

Corporate ATM Safety Strategy 2008-2011





Safety is the first priority of every single employee of IAA. No one should think otherwise. Together we will strive to implement safety management to the highest *international* safety standards. This is our aspiration and I ask each of you for your support to realise it.

Eamonn Brennan

Foreword



As Chief Executive of IAA, I speak for the company as well as myself when I say that we are committed to being a world leading provider of air traffic services.

This commitment depends upon our ability to continually improve the quality of the services we deliver. However, safety comes first; our *Safety Policy* states that the achievement of satisfactory safety in ATM shall be afforded the highest priority over commercial, operational, environmental or social pressures.

With this in mind, we introduced a comprehensive best practice Safety Management System (SMS) supported by a strong safety culture and audits. In a European context we score 88% in terms of safety management maturity, well above the acceptable target level of 70%, and this is a reflection of our commitment to safety. We continue to invest in the most modern ATM systems in Europe and our commitment to training is a cornerstone of our safety culture.

Our aspiration now is to comply with all applicable safety regulatory requirements and to strive, whenever practical, to go beyond compliance and ensure that we operate to the highest *international* safety standards.

This strategy is a brief description of how we intend to accomplish this objective. In particular, it establishes our strategic safety agenda and defines goals that we intend to pursue.

The strategy centres around our goal to implement an Operational Safety Improvement process that will focus safety efforts on assuring that the occurrence trend in Key Risk Areas does not increase and, where possible, will decrease.

Safety is the first priority of every single employee of IAA. No one should think otherwise. Together we will strive to implement safety management to the highest *international* safety standards. This is our aspiration and I ask each of you for your support to realise it.

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The IAA Corporate ATM Safety Strategy 2008-2011

As a result of our efforts in recent years the framework of a mature and effective SMS is now well established within the Air Navigation Service Provider (ANSP) organisation.

In the coming years we must contend with competing demands, such as

- Provide the capacity to cater for an average traffic growth rate of 4.8% per annum over the period 2008-2011
- Implement a national airspace reorganisation and redesign
- Centralise Approach Control Services in Dublin ACC
- Optimise Sectorisation
- Meet the demands of the Performance Review Commission (PRC) for “strong, transparent and independent performance review and target setting” in Air Traffic Management (ATM)
- Secure our future in a European airspace divided into fewer and larger Functional Airspace Blocks (FABs)
- Harmonise equipment and operational requirements in co-operation with our COOPANS partners and in line with SESAR and FAB developments
- Implement the separation of Safety Regulation and ATM Service Provision

These demands will affect each segment of our business in a different way. All the demands must be tackled in a way which ensures that we maintain our focus on safety performance and on the need for continual improvement in what we do and how we do it.

To approach this demanding environment we will take action on five interconnected focus areas, driven by associated strategic safety goals.

The focus areas and strategic safety goals are summarised in Table 1.

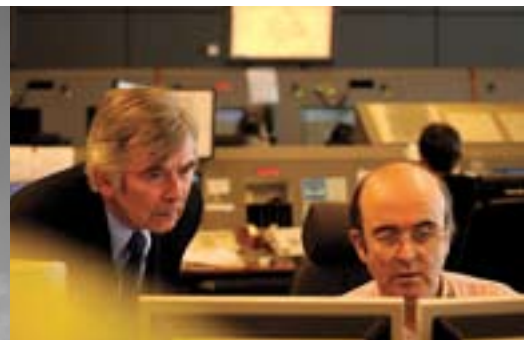
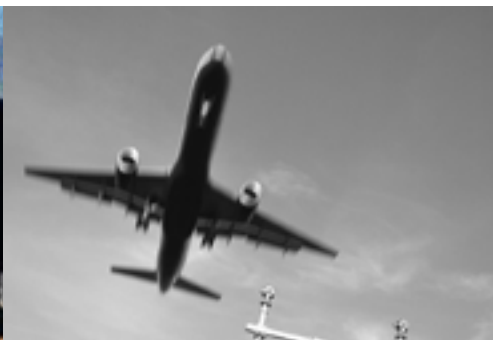


Table 1. IAA Corporate ATM Safety Strategy 2008-2011: Focus Areas and Strategic Safety Goals

FOCUS AREA	STRATEGIC SAFETY GOAL
1. Safety Leadership Behaviour	Goal 1: We will foster a culture of Safety Leadership Behaviour through the development of a safety leadership programme.
	Goal 2: We will review, and modify as necessary, our Performance Management process to ensure the inclusion of safety leadership responsibilities related to each manager's function.
2. Safety Performance Indicators	Goal 3: We will implement a 'Safety Significant Events' (SSE) scheme.
	Goal 4: We will comply with all applicable safety regulatory requirements and will strive whenever practical to go beyond compliance and ensure that we operate to the highest <i>international</i> safety standards.
	Goal 5: We are committed to the conduct of Normal Operations Safety Surveys in line with <i>international</i> best practice.
3. Operational Safety Improvement	Goal 6: We will implement a "Plan, Do, Check, Act" Operational Safety Improvement process that will focus safety efforts on assuring that the occurrence trend in Key Risk Areas does not increase and, where possible, will decrease.
4. Managing Human Factors Issues in ATM	Goal 7: We will establish a national pool of trained Occurrence Investigators under the direction of the Manager Safety Standards and Procedures.
	Goal 8: We will ensure that our Mandatory Occurrence Reporting (MOR) scheme is managed in accordance with the European harmonised definition of 'just culture'.
	Goal 9: We will define and implement a Roadmap for managing Human Factors issues in ATM based upon <i>international</i> best practice
5. Communicate and embed the processes that will enable us to better identify and close gaps in the defences of our safety system	Goal 10: We will deliver on-going briefing sessions and dedicated courses to managers and staff to promote awareness of the strategy. Our briefing sessions will prioritise direct face-to-face information exchange and discussion on <i>international</i> best practice.

1. Safety Leadership Behaviour

Safety Strategy Goal No. 1: We will foster a culture of Safety Leadership Behaviour through the development of a safety leadership programme.

Safety Strategy Goal No. 2: We will review, and modify as necessary, our Performance Management process to ensure the inclusion of safety leadership responsibilities related to each manager's function.

1.1 Keeping Safety First

Our corporate and public obligations impose upon each of us a responsibility to exercise our individual authority in a way that gives effect to the policy that "safety is our number one priority". The 2008-2011 phase of our SMS development is aimed at giving further practical expression to this.

We believe that this will provide us with the necessary focus to continually achieve a realistic balance between safety and commercial goals. Through the adoption and application of *international* best practice the organisation can accept with confidence the challenge of always tipping the balance to the side of safety.

1.1 Normalising Safety Leadership Behaviour

In the past two years we have reviewed and updated our Safety Management Manual to adopt *internal* 'best in class' practice, in terms of compliance with regulatory requirements, as the standard to be applied by each unit.

In effect, we are striving to normalise adherence to 'best practice' as the expected Safety Leadership Behaviour.

Safety Management Unit (SMU) audits confirm that Safety Leadership Behaviour is being steadily embedded in day-to-day practice.

We have set ourselves two strategic safety goals in this focus area. We will foster a culture of Safety Leadership Behaviour through the development of a safety leadership programme. In addition, we will review, and modify as necessary, our Performance Management process to ensure the inclusion of safety leadership responsibilities related to each manager's function.



We are striving to normalise adherence to 'best practice' as the expected Safety Leadership Behaviour.

2. Safety Performance Indicators

Safety Strategy Goal No. 3: We will implement a 'Safety Significant Events' (SSE) scheme.

Safety Strategy Goal No. 4: We will comply with all applicable safety regulatory requirements and will strive whenever practical to go beyond compliance and implement *international* best practice in the area of ATM Safety Management.

Safety Strategy Goal No. 5: We are committed to the conduct of Normal Operations Safety Surveys in line with *international* best practice.

2.1 The drive for mandatory safety metrics in Europe

The European Commission is the main driver for the development of a set of common safety metrics information to be made available on a mandatory basis; in accordance with Article 11 of the Single European Sky (SES) 'Framework Regulation' (EC 549/2004).

EUROCONTROL was mandated by the European Commission to pave the way forward in establishing a set of safety Key Performance Indicators (KPIs) for ATM.

EUROCONTROL established a Safety Data Reporting and Data Flow Task Force (SAFREP) and this group has, in consultation with stakeholders, established a strategy for the development of the set of mandatory safety KPIs by 2009.

2.2 Types of ATM Safety KPIs

The strategy established by the SAFREP group is based upon the principle that safety improvement is the sole objective of safety KPIs.

SAFREP has identified two main categories of performance indicators:

- **Lagging indicators** measure events (safety occurrences, such as accidents, incidents, system outages etc) that have happened. They also measure whether safety improvement activities have been effective in mitigating identified risk. **Lagging indicators** measure the outcome of service delivery.
- **Leading indicators** are identified principally through the comprehensive analysis of the organisation. They are designed to help identify whether the provider is taking action or has processes that are effective in lowering risk.

2.3 Lagging KPI development

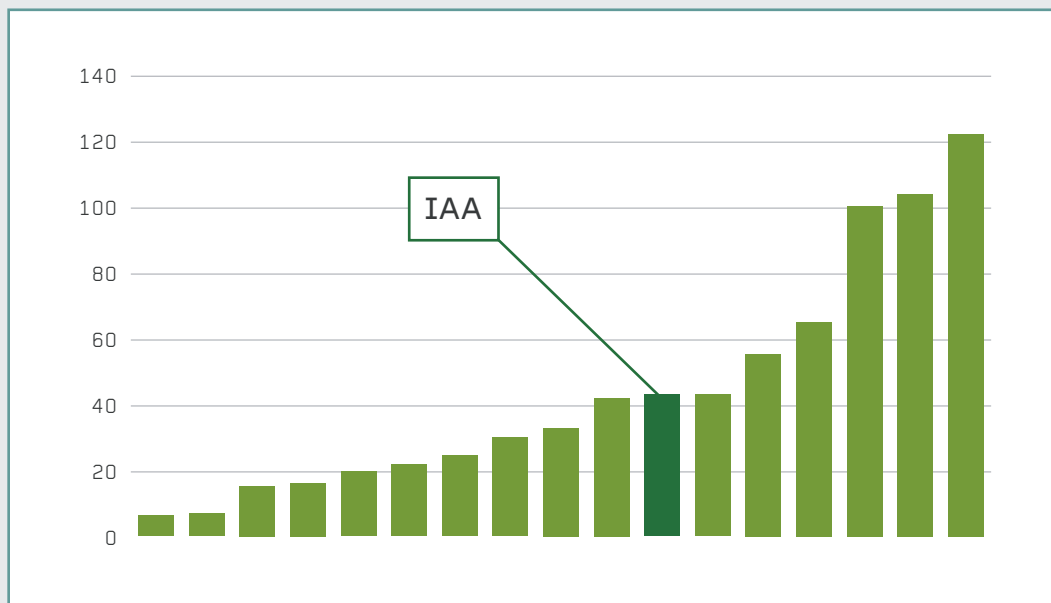
The starting point for lagging KPI development is measurement of how well the ANSP is performing in terms of carrying out the core safety task; to separate aircraft in accordance with the applicable separation standard.

CANSO is developing a 'Loss of Separation' metric as a first step towards a global set of safety performance measures.

The number of ATC attributed loss of separation incidents involving airborne IFR aircraft per million IFR flight hours.

A pilot trial of this metric was undertaken by CANSO using 2006 data and the result is shown in Fig. 1.

Fig. 1: IFR Losses of Separation per million Flight Hours - 2006



While 'Loss of Separation' information per se is useful as a high-level KPI, it is more beneficial to the ANSP to delve deeper into the circumstances of events to identify low-level trends, corporate vulnerability and where we may need to modify training syllabi and procedures to mitigate the recurrence of particular safety significant events.



An absence of safety incidents is not necessarily a true measure of the safety of an ATM system. It is important to view safety performance information in the context of the health of the Safety Management System.

2.4 The UK NATS 'Safety Significant Events' (SSE) Scheme

For all separation minima infringements with an ANSP contribution, the UK NATS SSE scheme requires the investigation and classification of two particular aspects of the event

- The degree of loss of separation
 - Greater than 50% loss, 30% loss or less than 30% loss.
- How the conflict was detected and resolved
 - Detected and resolved by ATC, the Pilot, Safety Net (initial detection), and/or resolved by Providence.

Overall, the SSE scheme is more useful as a measure of operational safety performance and, to derive target safety levels.

Having piloted the application of the SSE scheme in 2007 we are satisfied that it meets our needs and, we will roll out the full implementation of a 'Safety Significant Events' (SSE) scheme. We will provide the necessary training for Investigators to enable this.

2.5 Leading KPI development

An absence of safety incidents is not necessarily a true measure of the safety of an ATM system. It is important to view safety performance information in the context of the health of the Safety Management System.

A Leading indicator should measure the output of important elements of the Safety Management System, to demonstrate that excellent safety performance is attributable to a safe ATM system and not to a lack of reporting of safety incidents.

Measurement of the maturity of the Safety Management System – SMS Maturity – is the principal **leading** KPI currently used for public information.

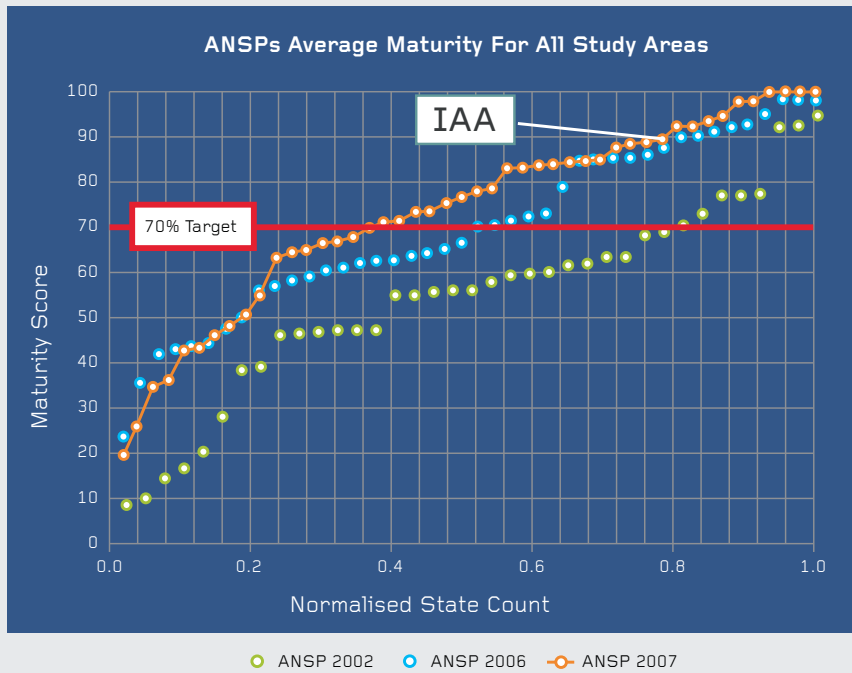
2.5.1 EUROCONTROL Safety Maturity Percentage Measure

EUROCONTROL conducts a regular SMS Maturity survey and its results are made available for public information. The survey result is expressed as a percentage score reflecting the extent to which safety procedures are produced, maintained and applied to give effect to the ESARRs (EUROCONTROL Safety Regulatory Requirements).

Maturity levels above 70% are considered as acceptable at this stage.

As shown in Fig. 2, the IAA ANSP score in the EUROCONTROL Safety Maturity Survey 2007 was 88%, well above the 70% target.

Fig. 2: EUROCONTROL Safety Maturity Survey 2007

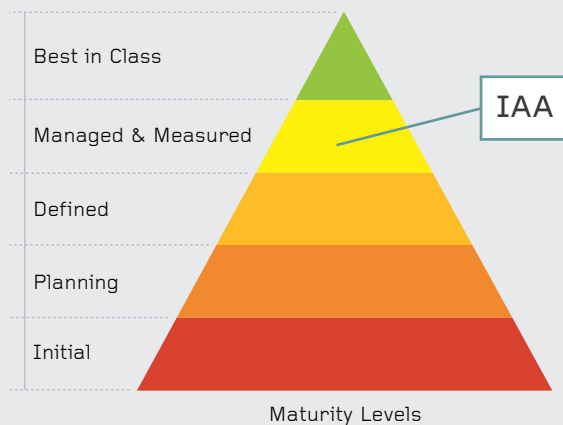


2.5.2 ICAO step-wise Measure

The SAFREP Task Force adopted the principle that European KPI development should be in line with ICAO requirements.

The ICAO Safety Management Manual (Doc 9859) advocates a step-by-step approach towards achieving SMS maturity. A working group instigated by ICAO, the Industry Safety Strategy Group (ISSG), has developed a Global Aviation Safety Roadmap. The Roadmap suggests an SMS Maturity Metric as depicted in Fig. 3.

Fig. 3: Step-wise measure of SMS Maturity



EUROCONTROL, European ANSPs and CANSO are currently working together to refine the percentage measure into a step-wise measure compatible with the Global Aviation Safety Roadmap. The IAA Safety Management Unit is actively participating in and supporting this work.

The implementation of new safety performance reporting and analysis requirements, defined in the updated Safety Management Manual issued in August 2007, now places us at the 'Managed and Measured' level.

We have adopted a Strategic Safety Goal that commits us to comply with all applicable safety regulatory requirements and to strive whenever practical to go beyond compliance and ensure that we operate to the highest *international* safety standards.

2.6 Normal Operations Safety Surveys

The conduct of Normal Operations Safety Surveys is now regarded by ICAO as an essential SMS tool to routinely monitor the safety performance of the operational system against expectations.

We do not currently conduct Normal Operations Safety Surveys. In line with our drive to implement *international* best practice in ATM safety management, we are committed to the conduct of Normal Operations Safety Surveys as part of this safety strategy.

Normal Operations Safety Surveys are an observational methodology developed by ICAO, the objective of which is to identify Threats and Errors in the operational system. The surveys consist of systematic observations by staff trained to use the Threat and Error Management (TEM) framework and observational forms.

The TEM framework aims to give a snap-shot of

- potential **threats** or events that occur beyond the influence of the air traffic controller, that increase operational complexity and, which must be managed to maintain the margins of safety; such as
 - Internal threats (equipment, workspace, other controller)
 - External threats (airport layout, airspace infrastructure/design, navigational aids)
 - Airborne threats (aircraft/pilot performance, R/T communications)
 - Environmental threats (weather, geography)
- potential **errors** that lead to deviations from organisational intentions or expectations, such as
 - Equipment handling errors
 - Procedural errors
 - Communications errors

We believe that Normal Operations Safety Surveys will be an effective tool to enable us to identify vulnerabilities before they fail.

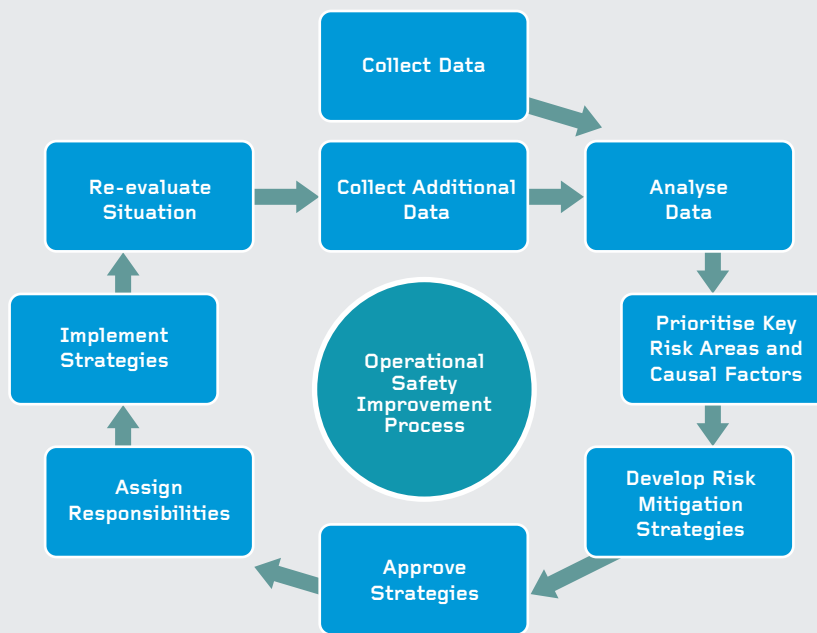
3. Operational Safety Improvement

Safety Strategy Goal No. 6: We will implement a “Plan, Do, Check, Act” Operational Safety Improvement process that will focus safety efforts on assuring that the occurrence trend in key risk areas does not increase and, where possible, will decrease.

Currently, our SMS does not include an explicit measurable Operational Safety Improvement process.

As part of this safety strategy, we are committed to implement a safety improvement process that is measurable and follows a “Plan, Do, Check, Act” cycle, as proposed in the ICAO Safety Management Manual and depicted in Fig 4.

Fig. 4: Operational Safety Improvement Process



Once the analysis of collected data identifies the need for action, an action Plan will be developed. The action plan will then be implemented and its progress and effectiveness measured. The plan will be revised if the expected results are not being achieved.

This continuing cycle of data collection, analysis, prioritisation, action, measurement against expectation and revision will become a central feature of our SMS.



Good data can make a difference to sound decision making in relation to where to most effectively target safety improvement efforts.

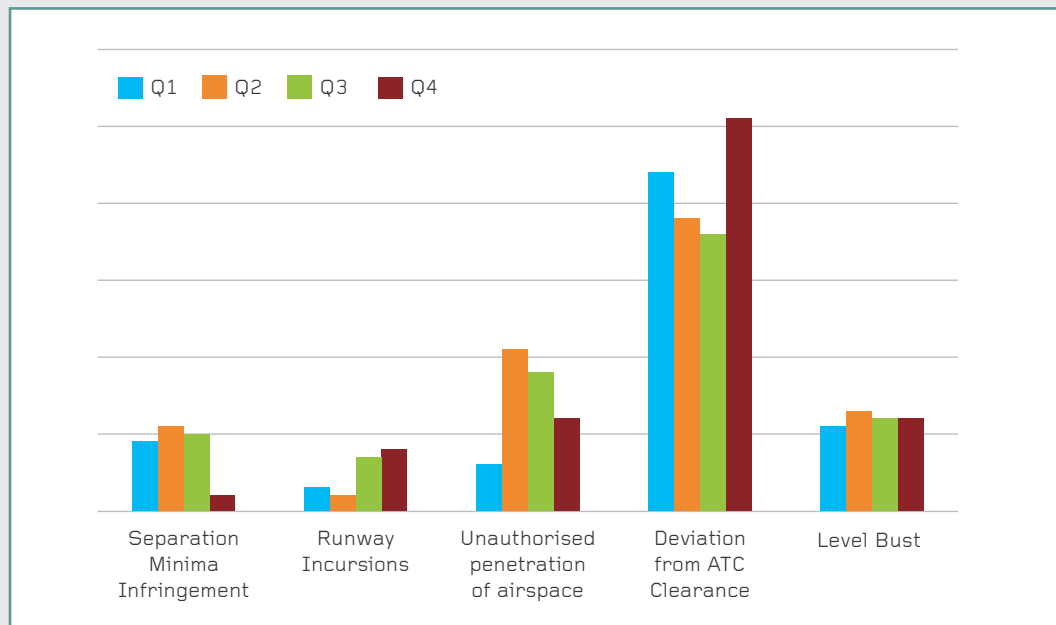
3.1 Collected safety performance data now exists

Through the recent computerisation of our Mandatory Occurrence Reporting (MOR) process we now have a Database of occurrence data that enables trend analysis.

Our recently updated Safety Management Manual now requires each operational Unit to conduct trend analysis of the collected occurrence data and to report the results in a standard Quarterly Operations Safety Report. These Reports require each unit to report, as a minimum, the trend in their top five local Key Risk Areas.

Figure 5 shows the trend in the top five Key Risk Areas as identified from the IAA occurrence reporting data for 2007.

Fig. 5: 2007 Quarterly Trend in top Key Risk Areas



3.2 Safety Improvement Action Plans

It is unlikely that our Key Risk Areas or causal factors are unique. Accordingly, we will work with other ANSPs and external agencies to exchange safety information and to seek shared solutions on common safety problems.

While we will primarily aim to develop our own Action Plans we will also seek to identify and adopt available plans from other sources that are highly specific to our particular Key Risk Areas.

For instance the following Action Plans are available from EUROCONTROL,

- European Action Plan for the Prevention of Runway Incursions
- European Action Plan for Air-ground Communications Safety

- European Action Plan for the Prevention of Level Busts
- EUROCONTROL Early Action Package for Airspace Infringement Risk Reduction

3.3 Good data can make a difference to sound decision making

2007 is the first full year for which empirical Key Risk Areas trend information is available. However, causal factors information is not mature enough for immediate decision making.

Accordingly, we will continue to improve the quality and consistency of our information database and validate the interpretation of data with appropriately experienced managers to ensure that findings accurately reflect the issues in incidents.

Good data can make a difference to sound decision making in relation to where to most effectively target safety improvement efforts.

To ensure that our SMS activities are more effectively tied into achieving Operational Safety Improvement, we will bring measurement and analysis to the centre of our safety management process. In particular, we will implement a "Plan, Do, Check, Act" Operational Safety Improvement process that will focus safety efforts on assuring that the occurrence trend in Key Risk Areas does not increase and, where possible, will decrease.





We believe that the risk of accidents can be minimised by identifying vulnerabilities before they fail and by taking the necessary corrective actions.

4. Managing Human Factors Issues in ATM

Safety Strategy Goal No. 7: We will establish a national pool of trained Occurrence Investigators under the direction of the Manager Safety Standards and Procedures.

Safety Strategy Goal No. 8: We will ensure that our Mandatory Occurrence Reporting (MOR) scheme is managed in accordance with the European harmonised definition of 'just culture'.

Safety Strategy Goal No. 9: We will develop and implement a Roadmap for the management of Human Factors issues in ATM based upon *international* best practice.

Human factors are a key success enabler in ATM safety. We are committed to managing human factors issues in line with *international* best practice.

4.1 The most fundamental building block is already in place

ESARR 3 and ICAO require the investigation of Human Factors issues to be included in the ANSPs MOR investigation process.

Our MOR procedures require that Human Error in ATM (HERA) analysis be conducted in Occurrence investigations where appropriate.

To ensure consistency in the conduct of HERA analysis and the timely availability of trained Investigators, we will establish a national pool of trained Occurrence Investigators, under the direction of the Manager Safety Standards and Procedures.

4.2 Just Culture

The ability to learn from previous mistakes is one of the most valuable tools for the improvement of safety. Failure to support safety reporting systems will have an impact on safety.

We will ensure that our Mandatory Occurrence Reporting (MOR) scheme is managed in accordance with the European harmonised definition of '**just culture**'.

Just Culture: that 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.

4.2 Managing Human Factors Issues

All human based safety systems and processes are vulnerable to human error. The core problem for safety management is not that errors occur, rather, that our complex systems and workplaces can be unforgiving of human errors.

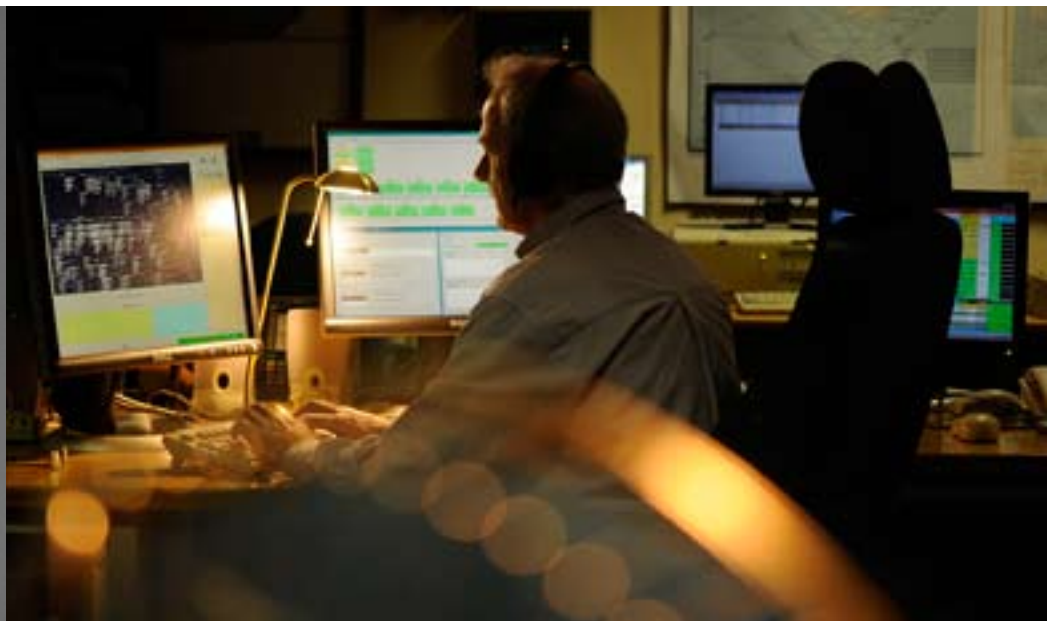
Contemporary scientific thinking in relation to managing Human Factors issues suggests that we cannot change the human condition; rather we can change the conditions in which the human works. Situations and systems are manageable and, as such, the most enduring solutions to human factors issues involve technical, procedural and organisational measures.

Human Factors analysis is a young science and the management of human performance issues is a delicate matter. Accordingly, an impartial, easily understood roadmap for the management of Human Factors issues in ATM is called for.

We will develop a Roadmap for the management of Human Factors issues in ATM in line with *international* best practice.

The Roadmap will be developed in consultation with all stakeholders, including professional associations and we will validate it with independent external Human Factors expertise.

The primary objective of the Roadmap will be to enable a full understanding of how best to manage Human Factors issues in ATM; in turn this will enable better protection of the ATM system against the potential consequences of human errors.



5. Communicate and embed the processes that will enable us to better identify and close gaps in the defences of our safety system

Safety Strategy Goal No. 10: We will deliver on-going briefing sessions and dedicated courses to managers and staff to promote awareness of the strategy. Our briefing sessions will prioritise direct face-to-face information exchange and discussion on *international* best practice.

The traditional or **reactive** strategy for safety management is dominated by retrospective repairs (after the horse has bolted).

Under the more modern **proactive** approach, prospective reform plays the leading part; the ANSP is aggressively seeking information from a variety of sources which may be indicative of emerging safety problems.

We believe that the risk of accidents can be minimised by identifying vulnerabilities before they fail and by taking the necessary corrective actions.

The challenge of this safety strategy is to build upon the SMS accomplishments to date and, through **proactive** reform, to embed the processes that will enable us to better identify and close gaps in the defences of our safety system.

The long term success of this strategy is dependant upon us having strong communication and teamwork within the ANSP organisation.

To promote a strong communication and teamwork capability we will deliver on-going briefing sessions and dedicated courses to managers and staff to promote awareness of the strategy. Our briefing sessions will prioritise direct face-to-face information exchange and discussion on *international* best practice.

A Final Word

If there is a unifying theme to both this and to our initial Corporate ATM Safety Strategy, it is the importance of communications to a strong safety culture.

And if there is one group that should be recognised for strengthening our safety communications, that group is all ATM staff.

In this "final word" section of the Safety Strategy 2008 - 2011, I would like to recognise and acknowledge your abiding commitment to this Company's first priority as demonstrated, in particular, by your professionalism in safety reporting.

In recent Safety Seminars and Safety Surveys we were reminded that staff are concerned about local and national issues such as feedback on Occurrence Reports, about resources as well as some perception of a "blame culture".

Based on these and other findings, we will develop an on-going safety promotion programme that will prioritise direct face-to-face information exchange and discussion on *international* best practice.

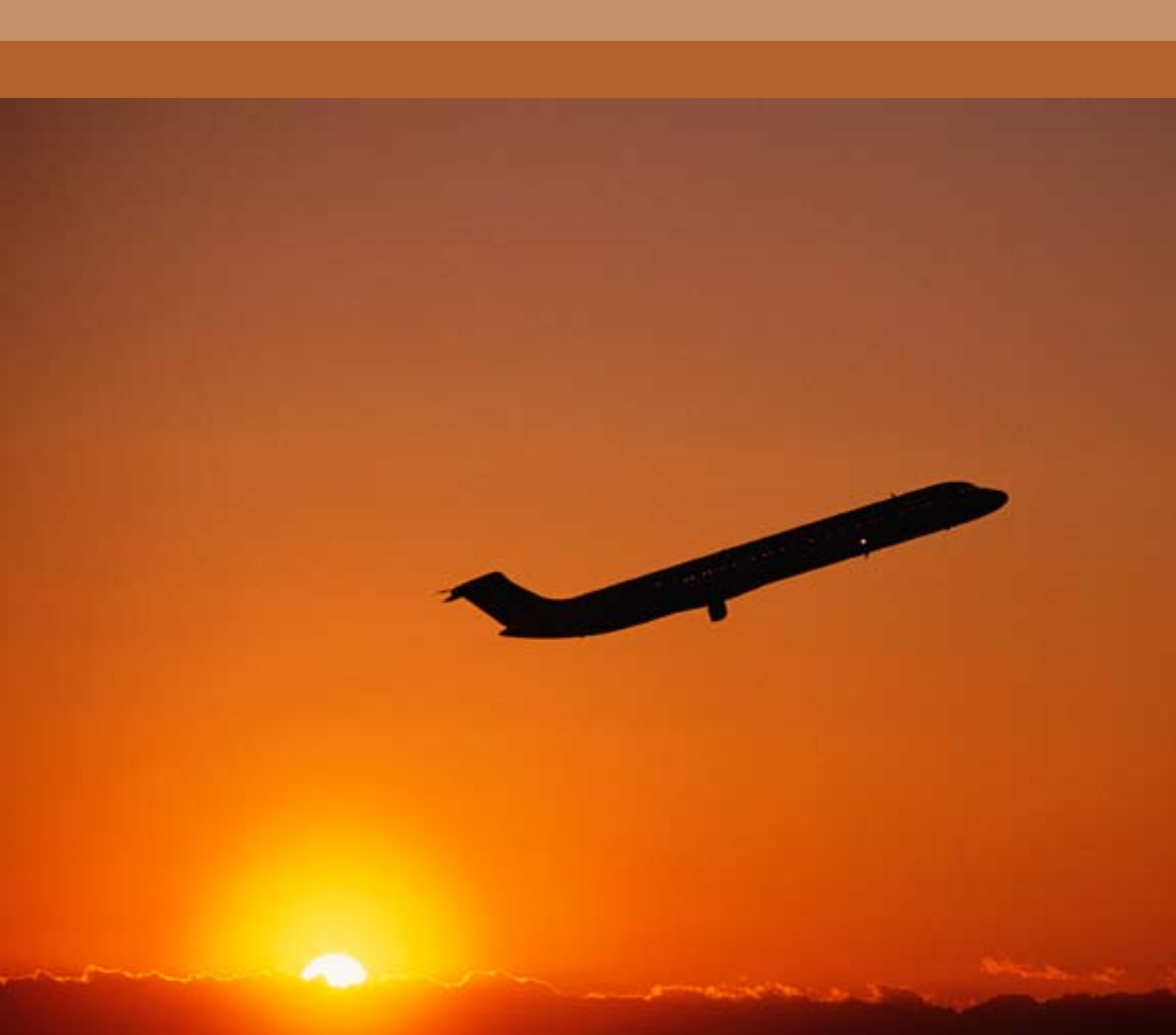
The Company also continues to place a high priority on operational staffing, safety-enhancing technology, and new safety initiatives such as Normal Operations Safety Surveys.

It is our goal to ensure that all staff know that they can raise issues and engage in the process of improving safety in a positive, constructive environment, that is free of blame and filled with team players who take personal responsibility for safety in everything they do.

I hope you find this Safety Strategy to be in line with this overall theme. If you have any questions, comments or suggestions for improving safety management, please email me at dermot.cronin@iaa.ie

Dermot Cronin

Head of ATM Safety Management



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