EUROCONTROL

SAFREP

Safety Data Reporting and Data Flow Task Force

Report on ATM Incident Reporting Culture:

Impediments and Practices

EUROCONTROL

European Strategic Safety Action Plan Implementation Programme (SSAP)

SAFREP Task Force Report to Provisional Council

ATM Incident Reporting Culture: Impediments and Practices

Executive Summary

Background

The tragic aircraft accidents in 2001 and 2002, were sharp reminders that the ongoing effort in ATM to improve the safety of European skies needed to be strengthened. Consequently, EUROCONTROL developed the Strategic Safety Action Plan (SSAP), to cover eight high priority areas. These are: Safety-Related Human Resources in ATM; Incident Reporting and Data Sharing; Airborne Collision Avoidance System; Ground-Based Safety Nets; Runways and Runway Safety; Enforcement of ESARRs and monitoring of their Implementation; Awareness of Safety Matters; Safety and Human Factors Research and Development.

The results of the SSAP implementation monitoring show that good progress has been made throughout with the exception of Incident Reporting and Data Sharing. In addition, there has been growing concern on the part of ATM professionals (Air Navigation Service Providers, safety regulators, international organisations and representative bodies of aviation personnel such as IFATCA and IFALPA) about flight safety being impaired through limited application of the "just culture" reporting and analysis approach. The major concern is centred on the judicial system, which causes increased fear of sanctions against the reporter, particularly if he/she was partly or fully responsible for the reported incident. Furthermore, certain elements of the media have dealt aggressively with apparent breaches of flight safety within certain airlines and ANSPs. These factors – punishing Air Traffic Controllers or pilots with fines or license suspension and a biased focus by some media on aviation safety issues – have had the cumulative effect of reducing the level of incident reporting and the sharing of safety information. This hinders safety improvement.

Accordingly, the Director General established a Safety Data Reporting and Data Flow (SAFREP) Task Force to address as a matter of priority the key areas of safety data reporting, legal, managerial and organisation constraints, and safety data flow for European ATM and to propose solutions to any constraints that SAFREP might identify within those areas.

Current Situation in Safety Data Reporting Practices, safety Reporting Culture and Safety Data Flow

Safety Data Reporting. The situation concerning legal impediments to safety occurrence reporting appears to be largely unchanged from the PRU/PRC's 2002 survey. There are two main legal impediments i.e. fear of prosecution (punitive legislation) and the fear of a lack of confidentiality (public access to details and names) that prevent the adoption and implementation of a "just culture".

Just Culture. The concept of "just culture" has become better understood and accepted by aviation personnel. However, the need for a "just culture" is generally not understood and reconciled with the judicial system and legislators, and the situation is likely to get worse if adequate measures are not taken. The removal of identified obstacles against the establishment of a "just culture" in ANS does not necessarily require the creation of additional regulations at international/regional level, but should concentrate firstly on appropriate implementation actions at domestic level.

Safety Data Flow. To improve ATM safety, major data flows already established should be integrated and merged to ensure that appropriate and timely ATM safety information is available for operational staff, safety experts and decision makers. Current data flows are the regulatory ESARR 2 data flow, the Agency voluntary risk sharing information based on CESC policy, the airspace users data flow into STEADES, the ICAO ADREP reporting and last but not least the ECCAIRS network, following Directive 2003/42/EC of 13 June 2003. The SAFREP TF found that achievement of complete interoperability between the data flows to be a key element in achieving the ATM safety lessons

dissemination, within the wider context of aviation safety data. But action is now needed to reach interoperability, provide more meaningful analyses, disseminate lessons learned and promote higher levels of safety.

Safety Key Performance Indicators. The lack of fully effective and harmonised reporting and assessment systems at national level will always pose a challenge to any centralised data flow at European level. The solution in progressing safety key performance indicators (KPIs) includes making best use of, and building on, the achievements already in place. This includes combining mandatory and voluntary data flows, where possible. The difficulties in identifying appropriate safety KPIs that truly measure the ATM system performance, is slowing down further the work. In addition, it is perceived that, if not adequately addressed and identified, the introduction of safety key performance indicators, correlated with other performance indicators, may put in jeopardy all the efforts to define, support and implement the "just culture". Work on this subject is ongoing and not yet concluded. SAFREP will be in a position, if required, to be reactivated in the future and present more concrete results.

Status of safety occurrence investigation

Safety investigation responds to the need to learn from accidents and incidents, and to take appropriate action to prevent the repetition of such events. In addition, it is important that even apparently minor occurrences are investigated, in order to prevent catalysts for major accidents. Safety analysis and 'investigation' is a necessary and effective means of improving safety, by learning the appropriate lessons from safety occurrences and adopting preventitive actions.

To be effective, the process requires that all relevant incidents and accidents be reported and comprehensively documented by aviation personnel. The latter must contribute fully to the analyses and 'investigation' of the reported occurrences. The success of the safety system is consequently dependent on the notion of "safety culture", to be implemented at the level of each individual organisation forming part of the aviation community.

Experience shows, however, that in many respects safety analysis and 'investigation' is not operating as effectively as might be expected. Neither is occurrence reporting as systematic as it should be, nor are aviation personnel fully cooperating with the investigation board, mainly for reasons related to the potential negative consequences for those involved. These impediments may derive from the subsequent use of the information provided to the investigation board by judicial authorities, parties to civil litigation, media, or even their employers.

Impediments to Reporting and Data flow

SAFREP considers that there are legal, managerial and organisational impediments to data reporting and data flow. Best practices to overcome these impediments exist and can be adopted and applied by different stakeholders. Others require development, especially those on how to engage positively with the judicial system.

Although introduction of "just culture" does not take place overnight, States, Regulators, ANSPs and EC should act together now to take advantage of a transparent ATM safety management system to which safety data reporting, assessment and sharing is only one part of the equation.

SAFREP considers that the ICAO, EUROCONTROL and European regulations on incident reporting, in themselves, offer adequate provisions and there does not appear to be a need for additional regulations or amendments thereto. SAFREP also concluded that the problems were primarily related to their implementation at national level.

Proper implementation will require actions at two different levels:

- formal measures in the form of an appropriate domestic legislation framework to support the implementation of practical measures. The promotion of best practices will, in effect, be a pointless exercise if incompatible with existing national regulations;
- practical measures such as identification, development and promotion of best practices, the establishment of a proper safety culture.

Improvements and Remedial Actions

Proper mitigation of various impediments will require immediate actions at different levels, such as:

- local activities in the form of national measures to adapt the domestic legislation framework to facilitate the implementation of "just culture";
- commitment of the top management in regulatory authorities and ANSPs to ensure that financial and man-power resources are committed to safety;
- an awareness and education campaign at European level inside and outside the aviation community, which addresses the media, legislators and judicial systems;
- a European level activity to develop where necessary additional harmonised guidelines on best practices, to provide training, to integrate safety data flows, to positively engage with the judicial system, and where requested provide support to individual States.

Document Approval

The following table identifies the management authorities who approved the initial issue of this document.

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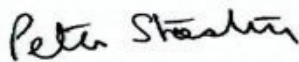SAFREP Task Force**

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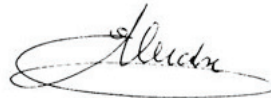Coordination
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Abstract

This report describes the current (October 2005) situation in Europe in relation to safety data reporting practices, reporting culture, data flow and safety key performance indicators. It was written by the EUROCONTROL, Safety Data Reporting and Data Flow (SAFREP) Task Force.

The report contains recommendations which, if adopted and implemented by the Governing Bodies of EUROCONTROL, will alleviate existing legal, managerial and organisation constraints to safety data reporting and safety data flow for European ATM. They will also facilitate the implementation of a "just culture" for safety reporting in Europe.

	Keywords		
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CHAPTER 1 - Introduction

1.1. SSAP Implementation Programme – Area 2 – Incident Reporting and Data Sharing

1.1.1. The tragic aviation accidents of 2001 and 2002, were sharp reminders that the constant effort to improve the safety of European skies needed to be strengthened. Consequently, EUROCONTROL developed the Strategic Safety Action Plan, which was approved by the Provisional Council in April 2003 to cover Eight High Priority Areas. These areas are:

1. Safety-Related Human Resources in ATM;
2. Incident Reporting and Data Sharing;
3. Airborne Collision Avoidance System;
4. Ground-Based Safety Nets;
5. Runways and Runway Safety;
6. Enforcement of ESARRs and monitoring of their Implementation;
7. Awareness of Safety Matters; 8. Safety and Human Factors Research and Development.

1.1.2. It is clear from the results of SSAP implementation monitoring that all Areas have made good progress with the exception of Area 2, Incident Reporting and Data Sharing. While European States and Air Navigation Service Providers (ANSP) have made considerable strides towards implementing incident reporting schemes, the process is not comprehensive and the quality of the safety data obtained varies significantly from State to State. Despite the clear benefits of sharing aircraft accident/incident information, some States and ANSPs remain concerned that their safety-related performance might be unfavourably compared with others.

1.1.3. In recent years there has been a growing concern on the part of ATM professionals (ANSPs, Safety Regulators, and representative bodies of aviation personnel such as IFATCA and IFALPA) about the interpretation of flight safety by the general public and especially by the judicial system. The major concern is associated with the intervention of the legal system, which causes increased fear of sanctions against the reporter, particularly if he/she was partly or fully responsible for

the incident. Furthermore, certain elements of the media have dealt aggressively with apparent breaches of flight safety within certain airlines and ANSPs. These factors - punishing Air Traffic Controllers or pilots with fines or license suspension and a biased focus by some media on aviation safety issues – have had the cumulative effect of reducing the level of incident reporting and the sharing of safety information by those involved.

1.2. Establishment of Safety Data Reporting and Data Flow Task Force

1.2.1. At the initiative of the Provisional Council (PC) and Chief Executive Standing Conference (CESC), the Director General established a Safety Data Reporting and Data Flow Task Force (SAFREP) in 2005 to address the priority areas of safety data reporting, legal, managerial and organisation constraints, and safety data flow for European ATM. The terms of reference of the SAFREP Task Force were extended at PC 22 (April 2005) to enable the safety recommendations in PRR 8 to be addressed.[1]

1.2.2. The SAFREP TF agreed on a two step approach i.e.:
- work with immediate priority on developing best practices on data reporting, safety culture and associated impediments; and
- work with a longer term priority on developing key performance indicators for safety, when more becomes available to the Task Force.

1.2.3. This two step approach allowed SAFREP TF to develop solutions to the tasks given to improve the SSAP Area 2 status. The tasks given to the SAFREP TF were:
- to increase the levels of incident reporting and resolve legal impediments;
- to consolidate the voluntary risk sharing information and the safety lessons dissemination;
- to consolidate the regulatory flow of occurrence data;
- to progress the development and reporting of European Safety Key Performance Indicators (KPIs);

- to better clarify the roles and responsibilities of various players using safety data;
- to find a way forward to improve the situation in sharing of ATM safety related data within the ECAC States. This way forward should be an integrated part of a new pro-active European Safety Programme the principle of which was agreed at PC23 in July 2005.

1.3. About this Report

1.3.1. This report aims to present the work carried out by SAFREP TF to cover the above tasks as well as the derived conclusions and recommendations to the Provisional Council. The work has been focused to progress the tasks given by Provisional Council, which are highlighted in the preceding section. While work on the majority of the tasks has reached maturity there is still progress to be made in the area of Safety Key Performance Indicators (KPIs). However safety KPIs, with the ultimate objective to enhance safety, are being developed and the results will be presented at an appropriate juncture.

1.4. SAFREP TF composition and method of work

1.4.1. The SAFREP Task Force comprised key stakeholders (senior staff from ANSPs and Safety Regulators, European Commission, Airspace Users such as IATA and ERA and controllers' professional associations - IFATCA, EUROCONTROL Agency DAP/SAF and Legal Service, SRC/SRU, PRU/PRC). Appendix 1 of this report contains the Terms of Reference of the Task Force, including the detailed composition of the Task Force.

1.4.2. The Task Force held five meetings between PC22 (April 2005) and PC25 (November 2005). This report contains the input of all the Taskforce members.

CHAPTER 2 - Inventory of Legal, Managerial and Organisational Impediments

2.1. Background

2.1.1. Continuous efforts to improve safety have resulted in aviation becoming one of the safest means of transportation worldwide. The outstanding overall record of air transportation, however in no way implies that safety should be taken for granted.

2.1.2. Tragic accidents, which thankfully occur infrequently, serve to remind the aviation community as well as the general public that a permanent focus on safety matters is the key to maintaining and, where possible, improving, safety standards in the aviation industry. Massive growth of air traffic expected in the foreseeable future will require serious safety considerations to prevent the erosion of safety margins.

2.1.3. Several processes contribute to achieving, maintaining and improving safety standards. However, accidents continue to occur in spite of the existence and enforcement of numerous standards, rules and regulations. A very important process reflects the assumption that one of the most valuable tools for the promotion of safety is the ability to learn from previous mistakes.

2.1.4. Safety investigation responds to the need to learn from accidents and incidents, and to take appropriate action to prevent the repetition of such events. In addition, it is understood that even apparent minor occurrences need to be investigated, in order to prevent catalysts for major accidents. Safety investigation is thus firmly believed to be a necessary and effective means of improving safety, by learning the appropriate lessons from safety occurrences and adopting remedial actions.

2.1.5. To be effective, the investigation process requires that all relevant incidents and accidents be reported and comprehensively documented by aviation personnel. Secondly, the latter must contribute fully to the investigation of the occurrences which have been reported. The success of the safety investigation system is consequently dependent on the notion of "safety culture", to be implemented at the level of each individual organisation forming part of the aviation community. The concept of safety can therefore be envisioned as a set of values and principles which result in the effective placing of the notion of safety at the forefront of an organisation's activity, and that creates the proper environment to encourage systematic and spontaneous incident reporting and complete cooperation with the investigation board.

2.1.6. Experience shows, however, that in many respects safety investigation is far from operating as effectively as expected. Neither is reporting as systematic as it should be, nor are aviation personnel fully cooperating with the investigation board, mainly for reasons related to the potential negative consequences for those involved. These may be derived from subsequent use of the information provided to the investigation board by judicial authorities, parties to civil litigation, media, or even their employers.

2.1.7. SAFREP TF performed a thorough fact finding exercise to understand and capture the main issues in data reporting and data flow as well as the solutions taken by some stakeholders to successfully alleviate the legal, managerial and organisational impediments.

2.2. Findings

2.2.1. PRC Update on "Legal Constraints to Non-Punitive ATM Safety Occurrence Reporting in Europe" Report

2.2.1.1. In 2002, the PRC published a survey of legal constraints and shortcomings in national legislation, which would not support a "non-punitive ATM safety occurrence reporting culture". The survey covered all EUROCONTROL Member States at the time. In June 2005, the Safety Reporting Taskforce (SAFREP) asked the PRU to update its survey. Using the previous work as a starting point, together with documentation and information available in-house (LCIP documents, annual reports of ANSPs, non-confidential information from the SSAP survey and SRU's ESIMS reports, etc.) the PRU began a new study with focus on the detailed legal and regulatory provisions of each State likely to impede safety reporting. During the course of the dis-

cussions, safety management and organisational safety culture aspects were also looked at

2.2.1.2 Interviews were conducted with the safety managers (or equivalent), the safety regulators (in some cases) and with ATCOs. Commendably, all contacted parties have whole-heartedly participated in the meetings, which occasionally involved senior management, in a wish to emphasise the company's commitment to safety. The accounts given seem to be very honest, admitting shortcomings, difficulties and delays in implementation, where present. The participants have also been made aware that the complete results will made available in a final report without dis-identifying States and organisations. So far none of the organisations objected to that and PRU/PRC will continue to make the stakeholders aware of how the results will be used and presented.

2.2.1.3. The EC Directive 2003/42/EC on "Occurrence Reporting in Civil Aviation" is gradually being transposed into national law. By and large, States have retained the provision relating to the overriding authority of penal law in relation to punitive measures. Article 8.3 of the Directive reads *"without prejudice to the applicable rules of penal law, Member States shall refrain from instituting proceedings in respect of unpremeditated or inadvertent infringements of the law which come to their attention only because they have been reported under the national mandatory occurrence-reporting scheme, except in cases of gross negligence".* This was found by SAFREP TF counterproductive to the facilitation of the "just culture" implementation and States are encourage to transpose the article without the overriding authority clause.

2.2.1.4. To date, there are still States with no clear plans for implementation, while others have prepared a draft that awaits national legislative process clearing. Those who have implemented it seem to be a minority, for now.

2.2.1.5. ATCOs are concerned about the lack of formal data protection, in particular from the media, as well as judicial "interference". This is acknowledged by safety managers and investigators as important. These concerns are exacerbated by the lack of formal support (judicial or otherwise) from the company, should an ATCO be held liable in court for an ATC incident.

2.2.1.6. A number of organisations have made efforts to open a dialogue with judicial authorities with little or no positive results. It is felt by many that those authorities must be approached from a higher European level.

2.2.1.7. The Freedom of Information Act is considered to be a major stumbling block but only in a minority of States where specific solutions are needed.

2.2.1.8. The quest for sensation by some parts of the media has led to ANSPs and/or CAAs trying to maintain as much secrecy as possible. The natural consequence is that media will obtain some data from unofficial sources. This data is then frequently misused, to the detriment of both the public and of the companies or individuals named.

2.2.1.9. In a number of cases transparency is wrongly considered dangerous for the public image of the company. In some few instances one consequence feared is the increase of insurance premiums, due to poor understanding of the reported data, while collecting the end results through an integrated data flow covering all aviation aspects.

2.2.1.10. Conclusions based on work done recently by PRU with twelve key States plus MUAC were retained by SAFERP TF to be included in this report. The PRU will continue this work with all ECAC States that will culminate in a subsequent report being published in early 2006.

2.2.1.11. Within the surveyed stakeholders the lack of safety culture emerges as the most important inhibiting factor. In several of the visited placed by PRU staff feel inhibited to report ATM safety occurrences for fear of being blamed or punished, for lack of feedback and/or lack of follow-up. Further to that, mostly due to company and/or local culture, ATCOs are often less than supportive for their colleagues involved in a safety incident. Also, they find it hard to accept and get over an incident without considering it a personal and degrading failure.

2.2.1.12. Training, particularly refresher and emergency training, appears to be largely neglected in the sample surveyed, mainly due to staff shortage and financial pressure. This is felt to be crucial for lesson learning, but is the first to be sacrificed for cost reduction.

2.2.1.13. Within the same sample of stakeholders there seem to be a major communication fault line between ATCOs and management. This may be compounded by similar faults between different layers of management and/or with external partners, such as the CAA /AAIB.

2.2.1.14. The above findings still need to be further validated with a wider stakeholder sample but indicates already the areas in which support is needed.

2.2.1.15. Although generally good, the relationship between ATCOs and pilots could be improved with regards to safety. ATCOs seldom have a clear understanding of the pilots' perspective of events and vice versa. Often, safety incident notifications are filed by ATCOs "against" the pilots involved.

2.2.1.16. A concerning aspect is that many organisations are reaching the limits of the current situation, particularly in States without supporting legislation. High-profile accidents, increased corporate responsibility, a misdirected public awareness are a few reasons why it is necessary to "get out of the box" and address non?aviation people. While the concept of "just culture" is largely understood and accepted by the aviation world, it is an unknown or a misunderstood concept by the public, media, politicians and the judicial system.

2.2.1.17. International legislation and/or regulation are mostly adequate and if properly implemented and used at State-level it could help set the scene for a true "just culture".

2.2.1.18. A concerted effort is needed to inform and educate the key players on the benefits of a "just culture" and the need to introduce "a just legal environment" where it does not exist. At the same time, education and awareness should help to establish good practices within the current legislative environment.

2.2.1.19. Once again, it is crucial to identify those States where legislative issues exist, through a thorough review of their legislative systems. Based on previous experience, a good level of participation can be expected from States. Furthermore, assistance to those States can be offered by a combination of best practice examples, advice for new/changed legislation etc., on a case-by-case basis, as needed.

2.2.1.20. In conclusion:

2.2.1.20.1. Legislation

- Although the EC Directive 2003/42/EC on "Occurrence Reporting in Civil Aviation" and ESARR 2 are gradually being transposed into national law, a significant number of States have not yet implemented any legislation supporting "just" safety reporting. The reporting levels are therefore rather low, usually limited to those events where ATCOs cannot get away with the occurrence and must report it;
- Those States in which the retention of the provisions of art 8.3. of EC Directive 42/2003 relating to the overriding authority of the penal law in respect to punitive measures exist, will not have full flexibility in facilitating the implementation of "just culture";
- It is necessary to engage with the judicial authorities, at both national and European level, to ensure protection of persons reporting safety occurrences.

2.2.1.20.2. Safety management systems

- Legislation and regulations, of themselves, will not be sufficient to remedy any lack of safety commitment from top management or the lack of a proper safety management system;
- A concerted and sustained effort must be made at European level to ensure that all States implement functional safety management systems.

2.2.1.20.3. Safety Culture

- The absence of an effective and well-functioning safety management system is often linked with a sub-optimal safety culture within the company. This can be seen in the priorities given by management to allocating staff and financial resources to safety;
- At ATCO level, there can also be a sub-optimal safety culture. In many places ATCOs considered that a change in mentality was needed, to enable an honest mistake to be accepted and not seen as a failure, and the ATCO(s) involved not isolated and/or shamed by their peers;
- Strong emphasis must be given to changing sub-optimal safety cultures within companies at both managerial and ATCO level. This will be a matter of changing hearts and minds through education. Legislation will play a lesser role in this regard.

2.2.1.20.4. Drivers for changes

- With few exceptions, much is expected from the European level, be it the EU or EUROCONTROL. Support is expected in various forms, from simple advice to implementation support or even some form of pressure on local authorities;
- The ATM community needs to make a common cause with other aviation communities that clearly have the same interests in safety performance and improvements. Laws, regulations and the general public's mentality will not change unless aviation as a whole makes a common front.

2.2.1.20.5. Policy pointers

- There is a clear need for a national legislation support in many States in support of non-punitive reporting and assurance of confidentiality. This should be based on existing ICAO, EUROCONTROL and EU standards and regulations, but need local adaptation. To this end, more involvement at European level might be needed.
- A vast education and awareness campaign based on best practices should be undertaken, both at European and national level. This campaign should have all local ingredients, but it should be co-ordinated at European level. The campaign should address the two main issues of public disclosure of names (mainly by media) and non-punitive reporting (from justice).
- Safety regulation should be properly funded, possibly reducing the pay disparities between ANSP and CAA personnel. This would ensure more appropriate levels of staffing with positive consequences.
- Top ANSP management should be more committed to safety. Financial constraints and capacity pressures should not be used in the detriment of safety. Further more ATCOs and managers must meet halfway in devising a healthy safety reporting system, where all occurrences are systematically reported and analysed, then lessons are disseminated and necessary changes swiftly implemented.
- Training is crucial to spread knowledge as well as in keeping ATCOs current with new developments. Also, regular refresher training would ease the psychological impact should such a measure be applied to an ATCO, following a safety incident in which she/he was found to have underperformed.

2.2.2. SSAP Mid-term Maturity Assessment

2.2.2.1. The remit for the SSAP Mid-term Maturity study was to establish the extent of the progress made by each ECAC state with respect to the introduction of ATM safety systems against the requirements of the SSAP, approximately halfway through the programme period.

2.2.2.2. In order to meet the study objectives, the overall status of ATM safety management has been assessed through the review of a number of key elements of safety management (or "Study Areas"). In one study area, A.2 "The collection and dissemination of incident data" very little improvement was detected from the findings of the 2002 survey.

2.2.2.3. "A Mature System" exists if there is a well-established structure in place for collecting and recording incident data, analysing and acting on the results of the analysis, which ideally is legally underpinned by national legislation.

Study Area A2 - ANSPs
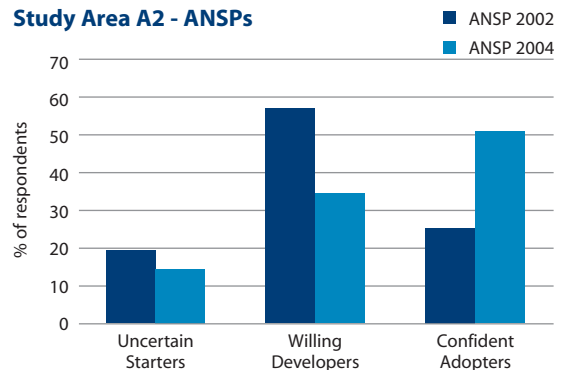
Study Area A2 - Regulators
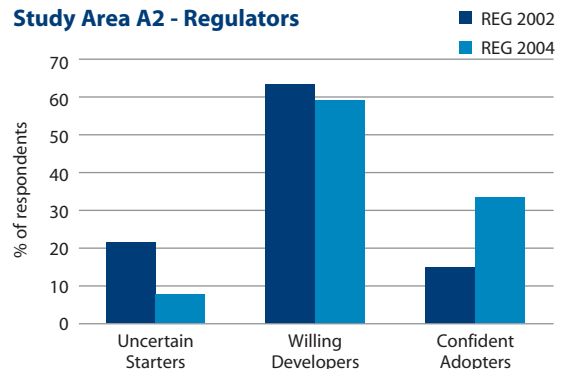
Figure 1 – SSAP Maturity Survey - Results on Collection and Dissemination of Incident Data

2.2.2.4. In 2002 over 20% of ANSPs and about 15% of Safety Regulators considered that there was a well-established system in place for the collection and dissemination of data. Progress has clearly been made in this area as 50% of the ANSPs and 35% of the regulators now declare that their State has a good safety occurrence reporting system.

2.2.2.5. This Study Area also attracted 71 comments during the survey or 11% of total comments. There is still a full spectrum of reporting systems across the ECAC States, ranging from countries without a formal reporting system for anything but the most severe incidents, to countries that have had elaborate systems in place for more than twenty years.

2.2.2.6. Most respondents believe that there is value in reporting and investigating data from a technical safety point of view, but that there are still great obstacles to overcome. Key obstacles are the absence of legal protection for voluntary reporting within States and the need for a so-called "Just Culture" within ANSPs and on a State level.

2.2.2.7. The introduction of legal protection for voluntary occurrence reporting is a very controversial issue in many States as it is argued that there will be many other professions who would require similar protection from the law, which would create the need for a major overhaul of the national penal code. Several States report formal or de facto solutions for this problem.

2.2.2.8. Practical issues are that some ANSPs still tend to suspend ATCOs for the duration of an investigation after each reported incident, which affects the ATCO's pay. SAFREP TF considers that this practice should be avoided. The practice of withdrawing ATCOs from operational positions when they are involved in safety occurrences, with the only aim of preserving the individual and the organisation was found to be a sound and recommendable practice. ATCOs retain their full right of reinstatement subject to further clarifications from the investigation but without prejudice of any administrative sanctions.

2.2.2.9. From a technical point of view, there are still States where the implementation of the reporting system raises questions about how to ensure consistency in reporting such that data ultimately becomes comparable within Europe: what software tools should be used to make the job easier, how to ensure the proper classifications are used for reports and how to properly conduct independent incident investigations.

2.2.2.10. Some participants mentioned that it looks like the situation relating to reporting will gradually improve over time as the younger generation of ATCOs appear to be less reluctant to participate in reporting schemes, even in the absence of formal legal protection. This seems to be reflected in the report from several ANSPs that they have made good progress with implementing a "Just Culture" internally.

2.2.2.11. A summary of the comments received can be viewed in Figure 2 below. It represents the issues from the ANSPs perspective.

SSAP Maturity Survey - Results on Collection and Dissemination of Incident Data
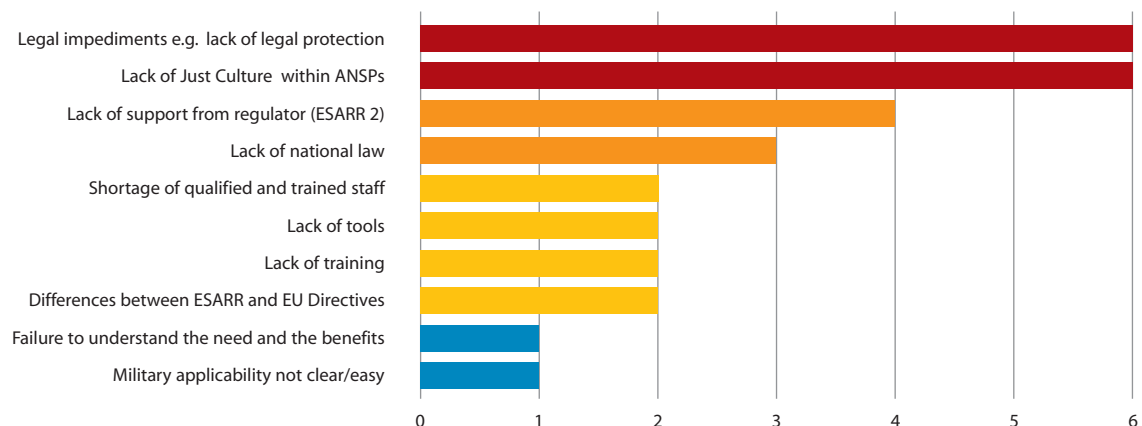
Figure 2 – SSAP Maturity Survey – Issues on ESARR 2 reported by ANSPs

2.2.2.12. In Conclusion:

While most respondents in principle supported reporting and dissemination of data and some progress is being made especially with ANSP organisations, there are still cultural, legal and process problems that need to be overcome before effective systems can be implemented. The SSAP Mid Term Safety Survey results are consistent with the PRC/PRU findings on the subject.

2.2.3. Regulatory Impediments as identified by ESIMS Programme

2.2.3.1. The EUROCONTROL ESARR Implementation, Monitoring and Support Programme (ESIMS) (2002-2004) of SRU/SRC had the scope to increase the SRC's visibility on the level of implementation of the ATM safety regulatory framework in those States visited, its consistency with EUROCONTROL safety regulatory decisions and related issues being faced.

2.2.3.2. States often appear to undertake (or have undertaken) the implementation of ESARR 2 on an ad-hoc basis, with half having no clear implementation plan. When the implementation plan is reported to exist, it is not always documented.

2.2.3.3. In some States, the SRU found it difficult to clearly understand the actual competence of the authorities or organisations, as well as the related interfaces and working arrangements with regard to accident and incident investigation, severity/risk assessment, actual analysis of safety occurrences, safety performance monitoring and national reporting to ICAO and EUROCONTROL.

2.2.3.4. The main reasons for the late promulgation of ESARR 2 can be summarised as follows:
- Lack of political commitment;
- Lack of a safety culture;
- Lack of a timely initiation of activities at national level;
- Lack of resources; and
- Initial perception that the national rule in place was sufficient to address ESARR 2 whereas with experience, this provided not to be true.

2.2.3.5. In less than half of the 36 States visited a safety regulatory process was in place to verify compliance with ESARR 2. Where one was in place it was only based on the monitoring of actual safety performance of the service provider (i.e. incident reports and/or related statistics).

2.2.3.6. Written procedures stating how ESARR 2 safety oversight is, or will be, conducted seldom existed and most States reported that they still lack the necessary resources to undertake the safety oversight function. At the time of the first round of ESIM visits out of 36 States questioned in only 11 a regulatory process was found in place to verify compliance with ESARR 2 as implemented by ANSPs.

2.2.3.7. The frequency of the main issues being faced when implementing ESARR 2 derived from the States' feedback given during the ESIMS Visits (2002-2004) are presented Figure 3 below.

Impediments to ESARR 2 Implementation Feedback from ESIMS Visits
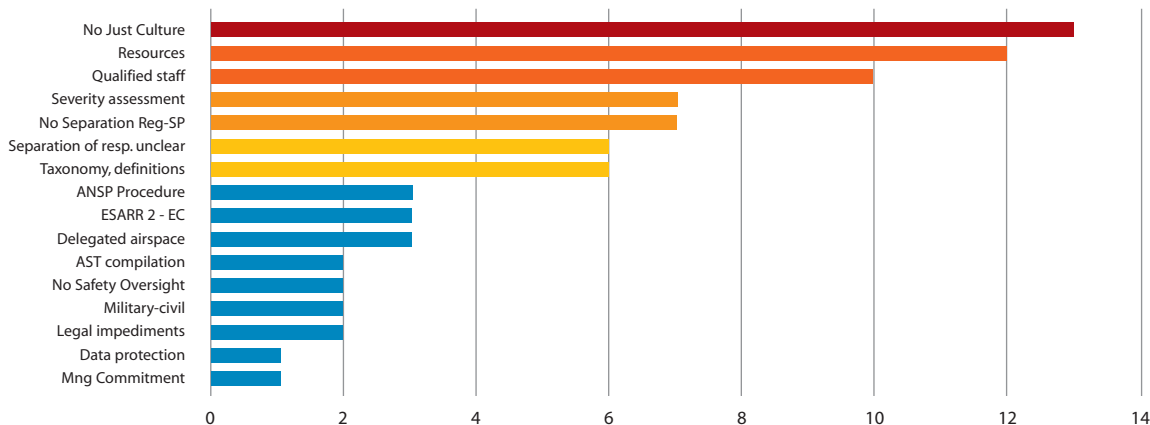
Figure 3 – ESIMS Feed-back on ESARR 2 Overall Impediments

2.2.3.8. As confirmed also by above graph in some Sates safety regulation function is rather weak, in spite of certain improvements. The single most important reason for this is financial. Unless this issue is tackled, a future NSA established under the SES regulations will not change the present situation to any significant extent.

2.2.3.9. In conclusion:

The main issues pertaining to the implementation of ESARR 2 at national level relate to:

- As the scope of ESARR 2 is applicable to the State, it therefore implies co-ordination between all Stakeholders involved in order to clarify the national implementation of ESARR 2;
- The new terminology implied by ESARR 2;
- The level of detail, in terms of reporting of precursors to accidents/incidents and the identification of causes;
- The severity and risk schemes which require further guidance to support a harmonised implementation across States;
- The existence of two EU Directives in the same area as ESARR 2;
- The lack of safety regulatory expert resources (human and financial) at national level; and
- The implementation of a "non-punitive environment", with potential changes to legislation other than aviation-related.

2.2.4. ESARR 2 Safety Data Collection Process

2.2.4.1. ESARR 2 has triggered, starting in 1999, the establishment of national safety flows as well as a centralised European regulatory flow. Much work has been done to develop guidelines for best practices as well as tools to assist in the ATM investigation process. TOKAI (Tool Kit for ATM Occurrence Investigation) is a tool that is now being used by several ANSPs and ATM safety regulators.

2.2.4.2. The Annual Summary Template Focal points were constantly being formally appointed, trained and started to work at national level. The quality of the safety data provided by them has increased constantly reaching the point that from 2006 the national summaries will contain data at the level of occurrences.

2.2.4.3. SRC/SRU has recently put in place an updated AST system to:

- To reduce the workload of the national focal points;
- To improve the overall ESARR 2 reporting process building over the existing resources;

- To improve the population of the SRC safety indicators tracked in the SRC Annual report;
- To better understand the limitations of national safety data flows;
- To provide more transparency on national safety data flows;
- To avoid duplication of work by limiting the number of annual queries to the AST-FPs;
- Easy interchange format with any stakeholder;
- "Low-cost" process – can be fed during investigation or automatically at certain defined periods (monthly, quarterly, annually);
- It is not time dependent, it can bring less reactivity and show more pro-activity;
- Serve other stakeholders need for safety data (such as PRC/PRU, EATM Programmes) with enough granularity;
- Continue to preserve the confidentiality of the sources and to avoid safety benchmarking.

2.2.4.4. In conclusion:

- The measures already in place are valid building blocks which can form part of a new approach to safety reporting in Europe;
- SRC believes that ESARR 2 and EC Directives 94/56 and 03/42, if implemented fully by States, are sufficient in their present form to start establishing the required information flow for safety data;
- There remain a number of issues that must be addressed:
  - quality of the data at the front end of the system (national reporting systems) still needs to further improve;
  - allocation of resources at national level, and training of personnel (on their own the AST Focal Points cannot solve in bridging all the gaps);
  - adherence to taxonomies and established investigation techniques;
  - establishment of a "just culture" reporting environment;
- The EC-EUROCONTROL partnership can be used as a basis for further action, especially in the area of ensuring the complete interchange ability of the tools developed by EC and EUROCONTROL such as ECCAIRS and TOKAI;
- The ESARR 2 process is being enhanced to include limited "per-event" information on each occurrence. This will enable improved quality of data and corresponding performance indicators and better transparency and comprehension of national data flows.

CHAPTER 3 - Existing Legal Obligation for Implementation of Occurrence Reporting and Assessment in ATM

3.1. Background

3.1.1. International civil aviation's outstanding safety record is primarily due to three key factors:
a) the dedication to safety by aviation organisations and their staff;
b) a continuous learning process, based on the development and free exchange of safety information; and
c) the ability to turn errors into preventive actions. It has long been recognised that endeavours aimed at improving contemporary civil aviation safety must build upon empirical data. There are several sources of such data available to civil aviation, each necessary but not sufficient to provide such empirical data. In combination, however, they provide the basis for a solid understanding of the strengths and weaknesses of aviation operations.

3.1.2 For years, information from accident and incident investigations formed the backbone of activities aimed at improvements in equipment design, maintenance procedures, flight crew training, air traffic control systems, airport design and functions, weather support services, and other safety-critical aspects of the air transportation system. In recent years, the availability of technological means has led to an accelerated development of safety data collection, processing and exchange systems. Safety data collection systems have allowed the development of a significant volume of safety information, which has added to safety information from accident and incident investigations. **Safety data collection systems form the pillars of a safety management system (SMS), and generate information that is used to implement corrective safety actions and proactive long-term strategies.**

3.1.3. Accidents and serious incidents are rare occurrences that often reflect the linking of circumstantial factors. As a result, it is often difficult to uncover unsafe operational practices in time to deal with them appropriately, using information from the investigation of accidents and serious incidents exclusively.

3.1.4. From a system safety perspective, in order to develop mitigations to operational errors, it is essential to learn about successful strategies and defences, through information from safety data collection systems. This complements the lessons from failures accessed through information provided by accident and incident investigations.

3.1.5. This section presents existing obligations for all responsible stakeholders to implement systems and/or schemes to report and assess safety occurrences in Air Traffic Management. Three levels of obligation have been identified: Global, European and National/Organisational, as follows:

3.2. GLOBAL - ICAO
Convention on International Civil Aviation ("Chicago Convention")

3.2.1. States are legally bound to implement the Articles and Annexes of the Chicago Convention. These include inter alia:

- **Article 26 of the Convention** - Investigation of Accidents – requiring States in which the accident occurs to institute an inquiry into the circumstances of the accident, in accordance, so far as its laws permit, with the procedure which may be recommended by ICAO and;

- **Annex 13 to the Convention** - Aircraft Accident and Incident Investigation (Ninth Edition July 2001) which lays down mandatory provisions, in detailed form, for the reporting and analysis of aircraft accidents and incidents, including inter alia; elements as the objective of the investigation; the non-disclosure of records; the procedures regarding information on accidents and incidents and incident reporting systems.

3.2.2. In addition, the collective agreement and commitment of States is also expressed in resolutions of the ICAO Assembly. Relevant resolutions include:

■ **Assembly Resolution A33-17 (October 2001):** Non-disclosure of certain accident and incident records, in which States are urged to examine and if necessary adjust their laws, regulations and policies to protect certain accident and incident records in compliance with Annex 13;

NOTE: The provisions in Assembly Resolution A33-17 and Annex 13, paragraph 5.12, address the protection of information from certain accident and incident records in particular, the provisions related to the cockpit voice recorder and their transcripts. However the provisions in Assembly Resolution A33-16, Assembly Resolution A31-10, Annex 13, paragraph 8.3 and Annex 6, paragraph 3.2.4, address self-reporting and electronic safety data collection systems. ICAO provisions do not address direct observation safety data collection systems.

■ **Assembly Resolution A35-17 (October 2004):** Protecting information from safety data collection/processing systems, which instructs the Council to develop appropriate legal guidance that will assist States to enact national laws/regulations to effectively protect information from safety data collection systems, both mandatory and voluntary, while allowing the proper administration of justice in the State and urges all States to examine their existing legislation and adjust as necessary.

NOTE: The above Assembly Resolution on the protection of information from safety data collection systems is consistent with the 3rd Fundamental (Promoting safety awareness worldwide by facilitating the effective sharing and use of aviation safety data and information) of the Global Aviation Safety Plan (GASP).

3.2.3. It can be concluded that, while existing ICAO provisions regarding protection of certain accident and incident records have served international civil aviation, developments dictate the need to generate a framework that encompasses the protection of all relevant safety information systems.

3.2.4. During the work of SAFREP TF the EUROCONTROL Legal service made contact with its counterpart in ICAO. ICAO welcomed the offer of co-operation because Europe is considered to be in advance to other regions in this subject. ICAO would like to use the work of SAFREP TF because it considers that this work further progresses the initiative of Assembly res-

olution A35/17. ICAO issued a State letter in early_2005 asking for best practices in relation to this Resolution. The first priority of the ICAO Legal Bureau is to study the replies received to this State Letter and then to make best use of any available synergies. The recent establishment of an EC office at ICAO HQ in Montreal might facilitate this work.

3.3. European

3.3.1. EUROCONTROL Safety Regulatory Requirement ESARR 2 - Reporting and Assessment of Safety Occurrences in ATM

3.3.1.1. The EUROCONTROL review of past safety data across the ECAC region and related analysis of safety performance at the European level has yielded the conclusion (referenced in the EUROCONTROL ATM Performance Review Report for 1998) that: *"Across the ECAC area, significant variations exist in the scope, depth, consistency and availability of ATM safety data".*

The aim of ESARR 2 is also to identify possible GLOBAL SOLUTIONS at ECAC level, be it new regulatory requirements or safety management improvements

3.3.1.2. ESARR 2 lays down obligatory provisions requiring EUROCONTROL Member States to:
■ ensure that a formal means of safety occurrence reporting and assessment is implemented;
■ ensure that all appropriate safety data are collated and reported to EUROCONTROL;
■ ensure provisions exist for any person or organisation in the aviation industry to report.

3.3.1.3. The scope of ESARR 2 covers the implementation by States of an Occurrence Reporting and Assessment Scheme for Air Traffic Management (ATM) Safety within a wider framework established by the implementation of Safety Management Systems. Whereas the objectives of ESARR 2 are three fold:
■ to support the monitoring of levels of ATM safety and related trends over time, both at European and national levels;
■ to support the improvement of aviation and ATM safety, whether or not ATM contributed to the causes of accidents and incidents;
■ to support the assessment and monitoring of technical and operational changes to the ATM system (e.g. RVSM or ACAS being just two examples).

3.3.1.4 The end results of a successful ESARR 2 implementation should be the solutions derived from the knowledge of:

- the trends; what is new in terms of safety occurrences or emerging hazards or what is becoming of an increasing concern;
- the Key Risk Areas (KRA); those areas or types of occurrences that are already a concern and should be dealt with;
- the way and proportion in which ATM is contributing to the occurrence of incidents and accidents and how ATM could be more proactive in supporting airspace users in ensuring they own safety;
- in what way changes to the ATM environment have participated to the existence of safety occurrences;
- in what way ATM could have been more supportive to the airspace users in ensuring their own safety (i.e. for those elements of the aviation transport for which ATM is not directly responsible).

3.3.2. European Community Law

3.3.2.1 European Community Law includes mandatory provisions, binding upon EU States and those having implementation agreements with the EU in the field of aviation. Relevant provisions include:

- **Directive 94/56/EC:** Establishing the fundamental principles governing investigation of civil aviation accidents and incidents as well as the principles of separation between the safety regulatory authorities (part of the safety chain, upstream of operations) and the independent investigators;

- **Directive 2003/42/EC:** Occurrence reporting in civil aviation. This Directive establishes the mandatory requirements for the collection of all aviation safety data, including air navigation safety data. Under Article 6.1 of the Directive, States are required to *"participate in an exchange of information by making all relevant safety-related information stored in [their] databases available to the competent authorities of the other Member States and the Commission".* The aforementioned national databases are required to be compatible with the European Commission's ECCAIRS data base, Article 6.3 invites "the competent authorities to use this software (i.e. ECCAIRS) for running their own databases".

- **Draft Commission Regulation laying down the Common Requirements for the Provision of Air Navigation Services (March 2005).** Annex II, section 3.1.2, sets out requirements for Safety Achievement which require ANS-providers to ensure that personnel are adequately trained and competent for the job; to ensure that risk assessment and mitigation is conducted to an appropriate level and to ensure that ATM operational or technical occurrences which are considered to have significant safety implications are investigated immediately.

3.3.3. National/Organisational

3.3.3.1. States are bound to implement national legislation including compliance with or transposition of relevant ICAO standards, ESARRs and European Community law. States have a certain amount of discretion as to how to meet these obligations. Therefore a completely harmonised implementation is not in place (e.g. States mandatory and/or voluntary reporting systems) and obligations of States must be reflected at ANSPs level (e.g. establishment of SMS).

3.4. Conclusion

There is a consensus within the SAFREP Task Force , that the ICAO, EUROCONTROL and European regulations on incident reporting, in themselves, offer adequate provisions and that there does not appear to be a need for additional regulations or amendments thereto. The task-force also reached the conclusion that the problems were essentially related to their implementation at national level. The proper implementation will require actions at two different levels:

- Formal measures in the form of an appropriate domestic legislation framework to support the implementation of the aforementioned practical measures. The promotion of best practices will, in effect, be a pointless exercise if incompatible with existing national regulations. It is understood that this task is not for the SAFREP, the ANSPs, or even for EUROCONTROL to complete, but for EUROCONTROL Member States themselves.
- Practical measures such as the identification and promotion of best practices in the establishment of a proper safety culture. This task should be undertaken by EUROCONTROL and implemented by ANSPs, with the support of EUROCONTROL.

CHAPTER 4 - Identified Best Practices and Potential Solutions

4.1. General

4.1.1. One key to the successful implementation of ESARR 2 is to attain an achievable level of "blame free culture" within a non-punitive environment, by ATM service providers, ATM safety regulators and investigators. Only small proportions of unsafe human acts are deliberate (e.g. criminal activity, substance abuse, controlled substances, reckless non-compliance, sabotage, etc.) or qualify as criminally punishable gross negligence and as such deserve sanctions of appropriate severity. A blanket amnesty on all unsafe acts would lack credibility in the eyes of employees (workforce) and could be seen to be in breach of natural justice.

4.1.2. Any safety information system depends crucially on the willing participation of the workforce, the people in direct contact with the hazard. In ATM organisations, these are obviously the ATM services personnel undertaking safety-related tasks, such as Air Traffic Controllers, engineering and maintenance personnel, etc..

4.1.3. What is needed is a "just culture" - an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information – but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour. The policy of "just culture" is designed to encourage compliance with the appropriate regulations and procedures, foster safe operating practices, and promote the development of internal evaluation programs.

4.1.4. The SAFREP TF has legitimately concentrated its attention on pragmatic measures such as the identification and promotion of best practices. However legal aspects should not be neglected and States need to tackle these in conjunction with the dissemination of "Just Culture".

4.1.5. While best practices and safety culture are an absolute necessity for the proper implementation of ESARR 2, that objective cannot be achieved through such practical measures alone.

4.1.6. The implementation of best practices at ANSP level will not relieve EUROCONTROL Member States of their own responsibilities to verify the consistency of ESARR 2 with their existing national regulations, and to amend them to the extent necessary, that extent will be a factor of the political desirability of a "just culture" in the domestic legal order of each individual State.

4.1.7. Failure to adapt domestic legislation will undermine the durable implementation of best practices by the ANSPs. The priorities within States lacking "just culture" should be targeted in reconciling the aviation sector with the judicial system. However there are still success stories where a robust reporting system is guaranteed by the national regulator within a non-supportive legislative environment. Where good practices are in place through the goodwill and motivation of those running the system, but with no back-up from the legislative framework, the situation is fragile - it can flip the other way and be destroyed by a single bad example.

4.1.8. SAFREP TF has identified a number of best practices, some of which have been outlined in this report as relevant examples. For the purposes of brevity, only a summary of these are reproduced either in this chapter of the report or in its appendices.

4.1.9. Additionally, two elements were made clear during the work of SAFREP TF:
- it would be unacceptable to punish all errors and unsafe acts regardless of their origin and circumstances;
- it would be equally unacceptable to give a blanket immunity from sanctions to all personnel that could or did contribute to safety occurrences.

4.1.10. The "just culture" finds its limits when gross negligence, criminal activity or intent on the part of reporter is established. In all other cases, the reporter should not be subject to administrative or disciplinary sanction simply on the basis of the report they submitted.

4.1.11. To engineer a "just culture", there is a need to agree upon a set of principles for drawing the line between acceptable and unacceptable actions. So where do we draw the line? How do we discriminate between the minority of "bad behaviour" and the vast majority of unsafe acts to which the attribution of blame is neither appropriate nor useful? The following sections of chapter 4 and appendices 3, 4, 5 and 8 gather best practices on how to deal with the legal, organisational and managerial impediments.

4.1.12. To achieve a "just culture", a clear de-lineation of punishment/non-punishment has to be defined and accepted by all parties involved, as a pre-requisite. There are variations depending on cultures (national, organisational and /or professional) but, as a basis, the understanding must be the same within the organisation so that a Reporting System can produce results, i.e. can be implemented and maintained over time.
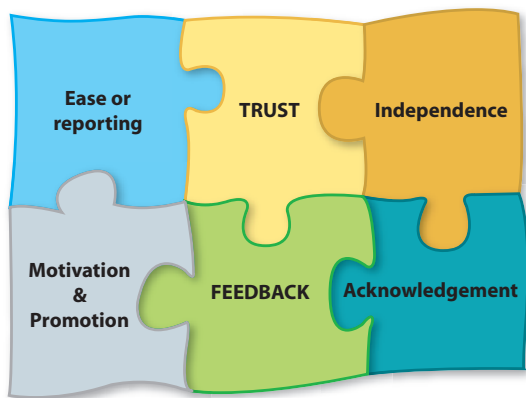
Figure 4 – Pre-requisites for a "just culture" reporting system

4.2. Best Practices in Safety Data Reporting, Assessment and Sharing

4.2.1. Pre-requisites in Safety Data Reporting

4.2.1.1 SAFREP TF has identified a number of non-exhaustive pre-requisites. In all cases these qualities are a minimum to successful reporting systems:

1. **MOTIVATION and PROMOTION**
   Staff must be motivated to report and the trend must be maintained through appropriate promotion of the system.
2. **EASE of REPORTING**
   Staff must not perceive reporting as an extra task and hence the system ought to be simple and easy to use.
3. **ACKNOWLEDGEMENT**
   Reporters like to know whether their report was received and what will happen to it, what to expect and when.
4. **INDEPENDENCE**
   Some degree of independence must be granted to the managers of the reporting system.
5. **FEEDBACK**
   Feedback to the reporter must be given, otherwise the system will die out.
6. **TRUST**
   A successful reporting system can only happen if trust between reporters and the managers of the reporting system genuinely exists. Another level of trust should also be achieved within ATC community, between controllers themselves.

NOTE: A graphical representation of the above enumerated pre-requisites is presented in the Figure 4.

4.2.1.2. Apart from the above direct contributors, other contributors are not negligible such as consultation and involvement of the aviation staff associations as well as peer reviews in the setting-up, operation and maintenance of safety data reporting and sharing system. SAFREP TF acknowledges that the identified list of best practices is not an exhaustive one, and there may be many others which have not yet been captured or identified.

4.2.2. Best Practices in Safety Data Assessment and Sharing

4.2.2.1. A number of generic phases are common to many occurrence investigation and reporting systems. Occurrence detection is followed by data acquisition. This is followed by occurrence reconstruction. Occurrence reconstruction, in turn, is followed by incident analysis. Recommendations are then proposed on the basis of this analysis. Finally, there is the reporting and exchange of information about an occurrence.

4.2.2.2. Figure 12 – Generic ATM safety occurrence assessment and sharing data process in Appendix 7 provides an overview of the generic ATM investigation process. It also identifies a number of more detailed guidelines that are intended to support different aspects of occurrence reporting and assessment.

4.2.2.3. The main message that SAFREP TF is seeking to convey is that all these efforts concentrating on safety data gathering have an output in identification of remedial actions to prevent recurrence as well as in data sharing and lesson dissemination. **Safety data collection is not in itself an isolated exercise.** Much wider benefits are expected at the end of the process by sharing risk information.

4.2.2.4. Some available and detailed best practices in safety data reporting and assessment were identified by SAFREP TF and are presented in the appendices of this report as follows:

- Appendix 3 – Regulatory best practices;
- Appendix 4 – ANSP best practices;
- Appendix 5 – Airlines best practices.

4.3. Best Practices in Safety Data Flow

4.3.1. SAFREP TF has identified various levels of data flows that ought to be explored at maximum for getting the best output possible in sharing lessons and improve ATM safety. These flows can populate three categories of safety reports that can be cascaded down in simplicity, usage and granularity to cover public as well as expert needs.

4.3.2. One flow that is potentially capable of collecting in one basket all the mandatory reportable safety occurrences is of course the regulated flow, which is illustrated in the middle layer of Figure 5 below. However it is acknowledged that potentially this is a reactive flow that has delays induced by the time length required to complete investigations carried out by the various national bodies.
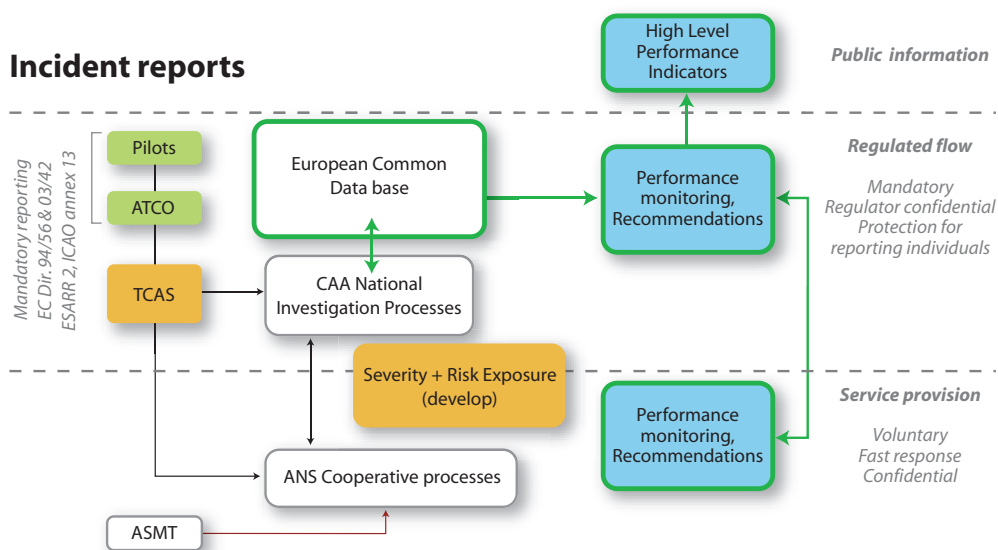

Figure 5 – Types of safety data flows

4.3.3. One potentially more pro-actively flow with less induced delays is the voluntary ANSPs flow that can ensure the sharing of safety risk information within a confidential environment.

4.3.4. It could be reasonably argued that a greater amount of best practices is more likely to be derived from mandatory rather voluntary schemes for the following reasons:
- it contains potentially more data;
- it contains a broader spread of data;
- it is easier to verify;
- are not so prone to local variations and small sample size.

4.3.5. Reports are used first and foremost, to make tactical decisions locally. This may be completed by the reporting organisation itself or with the involvement of the national regulator. The data flows are bringing the added value for the strategic decisions at national and/or regional level.

4.3.6. The SAFREP TF has identified the voluntary flow as a potential excellent complementary fast track mechanism to the regulated flow. Maximisation of the ANSP voluntary safety information flow in an international aviation context, aiming at addressing and prioritising the major ATM risks, sharing lessons learned and preventing reoccurrence would be an asset.

4.3.7. The latter identified voluntary flow can be improved in the most effective and fastest possible way, and with optimum use of available resources. This can be achieved by:
- Converting the CESC approved Policy on voluntary risk sharing in a harmonised information exchange process;
- Scoping initially this to the ANSPs of the EURO-CONTROL members;
- The consolidated findings of the ANSP safety information exchange should have the potential to be shared with safety representatives from the aviation industry;
- Maximum use of resources is obtained by making use of already existing international exchange fora, such as the Safety Improvement Sub-Group of the Safety Team (SISG);
- Ensuring for EUROCONTROL Agency the role of facilitating the information exchange, consolidating the risks and prioritising them as perceived by the ANSPs, fostering action plans that fit within the

Strategies of the individual ANSPs, distributing and promoting the plans that result from them, validating the plans against improvements that should come out of them, and agree with ANSPs further actions where and if required.

4.3.8. The more mature ANSPs have developed over the years a system for assessing operational ATM safety risks, using – inter alia – incident reports and their trends. From such trends, ANSPs define and prioritise their main ATM operational risks, and define plans to address them.
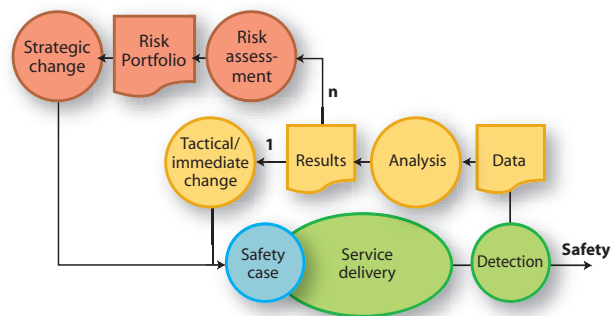
Figure 6 – Basic Safety Improvement Loop for a Typical Mature ANSP

4.3.9. Any international ANSP forum to exchange safety risk information and lessons learnt should be using the information that stems from safety improvement loops as described in the picture above. In doing so, the safety priorities to be addressed at international level will be an accumulation, consolidation, or selection of what has already been defined at individual ANSP level. The latter is in line with the Policy as agreed at CESC level, and answers the concerns that CEOs have raised prior to approval the final Policy.

4.3.10. The data exchange flow expanded at European level could then look as presented in Figure 7. ANSPs could collectively share lessons learned via a fast track mechanism based on a identified risk portfolio that could lead to common strategic changes. Ultimately, data could be further extracted and refined to give an overview of the safety prevention activities to the general public, either directly or through Safety regulators' reviews.
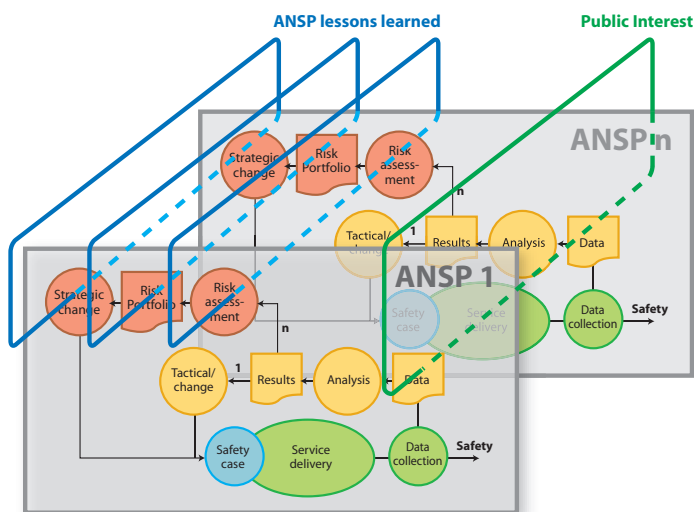
Figure 7 – Cooperating Safety Improvement Loops

4.3.11. In addition to the foregoing, SAFREP TF also presents a potential elaboration of the existing and future ATM safety data Flows into one consolidated European Risk Warning System in Appendix 6. The consolidation builds upon on the informal voluntary system operated by the Safety Improvement Sub-Group (SISG) of the Safety Team. The pro-activeness of the Voluntary Risk Warning System, the quick response to several safety latent issues makes it suitable for further formal development.

4.3.12. In conclusion:

- The EUROCONTROL Safety Improvement Sub Group (SISG) is, in the view of SAFREP TF, currently the only mature European forum where trends in incidents and their causes are already reported by ANSPs, discussed and priorities for preventive action plans are agreed;

- The SISG represents the majority of the EUROCONTROL Member States' ANSPs and functions well. It functions independently from regulatory bodies. The members of the SISG are open and constructive in their discussions, reporting, actions and follow up of the SISG meetings. SISG is therefore suggested as the European working platform for risk information exchange.

- The EUROCONTROL Agency provides the resources to facilitate and administer the SISG. The Agency also provides the resources (via DAP/SAF) to manage the information resulting from the SISG, do further analysis to identify common causes, and to facilitate drawing action plans, as well as their follow up. The EUROCONTROL Agency (via DAP/SAF) is currently the only source of resources that is available to do this at a European level;

4.4. ATM Safety Performance Measurement

4.4.1. Broad indicators of transportation activity exist in all modes of transportation. However, not all of them are either applicable or have a meaning for Air Traffic Management. The transportation indicators are commonly used to calculate accident and injury rates by qualifying how often a risk event had the chance to occur. One major issue, not only in ATM but in the aviation industry and in other transportation modes, is the availability of sound and robust exposure data.

4.4.2. It is recognised that the use of safety indicators is useful also for determining the effectiveness and the prioritisation of safety interventions, particularly those designed to target specific operators, equipments or conditions.

4.4.3. The EUROCONTROL Organisation has identified the need for national safety data to be collated from States, with a view to identify safety levels and trends at European level, improve aviation safety and monitor the implementation of changes to the ATM system.

4.4.4. "Requirements for safety data" have been identified by the Safety Regulation Commission, the Agency Safety Team, EATM Programmes and the Performance Review Commission, which necessitate that safety data be provided to EUROCONTROL by States, in order to support different needs, such as:

- The population of the SRC Safety Indicators via the provision of national summary safety data of ECAC States, in order to monitor safety levels and trends;

- The identification by the SRC/SRU, by the EATMP Safety Team and by the associated Agency Business Units of key risk areas, where ATM has the potential to improve aviation safety;

- The monitoring of the implementation of specific EATM programmes (Pre-operational and post-implementation monitoring);

- Publication through PRR reports of information relating to the key performance area of safety.

4.4.5. The fundamental foundation for the ATM safety indicators is considered by EUROCONTROL to be ESARR 2 and its related Annual Summary Template (AST) through which annually safety data from States, for a wide range of safety indicators is collected, aggregated and normalised for publication.

4.4.6. The AST data is slowly but constantly improving the quality of data for well known reasons, several of which are presented in this SAFREP TF report. Progress continues to be made. One major issue, in monitoring all the safety indicators introduced by the adoption of ESARR 2, continues to be the lack of fully reliable and consistent safety data from States.

4.4.7. Nevertheless, a considerable amount of data received is judged sufficiently mature for publication, and SRC annually publishes a limited set of safety indicators that are considered adequately reliable and robust to be viewed by professionals and public. These safety indicators are a valuable input to the process for the identification of key risk areas.

4.4.8. The lack of fully effective and harmonised reporting and assessment systems at national level will always pose a challenge to any centralised data flow at European level. The key solution in progressing key performance indicators includes making best use of, and building upon, the achievements already in place at regulatory and ANSP level including, where possible, the voluntary flows. The difficulties in identifying appropriate key safety performance indicators (KPIs) that are sufficiently sensitive to safety variations, and therefore truly measure the ATM system performance, are slowing down further the work.

4.4.9. In addition, it is the SAFREP's perception that, if not adequately addressed and identified, the introduction of safety KPIs, correlated with other performance indicators, may put in jeopardy all the efforts to define, support and implement "just culture".

4.4.10. PRC/PRU, with the support of SRU/SRC and Agency, is currently conducting a study on the definition of safety KPIs but the work needs more ANSP involvement, and is not yet sufficiently mature to be included in this SAFERP TF report.

4.4.11. In conclusion:

When developing the safety KPIs the following aspects should be considered:
- The existing AST process is detailed enough to capture low level safety trends and key risk areas and no additional safety indicators at this level are identified by SRC as being necessary at this stage; However for the establishment of a small set of KPIs further improvement in the quality of the data set collected is needed;
- States tend to have insufficient qualified resources available to report and investigate safety occurrences in ATM and to populate the national Annual Summary Templates;
- The exposure data used by SRC to normalise the safety data should be investigated for further refinement;
- Setting up targets for all safety indicators is at present inappropriate and has the potential to currently jeopardise the further strengthening of the reporting system;
- Further efforts should be put in place to ensure the harmonised processes in collection, assessment and dissemination of the safety occurrences in order to avoid a misleading picture at ECAC level.

4.5. Best practices in Engineering a "Just Culture"

4.5.1. It is neither an obvious nor an easy task to persuade people to file reports on ATM safety occurrences, especially when it may entail divulging their own errors, because:

- human reaction to making mistakes does not always lead to frank confessions;
- potential reporters cannot always see the added value of making reports, especially if they are sceptical about the likelihood of management remedying the information;
- there exist problems of trust in management and fear of reprisals;
- no incentives are provided to voluntarily report in a timely manner and promptly correct the reporter's own mistakes;
- extra work is not usually welcomed;
- there is a natural desire to forget that the occurrence ever happened.

4.5.2. The basic engineering principle of a just reporting culture can be borrowed for ATM from other domains, such as medicine, nuclear industry etc. Examination of some successful schemes indicates that five factors are important in determining both the quantity and the quality of incident reports. Some are essential in creating a climate of trust, others are needed to motivate people to file reports:

- indemnity against disciplinary proceedings (as far as it is practicable and legally acceptable);
- confidentiality or dis-identification;
- the separation of the agency or department collecting and analysing the reports from those bodies with the authority to institute disciplinary proceedings and impose sanctions (e.g. the ATM safety regulator can collect the anonymous safety occurrence reports alleviating the issues raised by the contractual relationships between the ATM Service Providers and their employees. This scheme has however a lack of incentive, in that the regulator might be in the position to vary, suspend or withdraw the ATC licence/certificate of competence);
- rapid, useful, accessible and easy to use reporting system;
- ease of making a report.

4.5.3. SAFREP TF has identified from the previous work of Global Aviation Information Network - GAIN a best practice to establish and engineer a "just culture" in eight steps. A detailed approach of this methodology is presented Appendix 8 to this report.

4.5.4. Briefly the eight sequential steps are looking to (1) first sort out the legal aspects, (2) define policies and procedures, (3) establish easy and clear methods of reporting, (4) set-up roles, responsibilities tasks and timescales, (5) develop the required forms and templates, (6) provide feed-back, (7) create an educational plan, and (8) once created there is a need to maintain the right culture.

4.5.5. The reduction or removal of legal impediments to a "just culture" in ANS is primarily a State responsibility. It remains a complex process, in the light of the various legal interests to be reconciled. It also involves a wide number of different authorities, well beyond aviation regulators alone. The first steps towards alleviating or changing the legal constraints could be for individual States:

- to clearly identify the issues at stake and the circle of national authorities to be involved, in their specific legal environment;
- to define a process for the establishment of the dialogue required between all national authorities involved;
- to conduct, within the group of multiple authorities involved, a legal analysis of the issues arising from the implementation of a "just culture" in ANS, from which a clear vision and action plan will emerge

4.5.6. In order to reconcile with the judicial system, the two most important issues are: i) indemnity against disciplinary proceedings and ii) having a legal framework that supports reporting and investigation of incidents. The first steps in changing the legal aspects could be to:

- substantiate the current legal situation;
- discuss possibilities of change with company lawyers / legal advisors;
- discuss with operational personnel what changes in the legal policy they think would improve incident reporting;
- start addressing the political arena.

CHAPTER 5 - Conclusions

5.1. The conclusions laid down in this chapter have been derived from the fact finding and analysis work undertaken by the SAFREP TF. The main conclusions have corresponding recommendations in Chapter 6 – Recommendations. It should be noted that each of the conclusions and recommendations has its own rationale in one or more of the tasks set out in the SAFREP TF Terms of Reference. The conclusions and recommendations are listed in their priority and feasibility order.

1. The removal of identified obstacles against the establishment of a "just culture" in Air Navigation Services (ANS) does not necessarily require the creation of additional legislation at international/ regional level. The first priority is appropriate implementation actions at domestic level, which is primarily a responsibility for EUROCONTROL Member States.

2. On judicial systems and operation of "just culture" reporting:

a) Variations exist where national judicial systems and/or working arrangements either facilitate or prohibit an open and penalty free reporting culture. Broadly three situations exists: cases where good practices are supported by appropriate legislation; cases where good practices are still working within an ambiguous legislative framework; and thirdly cases in which neither the good practices nor the necessary legislative framework are in place. Where good practices are in place through the goodwill and motivation of those running the system, but with no back-up from the legislative framework, the situation is fragile - it can flip the other way and be destroyed by a single bad example.

b) It is further acknowledged that a number of organisations have made efforts to open a dialogue with judicial authorities with little or no positive results. Other organisations are yet to establish a communication channel. It was felt by the SAFREP TF that legal authorities must be approached from both the domestic and European levels.

c) The SAFREP TF acknowledged EU directive EC42/2003 and the need for "just culture". The task force also felt that it was important to ensure the incorporation of the "just culture" within SES as it was developing. Finally SAFREP TF agreed that the legal aspects are wider than purely aviation sector rulemaking.

3. There could be a role for EUROCONTROL to assist States in their efforts and to encourage Europe-wide harmonisation and cooperation in the field of safety data (safety occurrences report and analysis, lessons learnt, preventive and corrective actions). Such a role should include the development of appropriate guidance material, training and support process for the assistance of individual Member States, as required. The existing best practices where available need to be updated and brought together in a structured and user friendly format for appropriate wide dissemination. In complementary to the Europe-wide consolidated framework, the Single Sky implementation shall promote in this field the development of bilateral or multilateral co-operation between NSAs , as well as between ANSPs.

4. In a significant number of cases the credibility of safety regulation, including the oversight of safety reporting and assessment processes by States, is threatened by a lack of human and financial resources. Adequate resourcing requires political and financial support. Unless this issue is tackled, any future NSA, established under the SES regulations, will not change the present situation to any significant extent. Although overall resourcing is not an ANSP identified issue the allocation of the resources to safety management, particularly to safety occurrence reporting and assessment inside ANSPs, requires a clear commitment from top ANSP management.

5. Concerning lessons learnt from voluntary data exchange:

a) The CESC Policy to facilitate and coordinate the voluntary exchange of ATM safety risk information, and disseminate lessons learned between ANSPs and facilitated by the EUROCONTROL Agency, is now proving itself in improving risk information sharing and promoting lessons learnt between various stakeholders. In addition to the work that is being generated via the Safety Improvement Sub-Group (SISG) on major safety improvement projects, the initiative on safety alerts is also another improvement. The work done on Mode S transponder and corresponding ACAS problems is a good example of this.
b) Maximisation of the ANSP voluntary safety information flow into an international aviation context, aiming at addressing and prioritising the major ATM risks, sharing lessons learned and preventing reoccurrence would be very beneficial.
c) Pilot reports may give additional information on the risks as they are perceived by ANSPs. Complementary, trends on incidents as reported by airlines may provide information not available from ANSPs.

6. The need to establish a consolidated data flow for ATM safety incidents with an authoritative analytical process and trend results was identified:

a) Mandatory regulated data flows exist at national and international level, the latter being SRC and increasingly the ECCAIRS based network of EC. Mandatory flows are however slow in materialising and usually they are reactive with induced delay. Voluntary flows are potentially an excellent complementary fast track mechanism to the regulated flow.
b) ATM related information needs to be eventually consolidated in one single repository and the data should be actively analysed by safety experts to identify European trends and European Risks. The output of this analysis should be made available for all stakeholders covering safety regulation and safety management aspects. The ATM safety repository should be based on the ECCAIRS system, which com-

bines aircraft and air navigation data, and should seek to make best use of the ECCAIRS and SRC systems, airline community tools such as STEADES as well as any tools that may support the voluntary ANSP risk sharing.

7. ICAO welcomes the work of the SAFREP TF; it will contribute to progress the implementation of Assembly Resolution A35/17. ICAO seeks support to ensure a global approach and European solutions and best practices could be used as input to the ICAO objective of globalisation of the "just culture".

8. Currently, data available from SRC is being used as a basis for safety KPIs by PRC for the next PRR reports. Further development on KPIs to improve aviation safety however needs to be undertaken with the participation of States Safety regulators and ANSPs.

9. The SAFREP TF concluded that the PRC, SRC and Agency have complementary roles in safety data analysis and representation as follows:

a) PRC uses available data via sources from the Agency and SRC to report to the industry and public on European safety;
b) SRC, regulators, Agency and ANSPs use the data for expert analysis, and come forward with recommendations to improve safety regulation and safety management respectively. Actions for safety improvement are then progressed.

Associated details on responsibilities in regard to safety are to be found in Appendix 9 of this report.

10. The actions resulting from this report need to be taken with urgency by various stakeholders to ensure that changes take place to further improve ATM safety.

CHAPTER 6 - Recommendations

Just culture is a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

The SAFREP Task Force recommends:

1. States to:

a) adopt within their national safety framework, international regulations and requirements for ATM safety data reporting and assessment, taking due account of the need to ensure also compliance with EC Directive 42/2003;
b) adapt their national legal and institutional framework, where required, so that the needs of safety and reporting in the industry are balanced with those of society in general; to this effect, modifications to the domestic legislation may be required to, as far as possible:

   i. prevent the misuse of safety information in civil litigations;
   ii. ensure appropriate protection against sanctions as a result of submitted safety information;
   iii. offer solutions for appropriate protection against penal law proceedings as a result of access to safety information; and
   iv. provide protection against inappropriate public disclosure of the submitted safety information;

   in order to establish a culture that is "just" to all concerned.

2. Creation of awareness of best practices for States, Regulators and ANSPs on incident reporting systems by:

a) the President of the EUROCONTROL Permanent Commission writing to ECAC States, seeking support to remove national judicial impediments to incident reporting;

b) starting an awareness campaign with States to target aviation professionals as well as the media, legislators and judicial experts at both European and National levels to promote the understanding of the importance of a "just culture" for aviation safety. This should facilitate States to open and/or further strengthen communication between the aviation sector and the judicial authorities to reconcile the view on "just culture" and with the media to address the issue of public disclosure and misuse of safety information;
c) EUROCONTROL in coordination with the European Community exploring SES legislation as a potential vehicle to facilitate and promote "just culture".

3. States to enforce the safety oversight function at national level where required by allocating adequate resources for State NSAs.

4. ANSPs senior management to ensure their commitment on safety and allocation of resources to safety management in general and in particular on safety occurrence reporting and assessment processes. Financial constraints and capacity pressures should not be used to the detriment of safety.

5. Development and establishment of:

a) appropriate guidance material for States to elaborate, and implement at national level, a legal framework supporting the establishment of a "just culture" in ATM;
b) a process for the support of individual States and groups of States, for the implementation, at national level of a legal and institutional framework supporting the establishment of a "just culture" in ATM, where requested;

c) a plan, with clear milestones and reporting deadlines to report regularly to the Provisional Council, regarding the progress of the implementation at domestic level of a legal and institutional framework supporting the establishment of a "just culture" in ATM.

6. Continued encouragement and support for the exchange of voluntary incident and safety risk information, for the purpose of disseminating and sharing safety data and corresponding lessons learned to the widest professional audience by:

a) using the recently agreed CESC policy for risk information sharing between ANSPs and EUROCONTROL as a basis for further intensifying lesson dissemination and identification of any potential urgent mitigation that need to be put in place;
b) using the process for Safety Alerts to ensure a fast and effective follow-up by all parties involved, including ANSPs, regulators and any other interested party when required;
c) enhancing data collection and analysis by including ATM information from airlines' data repositories such as STEADES.

7. To bring rationalisation in European ATM safety data collation and analysis by:

a) the establishment of a fully coordinated ATM safety information repository through enhancing the EC's ECCAIRS aviation wide system with the data collected through the current SRC data flow. Merging the current mandatory incident databases into one European ATM repository compatible with ECCAIRS is a long term objective which should now be explored.
b) ensuring that the SRU/SRC as well as the Agency develop the analytical ATM safety expert capabilities for risk analysis, trends and lessons learnt in their respective areas of safety regulation and safety management.

8. The EUROCONTROL Organisation to continue to actively support and cooperate with the relevant ICAO bodies in the implementation of Assembly Resolution A35-17, taking into account the findings and recommendations of this report.

9. The PRC/PRU, SRC/SRU, Agency, States' Safety Regulators and ANSPs to cooperate further in the development of European Safety KPIs for reporting European ATM Safety levels to the aviation community.

10. The safety roles and responsibilities with respect to the various elements on incident reporting and assessment of the PRU/PRC, SRU/SRC and the Agency as outlined in the Appendix 9 of the SAFREP TF report be accepted.

11. The above recommendations be incorporated into the European Safety Programme and progress of implementation be regularly reported to the Provisional Council.

12. That SAFREP Task Force be put in abeyance and invited by the Provisional Council to consider safety KPIs at an appropriate juncture as that work matures.

Appendices

Appendix 1 - SAFREP Terms of Reference

1. Mission:

To respond to the Director General in addressing the priority areas of safety data reporting, legal constraints and safety data flow in the ECAC area within the context of Strategic Safety Action Plan (SSAP).

2. Authority:

The Safety Data Reporting & Data Flow Task Force reports to the EUROCONTROL Director General.

3. Participation:

Key External Stakeholders:

Job BRUGGEN – LVNL, Francis SCHUBERT – SKYGUIDE, Ron ELDER and Ben ALCOTT - UK CAA – SRG, Fergus CUS-DEN and Jane GOTHARD – UK NATS, Jan BOREN and Carin CASSBORG – Swedish CAA, Silvano MANERA, Daniele Giuseppe CARRABBA and Gianni SEMENZATO – ENAC Italy, Corrado RUGGIERI and Massimo GARBINI – ENAV Italy, Gilles MANTOUX - DGAC France, Anne FRISCH DSNA France, Cees GRESNIGT and Dragica STANKOVIC – IATA, Mike AMBROSE – ERA, Roberto SALVARANI and Jean-Pol HENROTTE - European Commission, Marc BAUMGARTNER and Geert MAESEN – IFATCA, Hans-Juergen MORSCHECK and Heino KUESTER – DFS – Germany, Peter NORBJERG – NAVIAIR - Denmark.

EUROCONTROL Agency, SRU and PRU:

George PAULSON - DAP, Peter STASTNY - Head of SRU, Charlie GOVAARTS – Expert SRU, Erik MERCKX - Head of DAP/SAF, Roderick Van DAM – Head of Legal Service, Tony LICU - SSAP Programme Manager, Xavier FRON – Head of PRU, Radu CIOPONEA – Expert PRU and Francesco PRETI – Expert PRU.

4. Tasks:

- To identify and analyse the current situation in safety data reporting practices, safety reporting culture, safety data flow;
- To address the reporting requirements for individual serious incidents, taking account of national arrangements;
- To identify the current legal, organisational and managerial impediments to the reporting of safety occurrences addressing specifically the legal protection for individuals, including setting standards for legal protection as appropriate;
- To identify improvements and corresponding remedial courses of action in regard to the reporting and analysis process including issues such as:
  - reviewing of serious ATM-related incidents;
  - homogenous severity classification based on ESARR 2 advisory material; and
  - dissemination of findings and lessons learned;
- To propose to the Provisional Council a strategy, actions and timescales, agreed with key ATM stakeholders, aimed at improving the ATM safety reporting and data flow processes.

5. Chairmanship:

The Safety Data Reporting & Data Flow Task Force will be co-chaired by George PAULSON – DAP and Ron ELDER – SRC Chairman.

6. Secretary:

The Safety Data Reporting & Data Flow Task Force secretary - Tony LICU, DAP/SAF.

7. Planning:

5 meetings: 25 April, 13 May and 9 June, 9 September and 3 October 2005 (10.30 – 16.30).

Appendix 2 - "Just Culture" Concept Definition

A **"just culture"** in Safety Reporting can be **defined** as follows: a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

A concise representation of where to delineate the "just culture" is represented in Figure 8 below.
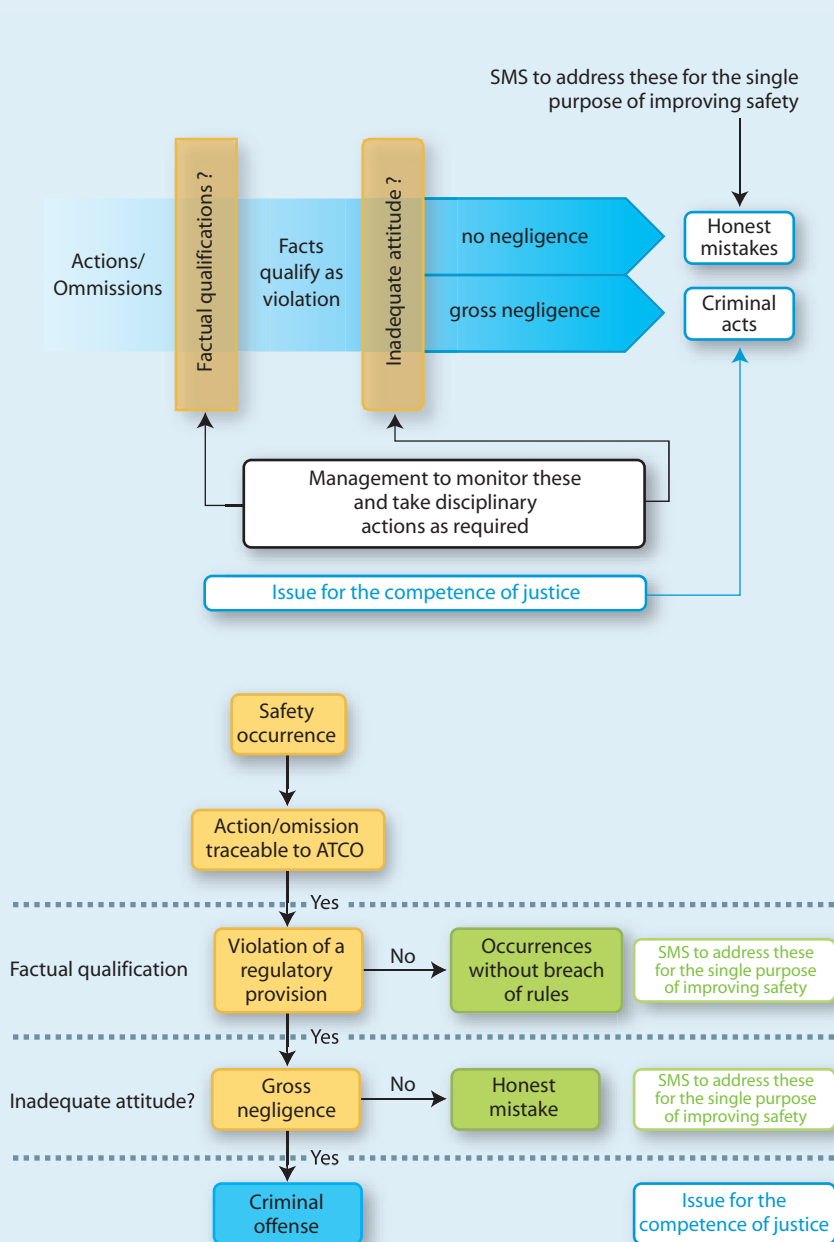
Figure 8 – "Just Culture" Concept Definition

Appendix 3 - Regulatory Best Practices - Examples

The following is an extract of a national regulatory best practice to support the dissemination of "Just Culture" in aviation industry. The support of the national regulator as the guardian of the safety culture is essential for the non intervention of the judicial system. An independent national regulator that oversees the "Just Culture" within the industry will allow building up confidence.

One aviation regulator, the UK CAA, announced some years ago, that in cases of absent egregious behaviour, e.g. intentional or criminal wrongdoing, they would not shoot the messenger, and encouraged their airlines and other aviation industry employers to take the same approach.

That is a major reason why the UK has some of the world's leading aviation safety information sharing programs, both government and private. The type of facilitating environment created by the UK CAA is essential for the development of effective aviation safety information collection and sharing programs

Policy Statement issued by a CAA UK CAA in CAP 382 Regulation "Mandatory Occurrence Reporting"

Statement by the Chairman of the CAA

Confidentiality of Reports
It is fundamental to the purpose of the Scheme that the substance of reports should be disseminated where necessary in the interest of flight safety. Without prejudice to the proper discharge of its responsibilities in this regard, the Authority will not disclose the name of the person submitting the report or of a person to whom it relates unless required to do so by law or unless, in either case, the person concerned authorises disclosure.

Should any flight safety follow-up action arising from a report be necessary, the CAA will take all reasonable steps to avoid disclosing the identity of the reporter or of those individuals involved in the reportable occurrence.

Assurance Regarding Prosecution
The CAA gives an assurance that its primary concern is to secure free and uninhibited reporting and that it will not be its policy to institute proceedings in respect of unpremeditated or inadvertent breaches of the law which come to its attention only because they have been reported under the Scheme, except in cases involving dereliction of duty amounting to gross negligence.

Action in Respect of Licences
The CAA has a duty to vary, revoke or suspend a licence as appropriate if it ceases to be satisfied that the holder of the licence is competent, medically fit and a fit person to exercise the privileges of the licence. If an occurrence report suggests that the licence holder does not satisfy these requirements, it will take appropriate licensing action. For example, if the report indicates that the licence holder requires further training, it may suspend his licence until he has undergone such training. If a report should indicate that the licence holder may not be a fit person to exercise the privileges of his licence, the fact that he has reported the occurrence will be taken into account in determining his fitness and will weigh heavily in his favour. Although the CAA recognises that, in practice, licensing action may be regarded as having a punitive effect, there can be no question of action being taken by the CAA on a licence as a punitive measure. The purpose of licence action is solely to ensure safety and not to penalise the licence holder. In all such cases, when considering what action to take, the CAA will take into account all relevant information about the circumstances of the occurrence and about the licence holder which is available to it.

Possible Action by Employers

Where a reported occurrence indicated an unpremeditated or inadvertent lapse by an employee, the CAA would expect the employer to act responsibly and to share its view that free and full reporting is the primary aim, and that every effort should be made to avoid action that may inhibit reporting. The CAA will, accordingly, make it known to employers that, except to the extent that action is needed in order to ensure safety, and except in such flagrant circumstances as are described under the heading 'Prosecution' above, it expects them to refrain from disciplinary or punitive action which might inhibit their staff from duly reporting incidents of which they may have knowledge.

Protection of the Interests of the Licence Holder

It is recognised that where a licence holder is a member of an association or trade union he is at liberty to inform that association or union of any prosecution or action by the CAA in respect of his licence, and seek their assistance.

At any hearing conducted by the CAA, in respect of a licence held by a member of an association or trade union, a representative of that body may accompany the licence holder and address the CAA on his behalf.

XXX
Chairman of the CAA"

Appendix 4 - ANSPs Best Practices - Examples

Expanding on the "Just Culture" concept defined in Appendix 2, the SAFREP TF identified ANSPs Saftey Management System best practices from those stakeholders that have successfully alleviated the impediment and have a working "just culture" in their organisation. This Appendix contains examples of approaches.

Internal Generic ANSP measures

"Just Culture" Policy

Some ANSPs have adopted a «Just Culture» policy with regards to incidents with the purpose of making disciplinary measures strictly limited to those acts that do not qualify as "honest mistakes". This has been identified as a successful internal measure that can be taken by ANSP in the challenge of implementing a "just culture" environment.

Protection of individuals during investigations

Protection of Protection of individuals can be defined in two ways[2]:

- Positively by stating what will not lead to any form of punishment or disciplinary actions. This is often quite difficult as the range of actions that should not lead to such consequences is wide; or
- Negatively by stating what shall lead to prosecution or disciplinary actions.
  In order to give a clear picture of the Protection Policy of an ANSP a mix of both is used as shown below.

Disciplinary commission[3]

Whereas there is no question that disciplinary decisions are to be made by the management of ANSP Organisations the advice of a "Disciplinary Commission" is required.

The Disciplinary Commission is usually composed of management and staff representatives in equal numbers. Its main function is to:

- Classify errors as "Honest errors" , "Borderline" acts or "Inappropriate attitudinal behaviours"
- Suggest remedial actions.

Note that "Gross negligence and criminal acts" need not be referred to the Disciplinary Commission as these cannot any longer be handled as internal matters. The Disciplinary Commission may require to hear during its proceedings specialists such like investigators or human factors specialists.

Identification of the "Honest errors"

"We all make errors irrespective of how much training and experience we possess and how motivated we are to do it right" (from Reducing error and influencing behaviour. HSE 1999)

Only guidance can be given on these notions. However it is a good starting point to start placing these in a procedure for a basis of understanding that is common to management and staff. Below it is a graphical representation of what the procedure may contain to clarify the grey areas where the disciplinary actions need to be taken.

2- This is in fact dependent upon the judicial culture
3- TORs of the Disciplinary Commission are to be prepared separately

Errors

Skill based
Failure in the performance of a routine task that normally requires little conscious effort

Knowledge based
Occurs when individuals are unable to apply their existing knowledge to new situations.

Failure to know what to do in a given situation (problem solving at conscious level)

Rule based
Failure to carry out a procedure or protocol correctly or choosing a wrong rule

Slips
an inadvertant action that is not adequate

Lapses
a temporary failure: a lapse of concentration

Mistakes
to be wrong about or to fail to recognize something or someone

wrong in what you believe, or based on a belief that is wrong

an action, decision or judgment which produces an unwanted or unintentional result

Violations
to break or act against something, especially a law, agreement, principle or something that should be treated with respect

Unintentional — Non compliance

Optimising — Actions to further personal rather than strictly tasks related goals

Routine — Cutting corners at every opportunity

Necessary situational — Actions that seem to offer the only path available to get the job done as rules/procedures seem inappropriate for the present situation

Exceptional — Totally unexpected situations

Figure 9 – Sample of Error Classification Within "Just Culture" Environment

Depending on circumstances some of these errors can be classified as having an individual or systemic root. This is important as individuals must not be blamed for systemic root causes hence the recommendation to apply the substitution test technique. This gives one criterion for honest error e.g. a rule based error that leads to a necessary violation is seldom an action that individuals concerned are pleased to carry out, and particularly if the investigation has made the effort to determine the pertinence and feasibility of applying the laid down rules.

The second criterion for honest error has to do with circumstances in which it took place. A rule may well be suitable for e.g. given traffic levels but it may become totally impracticable with high or complex traffic levels. This would apply similarly with degraded equipment type of situations. Therefore the investigation shall establish very carefully what the environment was like when the safety occurrence took place.

Appendix 4 - ANSPs Best Practices - Examples

The table below is given as a basis for decision making about possible disciplinary and remedial actions. It must be stressed that proper classification of errors is fundamental to the decision making process (items marked in green should NOT lead to any disciplinary actions while fields marked in yellow may lead to disciplinary actions, see below).

Slips	unintended actions	No obvious solutions
Lapses	unintended failure to act	No obvious solutions
Mistakes	intended actions giving a result different from Expectations	Training
Violations	« Deliberate » and break the assumption of safety management systems: rules will be followed	**unintentional non compliance** People do not know how to apply the rule People act as if there is no procedure → Training
		routine Rules are broken because they are felt irrelevant or because people do not appreciate anymore the dangers → Behavioral change
		optimising It is sometimes possible to get the job done faster, more conveniently or esperience a thrill by not adhering to the rules
		situational It is impossible to get the job done by appllying the rules strictly → Question the rules and work place
		Exceptional People have to solve the problem for first time and fail to follow good practice → No obvious solutions

Table 1 – Remedial Actions within "Just Culture"

Additionally the Table 1 provides for some guidance about possible pertinent remedial actions. This is with the aim to further avoid taking actions that might be perceived as blaming or shaming e.g. sending for retraining a staff that has made a lapse in a heavy traffic situation would most probably be felt by this person as a non necessary punishment when solution are elsewhere.

Gross negligence and criminal acts.
Both these require to be referred to the judicial authorities (possibly via the Regulator). These cases should be obvious by way of their nature. Gross negligence can be defined as **"Failure to use even the slightest amount of care in a way that shows recklessness or wilful disregard for the safety of"** airspace users and /or staff of ANSPs.

Criminal acts are transgressions of law and thus may be defined as **"Any crime, including an act, omission, or possession under the laws applicable, which poses a substantial threat of personal injury, notwithstanding that by reason of age, insanity, intoxication or otherwise the person engaging in the act, omission, or possession was legally incapable of committing a crime".**

NAV Portugal
Approach in handling incident reporting and investigation

The procedure for what happens in the aftermath of an occurrence in NAV Portugal the Portuguese ANSSP is documenting the following steps:

- ATCO involved will be relieved form position with the main objective to preserve the individual and the Organization;
- ATCO involved in the occurrence has free access to data (recordings, etc.);
- Subject ATCO is part of the Investigation team to fully cooperate on preliminary report (PR);
- The preliminary report ought to be produced within 72 hours; Preliminary report can address recommendations, and if urgent, remedial actions will be taken;
- ATCO can decide to be or not accompanied by a Unit Mentor;
- No disciplinary proceedings are taken against ATCO;
- ATCO will sign for agreement/dis-agreement with the findings and recommendations of the investigation.
- If concluded for a non-incident, investigation process will normally, stop here; this is a key element for decision making process.
- Final Report will be concluded within 3 weeks time;
- Mandatory feed back to the reporter (s) (7 days in case when the process ends after PR);
- Internal dissemination of lessons learnt is achieved via quarterly Safety Magazine or more frequently via a Safety Letter if the subject requires urgency;
- The process is consistent with NAV Quality System. The timing deadlines (72 Hrs, 3 weeks, 7 days etc) are derived from the QMS requirements

Furthermore, the Internal NAV Portugal Rules like IS005/03 provides: *"...ATCO involved in any Safety Occurrence will maintain integrally all rights, even salaries payment, and no punitive or disciplinary acts can result from there".*

NAVIAIR
Approach in introducing incident reporting and investigation

Background
 In 2001, a new law was passed by the Danish Parliament, mandating the establishment of a compulsory, strictly non-punitive, and strictly confidential system for the reporting of aviation incidents. A particular and perhaps unusual feature of this new reporting system is that not only employees (typically Air Traffic Controllers and pilots) are ensured strict immunity against penalties and disclosure but also, in fact, any breach against the non-disclosure guarantee is made a punishable offence.

The law would grant freedom from prosecution, even though the reporter had committed an erroneous act or omission that would normally be punishable. Furthermore the reports from this scheme would be granted exemption from the provisions of the freedom of information act. Investigators would, by law, be obliged to keep information from the reports undisclosed. However the law would grant no immunity if gross negligence or substance abuse was present in the reported situations, and it would also be punishable by fine, **not** to report an incident in aviation.

In most democratic countries, the freedom of information act is an almost sacred institution. This fact is also the case in Denmark. It was acknowledged by the politicians and aviation specialists, that the public has a right to know the facts about the level of safety in Danish aviation. In order to accommodate this it was written in the law that the

regulatory authority of Danish aviation, based on the incoming reports, should publish overview statistics two times per year, based on de-identified data from these reports.

Within NAVIAIR (the Danish Air Traffic Control service provider employing all Air Traffic Controllers in Denmark), a high level decision was made to actively support the implementation process of the new reporting system. This decision was not made solely because it was mandatory, but because management foresaw a benefit for the company's main product flight safety. As a consequence of this, every Air Traffic Controller received a letter from management, explaining the new system stating NAVIAIR´s commitment to enhance flight safety through the reporting and analysing of safety related events. The incident investigators, who were responsible for the implementation of the new system, were given the task of communicating the change, and were also given a full mandate and support by management. The internal NAVIAIR activities were followed in parallel with external lobbying.

An extensive briefing campaign was carried out in order to give information to every Air Traffic Controller about this new system. In the briefing process the controllers expressed many concerns, particularly pertaining to confidentiality and the non-punitive issues. These concerns were due to the existing culture and all anticipated. Questions were asked such as:

- Can we trust this new system?
- What will it be used for?
- Why more non-productive paperwork?
- We just handle the situations, so why report them?

These questions were typical and were asked by the controllers during the implementation process. They were dealt with by explaining the intentions of the law governing the reporting system; the law that would grant media and others no access to the reports, and the law that would secure freedom from prosecution. Furthermore it was emphasised that no major enhancement of flight safety would possible if no knowledge of the hazards was gathered and disseminated. It was explained to the controllers, that the reporting system could ultimately be the system that would be able to explain and hopefully eliminate the flaws that everybody recognised in everyday operation. NAVIAIR basically asked the Air Traffic Controllers to trust them, and take ownership of flight safety. In return NAVIAIR would try to deal effectively with flight safety.

The results
The reporting system started to operate on the 15th of August 2001. During the first 24 hours after starting, NAVIAIR received 20 reports from Air Traffic Controllers! One year after the reporting system was started NAVIAIR had received 980 reports-compared to the previous year´s 15 reports.

Still, the numbers from the new and the old period cannot be compared directly. With the new reporting system Air Traffic Controllers became obliged to report instances that were not compulsory to report beforehand. So the best comparison of the change would then be to compare the amount of reports for losses of separation between aircraft (they were mandatory reportable occurrences before implementation of this new system). The comparison is fair and informative and it serves to show the quite dramatic change in reporting culture, not least because these situations were the ones that Air Traffic Controllers were punished for beforehand.

It is important to mention that any company management that puts a system like this in place has to prepare for new and maybe unpopular knowledge. It may come as a surprise for the management of any company when more breaches of safety are being reported. It is very important that this new knowledge is not seen as a sign that safety is sliding. Rather it should be interpreted as an uncovering of things that have existed and gone unreported for years. The paradox remains, however, that the safest companies will initially be viewed as the unsafe companies due to their willingness to elicit a greater number of reports. For the time being it takes courage to be safe!

Investigation

The investigation process is one of the most important parts of a safety culture. It is of utmost importance that a company that puts a confidential non-punitive reporting system in place has to be professionally prepared to handle the challenge, and a formal process has to be set up to handle the reports.

The reports (they had to be submitted within maximum 72 hours) that were received in NAVIAIR have varying content, ranging from small deviations or technical malfunctions, to serious losses of separation. Naturally, not all situations will receive the same amount of attention and interest from the investigators.

In order to gain maximum flight safety benefit NAVIAIR have set up priorities for how the reports will be handled. In general, all reports are evaluated. The evaluation tries to establish whether immediate correction is required. These situations would typically be cases of separation losses between aircraft or serious procedural or technical issues.

All separation losses between aircraft will be investigated thoroughly. These incidents would be categorised and include the following:
- Separation minima infringement;
- Runway incursion where avoiding action was necessary;
- Inadequate separation between aircraft.

The investigation will include gathering of all factual data such as voice recordings, radar recordings and the collection of flight progress strips, etc. After the factual data has been collected and analysed the investigator will carry out interviews face to face with the involved controller(s) and other personnel relevant to the situation. The interview will be carried out with a human factors focus based on the HEIDI taxonomy developed by EUROCONTROL.

When the data gathering and interviews are completed the investigator will produce a written report on the incident, and the report has to be completed within maximum 10 weeks. The ultimate purpose of the report will be to recommend changes to prevent similar incidents.

In NAVIAIR, the incident investigators have received training in both investigation techniques and human factors and they are generally maintaining required to maintain their operational status, which has proven useful for keeping up credibility with the controllers. Furthermore, it is recognized that it is not possible to produce a meaningful report of an incident without current knowledge of air traffic control operations.

The form of the final report on incident follows the same format in every investigation. The report describes the factual circumstances and contains the investigators" assessment of the following elements:
Aircraft proximity and avoiding manoeuvres;
- Safety nets - their impact on and relevance for the incident;
- System aspects;
- Human factors;
- Procedures;
- Conclusion;
- Recommendations.

In order to evaluate the effects of the reporting system it is interesting to look into the content of the incoming reports and the effect the investigation of these reports has had.

Appendix 4 - ANSPs Best Practices - Examples

Flight Safety Partnership

Another flight safety enhancing element that has offered itself after the new reporting system was implemented, is the sharing of flight safety knowledge. As a result of the investigations of the incoming reports, NAVIAIR quickly realised that we in Air Traffic Control cannot handle flight safety alone. Many potential hazardous situations between aircraft arise as a consequence of the interface between Air Traffic Controllers and Pilots (misuse of phraseology, different understanding of procedures, different expectations etc). If we shall hope to make any new breakthrough in flight safety, it will be important to look at flight safety as a mutual process.

In order to deal more effectively with flight safety, NAVIAIR decided to establish a Flight Safety Forum. NAVIAIR subsequently invited flight safety officers from all the major Danish airlines to participate in discussion and knowledge sharing of flight safety relevant information. Everybody involved accepted this invitation and, as a result of this, meetings are held twice a year and address operational flight safety in the Danish Airspace. Furthermore NAVIAIR has decided to share this information for us in incident investigation.

Safety improvement

It is worth repeating that the overall goal of the whole exercise of establishing a flight safety reporting systems is to improve flight safety. In turn, the value of these systems has to be viewed with regard to their effect on flight safety. This can sometimes be a difficult task to perform, as a prevented accident will never appear in any statistics.

When NAVIAIR examined the improvements or changes made in their system (machine/procedure/human) since implementation of the new reporting system, it is obvious that improvements have been made. Before the implementation of the reporting system, many of the flight safety relevant observations were reported, but they were reported to different departments in the company, thus eliminating the advantage of focused information gathering and dissemination.

Conclusion

Today NAVIAR feels confident that the system put in place a few years ago is solidly founded within their Air Traffic Control system. They base this assessment on what can be heard when listening to the discussions among controllers and support staff that take place on, and off record, as well as on the amount and content of the reports received.

Of course the system has suffered difficulties. Sometimes, Air Traffic Controllers do feel blamed when they learn of the conclusion of an investigation. Equally, in the minds of the individual involved, a non-punitive confidential culture may appear as a general amnesty for every mistake made; but that is not the case. Most of the investigated incidents have had human mistakes as their root cause. That fact can be hard to be face up to; and in such situations it is important to confront the individual in a way that inspires proactiveness both for the organisation and the individual so that both will learn.

What made all this possible? First of all it is important that the legal framework is in place to run a reporting system. Even the most well meaning management will have problems to install trust if legal action can still be undertaken against employees..

Secondly, the management of any company in a safety critical business be that aviation, medical care, power or the nuclear industry etc. has to be committed. Safety starts at the top.

In order to give the Air Traffic Controllers themselves the ownership to flight safety, it is very important that the people that are communicating safety have a professional background. Many feelings become activated, and dis-

cussions will follow when you embark on the endeavour of communicating flight safety. These discussions and questions have to be answered by people who have "felt" the business themselves. Management will have to show support and be visible in the safety campaign, but the professional discussions have to be among professionals.

The ultimate test for any non-punitive confidential reporting system (the legal framework, the confidentiality, the psychology) will come if a country running such a system experiences an aviation disaster with loss of life. When this happens, everything takes a new and unknown course. To prepare for this it is important to focus on the fact that without aviation safety reporting systems, the likelihood of disasters are much greater.

UK NATS Best practices

In November 2001 NATS conducted a review of its Occurrence Reporting process against a background of having a mature Mandatory Occurrence Reporting (MOR) Scheme in place and no immediate concerns over reporting levels. Fundamental to the success of safety reporting in the UK is the CAA's stated commitment that the purpose of the MOR scheme is to benefit flight safety and that it will not be the policy of the CAA to institute legal proceedings as result of events reported under the scheme. Additionally, it is stated that the CAA expects that employers will not act in a manner that may inhibit reporting through taking disciplinary action.

The aim of the NATS review was to identify improvements to safety reporting which would maximise capture of operational occurrences and observations and facilitate effective lesson learning.

The principles that were applied when developing proposals for improvement were that they would:
- improve upon what NATS already had;
- have the confidence of the users;
- ensure continued alignment with regulatory requirements;
- be simple but effective;
- be accommodated within existing resource.

The review group validated through staff survey that the main reasons for not reporting incidents were:
- Perceived Blame Culture
- Too time consuming to complete the form
- No action will be taken as a result of the report
- No feedback will be received

Best practice in incident reporting in other safety critical organisations was examined as part of the review. This highlighted some important points regarding the implementation experience in these organisations:
- buy-in needs to come from top of the organisation;
- A comprehensive education system - from top down is important
- it can take 4 / 5 years before staff accept the system and up to 10 years for a scheme to reach maturity.

An enhanced reporting scheme was developed that covered both MORs and what NATS terms 'open' reports that capture the low level issues that do not require a submission of an MOR. Agreement was reached with the CAA SRG to conduct a 6 month trial of the scheme to cover both ATC and Engineering occurrence reporting.

The post trial review confirmed that the trial had not prejudiced the CAA MOR scheme. NATS was also encouraged to see that the scheme quickly yielded information on potential precursors to incidents that the existing reporting

process had not picked up, for example; poor operational handovers and the failure to apply best practice operating techniques. The enhanced reporting process was subsequently rolled out to all NATS units.

NATS has demonstrated that it is possible to increase incident reporting through addressing the causes of under-reporting and has successfully achieved this through working closely with the CAA SRG in ensuring that the needs of both organisations can be met.

Appendix 5 - Airlines Best Practices - Examples

Airlines have a longer record than ATM in succeeding to introduce reporting and assessment of safety occurrences.

For example some years ago **British Airways** gave assurances that they would also not "shoot the messenger" in order to get information from pilots, mechanics, and others for their BASIS system. Many other airlines around the world are concluding that they must do the same in order to obtain information they need to be proactive about safety.

Significant progress has also been made on this issue in the U.S. In October 2001, the FAA promulgated a regulation, modelled on the UK example, to the effect that information collected by airlines in FAA-approved flight data recorder information programs (commonly known as Flight Operations Quality Assurance (FOQA) programs will not be used against the airlines or their pilots for enforcement purposes, FAA 14 CFR part 13.401, Flight Operational Quality Assurance Program: Prohibition against use of data for enforcement purposes.

In this Appendix SAFREP TF has gathered few samples of airlines documented best practices that helped improved the "just culture" within airline community.

TAP – Air Portugal

Safety Commitment

"TAP-Air Portugal is committed to the safest flight operating standards of the Industry. It is therefore imperative that we have uninhibited reporting of all incidents and occurrences which compromise the safe conduct of our flights. To this end, every employee is responsible for communicating any information that may affect the integrity of flight safety. Such communication must be completely free of reprisal.

TAP-Air Portugal will not take disciplinary action against any employee who discloses an incident or occurrence involving flight safety. This policy shall not apply to information received by the Company from a source other than the employee.

The primary responsibility for flight safety rests with line managers. Remember, however, that flight safety is everyone's concern.

Our method of collecting, recording and disseminating information obtained from Air Safety Reports has been developed to protect to the extent permissible by law the identity of any employee who provides flight safety information.

I urge you all to use our flight safety programme to help TAP-Air Portugal become the leader in providing customers and employees with the highest level of flight safety.

YYYY
Accountable Manager TAP Portugal"

Appendix 5 - Airlines Best Practices - Examples

ALASKA Airline

The following section was taken from a corporate statement from Alaska Airlines that was transmitted to all staff.

Legal Aspects
Generally, no disciplinary action will be taken against any employee following their participation in an error investigation, including those individuals who may have breached standard operating procedures. Disciplinary action will be limited to the following narrow circumstances:

1) An employee's actions involve **intentional (wilful) disregard of safety** toward their customers, employees, or the Company and its property. This is applicable when an employee has knowledge of and/or intentionally disregards a procedure or policy. Reports involving simple negligence may be accepted. In cases where an employee has knowledge but still committed an error, the report may be accepted as long as it is determined that the event was not intentional and all of the acceptance criteria listed herein is met.

2) An employee **commits a series of errors** that demonstrates a general lack of care, judgment and professionalism. A series of errors means anything over one. Management retains the discretion to review and interpret each situation and determine if that situation demonstrates a lack of professionalism, judgment or care. When determining what reports are acceptable when a series of errors are involved managers should consider the risk associated with the event and the nature and scope of actions taken as a result of all previous events. A risk table is available to assist managers in making a determination of risk.

3) An employee **fails to promptly report** incidents. For example, when an employee delays making a report in a reasonable time. A reasonable time for reporting is within 24 hours. However, reports should be submitted as soon as possible after the employee is aware of the safety error or close call.

4) An employee **fails to honestly participate** in reporting all details in an investigation covered under this policy. For example, an employee fails to report all details associated with an event, misrepresents details associated with an event, or withholds critical information in his/her report.

5) The employee's actions **involve criminal activity, substance abuse, controlled substances, alcohol, falsification, or misrepresentation.**

Reporting System
The Alaska Airlines Error Reporting System (ERS) is a non-punitive reporting program which allows employees to report to management operational errors or close calls that occur in the workplace. This system is designed to capture events that normally go unreported. It also provides visibility of problems to management and provides an opportunity for correction.

Roles and Responsibilities
The Safety Division has oversight of the program. Supervisors and local management have responsibility for the day-to-day management of reports submitted, investigations performed and implementation of corrective actions.

Users: Any employee not covered by the Aviation Safety Action Program (ASAP) or Maintenance Error Reduction Policy (MERP). These employees are not covered by ERS because they are certificated by the FAA, and the company cannot grant immunity to them in all cases. ASAP provides protection for certificated employees. Pilots and

Dispatchers are currently covered under ASAP. Until Maintenance & Engineering develops an ASAP, Maintenance & Engineering employees will be covered under MERP.

Reporting Procedure

1. Reporters can file a report on www.alaskasworld.com. An employee can also submit a report over the phone by contacting the Safety Manager on Duty.
2. A report should be promptly submitted, normally as soon as the employee is aware of the error or close call. Reports made later may be accepted where extenuating circumstances exist.

Feedback

The employee's supervisor will review the report, determine if it meets all criteria for acceptance and notify the employee. If the report is not accepted, the employee's supervisor is responsible for contacting the Safety Division immediately for review. Concurrence from the Safety Division is required prior to the non-acceptance of a report. The Safety Division will record and review all reports submitted under this program. The Internal Evaluation Program (IEP) will accomplish a monthly review of corrective actions. All long-term changes to procedures and policies will be added to the IEP audit program and become permanent evaluation items for future audits. A summary of employee reports received under this system will be presented to the Board of Directors Safety Committee quarterly. Summary information will also be shared with employees on a regular basis.

Appendix 6 - Elaboration of Existing and Future ATM Safety Data Flow into one consolidated European Risk Warning System

This Appendix captures the work of SAFREP TF in:
- Identifying the various safety data flows and propose a way forward to ensure that all risks from such safety data flows are known to all the interested parties in a co-ordinated way; and in
- Identifying the process and way forward to access, manage and resource the analysis of these data, in order to agree with all stakeholders on prevention plans to increase safety levels

Background

- Various ATM safety data flows currently exist, and can be categorised as follows :
    - Mandatory (ESARR 2 and EU 42/03) versus voluntary (ANSPs);
    - National mandatory reporting versus European wide mandatory reporting;
    - Pilot reporting versus ATCO reporting;
    - Individual reports versus summary reports (the latter showing trends);
    - Electronic and searchable reporting versus paper reports;
    - Existing Reports and databases on specific occurrences (i.e. RVSM, PLOC, Runway Incursions, ..) versus generic reporting of all occurrences;
    - Human reporting versus automated reporting (ASMT and the like);
    - Publicly available reports (e.g. AIRPROX data) versus confidential reports (e.g. voluntary ANSP reports);
- Limited if no consolidation of the various above categories currently exists, due to historical fragmentation of the various "owners" of such reports and the corresponding databases. Other reasons include institutional and organisational differences, as well as different use of the findings of these reports.
- It is recognised that a consolidation of all available data, in a way that is acceptable to all parties involved, and with a consolidated approach to learn from such occurrences, would benefit ATM Safety as a whole.
- It is further recognised that consolidation of such data into one manageable risk warning system would be the essential to measure European safety levels, derive KPIs and set measurable targets for safety improvement.

Owners of the most important existing and future reporting systems within Europe

The currently known incident information systems are owned and managed by the following owners:

Mandatory:
- National AAIB's;
- National CAA's (ATCO as well as Pilot reporting);
- ANSPs as part of the ESARR 3 requirements;
- EUROCONTROL Organisation:
    - SRU/SRC : ESARR 2 compliant reporting via AST;
    - PRU: Publicly available information ;
- European Commission : EU 42/03 , applied via ECCAIRS data base.

Voluntary

■ Individual ANSPs as part of a mature SMS;

■ Individual Airlines;

■ ANSP Associations:

- CANSO initiative;

■ Airline Associations:

- IATA: via STAEDES database;

■ EUROCONTROL Organisation:

- SISG : Consolidated incident trends and perceived risks;

Early Warning Messages;

- EATM Domains and Programmes : databases aimed at monitoring specific activities and implementation programmes (RVSM, PLOC, ACAS, …);

- R&D : incident databases for longer term safety improvements (such as SAFLEARN);

- PRU: Publicly available information;

It is the SAFREP TF view that the ATM community need to study the feasibility to consolidate mandatory and voluntary ATM incident reporting systems, as described above, into one European ATM Risk Warning System to look potentially as visualised in Figure below.
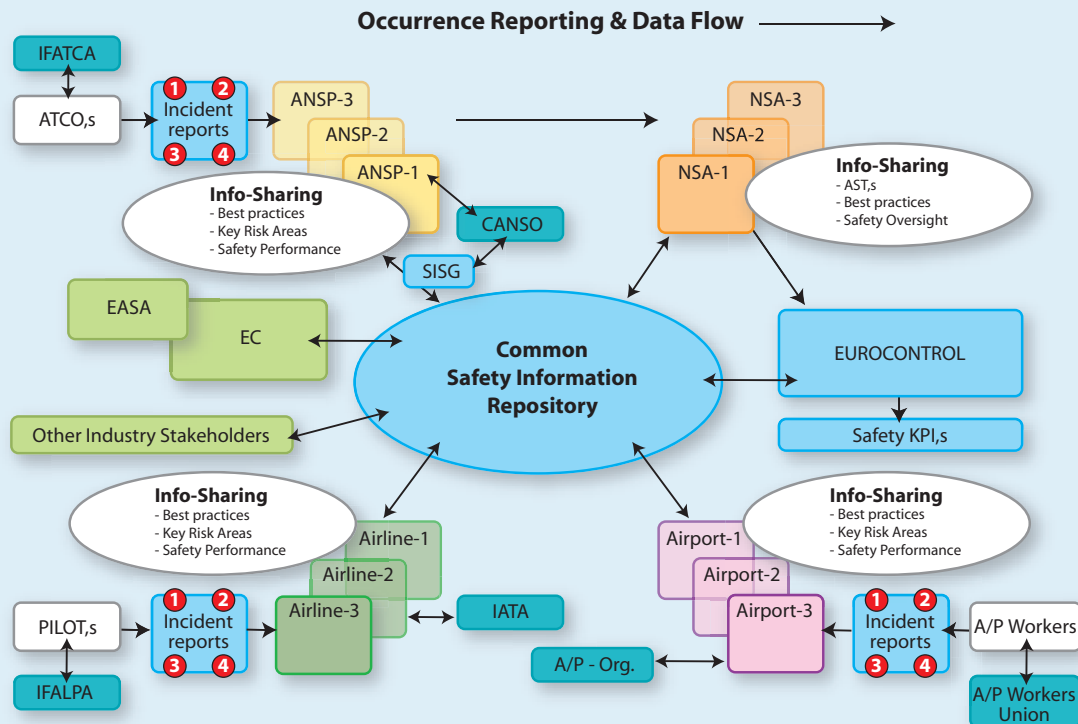
Figure 10 – Common European Safety Information Repository

The previous figure describes how the system might look at its central level. The common European safety information repository should be compatible with the EC ECCAIRS system, which has the particular advantage of collecting all aviation data, including air navigation safety data. Nationally the system may be implemented as presented in Figure 11. The later was derived from a national implementation of the combined package of the ESARR 2 and EC42/2003 Directive.

Integrated National Aviation Safety Data Flow
(data based on investigation and severity assessments)

Figure 11 – National Safety Data Flow

Appendix 7 - ATM Occurrence investigation Process

A. Detection and Notification

1. The scope of occurrences to be reported should be based on national experience and international definitions and it should be published.
2. Notification is initially passed to supervisors, responsible for the immediate safeguarding the service.
3. All stages of the investigation should be conducted unless the Safety Management Group accepts a written justification for halting the process at any stage.
4. Safety net and monitoring tools can be used to detect occurrences.

B. Factual information gathering

5. National guidelines specify data to be gathered.
6. Published checklists should be used to specify what data should be gathered following an occurrence.
7. Local safety department is responsible for supervising the data gathering process.
8. Approved investigators should issue a preliminary report and conduct any follow-up data gathering.
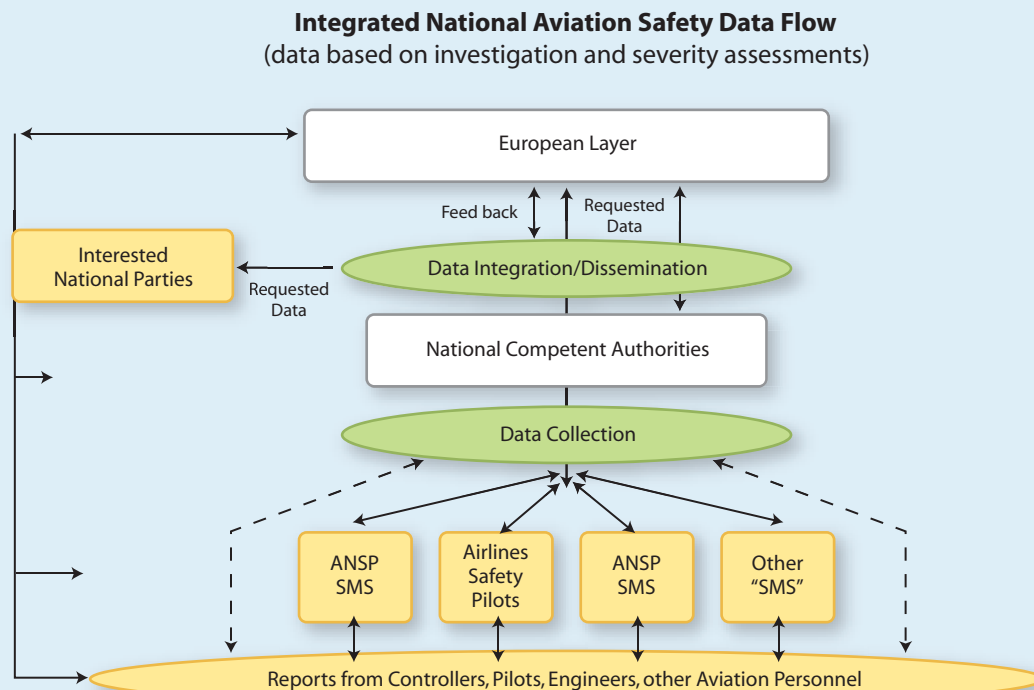
C. Reconstruction

9. Notifiers and contributors should be involved in occurrence reconstruction.
10. Record, playback and simulation tools should be exploited to the possible extend.
11. A formal approach to occurrence reconstruction and analysis should be adopted by using a proven method.
12. Reconstructions should also consider plausible worst case scenarios.

D. Analysis

13. The boundary of an investigation should be assessed and documented.
14. Specialist human factors support should be recruited.
15. Risk Assessments should be based on EUROCONTROL Regulatory Requirements (ESARR 2).
16. When assessing the risk of future incidents, attention should be paid to record of previous occurrences.

E. Recommendations and Monitoring

17. Feedback should be provided to personnel.
18. Safety recommendations should be implemented or the reasons why they are not implemented should be documented and approved. These actions should be monitored.
19. Periodic reviews and monitoring help to assess the success or failure of remedial actions
20. Success of scheme should be assessed by severity weightings (see guideline 15).

F. Reporting and Exchange

21. The final report should be issued in an agreed format.
22. Occurrence reports should be accessible to all staff.
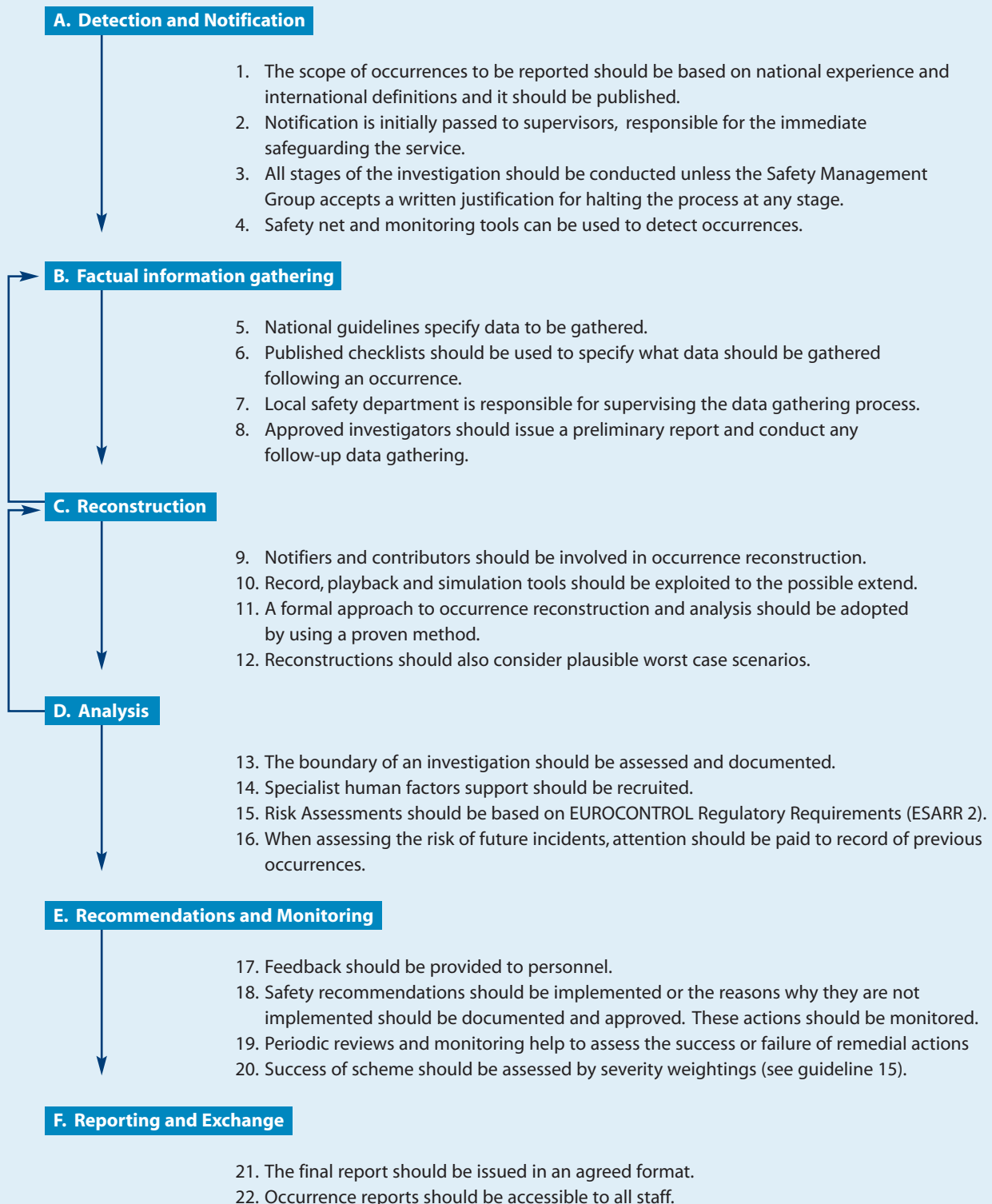
Figure 12 – Generic ATM safety occurrence assessment and sharing data process

Appendix 8 - How to Engineer a "Just Culture"

1. How to Reduce the Legal Impediments

The reduction or removal of legal impediments to a "just culture" in ANS is primarily a State responsibility. It remains a complex process, in the light of the various legal interests to be reconciled. It also involves a wide number of different authorities, well beyond aviation regulators alone. The first steps towards alleviating or changing the legal constraints could be for individual States:

- to clearly identify the issues at stake and the circle of national authorities to be involved, in their specific legal environment;
- to define a process for the establishment of the dialogue required between all national authorities involved;
- to conduct, within the group of multiple authorities involved, a legal analysis of the issues arising from the implementation of a "just culture" in ANS, from which a clear vision and action plan will emerge.

In order to reconcile with the judicial system, the two most important issues are: i) indemnity against disciplinary proceedings and ii) having a legal framework that supports reporting and investigation of incidents. The first steps in changing the legal aspects could be to:

- substantiate the current legal situation ;
- discuss possibilities of change with company lawyers / legal advisors;
- discuss with operational personnel what changes in the legal policy they think would improve incident reporting;
- start addressing the political arena.

> *Potential obstacles: For many organisations, the main challenge of developing a "Just Culture" will be to change the legislation, especially if the changes are counter to social legislation.*

2. Reporting Policy and Procedures Development

It is important that the following issues are considered with regard to the underlying reporting structure and company commitment:

- confidentiality or de-identification of reports;
- separation of agency/department collecting and analysing the reports from those bodies with the authority to institute disciplinary proceedings and impose sanctions;
- company commitment to safety;
- some degree of independence must be granted to the managers of the reporting system.

> *Potential obstacles: Persuading senior management of the need for creating a "Just Culture" and to commit adequate resources to it may be difficult.*

3. Establish Methods of Reporting

It is important that the following are considered with regard to the method by which reports will be collected:

- rapid, useful, accessible and intelligible feedback to the reporting community;
- ease of making the report - voluntary reporting should not be perceived as an extra task;
- clear and unambiguous directions for reporting and accessibility to reporting means;
- professional handling of investigation and lesson dissemination.

The first steps to develop a "Just Culture" Reporting System could be:

- decide on voluntary versus mandatory reporting system;
- decide on anonymous, confidential, open reporting system;
- develop procedures for determining culpability, such as the "Just Culture" decision tree, and follow-up action e.g. type of discipline or coaching;
- decide who shall decide culpability, e.g., team consists of safety, operations and management human resources;
- draft a plan and discuss with a small selection of operational personnel;
- decide if and how the reports will be further investigated;
- decide which reports will be further investigated , e.g. those which are most severe, or those with the most learning potential;
- decide who will investigate the reports.

Potential Obstacles: It may not be obvious to all organisations which system would suit them best. Ideally, a variety of reporting methods (or a flexible method) will be implemented, as not one reporting method will suit everyone's needs. It may be necessary for the organisation to survey the needs of the potential users to better understand which reporting method would be more readily accepted. A system that is unclear and ambiguous could create distrust in the system, so it is necessary that the procedures to decide culpability must be clear and understood by all.

4. Determine Roles and Responsibilities, Tasks and Timescale

For such a system to thrive, a number of different people need to be involved in the implementation and maintenance of the system. A 'local champion' will be needed to promote and act as guarantor to ensure the assurances of anonymity will be preserved in the face of external or managerial pressures. Decide and select someone to:

- Champion the system;
- Educate users and implement system;
- Collect and analyse the reports;
- Decide which department will be involved in the disciplinary decision making process;
- Feedback the information such as developing newsletters;
- Develop and maintain the data collection system.

Potential Obstacles: Having sufficient resources (e.g. people) to run the system, as well as having enough of the 'right' kind-of people, who are energetic, well-liked, well-known and respected in the company. Maintaining the energy required for the system to function.

5. Reporting Form Development

It is important to have a reporting form that encourages accurate and complete reporting (e.g. questions that are understandable) and is easy to be filed in; otherwise reporters may provide erroneous or misleading responses. Determine:

- What information you want to collect, e.g. only that information that will improve learning in the organisation;
- What you want to do with the information, e.g. case studies or summary data, as this will determine what information you collect;
- What format you want to collect it in, e.g. electronic, paper or both;

- What resources are required to develop the system in terms of people and costs;
- Whether and how the reporting form should be integrated with the current incident reporting system.

> *Potential Obstacles: It could be possible that too much /irrelevant data is collected. It is important that it is kept simple, but with enough detail that useful analysis can be applied to it.*

6. Development of a Template for Feedback to Potential Users

In this step the Organisations should determine:
- What type of information you want to disseminate, e.g. summary, case studies, "hotspots"; and human factors data;
- How to disseminate the information, such as newsletters or briefing notes;
- Who will be involved in writing, editing newsletter, and who will be endorsing the action plan;
- How often you will disseminate the feedback;
- Template style of the newsletter, title, etc..

> *Potential Obstacles: The newsletter is not read. It may be necessary to find out what sort of information the audience would like to know about; provide examples that will be of interest and relevant to their job. One may need to vary the style over time, so that it maintains their attention, and so that they are likely to contribute to it.*

7. Develop a Plan for Educating the Users and Implementing the System

Potential reporters must know about the reporting scheme and know how to submit a report; this will include induction courses; periodic retraining to remind staff of the importance of reporting; and ensuring that staff is provided with access to reporting forms. Below are some initial steps for implementing the system.
- develop brochures to explain the changes in the legal system;
- present the changes to all staff;
- train a "champion" or a team to be the main focus for the system;
- explain to users how this new system will fit into the current system;
- have a "Health and Safety Week" campaign to promote the reporting system;
- include a section on the reporting system in the safety induction course;
- use email and internet to communicate, announcing new information and congratulating participants;
- design posters to describe the reporting system process pictorially.

> *Potential Obstacles: Information about the system may not be disseminated to a wide enough audience and to a deep enough level within the organisation.*

8. Developing and Maintaining the "Right Culture"

A number of additional issues concerning the 'cultural' aspects of reporting are necessary in order to maintain motivation to report, such as the trust between reporters and the managers must genuinely exist for the reporting system to work.

The main aims are to develop an open culture in which people feel able to trust the system and to develop new ways to motivate people to use the system. Initial ideas are:

- system visibility – potential contributors to be made aware of the procedures and mechanisms that support the incident reporting system;
- maintaining the employees' voice – must ensure that the reports are used to voice the employees voice and not used to suit existing management priorities;
- publicised participation – publish the contribution rate from different parts of the organization to show that others have trust in the system. However one must ensure that this doesn't have the opposite effect, such as asking for certain quotas of reports per month;
- develop 'marketing strategies' for enhancing safety culture: a) Customer centred – focusing the marketing strategy to suit the audience (e.g. management will have a different focus than the operations personnel); b) Link safety values to the core business – and show tangible evidence for their impact, such as how safety can enhance production, efficiency, communication and even cost benefits; c) Reward and recognition – positive reinforcement for reporting incidents;
- change attitudes and behaviours - focus on the immediate, certain and positive consequences of reporting incidents and publicise the "pay-offs" of reporting incidents;
- management commitment – raise awareness of management's commitment to safety, with a "hands on approach"; have management involved in the reporting process to show that they visibly believe and promote the "Just Culture";
- employee involvement – ensure employee involvement so they are committed to the need to be actively involved in decision making and the problem solving process.

Potential Obstacles: It takes time and persistence to try and change safety attitudes and behaviours. Maintaining motivation of the personnel set with the task of improving safety reporting can be a potential obstacle. Three planning aspects that need to be taken into consideration: 1) the required time to undertake the steps and sub-steps (include start and end dates); 2) the estimated costs involved and 3) who will undertake the work.

Appendix 9 - Safety actions of PRU/PRC, SRU/SRC and Agency in regard of safety performance measurement

Within their roles and responsibilities in the filed of safety performance measurement, the PRU/PRC, SRU/SRC and the Agency will undertake the following actions:

■ In their reporting to PC, SRC will continue to name States that are not compliant with ESARR2, and those which have not yet established an Annual Summary Template Focal Point.
■ PRU/PRC will continue to use the dis-identified SRC data from ESARR2 in the next PRR. It is agreed between all parties that the completeness and the quality of these data is not yet fully mature, but they will be taken "as is", assuming that reporting quality will improve over the years to come. PRC will publish performance information based on en-route and airport-related performance indicators developed by SRC.
■ PRC/PRU aims to use available data, as appropriate, from the Agency and SRC to report to the industry and public on high-level safety aspects as part of overall European ATM performance.
■ SRC/SRU and the Agency will use these data for expert analysis, and come forward in collaboration with regulators and ANSPs with recommendations, plans and programmes to improve safety regulation and safety management respectively.

Based on comments from the external stakeholders in SAFREP, there is an agreement that KPIs are the way forward in the long term. SAFREP could therefore look into how this can be developed, as part of any future assignment. The purpose of safety KPIs is to improve safety levels through monitoring followed by corrective action.

ANSP representatives in SAFREP felt that the quality and quantity of the national mandatory incident data so far is not sufficient to facilitate meaningful KPIs that could be used either for benchmarking purposes (in a similar way to that for capacity, delays and cost efficiency), or to steer safety improvement actions at European level. The effort and focus should therefore be on improving the completeness and quality of the data flow.

In the area of "just culture", PRU will continue to update its 2002 report on "legal impediments to incident reporting" ready for the SAFREP final reporting to PC24 in November.   A clear distinction will be made to organisational/cultural impediments within the ANSP or ANSP/Regulator on one hand, and genuine legal impediments on the other. In the next PRR, as well as in the dedicated updated report, PRU/ PRC will publish the names of those states that still have legal impediments in order to help the CAAs/ANSPs in those States to address this issue with their respective ministries of justice.

Appendix 10 - Glossary of Acronyms and Terms

AAIB	Aircraft Accident Investigation Board
ACAS	Airborne Collision Avoidance System
ADREP	ICAO Aircraft Accident/Incident Reporting System
AEA	Association of European Airlines
AGAS	High Level European Action Group for ATM Safety
ANS	Air Navigation Services
ANSP	Air Navigation Service Provider
AO	Aircraft Operator
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATM	Air Traffic Management

CAA	Civil Aviation Authority
CANSO	Civil Aviation Air Navigation Service Provider's Organisation
CEC	Commission of the European Community
CEO	Chief Executive Officer
CESC	Chief Executive Officers Standing Committee

EAM	ESARR Advisory Material
EATM	European Air Traffic Management Programme
EC	European Community – (also used for European Commission)
ECAC	European Civil Aviation Conference
ECCAIRS	European Co-ordination Centre for Aviation Incidents Reporting Systems
ECIP	European Converging and Implementation Plan
ERA	European Regional Airlines
ERA	European Region Airlines
ESARR	EUROCONTROL Safety Regulatory Requirement
ESIMS	ESARR Implementation, Monitoring and Support
EU	European Union
EUROCONTROL	European Organisation for the Safety of Air Navigation

GASP	(ICAO) Global Action Safety Plan

HEIDI	Harmonisation of European Incident Definitions Initiative in ATM

IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFALPA	International Federation of Air Line Pilots' Associations
IFATCA	International Federation of Air Traffic Controllers' Associations

KPI	Key Performance Indicator

LCIP	Local Converging and Implementation Plan

PC	Provisional Council
PR	Preliminary Report
PRC	Performance Review Commission
PRU	Performance Review Unit

SAFLEARN	Safety Learning R&D Project
SAFREP	Safety Data Reporting and Data Flow
SES	Single European Sky
SMS	Safety Management System
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SRU	Safety Regulation Unit
SSAP	Strategic Safety Action Plan
STEADES	Safety Trend Evaluation, Analysis and Data Exchange System

TCAS	Traffic Collision Avoidance System
TORs	Terms Of Reference

"There must also be an unobstructed flow of safety-related information by everyone involved in air transport, at every level and across every safety discipline. At the same time, airlines and regulators must put in place safety management systems that can make use of this information in order to take action before an accident occurs."

(ICAO – Dr. Assad Kotaite)