EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL

- Decisions of the Permanent Commission -

DECISION N° 96

approving the Strategic Safety Action Plan for Enhanced ATM Safety in a Single Pan-European Sky

THE PERMANENT COMMISSION FOR THE SAFETY OF AIR NAVIGATION:

Having regard to the EUROCONTROL International Convention relating to Co-operation for the Safety of Air Navigation, amended by the Protocol signed at Brussels on 12 February 1981, and in particular Articles 2.1, 6.1.(a) and 7.1 thereof;

Considering the need to further enhance ATM safety in a Single Pan-European Sky perspective;

On the proposal of the Director General and the Provisional Council,

TAKES THE FOLLOWING DECISION:

**Sole Article**

The Strategic Safety Action Plan for Enhanced ATM Safety in a Single Pan-European Sky set out at Attachment 1 of document PC/03/16/12 of 20 March 2003 is hereby approved.

Done at Brussels on 10.04.2003

Joséf TURECKÝ
President of the Commission
EXECUTIVE SUMMARY

Background
Safety is paramount in aviation. Under the Chicago “Convention on Civil Aviation” States are required to provide a safe Air Traffic Service within their defined airspace. The continuing increase in the use of air transport means that, if no action is taken, the absolute number of accidents will increase, unless the accident rate drops. The ECAC Air Traffic Management (ATM) Strategy for the Years 2000+ (ATM 2000+ Strategy) sets out the principles and objective for enhancing ATM safety in Europe and decreasing the accident rate.

The number of flights in Europe is forecast to grow by a factor of approximately two by 2020, which means that the accident rate must be halved to ensure that the current number of accidents does not rise. The safety objective of the ECAC ATM Strategy for the Years 2000+ is “To improve safety levels by ensuring that the number of ATM induced accidents and serious, or risk bearing, incidents do not increase and, where possible decrease”. This means that preventative actions must be taken to ensure that ATM safety in the ECAC area is enhanced.

Following the mid-air collision on 1 July 2002, the EUROCONTROL Provisional Council established a High Level European Action Group for ATM Safety (AGAS) to identify priority actions to further improve ATM safety across ECAC. Senior safety regulation and safety management experts from across the industry have cooperated to bring forward a series of practical actions to this end in the form of an action plan for enhanced ATM safety in a Single Pan-European Sky.

This document is intended for all stakeholders in Air Traffic Management (ATM). It describes the factual situation within the sector of ATM, proposes actions to be taken to enhance ATM safety and sets out in broad terms the contents of those actions. The document also presents the way forward and proposes firm timescales for implementation. Implementation will be coordinated by the EUROCONTROL Agency and the Safety Regulation Commission for regular review by the Provisional Council.

AGAS

Although EUROCONTROL Member States have an obligation to implement EUROCONTROL Safety Regulatory Requirements (ESARRs), once they are formally approved, implementation has been slow in some States with the result of a mixed achievement across Europe. Matters may improve with the adoption of the European Community Single European Sky Regulations and through the accession of the European Community to EUROCONTROL. Nevertheless AGAS proposed that more needs to be done to encourage States to implement ESARRs.

A survey, commissioned by AGAS, confirmed that the development of an ATM safety framework is not consistent across the ECAC area. A few States have well defined safety frameworks, whilst a small number of States are at a very early stage of assessing safety requirements and how those requirements might be met. The majority of States have started introducing ATM safety frameworks within the last 5 years; they have made progress but recognise that they have some way to go before their systems reach maturity and optimum efficiency. The AGAS study found that in some States there is a general lack of leadership and commitment that has led to a dearth of properly qualified safety experts, and insufficient opportunities for safety related training.
AGAS also considered Human Resource and ATM Technical matters, taking into consideration the work undertaken by the Agency. AGAS, in assessing the work carried out on its behalf, recommends that actions be undertaken in the following key areas:

**High Priority Actions**

- Safety related human resources in ATM;
- Incident reporting and data sharing;
- ACAS;
- Ground-based safety nets;
- Runway safety;
- Enforcement of ESARRs and monitoring of their implementation;
- Awareness of safety matters;
- Safety and human factors research & development (R&D).

It was considered that these areas would have the most direct impact on ATM Safety and they are set out in more detail in Appendix 1 under the heading “High Priority Actions to Improve ATM Safety in Europe”.

**Areas of Immediate Focus**

The following actions are proposed for immediate focus. These build on action areas already agreed by the Permanent Commission and Provisional Council:

- Safety related human resources in ATM (additional actions);
- Incident reporting and data sharing (additional actions);
- ACAS (additional actions);
- Runway safety;
- Enforcement of ESARRs and monitoring of their implementation.

**Implementation**

Through this Action Plan AGAS proposes to ensure that enhancements to ATM safety are maximised in the most cost efficient manner and in the shortest practicable timescale. A joint SRC/Agency Action Programme and implementation schedule will be developed that will include all aspects of the Action Plan together with more detailed timescales and milestones. It is envisaged that the safety regulatory actions will be integrated by the SRC into its working arrangements and that the Agency will incorporate safety management actions into a complementary safety management programme.

**Follow up**

This action plan presents a number of high priority actions to enhance European ATM Safety. An implementation monitoring function will be established. Some of the actions are already in train whilst others need to be started as a matter of urgency. Once detailed planning has come into full force the progress of all actions, those currently in train as well as future actions, will be monitored and all Stakeholders advised of progress.

Regular progress reports will be made to the EUROCONTROL Provisional Council, ICAO and other bodies for their review. Close contact will be maintained with all relevant international organisations, ANSPs, airports and airspace users to maintain their commitment and ensure implementation progress.
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Safety should be afforded the highest priority over commercial, operational, environmental and social pressures

Introduction

Within the EUROCONTROL Organisation a number of different programmes are underway, or planned, to enhance the level of ATM safety within Europe. These programmes will progressively raise the level of safety in Europe as a result.

In the light of the recent serious accidents in Italy and Germany the EUROCONTROL Provisional Council (PC) decided to consider both new actions and enhancement/earlier delivery of on-going programmes. Accordingly, the PC requested the Director General, in co-operation with the Safety Regulation Commission, to establish a High Level European Action Group for ATM Safety (AGAS) in order to identify priority actions for further improvement of ATM safety across the ECAC area. Senior safety experts from States, Air Navigation Service Providers (ANSPs), international organisations, associations and Unions have co-operated to bring forward a series of practical actions for safety enhancement, which have been included in this action plan.

The objective of this action plan is to focus safety enhancements into areas where the greatest benefits will be gained. This document is intended for all stakeholders in Air Traffic Management (ATM). It describes the factual situation within the sector of ATM, proposes actions to be taken to enhance ATM safety and sets out in broad terms the contents of those actions. The document also proposes a firm timescale for implementation.

European ATM Safety

Safety is paramount in aviation; under the Chicago “Convention on Civil Aviation”, States are required to provide a safe Air Traffic Service within their defined airspace. Safety is an integral part of the ECAC ATM Strategy for the Years 2000+ (ATM 2000+ Strategy). The objective of the ATM 2000+ Strategy is “To improve safety levels by ensuring that the numbers of ATM induced accidents and serious, or risk bearing, incidents do not increase and, where possible, decrease.”

ATM Safety is sub-divided into two separate areas. Safety regulation is the process for establishing, overseeing and enforcing common safety levels in the public interest, whilst safety management is the process of providing services and products safely. Within EUROCONTROL safety regulation is the direct responsibility of the Permanent Commission, through the Provisional Council, acting on advice from the Safety Regulation Commission (SRC). Safety management is dealt with by the Agency through the European ATM Programme (EATMP).

SRC data for 1999 indicates that historically within the ECAC area there are 0.6 accidents per year with an ATM direct cause. However, the continuing increase in the use of air transport means that, even if the accident rate stays the same, the number of accidents will increase. Levels of safety in aviation are expressed as accidents per flight hour. This means in order to maintain the publicly acceptable risk in a scenario where demand is expected to increase by a factor of approximately two by 2020, the accident rate induced by ATM has to be halved (becoming twice as stringent).

However, there are no indications that “quick-fix” solutions exists to achieve such an improvement in today’s safety rate; instead it will rather be a continuous and persevering
process to implement further safety improvements. The cost for implementing such safety improvements needs to be fully acknowledged by the airspace user so that confidence in the industry continues to be fully assured and its growth is not constrained.

To achieve this required improvement, safety must be pro-actively managed. Improvements will be needed and will have to be underpinned by clear and unambiguous procedures backed by training for all those involved. Leadership and commitment in safety management will need to be strengthened and applied consistently throughout the ATM network, as will the monitoring processes. Clear lines of accountability will need to be shown.

Safety Implementation Maturity in ECAC States

An independent survey of ECAC States safety regulators and ANSPs, which was undertaken on behalf of AGAS, demonstrated that the development of an ATM safety framework is not consistent across ECAC and implementation of the ATM 2000+ Strategy in respect of the safety objective is at an early stage. A few States have well defined safety frameworks and understand their safety requirements. However, the majority of States have only introduced safety frameworks within the last five years and have made progress in many areas, but they recognise that they have some way to go before their systems reach maturity and optimum efficiency. A small number of States are at the early stages of assessing the safety requirements and have problems understanding what is required and how those requirements should be addressed. The figure above shows a comparison of the maturity of national regulators and ANSPs in 32 ECAC States where both regulators and ANSPs responded to the survey. It can be seen that the maturity of the regulators varies greatly and is often below that of the ANSP. The majority of both State ATM regulators and ANSPs lie between the mature and early stages categories.

Legislation

In addition to their responsibilities as Members of ICAO, EUROCONTROL Member States have an obligation to implement in a timely manner EUROCONTROL Safety Regulatory Requirements (ESARRs) once they have been formally approved. For various reasons many States are not meeting that commitment and current legal mechanisms to secure compliance are few and in practice ineffective.

At present as most EUROCONTROL Member States must transpose into their national legal order EUROCONTROL regulatory decisions, such as ESARRs, implementation is slow and uneven across the States. The transposition into national law may also result in
differences at national level rather than a fully harmonised EUROCONTROL-wide application of requirements. Monitoring of implementation is at present limited. Overall this means that the level of maturity of safety frameworks is not consistent across ECAC.

The adoption of the European Community Single European Sky Regulations and the accession of the European Community to EUROCONTROL should provide legal strength to the implementation of ESARRs, which, once they have been transposed into EC law, will be directly applicable and enforceable within a proportion of ECAC States.

High Level Action Group For ATM Safety - AGAS

Taking into account the current situation outlined above and working within its Terms of Reference, AGAS created ad-hoc working groups to investigate specific areas and propose actions to be taken. Work on runway safety, already in train within the EUROCONTROL Agency, and human resource work were also taken into AGAS’ considerations as was associated safety and human factors R&D. The Agency, on AGAS’ behalf, also commissioned a study to assess the maturity of the safety framework across the ECAC area.

From the work of its groups and the work undertaken by the Agency, AGAS decided that practical actions in the following areas would have the most direct impact on ATM Safety and were therefore of the Highest Priority:

High Priority Actions

- Safety related human resources in ATM;
- Incident reporting and data sharing;
- ACAS;
- Ground-based safety nets;
- Runway safety;
- Enforcement of ESARRs and monitoring of their implementation;
- Awareness of safety matters;
- Safety and human factors research & development (R&D).

Based on the outcome from the working-groups, the safety overview study and Agency activities, AGAS has developed a series of actions for implementation. The identified safety improvements should be implemented within the existing EUROCONTROL framework in the context of achieving the ECAC ATM Strategy for the Years 2000+. This Action Plan sets out the areas in which actions are considered necessary. The specific actions required in each area are outlined at Appendix 1.

Through this Action Plan AGAS proposes to ensure that enhancements to ATM safety are maximised in the most cost efficient manner and in the shortest possible time.

Early Actions

AGAS considered that certain of the high priority areas above could well have a direct and immediate impact on the ATM safety levels of ECAC States. Those recommendations were therefore put to the EUROCONTROL Provisional Council and Commission in advance of the development of this Action Plan. The proposed actions were approved and are now being implemented. The areas concerned are resourcing of controller working positions, particularly during periods of systems outage, incident reporting, review of ACAS documentation and implementation of STCA. The Director General of EUROCONTROL has written to all ECAC DGCAs drawing attention to the actions required in respect of ACAS.
and resourcing of controller working positions; the Agency is progressing action on STCA implementation and introducing a pilot scheme for incident reporting and sharing “lessons learnt”.

Areas of Immediate Focus

AGAS considered that in addition to the issues that have already been dealt with under Early Actions the following High Priority areas, listed at Appendix 1, need to be progressed in parallel with developing an Action Programme implementation schedule being produced. The following actions are therefore proposed:

Safety Related Human Resources in ATM (additional early actions). As a matter of urgency national ATM safety regulators and ANSPs should increase their efforts to implement ESARR 5 within the agreed time frame and, as needed, make full use of the acceptable means of compliance and implementation support. They should also ensure safety awareness, establishment of a safety culture, safety attitude and behaviour amongst ATCOs (individuals and teams) through the implementation of regular emergency, refresher, competency in line with ESARR 5 and team resource management (TRM) training. Sufficient human resources to enable the implementation and conduct of safety related training of all operational staff, as a matter of priority, should be allocated. States should investigate the feasibility of “pooling” human resources. Best use should be made of harmonised EUROCONTROL guidelines, recommended practices and tools to also integrate human factors principles in ATM.

Incident Reporting and Data Sharing (additional early actions). National ATM regulators and ANSPs should urgently allocate sufficient resources for data collection, analysis, sharing and dissemination of lesson learnt. They should implement the principles of “just culture” in safety occurrence reporting and cooperate with the EUROCONTROL Agency to define and adopt industry wide harmonised mechanisms for sharing safety-related data. This should include cooperating with airlines to derive best practice where possible and to share data on “lessons-learnt”. An industry-wide awareness and education campaign for all stakeholders underlying the safety benefits of a good reporting culture should be initiated.

ACAS (additional early actions). The EUROCONTROL Organisation should, as a matter of priority, continue to progress the work currently being undertaken on ACAS II RA Downlink. The work should cover technical feasibility and human factors aspects. The Agency should maintain the work currently being undertaken to address certain ACAS logic performance issues and to develop and propose modifications to the TCAS II MOPS.

Runway Safety. National Aviation Safety Authorities (NASA), Aerodrome Operators, ANSPs, Aircraft Operators, Aircraft Operators Associations should all, as a matter of high priority, implement the recommendations in the “European Action Plan for the Prevention of Runway Incursion” that relate to their activities.

Enforcement of ESARR and the Monitoring of their Implementation. EUROCONTROL must ensure that ESARRs are drafted in a clear and easily transposable manner and States must finalise the implementation of ESARRs that have been formally approved. Existing ESARRs should be reviewed to improve clarity and Means of Compliance should be developed. Although there is an SRC monitoring programme to oversee the implementation of ESARRs, its current structure has limitations that prevent its development into a strong monitoring tool. The need for an institutionalised oversight programme, which will allow for actions to be taken when a State is not compliant, was identified. Such actions could range from assistance and education to national bodies incurring difficulties with implementation, to more public actions if non-compliance continues on the part of a recalcitrant State, with the implication that some of the information obtained under such a monitoring programme could be disclosed. Regular monitoring was considered key to help achieve compliance. In
order to avoid duplication, it was proposed to investigate whether or not such a programme can be aligned with the ICAO Safety Audits Programme.

**Actions to Improve ATM Safety in Europe**

Considerable work on enhancing ATM safety within ECAC States is already in train within EUROCONTROL, individual States and other stakeholders. Actions proposed in this Action Plan are the result of work undertaken within AGAS and address specifically the high priority areas. They are intended to complement other actions and to focus on those issues that are considered to be of prime importance.

To enhance ATM Safety in Europe it is imperative that there is a common Framework for safety in all ECAC States. As stated above, that does not exist at present. Although the majority of States recognise the need for a developed ATM Safety Framework, few have fully implemented either the Safety Regulation or the Safety Management requirements. There is a need for all States, Service Providers and airspace users to act in concert to ensure that enhancements are put in place as soon as possible. A study into ATM safety within ECAC States has highlighted the need for improved Leadership and Commitment by some States and for EUROCONTROL to provide help to those States that do not have sufficient resources to develop their own safety frameworks.

**Action Plan Implementation**

*In order to allow the safe operational introduction of common levels of safety regulation and safety management throughout ECAC States at the earliest possible date, full Stakeholder commitment and a schedule with realistic timescales are required.*

An initial proposal of the implementation dates is contained in this Plan. A joint SRC/Agency Action Programme schedule will be developed that will include all aspects of the Action Plan together with more detailed timescales and milestones. It is envisaged that the safety regulatory actions will be integrated by the SRC into its working arrangements and the Agency will incorporate safety management actions into a safety management programme. The detailed output from the AGAS and its Working Groups will be used to develop the specific actions required. It is essential, if the actions are to be implemented within an acceptable timeframe, for an oversight framework to be established to ensure overall coordination and management of the implementation schedule. An implementation monitoring process (similar to that used during the implementation of the European RVSM Programme) will therefore be put in place.

The urgent actions (above) that have been agreed by the EUROCONTROL Provisional Council/Commission and are already being implemented ahead of the Action Plan Programme, will be included in the Action Programme schedule where appropriate.

To ensure that this Action Plan is implemented as a pan-European Programme in an acceptable timeframe the Programme Management Plan schedule will serve as the benchmark against which progress of Action Plan implementation will be assessed. The schedule will be developed in close consultation with States who will be asked to nominate national points of contact.

The following significant dates are foreseen:

- Immediate safety actions (ongoing) - December 2002 (start)

A basic Safety framework is essential in all ECAC States
- Action Programme schedule complete - November 2003
- Formal Action Programme Implementation Launch - January 2004
- Mid-Implementation Progress Assessment - November 2004
- Target Implementation Date - January 2006
- Progress Implementation Safety Evaluation - July 2006

This Action Programme will evolve as circumstances develop. For example, should further significant ATM safety implications arise following the accident report concerning the 1 July 2002 mid-air collision, the Action Programme will be adapted accordingly.

ATM Safety Action Plan Follow up

This Action Plan presents a number of high priority actions to enhance European ATM Safety. When the action plan has been agreed an implementation monitoring function will be established. Some of the actions are already in train whilst others need to be started as a matter of urgency. Once detailed planning has come into force, progress of all actions, those currently in train and future actions, will be monitored. All Stakeholders will be kept advised of progress.

Regular progress reports will be made to the EUROCONTROL Provisional Council, ICAO and other bodies for their review. Close contact will be maintained with all relevant international organisations, ANSPs, airports and airspace users to maintain their commitment and ensure implementation progress.

Leadership and Commitment for ATM Safety in Europe

This Action Plan in covering safety regulation and safety management in the gate-to-gate context reaffirms the EUROCONTROL Organisation as the leader for ATM safety in Europe. That position will continue to be supported by advice from the SRC as well as from a strengthened safety management function within the Agency. The European Community, soon to be a Member of the EUROCONTROL Organisation, having itself been involved in certain aspects of European ATM is working cooperatively with EUROCONTROL in this matter.

- END -
Appendix 1

High Priority Actions to Improve ATM Safety in Europe

The following areas and associated actions were considered by AGAS to be of the highest priority because they are likely to have the greatest impact on enhancing ATM safety.

Safety Related Human Resources In ATM

Current Situation. The quantity, quality, recruitment and training of experts in Safety Regulation and Safety Management has been identified by AGAS as a major issue of concern in many ECAC States. The human resources requirements to deal with safety regulation and safety management matters are assessed as about 1% of the total workforce in an average organisation. This figure may be slightly higher in smaller organisations. However, although the numbers are not high, the major problem is the lack of qualified safety personnel trained in safety regulation and safety management. There are still significant differences in application and implementation of ATM staff training and performance across the ECAC area. In addition staff shortage of Controllers in Europe can contribute to a shortfall in regular safety enhancement measures. Addressing these qualitative and quantitative imbalances in considering human resources and human factors issues as important enablers to enhance overall safety levels would lead to potential safety benefits. To alleviate this overall shortage of skilled human resources, “pooling”, that is States sharing of manpower resources or cooperating in developing safety regulation and safety management systems, should be explored.

Action Required.

The following actions should be taken to help alleviate the current situation:

• All stakeholders provide adequate numbers of human resources in safety regulation and safety management;
• EUROCONTROL ensure that the correct guidance material is available for recruitment and establishing a viable system for training personnel in safety matters.
• ANSPs should increase their efforts and investments to reduce and eliminate staff shortage of ATCOs;
• National ATM safety regulators and ANSPs to allocate sufficient human resources to enable the implementation and conduct of safety related training of all operational staff as a matter of priority, making best use of harmonised EUROCONTROL guidelines, recommended practice and tools as required;
• National ATM safety regulators and ANSPs should increase their efforts to implement ESARR 5 within the agreed time frame and make full use of, as needed, the acceptable means of compliance and the implementation support;
• National ATM safety regulators and ANSPs should ensure safety awareness, establishment of a safety culture, safety attitude and behaviour amongst ATCOs (individuals and teams) through the implementation of regular emergency, refresher, competency in line with ESARR 5 and team resource management (TRM) training;
• ANSPs should implement Critical Incident Stress Management (CISM) as an integrated element of their Safety Management System;
• ANSPs should verify that adequate arrangements are in place and, as required, develop guidelines for the staffing of controller working positions to ensure safe operations during system outages, maintenance phases and transition phases to new systems;

• ANSPs should integrate Human Factors principles into all stages of development and implementation of ATM systems enabling safe system performance.

• States should investigate the feasibility of “pooling” human resources;

• EUROCONTROL, in particular the SRC, in collaboration with the European Commission, should take the initiative to identify and alleviate difficulties with respect to the availability of resources for regulatory functions, addressing in particular the development of cross-border regulations functions and of EASA.

**Action by.** State Regulators, ANSPs and EUROCONTROL/European Commission.

**Finance.** States and ANSPs are responsible for funding all human resource issues. Some States may need financial assistance and it will be necessary to identify how training is funded.

**Timescale.** The provision of the correct level of human resources is fundamental to enhancing ECAC ATM Safety. This action should therefore be given the highest priority. Funding, guidance material and a training structure should be identified by March 2004 and delivered as soon as practicable thereafter. ESARR 5 implementation should be completed within the allotted timeframe.

**Incident Reporting and Data Sharing.**

**Current Situation.** States and ANSPs have applied considerable effort in implementing reporting schemes that are compliant with ICAO (including ADREP 2000), the European Commission Directives and ESARR2. Problems, however, relate mainly to the implementation of comprehensive reporting systems (aiming to cover all safety issues) and to the adequacy of the safety information extracted from the analysis process as the basis to elaborate remedial actions. Scope, type, quantity and quality of safety data collected in the reporting process varies significantly from State to State, and from service provider to service provider. Use of automated tools for data collection is not widespread. In many cases there is no common point of contact in States for safety data gathering and analysis and some States have yet to develop a “no-blame” culture. Benefits of sharing aircraft accident/incident information and disseminating lessons learnt in safety occurrence investigation are well understood and considerable progress has been made in the airlines on this very issue, to the benefit of their safety performance. The airlines have developed an effective data gathering system and cooperation with them should be investigated to learn from their experiences.

**Action Required.** States need to collect and share data in order to reduce the risk of incidents/accidents reoccurring. It is also necessary to assure States that information disseminated will not be misused. EUROCONTROL together with States and ANSPs should take actions in the following areas:

**Resources:**
• Allocate sufficient resources for safety data collection, analysis and dissemination of lesson learnt;

**Education and Awareness:**
• Initiate an industry-wide awareness and education campaign for all stakeholders, underlining the safety benefits of a good reporting culture;
• Introduce the reporting culture in the training of all personnel involved in safety related activities;

Data Collection and Analysis:
• Implement the principles of “just culture” in ATM safety occurrence reporting;
• Develop an acceptable means of compliance for ESARR 2;
• Establish immediately a focal function in each State for safety data collection;
• Develop strategies for the removal of legal impediments;
• Develop best practice in establishing cooperation between ANSPs, investigators and airspace users for identifying remedial actions, and encourage “no-blame” cultures.

Harmonisation:
• Adopt and implement a common taxonomy for ATM safety occurrence;
• Expedite the ongoing EUROCONTROL and European Commission initiatives for developing a common ATM taxonomy;
• Adopt and implement a common scheme for severity assessment and a common methodology for the identification of causes across the aviation industry.

Data Sharing and Lesson Dissemination:
• Share safety information, notably on cause, lessons learnt and remedial actions;
• Investigate means of sharing information and “lessons-learnt” with airlines;
• Review the current EUROCONTROL “Publication and Confidentiality Policy” to ensure proper balance between safety improvement and confidentiality safeguards;
• Initiate co-ordinated safety improvement actions based on data collected through Automated Safety Monitoring Tools and involving the whole aviation community;
• Develop and issue of Safety news based on investigated incidents.

Action by. State Regulators, ANSPs, Aircraft Operators and EUROCONTROL/European Commission.

Finance. Funding to establish appropriate common taxonomy and common classifications will be required. Some work is already in progress and this should be speeded up and additional funding identified either through EUROCONTROL and/or the European Commission.

Timescale. Much work is already in progress, but it needs to be accelerated and firm dates established for having a common data collection system across ECAC States. AGAS considers that work should be focussed toward having a system in place and fully functioning by January 2006.

ACAS

Current Situation. Both airborne and ground-based safety nets are last resort systems to prevent aircraft accidents. In normal operation the safety nets are triggered in cascade, i.e. the airborne safety nets will be launched only if the ground system (controller and ground-based safety nets) fails.

There are extensive ACAS provisions and guidance material included within ICAO documentation and that of EUROCONTROL, the Joint Aviation Authorities and individual State’s Civil Aviation Authorities. It is essential that these are reviewed, reinforced where necessary, and applied correctly by all those involved in ACAS operations.
Airborne Collision Avoidance Systems (ACAS) are mandated for many aircraft, but application of procedures, internationally, has been shown to be sometimes inconsistent. This needs to be addressed, urgently.

**Action Required.** AGAS considers that the following actions are required:

States Civil Aviation Authorities should ensure:

- national legislation and AIPs include provisions requiring the carriage and operation of ACAS II in accordance with the ACAS policy agreed by the ECAC States;
- national legislation and AIPs define pilot and controller responsibilities during ACAS II operational events within their national airspace, in accordance with the ICAO provisions;
- that aircraft operators’ ACAS training for flight crew is in accordance with the ICAO ACAS Performance Based Training Objectives;
- that aircraft operators’ flight operations manuals include appropriate ACAS procedures;
- that Air Navigation Service Providers’ ACAS training for controllers is in accordance with EUROCONTROL ACAS guidance;
- that Air Navigation Service Providers’ ATC operations manuals include appropriate ACAS procedures.

EUROCONTROL should:

- continue to progress the work currently being undertaken on ACAS II RA Downlink as quickly as possible to cover technical feasibility and human factors aspects;
- maintain the work currently being undertaken to address certain ACAS logic performance issues and to develop and propose modifications to the TCAS II MOPS.

**Action by.** State regulators, aircraft operators, ICAO, JAA, and EUROCONTROL.

**Finance.** There should be no cost implications in the actions required for ACAS.

**Timescale.** The issue is considered among the areas of immediate focus.

**Ground-Based Safety Nets**

**Current situation.** ANSPs are encouraged, but not obliged, to implement ground-based safety nets, especially Short Term Conflict Alert (STCA). Case studies reviewed by AGAS have shown that ground-based safety nets contribute significantly to the safety of the ATM system and action is required to increase their use, even mandating the requirement.

**Action required.** Common actions are required to ensure the required standards and guidance material for ground-based safety nets are established. Local actions will also be required to ensure that the common actions are transferred into concrete solutions. Consideration should also be given as to whether existing practices in the airborne domain, such as Minimum Equipment Lists (MEL), are appropriate for the ground environment:

- EUROCONTROL together with States and ANSPs:
  - should identify “Best Practice” in regard to ground-based safety nets;
  - should elaborate and, where necessary, validate a safety case for the systematic introduction of ground-based safety nets (mandating if necessary); this should include:
    - Review existing specifications and guidance material and amend as appropriate;
    - Specifications and guidance material should be assessed to establish standards and regulation requirements;
must consult with all stakeholders to ensure that there is common agreement on the
requirements;
should produce a full set of specifications and guidance material, supported by
appropriate elements of safety, risk and cost/benefit assessments;
must establish the rules for operations with and without ground based safety nets;
should make a case to ICAO for the Minimum Equipment List (MEL) concept to be
extended to ground-based ATM equipment, (an MEL is used to ensure that an
aircraft is always operated within controlled parameters) to be considered for use as
guidance on how to ensure that safety is maintained during technical outages and
system degradation for ground based ATM equipment, if appropriate;
consider whether a requirement for independent Certification of ground based safety
nets is relevant;
investigate the need for action regarding last-resort ground-ground communications
means.

The following local actions are required within Civil Aviation Authorities and ANSPs:

- Review national legislation and regulations;
- Implement and/or adapt existing ground-based safety nets and ensure compliance
  with standards and regulations;
- Ensure that all staff are trained.

Action by. State regulators, ANSPs, ICAO, associations that are ATM related and
EUROCONTROL.

Finance. Some States may need financial assistance to implement ground-based safety
nets and this will need to be investigated.

Timescale. EUROCONTROL has commenced looking at ways to assist those States that
have not yet implemented Short Term Conflict Alert to do so as soon as possible. A broader
study into the requirements for guidance material, standards and regulations for ground-
based safety nets is required and should be commenced as soon as possible. The target
should be to have standards in place by mid 2004 and any associated STCA regulatory
requirements established simultaneously.

Runway Safety

Current Situation. Runway safety is a vital component of aviation safety as a whole, which
calls for preventative actions. Over recent years there have been a number of runway
incursions across the European region, which resulted in two actual collisions, both with loss
of life. Analysis of the available data indicates that there is one runway incursion every
three to four days within the European region. Action is required to reduce the number
of runway safety occurrences, in particular runway incursions.

Action Required. In July 2001 a joint runway safety initiative was launched by GASR, JAA,
ICAO and EUROCONTROL to investigate specific runway safety issues and to identify
preventative actions. The ensuing study of incidents at airports and associated concomitant
preventative actions are set out in the "European Action Plan for the Prevention of Runway
Incursion". The specific actions required are:

- All stakeholders to implement the recommendations in the "European Action
  Plan for the Prevention of Runway Incursion" that relate to their activities.
- The document is considered to be a living document that will be updated as
  necessary. Stakeholders should therefore have mechanisms in place to capture
  updates of the Action Plan.

Actions by. National ATM safety regulators, Aerodrome Operators, ANSPs, Aircraft
Operators, Aircraft Operators Associations, EUROCONTROL.
Finance. Implementation of the recommendations will be the responsibility of the stakeholder suggested in the Action Plan or as the national ATM safety regulator decides.

Timescale. A target timescale for implementation is laid down for each action in the Action Plan. A process will be put in place for safety regulators to monitor progress with implementation prior to commencement of the ICAO Safety Oversight Programme foreseen for 2004.

**Enforcement of ESARRs and Monitoring of their Implementation**

**Current Situation.**

EUROCONTROL Member States have an obligation to implement EUROCONTROL Safety Regulatory Requirements (ESARRs) once formally approved. Most EUROCONTROL Member States, however, require domestic legal instruments to incorporate EUROCONTROL decisions, as they are not directly applicable under the Convention. This lack of direct applicability means implementation of decisions has been slow in some States, which has resulted in a mixed picture across Europe. The transposition into national law may also result in differences at national level rather than a fully harmonised EUROCONTROL-wide application of requirements. The implementation of the EC’s Single European Sky proposals should provide legal strength to the implementation of, inter alia, ESARRs. It must be noted however that although all current EU Member States are also Member States of EUROCONTROL, there will be a continuing need to ensure that EUROCONTROL and EU proposals are equally applied across all ECAC Member States.

Currently there is only limited monitoring of ESARR implementation and the oversight programme is not institutionalised. As regular monitoring was considered key to help achieve compliance, the need for an institutionalised and strong oversight programme, which will allow for a range of actions to be taken when a State is not compliant, was identified.

It must be highlighted that some of the difficulties with the implementation of ESARRs also stem from their format and drafting. For example, the absence of a clear distinction between mandatory and non-mandatory material does not facilitate the task of national regulators. A Means of Compliance (MOC) is also urgently needed for each ESARR.

**Action Required:**

- States must finalise the implementation of ESARRs agreed by the EUROCONTROL Commission as soon as possible;
- EUROCONTROL to ensure that ESARRs are drafted in a clear and easily transposable manner, and the consultation and drafting mechanism is aligned with the EUROCONTROL Notice of Proposed Rule Making (ENRPM) mechanism;
- EUROCONTROL to review existing ESARRs to improve clarity when required;
- Develop a regularly applied strong oversight Programme for ESARRs whereby:
  - Feedback and assistance is provided to States further to monitoring;
  - Information on compliance by member States may be disclosed;
  - Investigate [in collaboration with the European Commission] whether such a programme can be aligned with the ICAO Safety Audits Programme.
- EUROCONTROL (SRC) develop Means of Compliance.

**Action by.** State ATM Regulators, European Commission, and the EUROCONTROL Organisation.

**Finance.** Some States, ANSPs may need support to implement ESARRs in the required timeframe.
**Timescale.** According to the existing ESARRs implementation deadlines.

**Awareness of Safety Matters**

**Current Situation.** Implementation of the ATM 2000+ Strategy in respect of the safety objective is at an early stage. Some States have some way to go before their safety systems reach maturity and effectiveness. In general, there is a lack of properly qualified safety experts, uncertainty about recruitment requirements, insufficient opportunities for safety-related training and the leadership in safety needs to be strengthened.

**Action Required:**

- ANSPs shall ensure that an SMS including Safety Training, Incident Reporting and Human Factors elements is implemented according to ESARRs 2 & 3;
- EUROCONTROL shall provide adequate resources and guidance material to assist in implementing an adequate safety framework;
- A dedicated Agency Safety Domain with a strengthened Safety Management Unit and consultative Safety Team shall be established by EUROCONTROL to oversee the development of ATM safety management guidance material and procedures, and to provide support to States and service providers;
- A specific awareness initiative by EUROCONTROL (SRC) to support national regulatory bodies;
- A campaign to heighten awareness of ATM Safety related requirements should be launched by EUROCONTROL;
- EUROCONTROL Organisation reaffirms its position as leader for safety of ATM in Europe, supports implementation of the Action Plan and regularly reviews ATM safety taking the necessary further actions.

**Action by.** EUROCONTROL, State ATM Regulators, ANSPs.

**Finance.** States and ANSPs should fund attendance at EUROCONTROL Safety Meetings. Funding for training, support to States and an ATM safety awareness campaigns need to be identified.

**Timescale.** Regarding the SMS implementation the time scale is according to ESARR 3, i.e. July 2003 and for the EUROCONTROL actions January 2004.

**Safety and Human Factors Research & Development**

In the coming decades ATM will undergo significant changes to address the need for increased capacity. ATM systems will be more complex and automation will be provided to support the controller. Safety assessment of complex systems and operations will need to be conducted with a range of different methods and approaches. Safety and human factors research & development (R&D) is therefore required.

Safety and human factors R&D will focus on seven principal areas:

- Examining ways to improve safety culture in ATM organisations by helping define practicable improvement measures and helping to raise safety competence and awareness).
- Supporting the process of learning from incident reports and other safety-related events in order to derive lessons for operational staff, designers, risk assessors and trainers. Part of this analytic approach will also aim to develop an ‘early-warning’ system to detect increasing incident types that could be precursors to accidents.
• Developing enhanced risk assessment methods (particularly in the area of human error and recovery) to ensure that future tools and systems can be fully assessed. This work area will also seek to develop an integrated risk picture for ATM in Europe, showing the relative safety priorities in the gate-to-gate ATM cycle.

• Developing means of ensuring that safety is fully and explicitly integrated into all future design concepts (supporting system design and procedures) including design and development of controller working positions and automated support tools.

• Investigating four specific safety areas – level busts, runway incursions, interactions between safety nets, and controller performance during low vigilance periods, to better understand the causes and optimum solutions to these problems via guidance and controller working practices (supporting WG4, Airports and Human Factors).

• Studying longer term key issues, such as the impacts of increasing traffic complexity on safety (supporting system design and procedures), how controllers can deal with this increased complexity, and determining the limits of complexity for controllers.

• Increasing co-ordination of European ATM Safety R&D, to deliver effective and efficient research results that add real safety value.

• Understanding safety in all aspects of design and operations so that safety investment can be strategically organised to realise required reductions in accident rates to accommodate predicted capacity growth.

**Action by.** EUROCONTROL Organisation, European Commission.

**Finance.** Some of the above work is already underway, in other areas additional funding will be required.

**Timescale.** Some of the above projects are already started, others will commence during 2003, the remainder during 2004. The completion timeframe will be 2003 – 2006.
# Glossary of Acronyms & Terms

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<tr>
<th>Acronym</th>
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<tr>
<td>ACAS</td>
<td>Airborne Collision Avoidance System</td>
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<td>ACC</td>
<td>Area Control Centre</td>
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<tr>
<td>ADREP</td>
<td>ICAO Aircraft Accident/Incident Reporting System</td>
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<td>AEA</td>
<td>Association of European Airlines</td>
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<td>AGAS</td>
<td>High Level European Action Group for ATM Safety</td>
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<td>AIP</td>
<td>Aeronautical Information Publication</td>
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<td>ANSP</td>
<td>Air Navigation Service Provider</td>
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<td>AO</td>
<td>Aircraft Operator</td>
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<td>APW</td>
<td>Area Proximity Warning</td>
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<td>ATC</td>
<td>Air Traffic Control</td>
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<td>ATFM</td>
<td>Air Traffic Flow Management</td>
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<td>ATM</td>
<td>Air Traffic Management</td>
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<td>ATS</td>
<td>Air Traffic Service</td>
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<td>CAA</td>
<td>Civil Aviation Authority</td>
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<td>CEC</td>
<td>Commission of the European Community</td>
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<td>CFIT</td>
<td>Controlled Flight Into Terrain</td>
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<td>CFMU</td>
<td>Central Flow Management Unit</td>
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<td>EATMP</td>
<td>European Air Traffic Management Programme</td>
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<td>EC</td>
<td>European Commission – (also used for European Community)</td>
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<td>ECAC</td>
<td>European Civil Aviation Conference</td>
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<td>ENPRM</td>
<td>EUROCONTROL Notice of Proposed Rule Making</td>
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<td>ESARR</td>
<td>EUROCONTROL Safety Regulatory Requirement</td>
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<td>EU</td>
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<td>EUROCONTROL</td>
<td>European Organisation for the Safety of Air Navigation</td>
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<td>GASR</td>
<td>Group of Aerodrome Safety Regulators</td>
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<td>IATA</td>
<td>International Air Transport Association</td>
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<td>ICAO</td>
<td>International Civil Aviation Organisation</td>
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<td>JAA</td>
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<td>MEL</td>
<td>Minimum Equipment List</td>
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<td>RVSM</td>
<td>Reduced Vertical Separation Minima</td>
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<td>SES</td>
<td>Single European Sky</td>
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<td>SM</td>
<td>Safety Management</td>
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<td>SMS</td>
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<td>SSAP</td>
<td>Strategic Safety Action Plan</td>
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<td>STCA</td>
<td>Short Term Conflict Alert</td>
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<td>TRM</td>
<td>Team Resource Management</td>
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<td>WG</td>
<td>Working Group</td>
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