving GA in the past 5 years. 10 States have confirmed that airspace infringement involving GA is a safety concern. The EAPAIRR is being used in 5 States to identify mitigation measures. In one State a national action plan derived from the EAPAIRR has been developed and introduced in the Safety Plan. State level SPIs exist in many States to monitor the situation. More information can be found in Annex B - EASp implementation in the States 2013.



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New actions

General Aviation priority areas not identified in the EASp

While the commercial air transport section of the EASp is organized in six areas within which issues and actions are identified, the general aviation section is lacking a similar structure.

Desired outcome

Establish priorities to focus action to mitigate safety issues affecting general aviation operations in future editions of the EASp

Proposed actions

Make a proposal to arrange the general aviation section of the EASp and seek an agreement with the Helicopter community

New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
GA1.7	<i>General aviation priority areas not identified in the EASp</i>	EASA to make a proposal to arrange the general aviation section of the EASp and seek an agreement with the Helicopter community	EASA and EGAST	2013	SP	Working Paper with proposal



5 Emerging Issues

This section anticipates issues that are emerging or where hazards exist for the immediate or near future. Giving consideration to safety issues derived from operations or regulations that have not been fully deployed incorporates a forward looking element in the Safety Plan, thus complementing the approach illustrated in previous chapters. Developing a possible picture of the future with some of the trends that are more relevant to aviation is one of the actions captured in this section.

The nature of the issues identified in this chapter is twofold: on one hand, it addresses safety aspects of changes and trends that impact aviation; on the other hand, it copes with the introduction of new products, systems, technologies and operations for which safety regulations may need to be updated.

Actions will not only deal with uncertainties at early stages of development but also with gathering data that are lacking from operations. Gaps in safety data can be mitigated by specific research actions either to produce simulation experiments (at different scales) or by gathering operational experts input on safety issues and prioritising them.

Completed actions		
No.	Issue	Finished action
EME2.1	Effect of climate change on aviation.	A workshop was organised in 2012 to focus on the issue of climate change. A network was finally not established. Avoidance of weather hazards (despite its limitations) and training are the most effective mitigation means.
EME3.1	Well balanced standardisation programme.	A well balanced standardisation programme based on three pillars, regulatory compliance verification, pro-active standardisation and a regulatory feedback mechanism is now established..
EME3.2	One uniform standardisation methodology for all fields of aviation.	One uniform standardisation process for all fields of aviation as covered by the Basic Regulation and related Implementing Rules is now developed

Progress made during 2013

This area is the forward looking element of the EASp. By looking ahead future risks can be anticipated and acted upon.

Action EME1.2 seeks to develop a possible picture of the future by establishing a foresight cell. Such cell could be used at strategic level to evaluate how risks develop with time and identify the kind of expertise needed to be prepared to face the changes. It would bring a more robust basis for this section of the EASp. An agreement has been reached with the consortium developing the [ASCOS project](#) to perform an initial test case using the FAST areas of change to develop a picture of the future. The first results are expected in 2014.

Several actions (EME1.3, EME1.4, EME1.5 and EME1.6) encompass pre-regulatory activities leading to the regulation of certain products like Remote Powered Aircraft Systems (RPAS), high-performance aircraft or sub-orbital planes and operations like powered lift pilot licensing operations.



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A well balanced standardisation programme and a uniform standardisation methodology for all fields of aviation are now fully in place, thus closing actions EME3.1 and EME3.2.

Developing new competencies to implement safety management on the regulatory side has been identified as one of the emerging issues of the EASp. The SMICG has delivered guidance on the competencies required for inspectors to evaluate SMS effectiveness when they oversee organisations. The issue will be further progressed by the EASAC in 2014.

New actions

Regulatory and oversight considerations

*Poor level of
responsiveness to
ADs*

Compliance with Airworthiness Directives (ADs) and other mandatory requirements are critical to ensuring the continued airworthiness of operational aircraft. Experience from regulatory oversight has shown variable achievement in this regard. In fact, some European aircraft manufacturers are concerned by the level of responsiveness of operators (especially outside Europe) with regards to the implementation of mandatory requirements and the feedback provided to them.

Desired outcome

This action aims to improve the level of responsiveness of operators to the implementation of mandatory requirements in order to ensure continued airworthiness.

Proposed actions

1. Provide advice to operators on best practice for the management of mandatory requirements
Deliverable: Review/Publish acceptable means of compliance, guidance material or information.
2. Conduct Continued Airworthiness Industry seminars and meetings to promote the applicable rules and standards
Deliverable: Promote bilateral meetings with industry for clarification of EASA safety information writing standards and to receive feedback on ease of implementation of EASA safety publications.
3. Monitor achievement through oversight (EASA S + Member States + Industry feedback)

New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
EME3.5	<i>Poor level of responsiveness to Ads</i>	Provide advice to operators on best practice for the management of mandatory requirements	EASA	?	R	Review/Publish acceptable means of compliance, guidance material or information.



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New Safety Actions						
No.	Issue	Actions	Owner	Dates	Type	Deliverable (Measure)
EME3.6	<i>Poor level of responsiveness to ADs</i>	Conduct Continued Airworthiness Industry seminars and meetings to promote the applicable rules and standards	EASA	?	SP	Promote bilateral meetings with industry
EME3.7	<i>Poor level of responsiveness to ADs</i>	Monitor achievement through oversight	EASA + MS	?	O	Oversight report



6 Human Factors and Performance

A projected increase in passenger numbers over the next decade, the move towards a Single European Sky and next generation aircraft technology, together with constantly shifting political, economic and regulatory frameworks demand that the role of the human in achieving the highest possible standards of safety within the aviation industry is seen as essential.

The entire aviation system, through people, processes and performance, relies predominantly on individuals and teams for safety, efficiency and effectiveness. In practice, people are required to communicate, apply judgments and make decisions and in doing so are constantly exposed to the risk of error. Therefore, human factors and performance of individuals and organisations affect all aspects of aviation and should not be addressed in isolation.

Completed actions		
No.	Issue	Finished action
HFP1.2	Action plan development.	An action plan on human factors based on the strategy and evaluation of the results of the questionnaire of December 2009 has been developed. It is updated annually.
HFP1.4	Consideration of HF in rulemaking activities.	The Agency has taken into account HF in rulemaking task that have human factors considerations. EHFAG has reviewed the rulemaking programme for 2013 to 2016 and identified tasks that have potential HF considerations.
HFP1.5	Room for improvement on HF guidance to address design related pilot errors.	Gaps or areas to improve the AMC for CS25.1302 Installed Systems for use by the Flight crew in order have been identified in order to better address design-related pilot error and recommend that the material is updated and harmonized.

Progress made during 2013

The entire aviation system, through people, processes and performance, relies predominantly on individuals and teams for safety, efficiency and effectiveness. Human factors and human performance are an integral part of the EASp. This section was populated with three new actions in the third edition.

In 2012 the European Human Factors Advisory Group (EHFAG) finalised a [Human Factors Strategy](#) with the intent of endorsing human factors principles across civil aviation activities. The EHFAG has started to transform some of the principles into concrete actions and developed an action plan (HFP1.2) that will be reviewed and updated annually.

In addition, during 2013 the following actions have been completed:

- The rulemaking programme 2013-2016 has been reviewed in order to identify where rulemaking tasks may need to consider human factor issues (HFP1.4). The 2014-2017 iteration of the rulemaking programme will also be reviewed.



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- Gaps to address design related pilot error and make recommendation to update AMC for CS 25.1302, Installed Systems for use by flight crews have been identified (HFP1.5);

Work continues to develop human factor competences for the various functions of regulators, starting with maintenance inspectors (HFP1.6)

Eurocontrol's Safety Team provides support to ANSPs in the deployment of ATM human factors activities (HFP1.3). To that end a work programme has been approved that covers the following strands of work:

- Weak Signals
- Human Factors in safe ATM Design
- Human Factors intelligence for all safety actors and all layers of management
- Human Performance safety culture improvements
- Safety Human Performance Dissemination and Toolkits
- Fatigue management
- Human Factors in Investigation
- Degraded Modes
- Critical Incident Stress Management
- Safety and Team Work Factors

Among the actions that the Eurocontrol Safety Team has finished we find: the [safety culture discussion cards](#), a paper on safety intelligence, development of an advanced course in human factors for safety actors, review of occurrence investigator course and a [white paper introducing a new safety concept](#).



Acronyms and Definitions

Acronyms

AER	Aeroplanes
ANS	Air Navigation Service
ANSP	Air Navigation Service Provider
AR	Authority Requirements
AST	Annual Summary Template
ATM	Air Traffic Management
CAST	Commercial Aviation Safety Team (US)
CBT	Competence Based Training
CFIT	Controlled Flight Into Terrain
CMA	Continuous Monitoring Approach
CPL	Commercial Pilot License
DVE	Degraded Visual Environment
EACCC	European Aviation Crisis Coordination Cell
EAPAIRR	European Action Plan for Airspace Infringement Risk Reduction
EAPPRE	European Action Plan for the Prevention of Runway Excursions
EAPPRI	European Action Plan for the Prevention of Runway Incursions
EASA	European Aviation Safety Agency
EASp	European Aviation Safety Plan
EASP	European Aviation Safety Programme
EBT	Evidence Based Training
EC	European Commission
ECAC	European Civil Aviation Conference
ECAST	European Commercial Aviation Safety Team
ECR	European Central Repository
EFB	Electronic Flight Bag
EGAST	European General Aviation Safety Team
EHEST	European Helicopter Safety Team
EHFAG	European Human Factors Advisory Group
EME	Emerging
ESP+	European Safety Programme for ATM
ESSI	European Strategic Safety Initiative
EVS	Enhanced Vision System
FAA	Federal Aviation Administration
FCL	Flight Crew Licensing
FSTD	Flight Simulator Training Device
GA	General Aviation
GRSS	Global Runway Safety Symposium
HE	Helicopters
HFP	Human Factors and Performance
IASCC	International Air Safety and Climate Change Conference
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
ICATEE	International Committee for Aviation Training in Extended Envelopes
IGPT	Internal Group on Personnel Training of EASA
IHST	International Helicopter Safety Team
IMC	Instrumental Meteorological Conditions
IR	Instrument Rating



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LAPL	Light Aircraft Pilot License
MAC	Mid-air Collision
MS	Member States
NAA	National Aviation Authority
NCC	Non-Commercial operations with Complex motor-powered aircraft
NCO	Non-Commercial operations with Other-than-complex motor-powered aircraft
NextGen	Next Generation Air Transportation System
NGAP	Next Generation of Aviation Professionals
NoA	Network of Analysts
NSA	National Supervisory Authority
O	Oversight
OR	Organisation Requirements
OSC	Operational Suitability Certificate
PPL	Private Pilot License
PRB	Performance Review Body
LOC-I	Loss of Control In Flight
R	Rulemaking
RAT	Risk Analysis Tool
RE	Runway Excursions
RPAS	Remotely Piloted Air System
RRSS	Regional Runway Safety Symposium
SES	Single European Sky
SESAR	Single European Sky ATM Research Programme
SLD	Super-cooled Large Droplets
SMICG	Safety Management International Collaboration Group
SMS	Safety Management System
SP	Safety Assurance and Promotion
SPI	Safety Performance Indicator
SSP	State Safety Programme
SYS	Systemic
TAWS	Terrain Awareness Warning System
VLJ	Very Light Jets
UAS	Unmanned Aircraft Systems
URT	Upset Recovery Training



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Definitions

Aerial Work

Aerial Work is an aircraft operation in which an aircraft is used for specialised services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue or aerial advertisement.

Aeronautical Information Publication

An Aeronautical Information Publication (AIP) is a publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation. (ICAO Annex 15 - Aeronautical Information Services)

Airborne safety nets

Airborne Safety nets provide alerts and resolution advisories directly to the pilots. Warning times are generally short, up to 40 seconds. Pilots are expected to immediately take appropriate avoiding action.

Airspace infringement

Airspace infringement occurs when an aircraft penetrates an area into which special clearance is required without having such clearance.

Commercial Air Transport

Commercial air transport operations involve the transportation of passengers, cargo and mail for remuneration or hire.

Controlled Flight Into Terrain

Controlled Flight Into Terrain (CFIT) occurs when an airworthy aircraft under the complete control of the pilot is inadvertently flown into terrain, water, or an obstacle. The pilots are generally unaware of the danger until it is too late.

European Aviation Safety Programme

European regional approach to the ICAO requirements of State Safety Programmes. It contains an integrated set of regulations and activities to improve safety within EASA Member States. It is published as a Commission Staff Working Paper⁴ developed jointly by the European Commission and the Agency. The latest version is available at www.easa.europa.eu/sms.

General Aviation

General Aviation means all civil aviation operations other than commercial air transport or an aerial work operation.

Ground-based safety nets

Ground-based safety nets are an integral part of the ATM system. Using primarily ATS surveillance data, they provide warning times of up to two minutes. Upon receiving an alert, air traffic controllers are expected to immediately assess the situation and take appropriate action.

Ice crystal icing conditions

Ice crystal icing condition exists when all of the liquid water particles in the cloud have frozen into ice particles and may be encountered in high concentrations at higher altitudes in the area of convective weather systems.

⁴ EC SEC(2011) 1261 final European Aviation Safety Programme.



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Non-precision approach

A non-precision approach is an instrument approach and landing which utilises lateral guidance but does not utilise vertical guidance. (ICAO Annex 6) For pilots of older aircraft, in which use of automated systems to assist in flying the approach is limited, a high degree of piloting skill is required to fly such approaches accurately and the frequent practice which many pilots need to achieve this can be difficult to come by if precision approaches are the normal method used.

Mid-air collision

A Mid-Air Collision (MAC) is an accident where two aircraft come into contact with each other while both are in flight.

Mixed phase icing conditions

Mixed phase icing conditions occur when super-cooled liquid water droplets and ice particles coexist in a cloud, often around the outskirts of a deep convective cloud formation.

Loss of separation

Loss of separation between aircraft occurs whenever specified separation minima are breached. Minimum separation standards for airspace are specified by ATS authorities, based on ICAO standards.

Level bust

A *level bust* occurs when an aircraft fails to fly at the level to which it has been cleared, regardless of whether actual loss of separation from other aircraft or the ground results. Level busts are also known as Altitude Deviations.

Local Runway Safety Team

Local Runway Safety Teams (LRSTs) are aerodrome centric, multi-organisational groups of experts providing practical suggestions to resolve runway incursion causal factors. More than 100 LRSTs have been established at European airports, as a consequence of which, the safety of runway operations has increased although incidents continue to be reported.

Loss of Control In Flight

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

Occurrences

Operational interruptions, defects faults, or other irregular circumstances that have or might have influenced flight safety and that have not resulted in an accident or serious incident.

Runway Excursion

According to the definition provided by ICAO, a runway excursion is a veer off or overrun off the runway surface. Runway excursion events can happen on takeoff or landing.

Runway Incursion

A *runway Incursion* is defined as "Any occurrence at an aerodrome involving the incorrect presence of an aircraft vehicle or person on the protected area of a surface designated for the landing and take off of aircraft". (ICAO Doc 4444 - PANS-ATM)

Safety Management System

A Safety Management System (SMS) is a systematic approach to manage safety, including the necessary organisational structures, accountabilities, policies and procedures (ICAO). ICAO



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through various Annexes to the Chicago Convention has incorporated requirements for service providers in various domains of aviation to have an SMS.

Space weather

Space Weather is the travel of solar and galactic radiation and their interaction with the Earth magnetosphere and ionosphere. It is a cyclic phenomenon.

State Safety Programme

According to the ICAO definition it is an integrated set of regulations and activities aimed at improving safety. ICAO requires contracting States to implement SSPs.

System Complexity

Complexity is an attribute of systems or items which makes their operation difficult to comprehend. Increased system complexity is often caused by such items as sophisticated components and multiple interrelationships (EUROCAE/ SAE Doc ED-79/ ARP4754)



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Working Groups

EAFDM

EASA and NAAs have formed a group of experts called the European Authorities Coordination Group on FDM (EAFDM). It is a voluntary and independent safety initiative with the following objectives:

- a. to foster actions by NAAs which contribute to improving the implementation of FDM programmes and to making FDM programmes more safety effective,
- b. to contribute to EASA objective of a high and uniform level of safety in Europe,
- c. to contribute to a better overview of air transport operational safety in Europe for EASA and NAAs.

For more information, visit <http://easa.europa.eu/safety-and-research/european-authorities-coordination-group-on-flight-data-monitoring-EAFDM.php>

EASAC

The **European Aviation Safety Advisory Committee** (EASAC) was established by the Executive Director of the Agency in October of 2009. The main objective of the Committee is to advise on a European Aviation Safety Strategy and propose a European Aviation Safety Programme and Plan. The first Plan is the present document, endorsed by the Committee.

The EASAC is chaired by the Executive Director of the Agency and composed of safety experts' ad persona from Member States, the European Commission, Eurocontrol, the PRB, Industry and EASA. The Committee reports regularly to the EASA Management Board.

EARPG

The **European Aviation Research Partnership Group** (EARPG) prepares proposals and suggests priorities for research topics to be funded by relevant sources available. Identification of research needs is based on: certification experts' experience, evidence of accumulation of safety related concerns resulting from safety analysis of incident and accident databases, Safety Recommendations stemming from incident and accident investigations and proposals by the European Strategic Safety Initiative (ESSI) and its safety teams ECAST, EGAST, EHESST.

The research results are expected to lead to recommendations and improvements of safety or environmental protection through changes to requirements, compliance and guidance material. The EARPG membership consists of the Agency's research focal points, EASA Member States with an interest in research, the European Commission and Eurocontrol. It shares information with authorities from Non-EASA Member States, particularly the FAA and Transport Canada, on on-going research and where appropriate, co-ordinates future research activities. The group interfaces with Industry and Research Institutions on a regular basis through workshops.

For more information visit <http://easa.europa.eu/safety-and-research/european-aviation-research-partnership-group-EARPG.php>

ECAST

The **European Commercial Aviation Safety Team** (ECAST) is a component of European Strategic Safety Initiative (ESSI). ECAST addresses **large fixed wing aircraft operations**, and aims to further enhance commercial aviation safety in Europe, and for European citizen worldwide. It was launched in October 2006.



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ECAST is a partnership between EASA, other European regulators and the aviation industry. ESSI is based on the principle that industry can complement regulatory action by voluntarily committing to cost effective safety enhancements. ECAST cooperates with CAST and with other major safety initiatives worldwide, in particular under the Cooperative Development of Operational Safety and Continuing Airworthiness Programme (COSCAP).

For more information visit <http://www.easa.europa.eu/essi/ecast/>

EGAST

European General Aviation Safety Team (EGAST) is a component of European Strategic Safety Initiative (ESSI). General Aviation (GA) is a high priority for EASA. EGAST creates a forum for sharing best practices, improving data sources, and promoting safety.

EGAST's mission is to promote and initiate for all sectors of General Aviation best practices and awareness in order to improve safety, thereby reducing the accident rates. The team may make non binding recommendations. EGAST will help EASA and the industry focus their resources on combined safety promotion efforts to reach the goal of reducing accidents

For more information visit <http://easa.europa.eu/essi/egast/>

EHEST

Launched on November 2006, the **European Helicopter Safety Team (EHEST)** brings together manufacturers, operators, research organisations, regulators, accident investigators and a few military operators from across Europe. EHEST is the helicopter branch of the ESSI, and also the European component of the International Helicopter Safety Team (IHST).

EHEST is committed to the goal of reducing the helicopter accident rate by 80 percent by 2016 worldwide, with emphasis on improving European safety.

For more information visit <http://easa.europa.eu/essi/ehest/>

EHFAG

The **European Human Factors Advisory Group (EHFAG)** is an existing body of human factors expertise drawn from national Aviation Authorities (including the FAA), industry, professional associations and research organisations. This Group will be tasked with developing a human factors strategy and action plan on behalf of EASA.

For more information visit <http://easa.europa.eu/safety-and-research/european-human-factors-advisory-group-EHFAG.php>

ESSI

The **European Strategic Safety Initiative (ESSI)** is an aviation safety partnership between EASA, other regulators and the industry. ESSI's objective is to further enhance safety for citizens in Europe and worldwide through safety analysis, implementation of cost effective action plans, and coordination with other safety initiatives worldwide. ESSI was launched in June 2006 by EASA as a ten year programme and has three pillars: ECAST, EHEST and EGAST

For more information visit <http://easa.europa.eu/essi/>

IGPT



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The Agency's Internal Group on Personnel Training (IGPT) has been set-up by the Agency to follow-up the EASA International Conference on Pilot Training of 29 Nov 2009. Its first meeting took place on 27 Jan 2010. Building on proven internal expertise and competences, the IGPT bridges Design, Certification, Training, and Operations by creating a forum to address training within the Agency and deliver the official Agency's position on the subject. The IGPT is composed of experts from all operational Directorates and adopts a total system approach in training based on the three pillars Rulemaking, Oversight and Safety Promotion. The IGPT addresses all types of training and checking for all types of personnel and operations. Regarding pilot training, this includes flight and type rating training, including both ab initio and recurrent elements, all categories of aircraft, all types of operations, and pilots with different backgrounds (e.g. those trained on highly automated glass cockpits aircraft and those pilots trained on older generation conventional aircraft).

NoA

The European Aviation Safety Agency has recently established a Network of Analysts (NoA) to provide a formal process to analyse safety data at a European level. The membership of the NoA is drawn from the National Aviation Authorities (NAAs) and Investigation Authorities of all EASA Member States.

The NoA focuses on:

- understanding what barriers exist to the provision of the best possible safety data and developing ways to improve safety data across Europe;
- agreeing the classification of aircraft accidents in EASA MS;
- carrying out analysis of safety data to support the European Aviation Safety Plan (EASp) and State Safety Plans, as well as identifying emerging issues for possible inclusion in the future;
- sharing experiences, good practice and developing safety analysis projects across Europe to enable the European aviation community to exploit the ECCAIRS European Central Repository for the benefit of all and
- providing analysis support to existing EASA groups such as the European Strategic Safety Initiative (ESSI) and the European Human Factors Advisory Group (EHFAG).

For more information visit <http://easa.europa.eu/safety-and-research/network-of-analysts.php>

PRB

On 29 July 2010, the EC adopted a Decision designating Eurocontrol acting through its Performance Review Commission (PRC) supported by the Performance Review Unit (PRU) as the **Performance Review Body** (PRB) until 30 June 2015. The Eurocontrol Organisation accepted to be designated as PRB on 15 September 2010.

For more information visit <https://www.eurocontrol.int/articles/european-atm-performance-review-body>

SM ICG

The **SMS International Collaboration Group** (ICG) created in Feb 2009 is a collaboration activity between aviation authorities in order to promote a common understanding of SMS principles and requirements in different countries, share lessons learned and encourage progress and harmonisation. The ICG consists of a core group and a participant group. The core group is comprised of authorities with resources and expertise for product development. It includes members from the FAA, EASA (supported by FOCA of Switzerland, the DGAC of France, AESA Spain, the CAA of the Netherlands and UK CAA), TCCA, CASA of Australia, JCAB



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of Japan, CAA of New Zealand and ANAC of Brazil. The participant group tests and reviews the core group's work products and resources.

For more information visit:

[http://www.skybrary.aero/index.php/Safety_Management_International_Collaboration_Group_\(SM_ICG\)](http://www.skybrary.aero/index.php/Safety_Management_International_Collaboration_Group_(SM_ICG))