ICAO EUR Region High-Level Seminar on Safety Management

11-13 September 2007

SMS Implementation

The EUROCONTROL Perspective

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European Organisation for the Safety of Air Navigation
Safety Enhancement

- A wake-up call to do more to enhance ATM safety:
  - In October 2001 - Runway Incursion in Milan’s Linate Airport - heavy loss of life
  - In July 2002 – Mid-air collision occurred over Germany

- Immediately EUROCONTROL took action to address safety issues:
  - Instigating a programme to raise awareness of ATM safety requirements & to speed up implementation of ATM safety management systems across Europe (Earlier in 2002)

- Recently the EU launched a legislative initiative to create a SES
  - Eventually meaning a single continuum airspace over EU member states
  - Having implications on how ATM in Europe is regulated
Safety Enhancement – EUROCONTROL Perspective

Direct result of the recent serious accidents - EUROCONTROL instituted a review of ATM safety within ECAC member States:

- Three fundamental conclusions:
  - The leadership and commitment to safety in many States — for both regulation and safety management — needed to be strengthened;
  - Resources, particularly trained and qualified personnel, required bolstering; and
  - The level of implementation of ATM safety management systems across Europe was uneven.

A strategic action plan was drawn up to enhance safety in areas where it would have the most direct impact:

- Early action was taken, in conjunction with ICAO, to improve that situation.
(3rd conclusions)

- Action was taken to heighten awareness on the importance of introducing an ATM SMS.

- A strategic safety action plan was in effect from February 2003 until the end of January 2006, an initiative that was followed by a new European safety programme for ATM - The ESP Programme.

- EUROCONTROL’s objective is to raise the level of SMS implementation across Europe to at least 70 percent of the safety requirements being met.
Air Traffic doubles by 2020

Traffic tripled over 25 years

Traffic doubles over 20 years
The Safety Challenge in Air Traffic Management

- Keeping the number of accidents constant and reduce it where possible:
  - In spite of increasing demand en-route
  - In spite of airports becoming congested
  - In spite of changing technology, procedures, systems
  - In spite of competition in the ANSP environment that will arise from the European Single Sky

- That Goal can only be met by adopting a more proactive approach to Safety:

  Calling for a systematic and structured safety
Key Steps

- Separate Air Navigation Service Provision (ANSP) from Regulatory Safety Oversight independently from each other

- Set up the ATM Regulatory Safety Oversight function and apply the EUROCONTROL rules and guidance for Safety Oversight

- Implement Safety Management System (SMS) for the ANSP, in compliance with safety regulations in force
Implementing a Dedicated System for Safety

- Risk is best managed by implementing a dedicated system for safety:
  - To make safety an explicit activity within the organisation
  - To systematically identify all safety risks and implement appropriate mitigation measures (*change in technology, procedures, systems & in organisation*)
  - To provide consistent, efficient and practical support for projects
  - To support effective operations addressing safety adequately
  - To provide evidences and arguments to demonstrate regulatory compliance

That Goal can only be met by implementing a SMS:

Calling for continuously identified & prioritized safety improvements
What is a Safety Management System

- An appropriate management structure within which safety roles and responsibilities of the organisation and individuals are clearly set out
- A structured and systematic way of working on safety, knowledge based, and with measurable outcome
- An appropriate implementation of safety performance process
- A Risk based approach: knowing, controlling and minimising risk
- The need for an independent safety management function
- A required commitment from the top, commitment from all operational and technical people, and a good safety culture
Current Safety Management System (SMS) approach is supported by international regulation and legislation:

- EUROCONTROL Safety Regulatory Requirements (ESARRs)
- ICAO Standards and Recommended Practices (SARPSs)
- European Single Sky Legislation (Common Requirements for Air Navigation Service Provision)
Setting up a SMS for an ANSP requires two main elements:

- Implementing the System
  - Given commitment and resources, can be done in 3 years
- Implementing a “Safety Culture” within the organisation
  - Takes longer to reach maturity: typically > 5 years
In 2004 (part of the Strategic Safety Plan) EUROCONTROL launched SASI

To provide support to ANS providers for SMS Implementation to implement the basic elements of an SMS in compliance with regulatory matters

Currently SASI support is being provided to ANSP with a series of working sessions dedicated to specific subjects relevant for the SMS implementation (more than 20 ECAC member States - part of the ESP activity field 1)

During SASI project, a number a generic SMS procedures have been produced which have been integrated in a comprehensive generic safety manual

The EUROCONTROL Generic Safety Management Manual
EGSSM (June 2006 – Ed 1.0)
Safety Management System (SMS)

SASI - Harmonised and efficient phased of implementation

**Initial development** of material (skeleton of procedures, awareness material and training needs), through working sessions involving Safety Managers;

**Local deployment** in individual ANSP’s organisation by the Safety Manager, with possible support for DAP/SAF

**Continuous improvement**, based on feedback from Safety Managers, in order to improve the overall efficiency of a given procedure.
Safety Management System (SMS)

- Draft Procedure(s)
- Identification of awareness requirements
- Identification of Training needs
- Identification of Actions required (e.g., co-ordination with regulator or Consultation with staff)
- Published Procedure(s)
- Conduct of awareness initiatives
- Get the Training done
- Carry out Actions required (e.g., co-ordination with regulator or Consultation with staff)
- Workshop(s)
- Follow-up Help desk and on site
- FEEDBACK
- Next step
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### Notes
- **Safety Management Documentation-IMP**: Indicates a high-level seminar focused on safety management in the EUR Region.
- The seminar dates are from 11 to 13 September 2007.
- The document includes a timeline for various activities such as safety assessment, RCS risk management, and safety policy preparation.
- The timeline spans from 2004 to 2007, highlighting key milestones and accomplishments in safety management.
- Specific areas of focus include safety surveys, external services, change management, and just culture.
- The document emphasizes the importance of continuous improvement and follow-up activities in ensuring safety standards are met.
Safety Management System (SMS)

- Examples of processes with impact on safety:
  - Recruitment/Selection
  - Training
  - Competency Checks
  - Refresher/Advanced Training
  - Procedures Operation Process
  - Interfaces ATS and CNS
  - CNS Maintenance Procedures
  - Emergency Procedures
  - Risk Assessment Software Changes
  - Incident Reporting
  - Incident Investigation
  - Lessons Learnt
  - Safety Surveys and Follow-up

Most of these processes have now been taken up in ICAO rules, as well as in the Single European Sky Legislation: “Common Requirements for Air Navigation Services”

All elements of the SMS described in policies, well documented, communicated, updated, data recorded.
Safety Management System (SMS)

What can and should be put in place as a minimum:

- Safety Management Function: safety manager (+ safety experts)
- Safety Policy
- Definition of the safety accountabilities of senior management and the main functions
- Incident Reporting procedure and Lessons Learnt from Incidents
- Risk Assessment
- Staff Competency Scheme
- Safety of External Services
- Safety Surveys
- Documentation system that makes the SMS auditable for Internal audits as well as audits by regulators
Safety Management System (SMS)

- What can and should be put in place as a minimum:
  - Safety Management Function: safety manager (+ safety experts)

![Diagram showing the structure of the SMS and the responsibilities of different roles.]

- CEO
- Safety
- Operations
- Engineering
- Admin / Finance

Bar chart showing:
- Audit of SMS implementation
- Chairmanship of organisation's Safety Board
- Monitoring of safety performances
- Adviser on safety key risks
- Training of staff on safety management
- SMS development, improvement and maintenance
Safety Management System (SMS)

- What can and should be put in place as a minimum:
  - Safety Management Function: safety manager (+ safety experts)
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  - Documentation system that makes the SMS auditable for Internal audits as well as audits by regulators

*Plan and Implementation: 2 years*
Safety Management System (SMS)

Proposed Planning Process:

1. Appoint SMS Project Manager (preferably the one who will be nominated as Safety Manager)
2. Gap Analysis on what is already existing
3. Plan and implement required safety training, with help from EUROCONTROL
4. Make an Implementation plan of the required SMS elements
5. Implement and monitor progress
Gap Analysis: example
Safety Maturity in ECAC States

41 States
Safety Maturity in ECAC States

![Graph showing safety maturity in ECAC States from 2002 to 2006. The graph includes a target line at 70%.](image-url)
Safety Maturity in ECAC States

![Safety Maturity Graph](image)

- 2002
- 2004
- 2006

Target 70%

Maturity Score %

Normalised ANSP Count

ICAO EUR Region High-Level Seminar on Safety Management
Yerevan, Armenia, 11 - 13 September 2007
Safety Maturity in ECAC States

Target 70%

Support on SMS to States

Maturity Score %

Normalised ANSP Count

Target 70%

2002

2004

2006

Support on SMS to States
Safety Maturity in ECAC States

ANSP Global Maturity

- Maturity Score vs. Normalised State Count
- Graph showing maturity scores from ASP 2002 to ANSP 2007
- 70% target

Safety Maturity in ECAC States

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Safety Management System (SMS)

- Training and support available from EUROCONTROL:
  1. Safety Management Courses at the EUROCONTROL IANS in Luxembourg

Safety Management System (SMS)

- Training and support available from EUROCONTROL:

  2. EUROCONTROL Generic Safety Management Manual:
     - A series of SMS Procedures
     - Guidance material on each of them
Safety Management System (SMS)

- Training and support available from EUROCONTROL:

  3. EUROCONTROL SASI Sessions:
     - A series of “on-the-job” training sessions on how to put SMS in place and on site coaching
     - Built on previous experience with ANSPs
     - Has received previously financial support from the European Commission
ICAO EUR Region High-Level Seminar on Safety Management

11-13 September 2007

SMS Implementation
The EUROCONTROL Perspective

Dr. Frederic Lieutaud
EUROCONTROL Safety Expert – DAP/SSH
Global Air Transport Safety

Hull Losses per Million Departures. Western Built Jets 10-year average

World 1.1

Hull Losses per Million Departures. Western Built Jets 10-year average
Global Air Transport Safety

Western-built Jet Traffic, Hull Loss & Passenger Fatality Rates 1996-2005

- Hull Loss Rate
- Fatality Rate
- Sectors Flown

Hull Loss and Fatality Rates vs. Millions of Sectors Flown

- Hull Loss Rate:
  - 1996: 1.27
  - 1997: 1.27
  - 1998: 1.27
  - 1999: 1.05
  - 2000: 0.87
  - 2001: 0.76
  - 2002: 0.65
  - 2003: IATA GOAL

- Fatality Rate:
  - 1996: 0.74
  - 1997: 0.45
  - 1998: 0.39
  - 1999: 0.21
  - 2000: 0.27
  - 2001: 0.24
  - 2002: 0.33
  - 2003: 0.10
  - 2004: 0.10
  - 2005: 0.10
  - 2006: 0.10
  - 2007: 0.10
  - 2008: 0.10

- Sectors Flown:
  - 1996: 0.00
  - 1997: 0.00
  - 1998: 0.00
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  - 2000: 0.00
  - 2001: 0.00
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  - 2006: 0.00
  - 2007: 0.00
  - 2008: 0.00