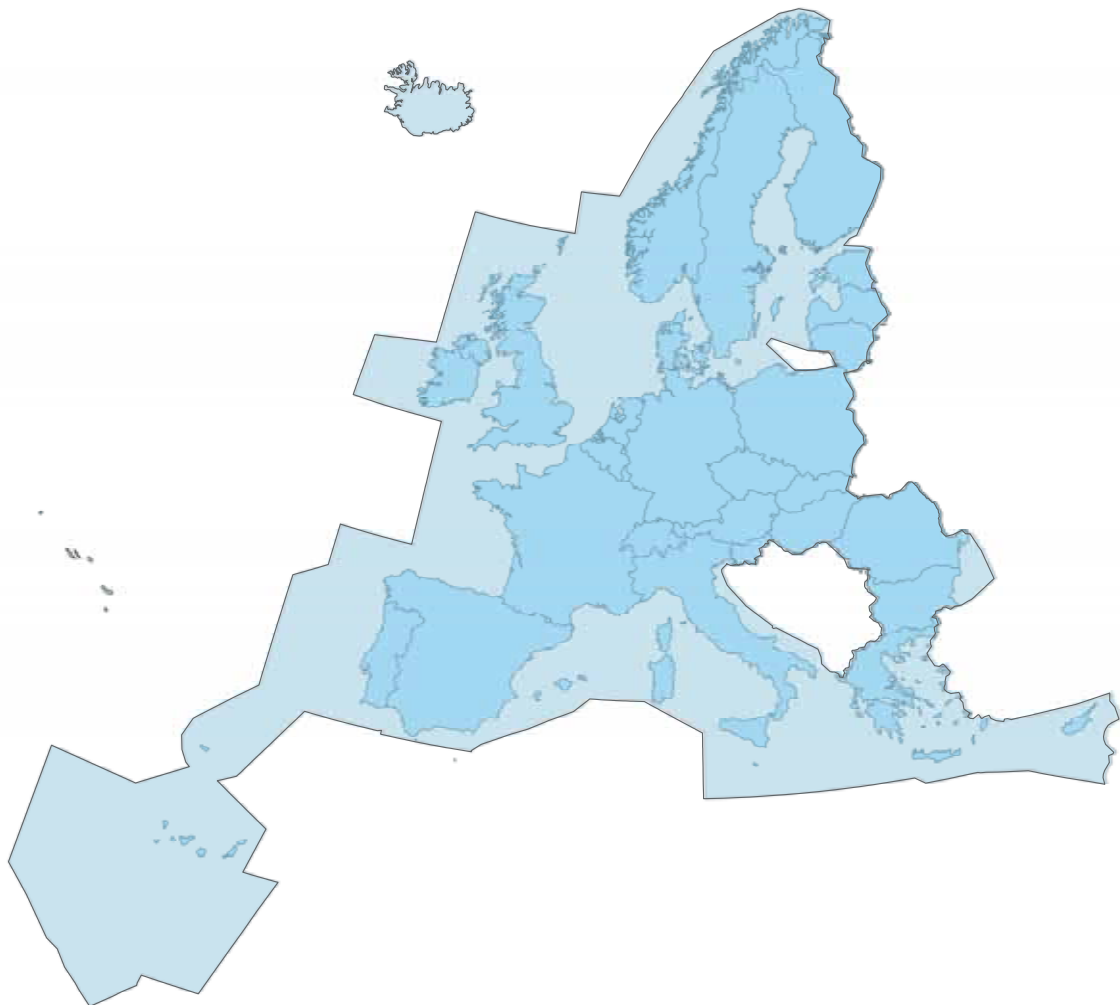


PERFORMANCE REVIEW COMMISSION

Evaluation of the Impact of the Single European Sky Initiative on ATM Performance



**Produced by the EUROCONTROL Performance Review Commission
upon the invitation of the European Commission DG-TREN**

21 December 2006

Background information

This report presents an independent evaluation of the impact of the SES legislation on ATM Performance in the Member States and associated States of the European Union.

It was prepared by the EUROCONTROL Performance Review Commission for the European Commission, at the latter's request.

The report was developed through extensive formal and informal consultation with European ATM Stakeholders at every stage of the project.

The final report was presented to the European Commission in December 2006

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Printed by EUROCONTROL, 96, rue de la Fusée, B-1130 Brussels, Belgium.

DOCUMENT IDENTIFICATION SHEET

DOCUMENT DESCRIPTION

Document Title

Evaluation of the Impact of the SES Initiative on ATM Performance

**PROGRAMME REFERENCE
INDEX**

PRC Report

EDITION:

FINAL

EDITION DATE:

21 December 2006

SUMMARY

This report has been produced by the EUROCONTROL Performance Review Commission upon the invitation of the European Commission DG-TREN

It assesses past and foreseeable ATM performance since the entry into force of the SES Regulations in 2004, identifies the main ATM performance issues and how they are addressed by SES Regulations. In addition to drawing initial conclusions, the report also identifies and suggests further improvements to address remaining issues and achieve the objectives of the SES by proposing specific recommendations.

Keywords

Air Traffic Management Performance Measurement
Single European Sky ATM ANS

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DOCUMENT STATUS AND TYPE

STATUS

Draft
Proposed Issue
Released Issue

DISTRIBUTION

General Public
EUROCONTROL Organisation
Restricted

INTERNAL REFERENCE NAME: SES Evaluation

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EXECUTIVE SUMMARY

Introduction

The European Commission has a statutory duty to review the application of the Single European Sky (SES) every three years, the first review to be provided by 20 April 2007. To prepare its first report to the Parliament and Council, the European Commission asked for the support of EUROCONTROL and, in particular, for an evaluation of the impact of the SES initiative on air traffic management (ATM) performance, to be carried out by the EUROCONTROL Performance Review Commission (PRC) under its normal working arrangements. This report responds to the European Commission's request.

This report assesses past and foreseeable ATM performance since the entry into force of the SES Regulations in 2004, identifies the main ATM performance issues and how they are addressed by SES Regulations. In addition to drawing initial conclusions, this report also identifies and suggests further improvements to address remaining issues and achieve the objectives of the SES by proposing specific recommendations.

These recommendations are addressed to Member States, European Commission, EUROCONTROL and Air Navigation Service (ANS) providers, who share the collective responsibility to achieve a truly effective SES.

The PRC considers that it is advantageous that this assessment occurs now, after the adoption of SES, as it provides an opportunity for policy makers and stakeholders to make adjustments to rules – to “fine-tune” the SES – and to take further action, such as providing support to implementation, having identified the strengths and weaknesses of the legislation before behaviour and institutional structures become entrenched.

The PRC report on SES impact focuses, as requested, on the SES, and does not address SESAR or EUROCONTROL in any depth.

Approach

Supported by the Performance Review Unit (PRU), the PRC has drawn upon its own experience in the field of ATM performance measurement, and also on the outputs of an extensive and structured stakeholder consultation process undertaken for this project. As the work has developed, the PRC has been able to share findings and suggested actions with a wide range of stakeholders, and this has enabled further feedback to be included in the development of its analysis and recommendations in an iterative way.

For practical reasons, in particular its relatively recent implementation, the impact of the SES initiative cannot be assessed from observed or planned ATM performance improvements as would be the normal analytical approach of the PRC. The PRC's approach to determining the impact of the SES initiative on ATM performance has, therefore, been qualitative, combining analysis of the main ATM performance issues, of the regulatory provisions of the SES, and of the extent to which these regulatory provisions address the main ATM issues. In doing so, the PRC has also considered key practical issues with implementation of the SES Regulations, considering in particular the capability, resources and commitment of stakeholders, and how these may vary across the States affected by the SES as well as costs of regulatory compliance.

In order to assess whether the SES is having its anticipated impact and to consider if it addresses current issues in ATM, the PRC has reviewed the original intent of the SES. Article 1 of the Framework Regulation sets out five objectives:

1. to enhance current safety standards;
2. to enhance the overall efficiency of general air traffic (GAT) in Europe;
3. to optimise capacity (meeting the requirements of all users);
4. to minimise delays; and
5. to establish a harmonised regulatory framework.

For the purpose of this project, the five objectives can be restated as three overall axes of analysis: an effective and harmonised **Regulatory Framework** to support both **Safety** and **Efficiency** (as illustrated in Figure 1). Efficiency is a generic term which covers economic, operational, technical and airspace aspects.

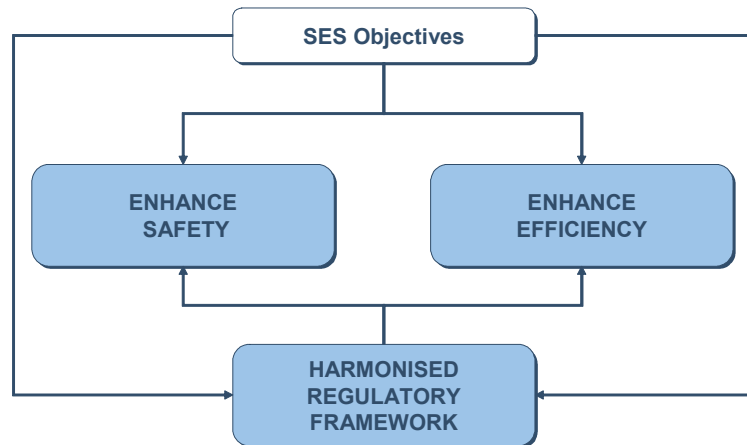


Figure 1: Three axes of analysis

ATM-related performance issues in the area of Safety and Efficiency have been extensively identified and documented in recent performance review reports (see e.g. PRR 2005). Although there have been improvements in ANS efficiency between 2000 and 2006, especially relating to ATM-related delays, the PRC recognises that efficiency remains a major issue as the current inefficiencies in the European ATM system (low productivity, high fragmentation of ATM systems, duplication of infrastructure, small scale facilities and lack of optimised route and sector design) cost airspace users some three billion euro per annum. Similarly, although there has been some progress on safety incident reporting and transparency issues, much remains to be done in the area of safety, in particular promoting a genuine “just” and transparent culture and developing key performance safety indicators to establish reliable safety trends for the purpose of performance review across Europe.

Findings

The PRC considers that it is too soon to determine the whole range of performance impacts of the SES, as its full implementation is yet to be completed. However, the project reveals that while some positive impacts of the SES have already been observed, there are also some weaknesses which should be addressed at the early stage. Amongst the positive impacts is improved cooperation between Air Navigation Service Providers (ANSPs) as well as States. Positive impacts of the SES will be felt differently in different States, for example those with less mature safety regulatory regimes are likely to benefit more.

One of the most significant benefits of the SES is the requirement to have separation (at least at the functional level) of regulation and service provision. This is recognised as a fundamental step to ensuring effective regulation and avoiding conflicts of interest.

It is also already possible to identify in the SES provisions themselves some potential weaknesses that should be corrected over time if issues are not addressed and performance improvements are not achieved. These weaknesses include a risk that SES requirements will ‘over-regulate’, creating burdens without compensating benefits. Therefore, SES regulations need to be developed in the context of the “better regulation” agenda. And, for the next few years, more is likely to be achieved through non-regulatory measures, including support to National Supervisory Authorities (NSAs) and ANSPs.

One of the key findings highlighted by the PRC is that, at European level overall, there is no guarantee that the SES in its current form will produce tangible performance improvements in respect of efficiency and thus address effectively the key current issues in ATM. The SES lacks overall impetus and incentives to performance improvement, notwithstanding its many positive aspects.

The most promising tools to improve performance (for example, certification of ANSPs, designation of any ANSPs with a valid certificate, financial incentives on ANSPs, reorganisation of the airspace into FABs) lie in the hands of the States, which may result in potential inconsistencies in their application and prevent a genuine and effective common playing field.

In order to focus collective effort towards performance improvement, the PRC considers that the development of quantified success criteria for the European ANS system is now crucial. Policy makers should establish in advance high level, quantified, performance criteria on a minimum level of performance to be achieved for a given time period. These quantified criteria form a central element of the suggested way forward set out in this report. Such minimum performance criteria will allow for a quantified assessment of future actions to improve performance, and are key to generating an effective European ATM network in the future.

Given the strengths and weaknesses of the SES identified during the project, and in accordance with the request of the European Commission, the PRC makes recommendations for improvements that are intended to adapt the SES to focus directly on improving performance and delivering a safer and more efficient network within an effective regulatory framework.

Recommendations

The PRC’s view is that there is considerable scope for improvement under the existing SES framework through non-regulatory actions such as guidance material, support to NSAs, and provision of information and facilitation of cooperation between the various parties, without necessarily introducing new European regulations.

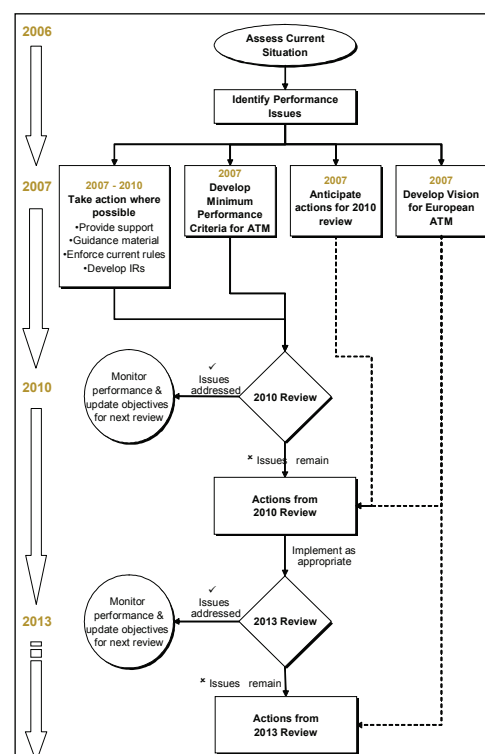


Figure 2: PRC’s approach to Recommendations

The PRC’s recommendations therefore follow a **gradual** and **conditional** structure: to identify performance issues, set quantified performance objectives – that can be used at each

periodic review of the SES to direct efforts towards these issues; and to take action as soon as possible by providing support and other non-regulatory activities within the existing legal framework.

Having allowed time for these activities to take effect, their impact would be assessed against minimum performance criteria. Only if actions are not successful and performance is not improving at the planned pace, would consideration be given to further regulatory or non-regulatory action. Figure 2 above depicts this approach.

The intent of the recommendations is to allow time for existing and proposed activity to take effect before new rules are considered, and the PRC encourages cooperation between Member States and ANS stakeholders to enable this approach to have effect.

Should such short term actions fail to have a significant impact on performance levels, there may be a need for appropriate and progressive regulatory intervention at European level, depending on observed performance improvements.

The 31 recommendations are categorised as short, medium or long term actions, reflecting the timescales within which the action can be commenced and have effect. The recommendations are articulated to address seven specific “Domains” which require attention and action by the various ATM stakeholders. These are briefly described below:

1. Efficient and effective organisation of supervision and regulation:

There are significant issues around NSAs related to enhancing their capabilities, making effective use of regulatory resources and ensuring a genuine common regulatory playing field. These mainly require non-regulatory measures to provide adequate support and make best use of existing tools provided by the SES regulations, such as Recognised Organisations and peer review.

In addition, the PRC identifies possible improvements to reinforce these tools, in particular, audits and inspection of NSAs.

The development of a common regulatory framework for NSAs which covers safety, economic and airspace issues should furthermore ensure more effective oversight of ANSPs, improving performance overall.

2. Performance criteria and objectives:

It is crucial that ANSPs make transparent their individual performance objectives, after consultation with airspace users. Key safety performance indicators at European level should be developed and agreed as a matter of urgency.

Policy makers should establish in advance for the European ATM system quantified performance objectives, on a minimum level of performance to be achieved for each review period of the SES. These will need to take appropriate account of SESAR.

Furthermore, financial incentives on ANSPs should be used by Member States and their application should be facilitated.

3. Rationalisation of airspace and service provision:

The current initiatives on FABs are not providing evidence of likely performance improvements in terms of safety and efficiency. This might be due to a lack of genuine commitment of Member States, but also to a number of issues (legal, institutional) that should be urgently addressed. In particular, there needs to be better articulation of the objectives of FAB creation. Once this has been done, collective effort should be better focussed through development of specific FABs performance indicators.

In parallel to the development of FABs, a genuine European network optimisation of route and sector design is needed to improve flight-efficiency and use of airspace.

4. Civil/military cooperation:

Member States should make the necessary efforts to implement effectively their statement on military issues attached to the SES regulation. This requires a strong commitment and may necessitate financial support in some circumstances.

Furthermore, quantified indicators for FUA should be developed in order periodically to assess the progress made on its full application.

5. Organisation of service provision:

In order fully to exploit the usefulness of the EU mutual recognition of ANSPs certificates, it is necessary to develop common rules for designation. This would allow States periodically to reassess their decision as to which ANSP should provide services in a particular block of airspace.

Although the SES explicitly recognises that CNS and AIS should be organised under market conditions, there is no guarantee that this will effectively take place under the current designation mechanism. Precise requirements should be introduced in the SES regulations in order to organise those services under market conditions.

Furthermore, performance improvements would also derive from the development of a genuinely contestable environment for the provision of ATS at certain airports.

6. Policy orientation for the SES:

In order to focus collective effort to improve performance and to remove uncertainties, there is a pressing need for all stakeholders to develop and agree on a common long term policy orientation for the SES.

7. Rule making process:

The development of interoperability rules for the European ATM network should be flexible enough to recognise the role of the industry and avoid unnecessary burden. This requires an appropriate balance between mandatory requirements and voluntary means of compliance.

Figure 3 presents all 31 recommendations organised by “Domains of action”. It depicts the relationship between recommendations, the appropriate timeframe for each, and the nature of the action required.

Following the overall approach of the PRC outlined above, several of the recommendations are contingent on future performance assessment (shown in the figure as ◆), some other are contingent on actual use of the SES tools (shown in the figure as ■). At that stage the impact of short term recommendations and existing SES regulations would be assessed. If they are deemed to have had a positive impact on performance, no further action beyond performance monitoring would be required.

However, should performance improvements not be observed, the further recommendations can be considered. Potential new regulatory actions shown (in dark brown in Figure 3) are indicated as “required” (REQ in the figure) in that they can be acted upon to produce additional benefits or address weaknesses in the SES, or “conditional” (CON in the figure) in that they are dependent on subsequent performance assessment. It is important to emphasise that it is through the setting of performance criteria in advance (Recommendation 11) that it will be possible to assess whether the SES has delivered an improved result or if further actions are required.

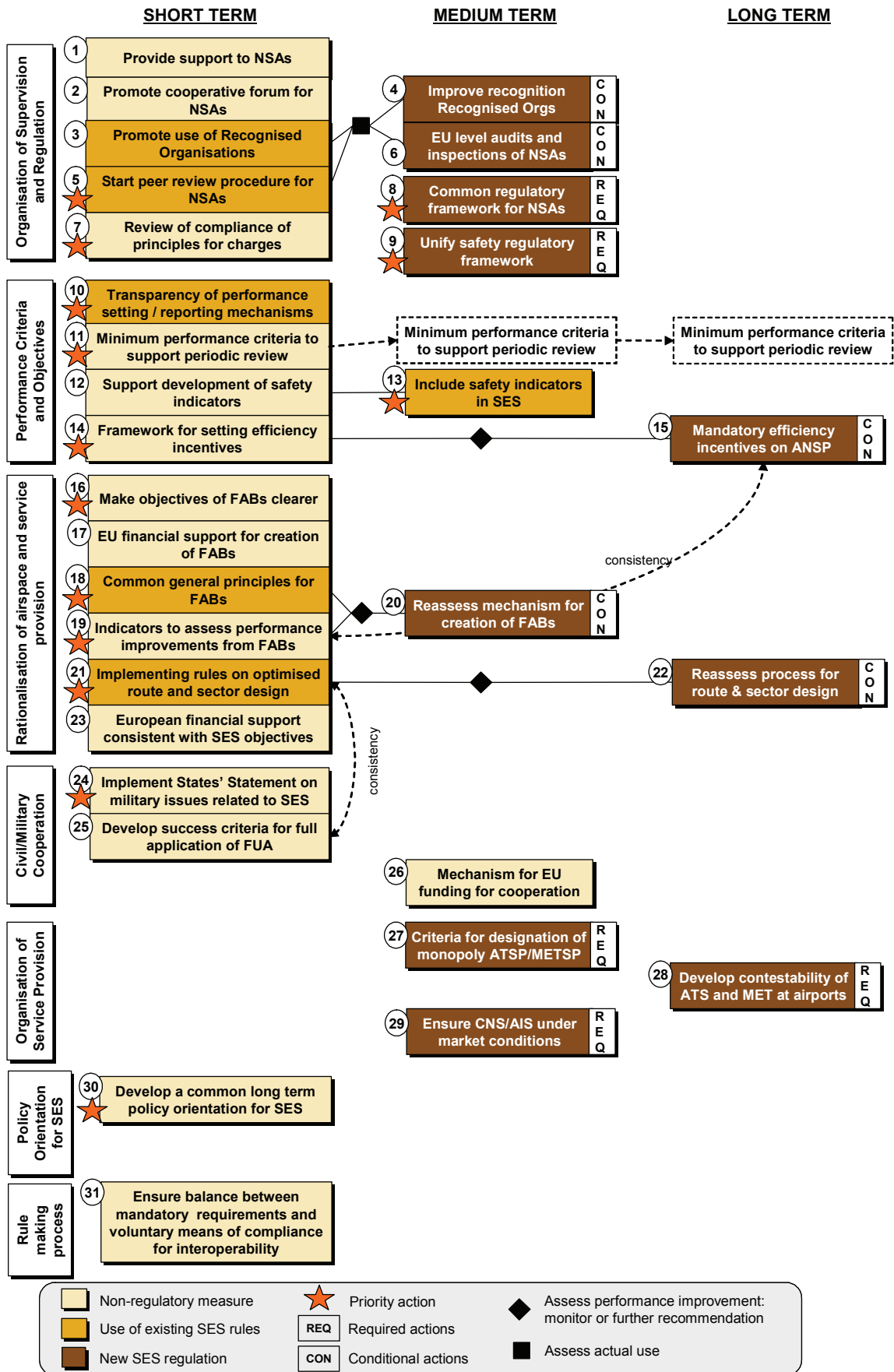


Figure 3: Summary of recommendations under domains of action

The PRC's recommendations are intended to provide a way forward for European ATM that focuses on performance improvement. As reflected in the recommendations themselves, and in the consultative approach to this project, the PRC's view is that collective action, within the framework of an agreed orientation for ATM, can achieve positive results for the sector. However, it is anticipated that tangible efficiency and safety will be secured when this cooperative action is combined with quantified criteria against which performance can be assessed, and with the introduction of appropriate incentives to drive future improvements.

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1 INTRODUCTION

1.1 GENERAL

This document forms the Final Report to the European Commission on the Evaluation of the impact of the Single European Sky (SES) initiative on ATM performance. As such it builds upon an Interim Report presented in July 2006.

This document has been prepared by the EUROCONTROL Performance Review Commission, hereinafter referred to as the PRC, in response to a Request for support from the European Commission¹. The PRC has been supported in its work by the Performance Review Unit (PRU) and by a consultant team from Booz Allen Hamilton and Integra Consult. This project is funded by the European Commission and by EUROCONTROL.

1.2 ORIGIN OF THIS REPORT

In accordance with Article 12 of Regulation (EC) No 549/2004 laying down the framework for the creation of the SES, the European Commission shall periodically review the application of the SES and shall report to the European Parliament and Council, on the first occasion by 20 April 2007, and every three years thereafter.

To prepare its first report to the Parliament and Council, the European Commission has asked for the support of EUROCONTROL and, in particular, called for an evaluation of the impact of the SES initiative on ATM performance to be carried out by the PRC under its normal working arrangements.

According to the terms of reference, this evaluation should:

- analyze past and foreseeable ATM performance since the entry into force of the SES Regulations;
- identify the main ATM issues and how they are addressed by SES Regulations;
- draw initial conclusions; and
- suggest any further improvements to address remaining issues and achieve the objectives of the SES.

The PRC report on SES impact focuses, as requested, on the SES and does not address SESAR or EUROCONTROL in any depth.

The European Commission, after discussion with the Single Sky Committee, also highlighted that this study should take into account that the SES entered only recently into force, that Implementing Rules are still under development and that some benefits may only arise in the medium term.

In addition to this work produced by the PRC, the European Commission also requested the EUROCONTROL Agency to provide a factual review of the implementation of the SES ("SESFARR") with a view to gathering facts concerning the implementation of the SES legislation and to identify difficulties that stakeholders may have encountered as well as work undertaken to assist them.

¹ Request for support N° TREN/05/ST/F2/36-2/2005-3/S07 under framework Agreement N° TREN/05/ST/F2/36.

1.3 BACKGROUND TO THE SINGLE EUROPEAN SKY INITIATIVE

1.3.1 Origins

In the late 1990s, high levels of European air traffic growth, combined with the liberalisation of the air transport industry within the then Community² raised concerns on the ability of the air traffic management (ATM) sector to meet the projected capacity requirements needed to support increasing air traffic demand. As a consequence of the inability of the system to keep pace with increasing demand, delays had risen to levels unacceptable to airspace users. These delays were attributed to a number of causes, including weather, airport capacity, airline operations and in particular the air traffic management system.

In response to the challenges outlined above, the European Commission published a Communication on the creation of the Single European Sky³ which concluded that, irrespective of the legal and economic structure of air navigation service providers, there was a need to establish an adequate overall European regulatory framework to ensure that services meet the necessary levels of safety, interoperability and performance, particularly if they were to continue being provided on a monopolistic basis. Clearly, wholesale structural reform and development of the necessary regulatory framework would require high-level political support and the development of the necessary political and legislative control mechanisms.

1.3.2 High Level Group

With the support of the European Council, the Commission constituted a High Level Group (HLG) in 2000, bringing together civilian and military representatives of the Community Member States, together with representatives of Norway and Switzerland, in order to:

- define the modalities of functioning of the Single European Sky within conditions of efficient delivery of services and in the respect of public service obligations, responsibilities and safety objectives to the benefit of civil and military users;
- examine the technical issues, implementation decisions and restructuring measures to be considered at national or European level in order to achieve such a reorganisation of routes, airspace structures and their operational usage;
- propose harmonisation of national systems along a coherent Community approach implying central decision making processes and solidarity mechanisms; and
- indicate how the Community framework can be supported by the use of the EUROCONTROL organisation in the implementation of its conclusions.

The HLG developed a report on the Single European Sky⁴ that was delivered in November 2000 with the objective of undertaking a genuine reform of air traffic management. Primarily, this involved adapting a more coherent organisational role at the Community level, while at the same time accommodating expected traffic growth with more efficient use and organisation of airspace. The principal conclusions of the HLG are set out in Figure 4 below.

² At that time the European Community comprised: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

³ Communication from the Commission to the Parliament and the Council - COM(1999) 614 final of 1.12.1999

⁴ "Single European Sky" Report of the High Level Group, European Commission DG-TREN, November 2000 http://ec.europa.eu/transport/air/single_sky/framework/doc/history/hlgreport_en.pdf

The HLG concluded that the main deficiencies that ATM was facing were the following:

- Air traffic is growing and will continue to grow
- Unprecedented delays can only be resolved by effective measures at European level
- ATM in Europe is fragmented which results in an inefficient use of available capacity
- The current system is not able to keep pace with demand
- There is a shortfall of qualified controllers
- EUROCONTROL does not at present have the necessary decision-making process and enforcement powers to ensure rapid improvement of the situation.

The HLG suggested a reform process to:

- Reinforce mechanisms to optimise the performance of European ATM as a whole
- Establish a ‘European’ airspace as a single continuum, managed for overall system efficiency ensuring sufficient access to airspace for both civil and military purposes while respecting national security and defence requirements for the use of airspace
- Ensure the development of a coherent approach to ATC across Europe
- Develop a coherent ATM system design across Europe
- Establish high-level rules at the European level for safety and system performance
- Establish strong and independent regulators and develop a process that ensures implementation backed up by effective enforcement
- Be consistent with the international framework and to comply with the basic requirements of the EU Treaty.

Figure 4: Main findings of the High Level Group Report

While the SES includes many elements envisaged by the HLG, during the democratic process of drafting and passing into EU law the SES package other elements were dropped.

In accordance with the conclusions of the European Council of Lisbon on 23 and 24 March 2000 and the European Parliament resolution on the Single European Sky of 6 July 2000, the Commission was invited to make appropriate legislative proposals concerning the reform of the ATM sector. On the basis of the conclusions of the HLG and of several consultations and studies, legislative measures were proposed. The significant milestones of the SES development are shown in Figure 5 below.

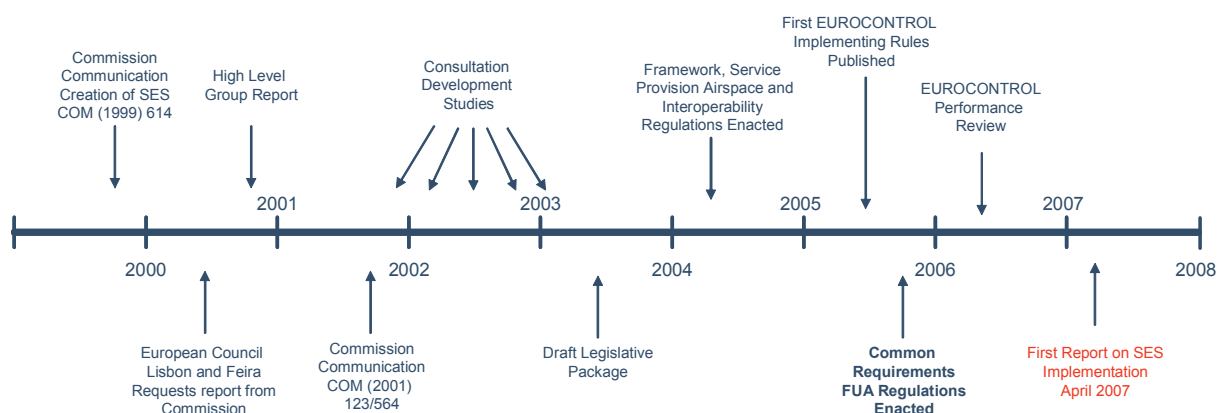


Figure 5: Timeline for SES development

1.3.3 Legislative framework

The institutional and analytical work outlined above led to a package of legislation consisting of four Regulations establishing the SES in March 2004:

- the Framework Regulation (Regulation (EC) No 549/2004);
- the Service Provision Regulation (Regulation (EC) No 550/2004);
- the Airspace Regulation (Regulation (EC) No 551/2004); and
- the Interoperability Regulation (Regulation (EC) No 552/2004).

The Regulations provide for the development by the European Commission of more detailed implementing rules, with the assistance of EUROCONTROL and the assistance of the Single Sky Committee. Figure 6 presents the current status of the SES legislative framework.

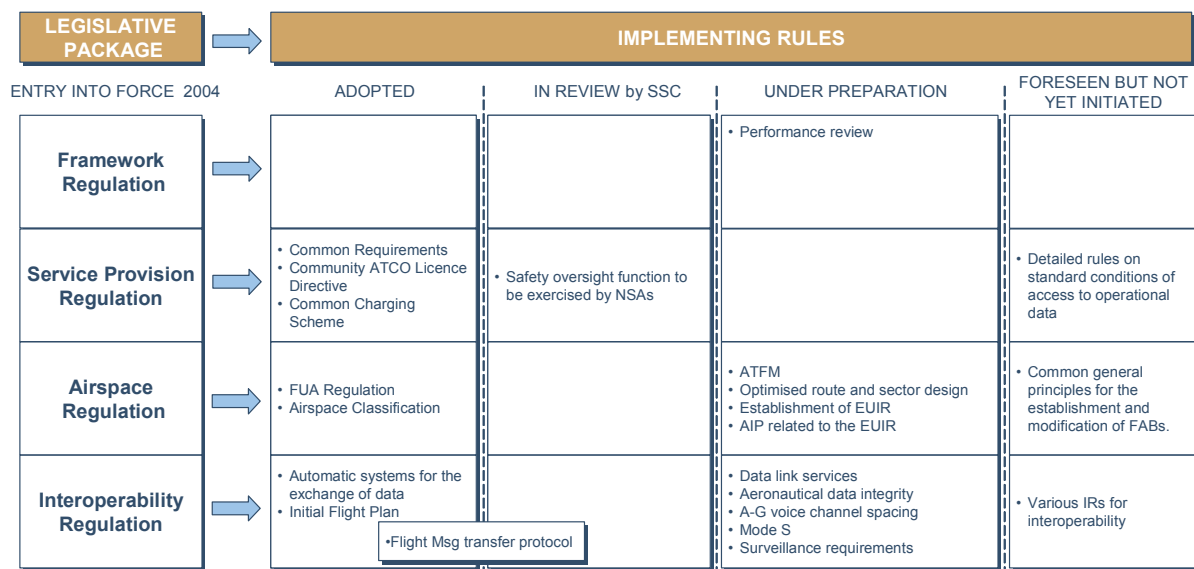


Figure 6: Legislative framework of the Single European Sky

2 APPROACH TO THE WORK

2.1 PRC'S OVERALL APPROACH

The impact of the SES initiative cannot be assessed from observed or planned ATM performance improvements as would be the normal analytical approach of the PRC. This is because the comparatively recent implementation of the SES (in 2004), and the fact that only few implementing rules are already applicable, make it impossible for the PRC to conduct its analysis in its customary quantitative way or to identify impacts from activity driven by the legislation itself. Furthermore, there are other initiatives of the European Commission, such as the Social dialogue, the SESAR programme, EASA, initiatives of EUROCONTROL, such as RVSM, DMEAN, and initiatives of the different stakeholders that influence ANS performance, and it is virtually impossible to separate their respective effects.

However, it is advantageous for this assessment that it occurs relatively soon after the implementation of the SES in that it provides an opportunity for policy makers and stakeholders to make adjustments to rules – to “fine tune” the SES – and to take further action, such as providing support to implementation, having identified the strengths and weaknesses of the legislation before behaviour and institutional structures become entrenched.

The PRC's approach to determining the impact of the SES initiative on ATM performance has, therefore, been qualitative, combining analysis of the main ATM issues, of the regulatory provisions of the SES, and of the extent to which the regulatory provisions of the SES address the main ATM issues. In doing so, the PRC has drawn upon its own experience in the field of ATM performance measurement and the outputs of extensive and structured stakeholder consultation process. As the work has developed, the PRC has been able to share findings and suggested actions with a wide range of stakeholders through this consultation process. This has enabled further feedback to be included in the development of its analysis and recommendations in an iterative way.

2.2 PROJECT PLAN

The Project plan is shown in Figure 7 below:

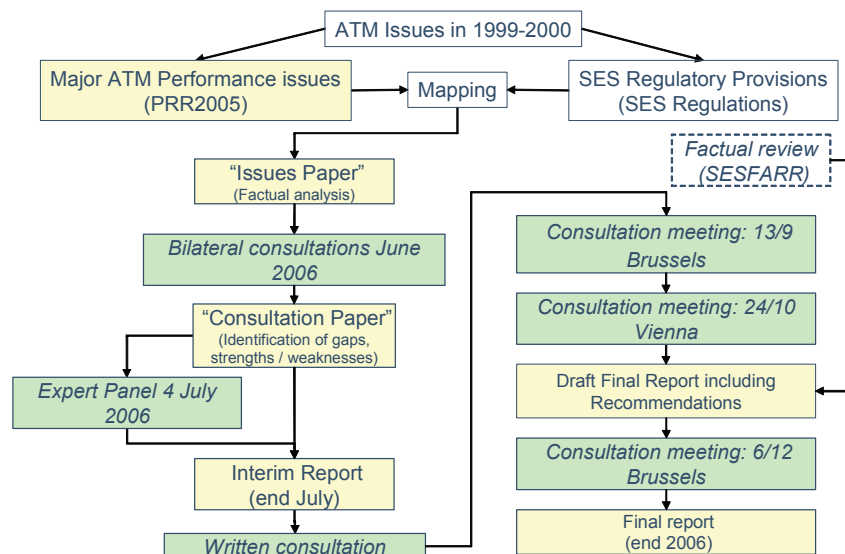


Figure 7 : Work Plan of the SES evaluation

As can be seen from Figure 7, the Final Report is the second of two deliverables; it is an augmentation and development of the Interim Report delivered in July 2006.

2.3 CONSULTATION

This project has drawn on the outputs of an extensive consultation process to inform the PRC's assessment and opinion. This has involved:

- a series of bilateral meetings;
- a written consultation process;
- convening an Expert Panel to discuss early analysis and findings and explore new ways forward for ATM; and
- two Open Consultation meetings to present findings and stimulate contributions from a wide range of European stakeholders.

The face-to-face consultation undertaken is summarised in Table 1 below.

Meeting	Date	Location	Attendees
UK Stakeholders	1st June	London	Representatives of DfT, CAA, UK NATS
EUROCONTROL	6th June	EUROCONTROL	Director General, Directors EATM
Germany stakeholders	7th June	Langen	Representatives of Federal Ministry of Transport, DFS, Lufthansa
European Commission	8th June	Brussels	PRC/PRU and European Commission project officers
France stakeholders	9th June	Paris	Representatives of DGAC/DSNA/DAST, Air France
European Airlines	13th June	Brussels	AEA member and IATA representatives
Expert Panel Meeting	4th July	EUROCONTROL	17 invited experts from Europe, and North America
Open meeting	13th Sep	EUROCONTROL	Presentation of interim findings & further consultation
CANSO	11th Oct	EUROCONTROL	Discussion on potential improvements
Central and Eastern Europe stakeholders	24th Oct	Vienna	Representatives from several Eastern European NSAs and ANSPs
European Airlines	29th Nov	Brussels	AEA members and IATA representatives
Open meeting	6th Dec	EUROCONTROL	Presentation of Draft Final Report

Table 1: Face-to-face Consultation during 2006

Briefings were given at EUROCONTROL meetings, notably CESC (26/9), CMIC (19/10) and Provisional Council (10/11), and at stakeholders' invitation, notably ATCEUC.

A written consultation process has also been conducted. Consultation papers and a request for information and responses to specific questions on the impacts of the SES were issued to over 100 key stakeholders in Europe including heads of ANSPs, regulatory authorities and airline representative groups. A total of seventeen responses to this written consultation were received. The respondent organisations are listed in Table 2 below.

Respondents		
DGAC (France)	AENA (Spain)	Skyguide (Switzerland)
FOCA (Switzerland)	DFS (Germany)	BAA
INAC (Portugal)	DIRCAM (France/mil)	ATCEUC

Respondents		
Swedish CAA	IAA (Ireland)	LFV Sweden
UK CAA	NATS (UK)	6 Airline Associations' combined response: AEA; EBAA; ELFAA; ERA; IACA; IATA
Ministry of Transport (Germany)	NAV Portugal	

Table 2: Respondents to Written Consultation in 2006

The PRC gratefully acknowledges the contributions by all these stakeholders to its work which have played a vital part in shaping the views put forward in this report.

2.4 REVIEW OF OBJECTIVES AND CURRENT ATM ISSUES

The first activity in the work plan, as shown in Figure 7 above, was to assess the original drivers and ATM performance-related issues that have led to the creation of the SES, discussed in Section 1 above. The second activity included two steps:

1. Assessment of the overall objectives of the regulatory provisions of the SES; and
2. Assessment of the current main issues facing ATM.

2.4.1 Main Objectives of the SES

In order to assess whether the SES is having its anticipated impact and to consider whether it addresses current issues in ATM, it is necessary to identify and confirm the overall objectives of the SES.

The SES process ended with the European Parliament and the Council agreeing on five main objectives which are included in the legislative package. These objectives, as set out in Article 1 of the Framework Regulation, are listed in Table 3 below.

Main SES Objectives	
(1)	to enhance current safety standards
(2)	to enhance the overall efficiency of general air traffic (GAT) in Europe
(3)	to optimise capacity (meeting the requirements of all users)
(4)	to minimise delays
(5)	to establish a harmonised regulatory framework

Table 3: Main Objectives of the SES - Framework Regulation

It is clear from this elaboration of the objectives that they are of essentially different natures:

- safety and efficiency can be considered as over-arching aims as well as specific objectives; optimising capacity and minimising delays are closely related but also more detailed in their scope;
- establishing a harmonised regulatory framework is of a different nature to the preceding objectives and is also an enabler of the first four.

2.4.2 PRC's assessment of current ATM situation

Current issues in ATM have been examined by the PRC and compared with the Main Objectives of the SES legislation.

In its most recent Performance Review Report (PRR 2005) published in April 2006, the PRC identified several main ATM performance issues related to five overall areas. These areas and the corresponding ATM issues are set out in Figure 8 below.

Safety	There is presently no accurate and consistent risk measurement across Europe. Risk will grow rapidly with traffic if not managed adequately; Transparency is generally low which may affect the confidence in ATM and reduce the ability to prevent accidents;
Capacity	En-route capacity is good on average (ATFM delays are close to target) but the situation is fragile; Arrival/departure capacity is becoming scarce at major airports (airport ATFM delays are increasing). The weak interactions between airlines, airports, and ATM planning and operations may affect air transport growth;
Flight efficiency	Initial findings suggest significant en-route horizontal flight inefficiencies (vertical and terminal flight efficiency are not yet measured);
Cost- effectiveness	Productivity is low on average, which offers significant room for improvement; Another area for improvement is support costs which are high on average. The current level of fragmentation is a driver of the high support costs.
Predictability	High variability of departure time, terminal area and airport taxi time from major airports. The weak interactions between airlines, airports, and ATM planning and operations affect airline/airport schedules and environment;

Figure 8: Main ATM issues identified by the PRC

2.4.3 Mapping SES Main Objectives to ATM Main Issues

The SES objectives match well the main issues identified by the PRC. This tends to indicate that essential items are covered in both and that there are no major new issues that have arisen since the legislation was prepared in the early 2000's.

Thus, for the purpose of assessing the impact of SES on ATM performance, the five SES objectives can be restated as three overall axes of analysis as illustrated in Figure 9.

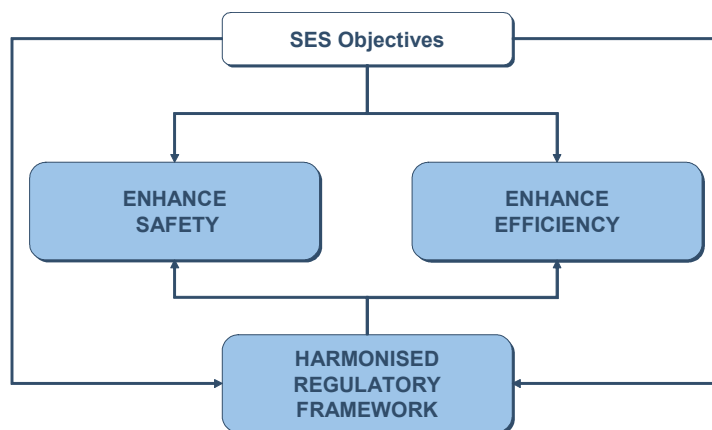


Figure 9: PRC three axes of analysis

These three axes are:

- a) Enhance ATM Safety;
- b) Enhance ATM Efficiency (Economic, Operational, Technical & Airspace) in order to:
 - Improve cost-effectiveness;
 - Optimize capacity & minimize delays;
 - Reduce flight inefficiency and minimize environmental impact;
 - Improve predictability of operations;
- c) Create an effective and harmonised regulatory framework to manage ANS performance at European level.

The PRC has examined the regulatory provisions of the SES, including Implementing Rules, so as to identify the relevant provisions related to each of the three axes. Annexes 1 and 2 document and detail the mapping process. Section 3 presents the result of the analysis.

2.5 DOMAINS OF ACTION

The axes of analysis allow the analysis of the strengths and weaknesses of the SES against the original objectives and the current issues in the industry. This has enabled the development of 31 specific proposals and recommendations for future improvements. However, recommendations in one area will often assist performance improvement in another, and therefore cross over between axes of analysis. To illustrate this effectively the 31 recommendations have been presented according to seven specific "Domains of Action" as briefly outlined below:

1. Efficient and effective organisation of supervision and regulation:

- Support to NSAs;
- Use of Recognised Organisations;
- Supervision of NSAs; and
- Review of compliance of air navigation charges principles.

2. Performance criteria and objectives:

- Make transparent individual performance objectives;
- Develop performance criteria for the European ATM system;
- Develop Safety indicators; and
- Develop a framework for financial incentives.

3. Rationalisation of airspace and service provision:

- Support the development of FABs;
- Support the optimisation of route and sector design; and
- Ensure consistency between financing/support and SES objectives.

4. Civil/military cooperation:

- Support the implementation of the statement by States on military issues; and
- Develop performance criteria for FUA.

5. Organisation of service provision:

- Develop CNS and AIS market;
- Develop common rules for designation; and
- Develop contestability for airport ATS and MET services.

6. Policy orientation for the SES:

- Develop a common long term policy orientation for SES to focus collective efforts.

7. Rule making process:

- Ensure appropriate balance between mandatory requirements and voluntary means of compliance.

Within each of these domains are specific proposals and recommendations for future actions directed at improving ATM performance in the short, medium and long term.

The specific actions are set out in Section 4 below while Section 3 details the rationale for these actions, on the basis of PRC's analysis.

2.6 CONSIDERATION OF PRACTICAL ISSUES & RECOMMENDATIONS

The PRC has also considered key practical issues for implementation of the SES Regulations, in particular the capability, resources and commitment of stakeholders, and how these may vary across the States affected by the SES, as well as costs of regulatory compliance. The draft findings from the parallel SESFARR project have also been reviewed in this context.

This report includes the PRC's perception of the strengths and weaknesses of the SES. It offers 31 recommendations for further improvements to address weaknesses or to build on strengths, so as to contribute to achieving the original objectives of the SES and to addressing the main performance issues facing ATM in Europe.

Stakeholder feedback on the SES, provided during consultation for this project, indicates that the SES is perceived as providing a positive impetus to performance improvement. For example, it is clear that the SES is regarded as a catalyst for improved cooperation between actors in the sector – a vital development in a network industry. This applies irrespective of the nature and maturity of the Member State, National Supervisory Authority (NSA) or Air Navigation Service Provider (ANSP). Notwithstanding the variety of geography, political priority or organisation of service provision, stakeholders have embraced the opportunity to work together and share experiences and solutions to problems. However, the analysis also shows that there is scope to improve the current situation and to drive performance improvements.

While there are current and anticipated positive impacts of the SES, in its current form it does not address some of the key requirements to improve performance. The PRC's recommendations are all related to improving either directly or indirectly, the performance of ATM, and their application is expected to have wider positive impacts on the organisation and supervision of the sector in Europe. However, they cannot solve all the problems facing the sector in Europe. Concerted actions at national and European level will be required to achieve all the original aims of the HLG and to address the performance issues facing ATM today.

In producing its specific recommendations the PRC has been alive to the fact that the bodies providing services, regulating their provision and overseeing the ATM industry in EU Member States represent a great variety of institutional structure, governance models, organisational structure, geographical context and historical development. The PRC therefore seeks to avoid a "one size fits all" solution to its recommendations. Its proposals are intended to drive overall European performance improvement whilst taking account of this variety. The proposals include recommendations for European level action to encourage national authorities to provide the appropriate solutions for their individual environments.

Clearly, any extension of new European regulation/legislation should be justified by appropriate regulatory impact assessments which properly take into account regulatory benefits as well as costs. The PRC's view is that before introducing new regulation, alternative means of achieving the objectives should be explored first. This is why the PRC's recommendations take several forms. They include potential future regulatory action but also strive to provide non-regulatory recommendations as much as possible. The recommendations comprise:

- Non-regulatory measures, such as provision of practical administrative support, publication of guidance materials, provision of funding, facilitation of improved communication between industry actors, etc.;
- Specific EC Communications to recommend and/or promote particular actions;
- Recommendations to apply fully or ensure enforcement of the existing provisions of the SES Regulations;
- Development of Implementing Rules on Performance Review (under Article 11 of the Framework Regulation);
- Conditional on whether the above have led/not led to quantified improved performance, new draft European level legislation; and
- Required new draft European level legislation (medium-term to long-term).

It is in this spirit of positive action that the PRC's recommendations have been developed. The PRC's view is that there is considerable scope for improvement under the existing SES framework through non-regulatory actions such as guidance materials, support to NSAs, and provision of information and facilitation of cooperation between the various parties, without necessarily introducing new rules/regulations.

The overall approach of the PRC recommendations takes the following gradual and conditional structure (see also Figure 10 below):

1. Identify the performance issues that need addressing;
2. At each periodic review of the SES, set specific quantified performance criteria for the European ANS system to direct efforts towards addressing these issues;
3. Take action by providing support or facilitating communication to address these issues and meet criteria within the existing legal framework so that current rules are effectively implemented and enforced but no new legislation is required;
4. Allow time for these actions to take effect;
5. Assess the impact of these actions so that:
 - Successful action in a field means further performance monitoring alone is required;
 - If actions are not successful and performance is not improving at the pace set out in (2) then consideration is given to further actions either non-regulatory or regulatory as appropriate.

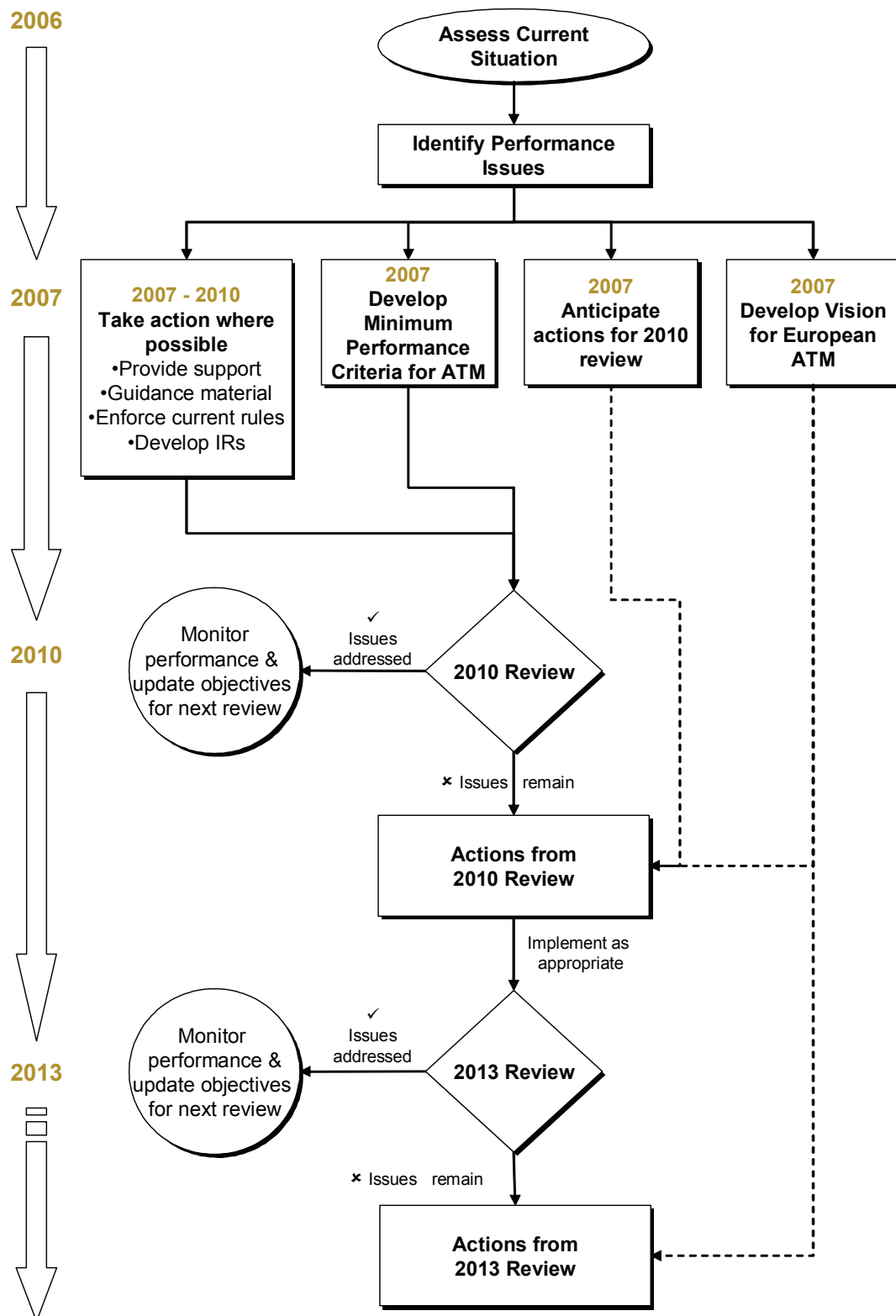


Figure 10: PRC approach to recommendations

The PRC encourages a cooperative approach between policy makers, regulators, ANSPs and airspace users. The intent of the recommendations is to allow time for existing and proposed activity to take effect before new rules are considered.

Should the short term actions fail to have a significant impact on performance levels, the PRC advocates consideration of appropriate and progressive regulatory intervention at European level. It is envisaged that these should be targeted at individual issues and performance improvement requirements.

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3 FINDINGS ON THE THREE AXES OF ANALYSIS

Having identified the three axes of analysis on the basis of the approach outlined in Section 2.4.3 above, the PRC has examined each in turn. Precise indications of the relative **Strengths** and **Weaknesses** of the SES in respect of each of these areas have been identified and to a large extent confirmed throughout the consultation process.

The sections below set out strengths and weaknesses under each axis of analysis and introduce corresponding recommendations that either build on the strengths, or seek to address the weaknesses. A brief rationale for each of the recommendations is provided as they are raised, and more detail on the specific actions under each recommendation is provided in Section 4.

3.1 ENHANCE ATM SAFETY

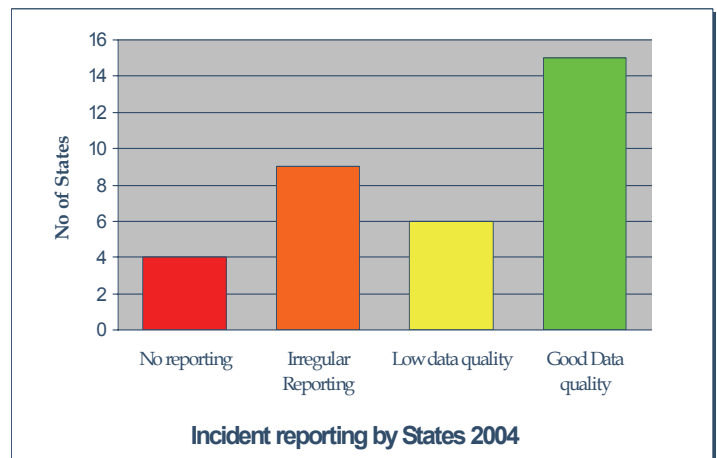
3.1.1 What is at stake?

The first Main SES objective is to enhance current safety standards (FR art 1).

The principal aim of the HLG Report and the subsequent European Commission Communication, was to improve continuously the level of safety such that accidents and risk-bearing incidents, attributed to ATM, do not increase in absolute terms – meaning that the risk per flight must decrease as the volume of air traffic increases.

In its most recent report (PRR 2005), the PRC noted some progress concerning incident reporting and transparency issues, but that much remained to be done to implement agreed plans. In particular the PRC concluded in PRR 2005 that:

- *“Safety information is wholly inadequate for the purposes of safety management and performance review across Europe;*
- *There are no reliable key performance indicators for ATM safety;*
- *There is no Europe-wide analysis of ATM-related incidents;*
- *Only 15 States out of 34 have provided good quality safety data information concerning events occurring in the airspace. Information concerning runway incursions is even less reliable”.*



3.1.2 SES Regulatory Provisions

The following provisions of Single Sky regulations are identified as making a potential contribution to enhancing **ATM safety**:

- a) Creation of a **harmonised and strong regulatory framework** with:
- mandatory EU rules;
 - supervision by independent national supervisory authorities (FR⁵ Art.4, SPR Art. 2);

⁵ The following abbreviations are used for the corresponding Regulations: FR Framework Regulation (549/2004); SPR Service Provision Regulation(550/2004); AR Airspace Regulation (551/2004); IOR Interoperability Regulation (552/2004); CR Common Requirements Regulation (2096/2005); FUAR Flexible Use of Airspace Regulation

- peer reviews of NSAs (CR Art.9);
 - consultation of stakeholders (FR Art.6 & 10, SPR Art. 15, CR Annex I.8);
 - effective sanctions for infringement (FR Art.9);
- b) **Performance review** by the European Commission (FR Art.11) inter alia, to:
- allow **comparison and improvement of ANSPs**;
 - identify and promote **best practice for improved safety**;
- c) **Transposition of EUROCONTROL Safety Regulatory Requirement (ESARRs)** (SPR Art.4; CR Art.1) into EU law to make mandatory existing safety standards and provide a strong and common enforcement mechanism on a European basis;
- d) **Certification of ANSPs** by NSAs (SPR Art.7) **subject to Safety Common Requirements** (introduction of safety management systems, safety cases. See CR Annex I.3 & Annex II.3).
- Mutual recognition of these certificates within the European Union (SPR Art. 7.8);
- e) **Community ATCO licence** (ATCOD Art 2) with a view to improving safety standards and provide minimum requirements for **training and language proficiency**;
- f) **Harmonisation and simplification** of the **airspace structure** with:
- Harmonisation of airspace classification (AR Art.4, ACR);
 - Establishment of a European Flight Information Region (EUIR) with a single European AIP (AR Art.3);
 - Common principles and criteria for optimised route and sector design (AR Art.6) to ensure the safe use of airspace;
- g) **Safety cases to support the creation of FABs** (AR Art.5.2.a);
- h) **Safety assessments and audits in support of FUA** (FUAR Art. 3.a, 6.3 , 7, 9 and Annex);
- i) **Systems, constituents and associated procedures** of the EATMN shall meet the **Safety Essential Requirement** (IOR Art. 2, Annex II Section A.3). This requires, inter alia, “agreed high level of safety, agreed safety management and reporting methodologies”, “**safety nets** subject to agreed common performance characteristics” and “a harmonised set of safety requirements for systems and their constituents”.

In addition, the following EU regulations and directives that are not strictly part of the SES also have a potential impact on ATM **safety**:

- j) **Occurrence reporting** in civil aviation (Directive 2003/42/CE);
- k) Principles for governing the **investigation of civil aviation incidents and accidents** (Council Directive 94/56/CE);
- l) **Creation of EASA** (Regulation (EC) No 1592/2002) as subsequently adapted and amended.

(2150/2005); ATCOD ATCO Licence Directive (Directive 2006/23/EC); ACR Airspace classification regulation (730/2006).

3.1.3 General Strengths and Weaknesses of the SES Concerning Safety

On the basis of feedback and analysis undertaken for this project, several strengths and weaknesses of the SES initiative are identified in the safety field.

In order to address these weaknesses and build on the strengths, individual recommendations are provided. The individual recommendation associated with each strength or weakness is set out in the boxes under each subsection. The subsections also include a brief explanation as to how each action will contribute to solving the specific issue or potential limitations. The recommendations in these boxes are then described in more detail in Section 4.

The PRC notes that much European regulatory material has already been adopted in the ANS safety domain: the focus should now be on implementation (and the provision of the necessary support to facilitate this) as well as on the promotion of an effective safety and “just” culture.

It is also clear from the consultation undertaken for this study that many stakeholders, particularly ANSPs have already put considerable effort and resources into implementing several provisions/directives related to safety.

3.1.4 Identified Strengths

3.1.4.1 *Common and Enforceable Safety Regulatory Framework*

The very existence of a common and enforceable safety regulatory framework in Europe provides a strong impetus for all States and ANSPs to meet common requirements and other safety regulatory provisions.

From the consultation it is clear that stakeholders see the SES as providing a basis for performance improvement, and that the existence of EU Regulations on safety, together with the certification structure has already raised, and will continue to raise, awareness of safety issues. The compliance with Common Requirements is expected to improve standards for States and ANSPs with less mature safety regulatory regimes so that benefits should be strongly felt in these States.

This framework should therefore enable all EU and associated States to reach an acceptable level of maturity in safety regulation, supervision and management sooner than they would otherwise have done.

Such a positive impact is expected to be all the greater in those States/ANSPs starting from relatively lower safety maturity levels so long as there is effective implementation. Mature States have noted that the impact on their safety performance will be relatively limited as they already reach the standards required in the SES. Mature States have also stated that while, in some cases, they found the SES to be a useful spur to reassess their performance and structure in the safety domain, the administrative burden required to show compliance with the SES provisions is not insignificant. This is also confirmed by the outcome of the SESFARR project.

Since much activity has been undertaken and there are useful provisions in the SES that are likely to drive performance improvement in the future, the PRC's priority is therefore to see the effective implementation of the existing framework. Two overall recommendations are made that could assist in this implementation.

- **Provide support to NSAs. (Recommendation 1)⁶**
- **Promote regular cooperative forum for NSAs. (Recommendation 2)**

Provision of support for NSAs is intended to build on cooperation already evident in the industry and to strengthen regional ties, focusing on assisting less mature NSAs.

Member States should also support the NSAs and ensure that they have the necessary capabilities to carry out their tasks.

In order to promote discussion, cooperation and coordination of NSAs as well as their representation at EU level, and to ensure the sharing of best practice and even application of the SES Regulations, the PRC recommends that a regular cooperative forum for NSAs should be established. It is not intended that this should necessarily be a formal institution but rather that it should build on existing cooperation between NSAs and the success achieved by informal, non-regulatory activity observed to date by the PRC.

3.1.4.2 Transposition of ESARRs

The transposition of the six EUROCONTROL Safety Regulatory Requirements (ESARRs) into EC law is expected to have a positive impact on safety performance in many States by ensuring minimum standards across Europe.

Feedback to the PRC from States and from the SESFARR project questionnaires is that giving the weight of EU law to the ESARRs should be greatly beneficial in ensuring compliance with the rules. For full benefits to be felt, it is important that the process to transpose ESARRs continues and that Member States and ANSPs implement these rules within the agreed deadlines. However, there would be benefit in ensuring that any duplication or inconsistencies in the safety rules are properly addressed and the framework unified.

- **Unify the Safety Regulatory Framework. (Recommendation 9)**

3.1.4.3 Promotion of cooperation among peers

The SES provides for a peer review mechanism of NSAs to ensure a uniform supervision within the Community. From the PRC's consultation this is recognised as a significant tool that should assist a uniform application of SES requirements and foster cooperation amongst ANSPs by improving the comparability of the certificates.

However, during the first years of the SES, the focus has been put on the creation or nomination of NSAs and on the first certification of ANSPs. The PRC suggests that it is now the time to make use of the peer review mechanism.

- **European Commission to start peer review procedure of NSAs. (Recommendation 5)**
- **Then, depending on the future experience to be gained from peer reviews, Organise audits and inspections of NSAs at European level. (Recommendation 6)**

In line with the PRC's approach, the commencement of peer reviews should be the immediate activity. However, should it become clear over time that the peer review process

⁶ The numbering of the recommendations follows the order defined in Annex 3 where recommendations are summarised according to "Domains of Actions" as described in Section 3.4. For this reason, they do not necessarily appear in the same order in this Section.

is inadequate to ensure a uniform application of SES requirements and supervision, then consideration should be given to the organisation of formal audits and inspections of NSAs at EU level.

3.1.4.4 Exchange of best practice in terms of safety and performance review

One of the stated aims of the performance review mechanism under EU law is to promote exchange of best practice concerning safety. Such exchanges provide an organic way to develop and promote safety management, and to improve overall safety standards.

The Implementing Rules on Performance Review, currently being developed, can be utilised in order to support this exchange of best practice. Moreover, by making use of the mandatory requirement for ANSPs to set performance objectives through the certification process, additional visibility can be provided to assess safety performance improvement.

The Implementing Rule on Performance Review should:

- include the need to make transparent the performance objectives (in terms of safety but also cost-efficiency and capacity) that must be set at national level under the Common Requirements – so as to encourage the widest visibility of objectives and comparison of progress against these over time; and,
- strengthen the additional benefits from open consultation with stakeholders, when establishing performance objectives. Inclusion of airspace users' views and explanation of the rationale for decisions taken on which objectives are included would also have a beneficial impact by putting pressure on ANSPs to meet their users' performance expectations.

Member States and ANSPs should therefore support these two proposals in order to meet the requirements of the performance review under the SES as described in Article 11 of the framework Regulation.

Information from the SESFARR project indicates that although the majority of States/ANSPs have a consultation mechanism in place, not all of them address safety.

→ Make the mechanism for (safety) performance objective setting and reporting transparent for performance review (through the development of Performance Review Implementing Rules). (Recommendation 10)

3.1.4.5 Community ATCO Licence

The ATCO licence Directive, as an Implementing Rule of the SES, is expected to improve safety standards and provide minimum requirements for training and proficiency of ATCOs in English. It has now to be implemented by the EU Member States and is expected by stakeholders to have a positive but un-quantified impact on safety. Information from the SESFARR project indicates that a majority of States have taken action to transpose the Directive into national legislation.

The ATCO licence Directive relies on the same NSAs to supervise the proper implementation of the directive. The PRC therefore considers it important that NSAs are supported in these tasks, and that Member States therefore ensure NSAs have the appropriate capabilities and make effective use of Recognised Organisations.

→ Provide support to NSAs. (Recommendation 1)

3.1.4.6 *Harmonisation and simplification of the airspace structure*

Harmonisation and simplification of the airspace structure is viewed as having some positive impact on safety. Both the harmonisation of airspace structure itself and the development of individual initiatives should have safety benefits. For example:

- the development of FABs should raise awareness and ensure safety is “built in to the system” due to the need for a safety case for their establishment;
- the adoption of the principle of FUA also requires safety assessments and audits.

While the implementation of the FUA regulation and the creation of the SES is underway, the PRC considers that an important piece of legislation is still to be developed according to the current SES framework: this is the implementing rule on optimised route and sector design which should also contribute to safety by simplifying and optimising the European route network. Therefore, Member States and ANSPs should support the harmonisation and simplification of airspace structure.

→ **Develop Rules on optimised route and sector design. (Recommendation 21)**

- Then, in the light of the developments of the first years of implementation rules for optimised route and sector design, **Reassess the process for route and sector design changes. (Recommendation 22)**

3.1.4.7 *Safety essential requirement for the interoperability of systems*

Interoperability of the European ATM network (EATMN) should have an important effect on safety by ensuring that all systems, constituents and associated procedures comply with essential safety requirements.

Since the essential requirements apply to the putting into service of new systems and constituents of the EATMN as of October 2005 and that they shall apply to all systems in operation by 20 April 2011, it is therefore necessary to ensure that the interoperability regulatory framework is in place at this time.

This framework should make best use of the various tools offered by the SES on the basis of the Community “New Approach”. In particular, this framework should strike a proper balance between mandatory requirements specified in interoperability implementing rules and voluntary means of compliance (Community Specifications).

During the consultation for this project, stakeholders – particularly ANSPs – stressed the need to make maximum use of voluntary means of compliance, balancing this against mandatory interoperability implementing rules.

The PRC recognises that this “New Approach” has to be supported while recognizing that making systems interoperable also necessitates minimum binding rules.

The SESFARR project has identified that NSAs, ANSPs and some equipment manufacturers have had significant difficulties in interpreting the requirements of the Interoperability Regulation and identifying an appropriate methodology for compliance. Therefore, Member States should ensure through the SES consultation process (as defined in Article 10 of the framework Regulation) that all stakeholders have a good understanding of the regulations and are properly involved.

- Develop necessary interoperability implementing rules and voluntary community specifications by **Ensuring a proper balance between mandatory requirements and voluntary means of compliance in future interoperability regulations. (Recommendation 31)**

3.1.5 Identified Weaknesses

3.1.5.1 *Limited Safety Benefits for Mature States*

Despite the positive encouragement to reassess safety performance and cooperate with peers provided by the SES, the safety benefit from SES implementation for Member States and ANSPs with good regulatory and safety management processes and structures in place already may be limited. Substantial workload and compliance costs are nevertheless incurred.

3.1.5.2 *Scattered Nature of Safety Regulation Instruments*

The existing European safety regulatory framework is scattered across SES regulations and implementing rules, EC directives 2003/42 and 94/56, and ESARRs. This framework appears to be complex, partly redundant, with possible internal contradictions and yet incomplete (e.g. no deadline for releasing occurrence reports, no common system for reviewing incidents and for the dissemination of lessons learned).

Responses to the SESFARR questionnaires urge greater coordination between EUROCONTROL safety initiatives and the SES regulations.

Therefore, in order to focus collective efforts towards performance improvements by clearing away uncertainties it would be beneficial to unify the safety regulatory framework and to develop an overall agreed and clear direction of ATM across Europe – a common long term policy orientation for ATM – with, in particular, a clear orientation of the organisation of the European safety regulatory framework.

This safety regulatory framework should provide coherent, simplified European level rules, implemented at national level by NSAs. This means that:

- an adequate organisational framework must be available for the development and enforcement of the safety regulatory framework;
- tools should be provided to enforce the safety regulatory framework with the support of credible sanctions.

This safety regulatory framework should be developed on a gate-to-gate principle by ensuring that ATM is considered as part of the overall aviation value chain.

This framework should also make best use of NSAs' independence from ANSPs by allowing NSAs not only to review the proper application of SES requirements but also to **assess** the level of safety, costs, and use of airspace.

→ **Unify the safety regulatory framework. (Recommendation 9)**

→ **Develop a common long term policy orientation for SES including the development of a single and strong ATM safety regulatory framework. (Recommendation 30)**

→ **Develop a common and consistent regulatory framework for NSAs. (Recommendation 8)**

3.1.5.3 *Lack of Resources and Capability to Ensure Implementation*

The effort required to comply formally with SES requirements may potentially distract from addressing more concrete and pressing safety issues – particularly in States with few resources. The nature of some provisions may lead to a false sense of security if Member States and ANSPs are satisfied by simply meeting the minimum requirements and compliance is reduced to merely “ticking the appropriate boxes”.

Several Member States and ANSPs lack the capability to implement every SES requirement, let alone more specific safety enhancements. This has also strongly emerged from the SESFARR project, and is valid in particular for the newly established NSAs.

In order to address this situation, the PRC therefore recommends that the level of support provided to NSAs should be enhanced to enable them to execute their duties effectively.

The PRC also recognises the concern expressed by several stakeholders that the national application of the safety regulatory framework by NSAs must be enforced, and in a way which enables common understanding of the effectiveness of supervision. All States must be confident that other ANSPs have been certified properly by their NSAs and that SES Regulations are adhered to in each State so that minimum safety standards can be guaranteed. In order to provide this reassurance, which appears to be lacking at present, several actions can be undertaken and considered in the short term:

- practical support to NSAs should be provided by Member States, by the European Commission and EUROCONTROL where resources are lacking;
- cross-border NSAs should be promoted through the promotion of regular cooperative fora for NSAs so that standards of certification and supervision are maintained and best practice promoted. Member States and NSAs should actively promote NSA cooperation;
- the use of Recognised Organisations should also be encouraged by Member States in order to ensure the appropriate specialist resources are deployed where required, and that NSAs without sufficient capability and qualified resources can draw upon the necessary expertise; and
- mature NSAs themselves could be used as Recognised Organisations by less mature NSAs (provided they comply with the nine requirements set out in Annex I of the service provision Regulation).

It is noticeable from the SESFARR project that, so far, only a few NSAs intend to make use of Recognised Organisations in their activities.

After gaining experience on the use of Recognised Organisations, should these SES provisions fail to effectively address the weakness due to lack of resources and capability, audits and inspections at European level should be considered.

Therefore the PRC suggests three short term actions, and consideration of one further action in the medium term should the use of Recognised Organisations prove to be beneficial but insufficiently widespread.

→ **Provide support to NSAs. (Recommendation 1)**

→ **Promote regular cooperative forum for NSAs. (Recommendation 2)**

→ **Promote and facilitate the use of Recognised Organisations. (Recommendation 3)**

••• **Then, in the light of the experience gained from the use of Recognised Organisations, Improve recognition process of Recognised Organisations. (Recommendation 4)**

3.1.5.4 Lack of Safety Indicators and Transparent Reporting

The issue of transparent reporting and provision of adequate information to assess the genuine level of safety performance emerged as a key theme during the consultation. This is in line with the PRC's own finding that safety information is wholly inadequate for the purposes of safety management and performance review across Europe.

The PRC recommends that commonly agreed safety performance indicators at European level should be introduced in order to drive an improvement of the overall level of ANS safety performance.

This is confirmed by responses to the SESFARR national questionnaires which largely supported the promulgation and definition of unified, Europe-wide, key safety performance indicators and associated objectives which are acceptable to, and agreed by stakeholders.

Recognizing that developments in the area of safety indicators are ongoing, the PRC proposes a step by step approach.

Firstly, according to the Common Requirements Regulation (2096/2005), ANSPs must define specific performance objectives in terms of safety in order to be certified and to operate in Europe. The PRC recommends that these performance objectives, set and committed at national level, are made transparent for performance review in order to provide a comprehensive view of the evolution of ATM safety. Member States should support this at the Single Sky Committee.

Secondly, the PRC supports the development of safety performance indicators within the EUROCONTROL SAFREP group and emphasises the need for this group to agree specific safety indicators before the **end of 2007**. Member States and ANSPs participating in the SAFREP group should support and foster this work.

Thirdly, on the basis of the conclusions of SAFREP, the PRC recommends that the safety performance indicators (and associated data requirements) be included in the appropriate parts of the SES Regulations (Common requirements Regulation and performance review Regulation).

- ➔ **Make the mechanism for performance objective setting and reporting transparent for performance review** (through the development of Performance Review Implementing rules). **(Recommendation 10)**
- ➔ **Support the development of safety indicators** within SAFREP. **(Recommendation 12)**
- Then, in the light of the SAFREP conclusions on safety indicators, **Include Safety indicators in SES to be used by ANSPs / NSAs / States.** **(Recommendation 13)**

3.2 ENHANCE OVERALL EFFICIENCY

3.2.1 What is at stake?

The second, third and fourth SES objectives are:

- to enhance the overall efficiency of general air traffic (GAT) in Europe;
- to optimise capacity (meeting the requirements of all users); and
- to minimise delays.

Efficiency is a generic term used in this document to address these three objectives. It covers a wide spectrum: Economic efficiency, Operational efficiency, Technical efficiency, Airspace use and design efficiency.

There have been significant improvements in ANS efficiency between 2000 and 2005, especially concerning ATM capacity and related ATFM delays.

However, efficiency remains a major issue. In its most recent report (PRR 2005), the PRC estimates inefficiencies in the European ATM system to be in the order of three billions euro per annum, as illustrated in Figure 11. The derivation of potential improvements shown in the right part of this figure is explained below.

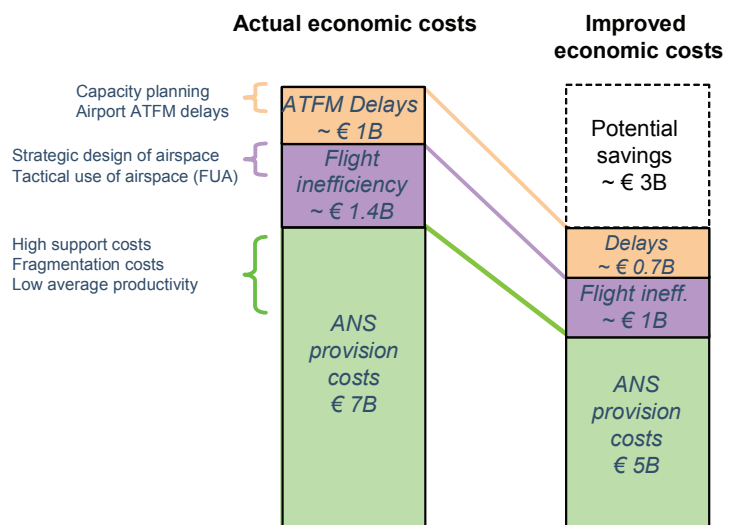


Figure 11: Economic ANS costs to airspace users (2005 figures)

– Cost-effectiveness

Unit costs of the European ATM system appear to be high in absolute terms. Although not directly comparable, it is interesting to note that nearly two times more traffic was controlled in the USA in 2004, at approximately the same cost as in Europe.

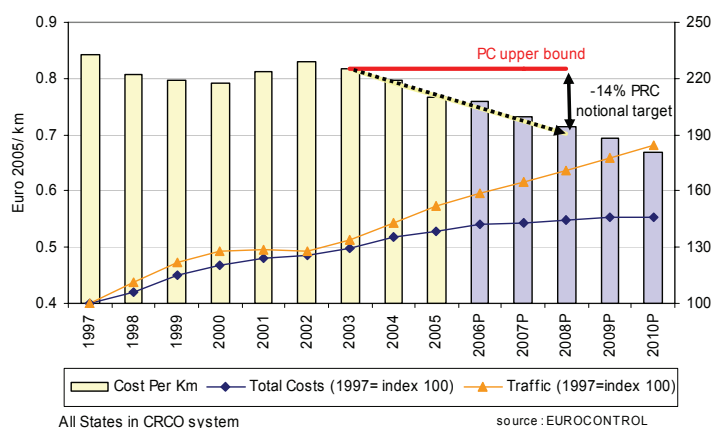


Figure 12: Real en-route unit cost per km, total cost and traffic

Although the level of cost effectiveness remains inadequate, recent data indicates that en-route unit costs are improving progressively, roughly in line with the PRC's notional cost-effectiveness target (-14% in average real en-route unit cost) over the 5 years period 2003-2008 (see Figure 12). This is a very positive development resulting from genuine performance improvements (e.g. tighter cost management) and strong traffic increase.

Nevertheless, from the **€7.0B** paid by airspace users for both en-route and terminal ANS provision (see left-hand-side of Figure 11 above), cost inefficiencies of the European ANS

system are estimated at approximately **€2B** in 2005 (see PRR 2005, Chapter 9). These cost-inefficiencies arise from low productivity of the European ANS system and high support costs, mainly due to the fragmentation of ATM systems, duplication of infrastructure and small scale facilities, within and across ANSPs, preventing full exploitation of scale effects⁷. On the other hand, it is recognised that transition costs from a fragmented system to a de-fragmented one may be substantial and in some cases prohibitive.

– Flight-efficiency / Environmental impact

The PRC has also identified Flight-efficiency as a major issue.

En-route horizontal inefficiencies alone are estimated to cost airspace users **€1.4 Billion** per annum – through additional fuel burn and other operating costs (see PRR 2005, Chapter 6). The main driver for horizontal flight-inefficiency is the lack of optimised strategic design and use of airspace. While trade-offs with capacity must be considered, significant savings could potentially be made, at least during week-ends when there are virtually no airspace restrictions.

Inefficiencies in vertical profile and terminal areas may well exceed horizontal inefficiencies, but again trade-offs have to be considered.

Improvements in flight-efficiency also translate directly into reduced environmental impact (emissions and fuel burn).

– Capacity / Delays

There have been major improvements in ATM-related delays over the last years, as shown in Figure 13. While the cost of remaining ATM-delays in 2005 is estimated at some €1 Billion (see left-hand-side of Figure 11 above), the level of en-route delays (upper part of graph) is close to optimum and cannot be reduced below optimum without incurring disproportionate additional capacity costs.

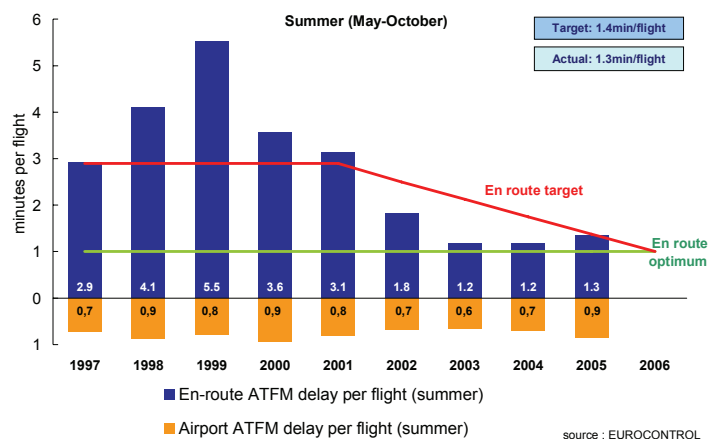


Figure 13: ATFM delays and en-route delay target

En-route ATFM delays increased in 2005 but met the agreed target for 2005 (1.4 min/flight). This was a significant achievement in view of the sustained traffic growth (approximately +4% annually since 2003).

Expected traffic growth makes the capacity/demand balance particularly fragile and a change in en-route delay trend has been noticed in summer 2006. Airport ATFM delays (bottom part of the graph) are significant and don't decrease. Both warrant special attention.

⁷ The impact of fragmentation in European ATM/CNS, PRC, April 2006.

3.2.2 SES Regulatory Provisions

The following provisions of Single Sky regulations are identified as having a potential contribution to **enhancing efficiency**:

- a) Creation of a **harmonised and strong regulatory framework** with:
 - mandatory EU rules;
 - supervision by independent national supervisory authorities (FR Art.4, SPR Art. 2);
 - peer reviews of NSAs (CR Art.9);
 - consultation with stakeholders (FR Art.6 & 10, SPR Art. 15, CR Annex I.8);
 - effective, proportional and dissuasive sanctions for infringement (FR Art.9);
- b) **Performance review** by the European Commission (FR Art.11) to, inter alia:
 - allow **comparison and improvement of ANSPs**;
 - identify and promote **best practice** in terms of **efficiency** and **to improve capacity**;
- c) Common **Financial requirements** on ANSPs including application of IAS, independent audits and transparency of accounts (SPR Art.12) as well as transparency of the cost-bases for air navigation charges, where appropriate, (SPR Art.15.2.e) shall facilitate benchmarking;
- d) **Certification of ANSPs** by NSAs (SPR Art.7) **subject to Common Requirements** (Need to establish a five year business plan, to maintain adequate operational capacity and to include in the annual plan expected level of capacity. See CR Annex I.2.2 & Annex II.3).
- e) **Mutual recognition** of ANSPs' certificates within the European Union (SPR Art. 7.8) and of ATCO Licence (ATCOD Art.15) will help to increase competition between ANSPs and remove some barriers to the **consolidation** of the industry;
- f) **Charging scheme** includes optional incentive mechanisms to encourage ANSPs and airspace users to support improvement in increased capacity and reduction of delays (SPR Art.15.3.e);
- g) **European Airspace** considered as a **continuum** with a view to maximizing capacity:
 - Harmonisation of airspace classification (AR Art.4, ACR);
 - Establishment of a European Flight Information Region (EUIR) (AR Art.3);
 - Common principles and criteria for optimised route and sector design (AR Art.6) to ensure the economically efficient and environmentally friendly use of airspace;
- h) **Reconfiguration** of the **European airspace into FABs** (AR Art.5) regardless of existing boundaries with a view to **achieving maximum capacity and efficiency** of the air traffic management network provides the legal means for the **reduction** of the **fragmentation** of the **upper airspace**;
- i) Common rules on **FUA** provide for a **more efficient organisation** of the **airspace** and better use of existing **capacity**, based on more effective cooperation at strategic, pre-tactical and tactical levels (AR Art. 7 and FUAR);
- j) Common rules on **ATFM** (AR Art.9) to **optimize available capacity** and to provide capacity in a **flexible** and **timely manner**;
- k) Implementing rules on **Interoperability** (IOR Art.3) to **enhance** the level of **integration** at Community level resulting in **greater efficiency** and **lower costs**; **Synchronization** of the implementation both on the ground and on-board systems.

In addition, two initiatives have to be considered:

1. the SESAR initiative is also expected to have an impact on overall ANS efficiency, particularly as it is due to deliver an ATM master plan.
2. The statement by Member States on military issues related to the SES agreed by Member States at the time of the SES package. This statement is reproduced in Annex 4.

3.2.3 General Strengths and weaknesses of the SES concerning efficiency

From the feedback received and analysis undertaken for this project, several strengths and weaknesses of the SES initiative are identified in the area of efficiency. In some cases however, identification of a strength is also accompanied by a corresponding limitation, where for example a positive aspect does not go far enough in driving real performance improvement.

Generally speaking, the SES provides potentially powerful elements towards improving efficiency by removing legal barriers for cross-border cooperation, but it remains simply an enabling regulation for most of these elements and does not drive improvement. Effective application is in the hands of States. There is a risk of inconsistent application of the rules and even conflict of interest among States, but there may also be a need to allow different applications of the regulations where this reflects local conditions, and where the outcomes remain consistent with the intent of the regulations (improved ATM efficiency). However, it is too early to say if the situation will improve or if the status quo will be maintained.

Therefore, besides adopting some improvements that can be initiated immediately under existing arrangements, the PRC suggests an approach (as outlined in Section 2.6 above) that takes into account the crucial role of States and ANSPs in making best use of the available SES tools.

But in order to drive collective improvements, the PRC proposes to develop minimum performance criteria for the European ATM system to be set before each of the three-year review periods defined in the SES. These performance criteria will not address local issues but aim to monitor performance improvements of the European ATM system overall.

At the end of each review period, if the criteria are met, it will mean that no further regulatory requirements are needed. New criteria will then be established for the next review period.

If the criteria are not met, then the situation will have to be reassessed: either the criteria were not achievable or there is a need to consider reinforcing some mechanisms of the SES.

3.2.4 Identified Strengths

3.2.4.1 Consultation and Cooperation

As previously mentioned under the Safety axis (see 3.1.4.4), consultation of airspace users and benchmarking are reinforced by SES, in particular through the Common Requirements Regulation, the forthcoming Performance Review Implementing Rule and the Common Charging Scheme Regulation. For these three Regulations, user consultation and benchmarking are considered to be important elements towards improved efficiency.

Independent and effective benchmarking can play an important role in ensuring some form of “yardstick” competition. It will, however, be very difficult to distinguish impacts from SES and from existing dispositions such as the Route Charges Principles and the PRC’s existing benchmarking work.

The PRC supports the development of requirements in the forthcoming implementing rules on Performance Review for effective open consultation with all stakeholders on performance issues and objectives.

In order to reinforce this positive aspect of the SES, and to take forward the benefits from consultation and visibility of performance, the PRC advocates making transparent the performance objectives that already have to be set in accordance with the certification mechanism of ANSPs. Member States should therefore support this specific point when the discussion takes place in the Single Sky Committee.

→ Make the mechanism for performance objective setting and reporting transparent for performance review (through the development of Performance Review Implementing Rules). (Recommendation 10)

3.2.4.2 *Common Principles for Route and Sector Design*

One strength of the SES is its enabling actions for common principles (i.e. rules) for the optimization of route and sector design. Potentially, these could have a significant impact on flight-efficiency, but the benefit is yet to be realised as the rules are still to be developed, agreed and applied.

The PRC stresses the need to develop this important Implementing Rule as a priority. The PRC also suggests that this Implementing Rule should ensure user options for more direct routings. The rules could include simple high level criteria for route and airspace design, e.g. for all busy city-pairs longer than 200NM, any route extension longer than 10% from direct routes should be duly justified. These high level rules could then be effectively used within an appropriate cooperative process for route design in Europe, where Member States and ANSPs should actively ensure their proper implementation.

In order to assist in developing European-wide understanding of performance and to drive improvements, the PRC also recommends that minimum criteria could be developed and used to support the European Commission's periodic reviews of the SES including criteria in relation to route and sector design.

Given the importance of this issue for the European ATM network, and the potential benefit that could be realised, the PRC also considers that in the future it may be worth reinforcing the SES rules governing route and sector design if no significant progress is made as compared to minimum performance criteria to be set by the European Commission (Recommendation 11).

→ Develop Implementing Rules on optimised route and sector design. (Recommendation 21)

→ Develop minimum performance criteria of the European ATM system to indicate expected performance improvements and to support periodic reviews on SES (2007-2010). (Recommendation 11)

•• Then, in the light of the development of the first years of implementation rules for optimised route and sector design, Reassess the process for route and sector design changes. (Recommendation 22)

3.2.4.3 *Common rules on FUA*

Common rules on Flexible Use of Airspace (FUA) to enhance civil/military cooperation at strategic, pre-tactical and tactical levels are expected to enable more efficient design and use of airspace.

The information received through the SESFARR project is that most States have used the FUA provisions to organise their airspace and have set up a joint Civil/Military Airspace Management Cell (AMC). Full implementation of the three airspace management levels (strategic, pre-tactical and tactical) is on-going.

As highlighted in its previous performance reports, the PRC considers that the transposition of the FUA concepts into EU law is an important step in improving this cooperation.

Member States shall therefore effectively implement the coordination processes and tasks defined for the three levels in the FUA Regulation.

3.2.4.4 Interoperability Rules Encourage/Foster Integration

The interoperability Regulation is expected to be an important driver to enhance the level of integration, leading to higher technical, operational and financial efficiency (e.g. more efficient interfaces, lower procurement, training and maintenance costs, etc). This should reduce the current level of fragmentation which is responsible for significant inefficiencies and costs.

Since the essential requirements apply to the putting into service of new systems and constituents of the EATMN as of October 2005 and that they shall apply to all systems in operation by 20 April 2011, it is therefore necessary to ensure that the interoperability regulatory framework is in place by 2011.

The SESFARR project has identified that NSAs, ANSPs and some equipment manufacturers have had significant difficulties in interpreting the requirements of the interoperability Regulation and identifying an appropriate methodology for compliance. Therefore, Member States shall ensure through the SES consultation process (as defined in Article 10 of the framework Regulation) that all stakeholders have a good understanding of the regulations and are properly involved.

In order to ensure that the regulatory burden on those complying with the legislation – both ANSPs and NSAs - is reasonable, the PRC recommends that the development of future interoperability Regulations should consider a proper balance between binding Interoperability Implementing Rules and voluntary Community Specifications while ensuring a strong and effective interoperability of the EATMN.

→ Develop necessary interoperability Implementing Rules and voluntary Community Specifications by **Ensuring a proper balance between mandatory requirements and voluntary means of compliance in future interoperability regulations.** (Recommendation 31)

3.2.4.5 Mutual recognition of certificates

One of the central elements of the SES, the requirement for certification of service providers, is a potentially significant strength, through the mutual recognition of certificates. By this means, certified service providers can offer services anywhere within the Community, facilitating cross-border services, or provision of services in more than one State (i.e. even where borders are not shared). Corporate and personnel mobility is encouraged and ultimately consolidation of service provision can be enabled.

These rules thus enable greater efficiency in service provision, but they are limited in that the extent of their application depends on the willingness of Member States to designate non-national ATSPs and METSPs (see corresponding weakness of the SES in Sections 3.2.5.5 and 3.3.5.5 below).

The PRC therefore recommends that Member States should make best use of the possibility offered by the SES to designate any certified ANSP of the Community.

3.2.4.6 Financial incentives on ANSPs enable significant Improvement

Some forms of financial incentives on ANSPs should encourage significant improvement in efficiency and are introduced in the SES through the Charging scheme regulation.

Nevertheless, while these financial incentives are considered likely to have a direct impact on ANSPs' performance, their application remains optional and at States' discretion. The current structure therefore provides an opportunity for improvement but does not drive performance.

The PRC therefore suggests that the development of a common framework to assist national authorities in setting financial incentives for efficiency performance could encourage wider application of this strength of the SES.

Apart from the UK, and possibly Germany if the privatisation of DFS is implemented, the SESFARR project has identified that no other State plans to introduce an explicit financial incentive scheme for its monopoly ANSP.

Therefore, the PRC recommends that Member States should use the possibility to incentivise their ANSPs in order to improve their overall performance.

Once again, as a stepped approach, the PRC considers that in the light of experience over the next review period, should no further application of incentives and no improvement in ATM performance be observed then the European Commission should consider the possibility of making it mandatory for States to set financial incentives schemes on ANSPs to improve efficiency performance.

→ Develop a framework to assist in setting incentives for efficiency performance improvements. (Recommendation 14)

••• Then, in the light of the experience gained in the first years of SES implementation and in particular by reviewing the use of financial incentives on ANSPs, as provided for in the Common Charging Scheme Regulation, consider Making it mandatory for States to set incentives on ANSPs for efficiency performance improvements. (Recommendation 15)

3.2.4.7 Transparency of ANSP Certified Accounts

Making mandatory the drawing up of certified accounts, the application of IAS as far as possible, and the submission to independent audit of ANSP accounts should improve transparency. It will provide a fair and comparable understanding of the ANSPs which would allow more effective users' consultation and benchmarking. The requirement for separate accounts for ANS and non-ANS activities will also improve transparency.

Less than 50% of the ANSPs that have provided information to the SESFARR project are following the IAS. Furthermore, some separation of accounts for ANS and non-ANS activities, where applicable, is not yet implemented. Finally, not every ANSP is yet in a position to publish an Annual Report.

The PRC considers that the transparency and audit of accounts is a prerequisite. It does not make any specific recommendation, except that the requirements provided in Article 12 of the service provision Regulation should be applied as soon as possible by Member States.

3.2.4.8 *Principles governing the establishment of air navigation charges*

The requirement to establish common principles for the establishment of both en-route and terminal air navigation charges is a definite strength of the SES in some States, and should assist in providing greater transparency and fairness for airspace users. However, it is important to ensure that adequate transparency rules are defined when specific “competitive” pressures exist to safeguard the development of competition.

It is also important that the principles governing the establishment of air navigation charges are properly applied by all stakeholders in order to ensure a fair charging for airspace users and to allow for proper benchmarking.

Therefore, the PRC recommends that Member States and ANSPs take the necessary measures to comply with these principles.

Since the rules for the calculation of costs will become effective in 2007 when the Common Charging Scheme Regulation enters into force and since it is not clear at this stage whether those rules will be applied consistently across all States, the PRC recommends that the European Commission starts reviewing compliance with the principles and rules for air navigation charges as provided in the current SES framework.

→ European Commission to start the review of compliance with the principles and rules for air navigation charges. (Recommendation 7)

3.2.5 **Identified Weaknesses**

3.2.5.1 *Risk of Inconsistency and Conflict of Interests due to Actions at Member States' Discretion*

The SES contains potentially powerful elements towards significantly improved efficiency, most notably: FABs, financial incentives in the charging scheme, full application of FUA, and designation of any certified ANSPs. However, performance improvements from application of these elements at local initiative are likely to be uncertain and most probably uneven.

In line with the PRC's overall approach set out in Section 2.6 above, it may be necessary, depending on the future performance assessment of the impact of the SES, to consider European level action to enforce consistent and effective application of the SES provisions. In the first instance, however, the PRC's recommendations are intended to provide support and guidance at a European level to support national activity.

3.2.5.2 *Administrative Cost of Compliance*

Compliance with SES Regulations introduces a cost to NSAs and ANSPs that will not necessarily bring benefits, at least in the short run (e.g. increased administrative burdens on ANSPs). In addition, inappropriate or over-regulation has the potential negatively to affect efficiency.

According to information from the SESFARR project, the budget for NSAs activities in 11 States surveyed is expected to increase by 35% from 31 July 2006 to 31 December 2007.

In order to alleviate the burden of compliance costs, the PRC recommends action to establish arrangements that will encourage collaboration, cooperation and exchange of best practices for NSAs at European/regional level to reduce the cost of regulation and supervision.

Member States should also take the necessary measures to ensure that NSAs' tasks are carried out in the most effective way.

- Provide support to NSAs. (Recommendation 1)
- Promote regular cooperative forum for NSAs. (Recommendation 2)
- European Commission to start peer review procedure of NSAs. (Recommendation 5)
- Promote and facilitate the use of Recognised Organisations. (Recommendation 3)

3.2.5.3 *Lack of Clarity over the Intent of FABs*

Despite being recognised as a key element of the SES, consultation demonstrated that FABs are still a vague concept and that their objectives are insufficiently clear. Moreover, the publicly available Cost Benefit Analyses of FAB initiatives to date show little evidence that significant performance improvements can be expected, even in the longer term after their establishment.

Two overall aspects of the potential benefits of FABs were raised during the consultation:

1. On a tactical/operational level they are intended to deliver a better use of airspace and to provide an arrangement that can be employed between States to organise cross-border services;
2. On a more strategic/organisational level, they are intended to change the basis on which services are provided in order to facilitate the consolidation among ANSPs, reduce fragmentation of service provision and exploit scale effects.

Clearly, tactical/operational benefits from (1) are likely to be significantly lower than the benefits from genuine organisational changes as in (2), although some of the latter may be obtainable within existing organisational structures, particularly for larger ANSPs. Despite the considerable stakeholders' effort put into discussions on the concept of FABs and into planning for individual FAB development, the PRC so far failed to observe concrete progress from the FAB activity reported to it.

Information obtained from the SESFARR project indicates that some States have difficulties regarding:

- legal nature (liabilities, risk sharing, etc);
- cost-effectiveness;
- geographical position, with some of them being surrounded by too many States willing or not willing to create a FAB with them or limiting their possibilities of extension to others States (e.g. South-East corner of Europe) and/or;
- overly complex issues, in particular regarding military aspects, social considerations or foreign controllers' liability to handle national military operations which require the extension of the initial deadlines.

Therefore the PRC recommends that a clearer scope, objectives and expectations of FABs should be established so as to facilitate mutual understanding and allow stakeholders to drive at a common goal. The PRC recommends that:

- The short-term focus of FABs should be on improving efficiency of airspace and infrastructure use;
- But that ultimately FABs should reduce fragmentation (which in several cases will require effective cross-border cooperation);

- In addition the role of economic incentives to improve performance should be emphasised which will provide a driver towards FAB creation;

In order to assist delivering the short-term benefits of improved efficiency of airspace and to establish the basis for service provision that can ultimately allow consolidation where appropriate, and recognising the considerable resources required to establish FABs, the PRC recommends several practical actions including:

- The objectives of FABs should be clarified, including the timescales over which they apply;
- implementation guidelines should be established along with the Implementing Rules to be developed according to Article 5(3) of the Airspace Regulation;
- an EU coordination unit should be established to support the implementation of FABs (including sharing experience, information and data on Cost Benefit Analyses);
- consideration of financing by the Community or appropriate financial institutions to cover transitional costs where there will ultimately be greater benefits and where these costs cannot be met in other ways. This provision of financial support could cover several aspects of FAB development such as:
 - Funding of feasibility studies;
 - Cost of transition to FABs structure, particularly for smaller ANSPs.

As part of its stepped approach, the PRC proposes to establish, in the very short-term, some performance indicators, against which it will be possible to assess the performance improvements arising from the creation of FABs. These performance indicators should be made transparent and shared by stakeholders in order to drive performance improvement.

By monitoring these indicators during the review period, it will be possible to reassess the situation and to propose if necessary any changes in the process of creating FABs.

- ➔ **Make the objectives of FABs clearer. (Recommendation 16)**
- ➔ **Develop common general principles for the establishment and modification of FABs. (Recommendation 18)**
- ➔ **Make available EU financial support for the creation of FABs. (Recommendation 17)**
- ➔ **Develop a set of performance indicators to assess the performance improvements arising from FABs. (Recommendation 19)**
- **Then, in the light of developments over the first years of SES implementation and in particular through the continuous monitoring of FABs by the European Commission, Reassess the mechanisms for the creation of FABs. (Recommendation 20)**

3.2.5.4 Lack of Financial Incentives towards Efficiency Performance Improvement

The SES provides an enabling legal framework for addressing the issue of fragmentation in Europe (service provision, ATM systems, airspace, etc), but does not drive performance improvements. With actions being left at Member States' discretion, there is an appreciable risk of inconsistency and even potential conflicts across the different initiatives. However, a pan-European approach to driving performance improvements may be equally inappropriate if it does not recognise the individual business characteristics of ANSPs.

It is not obvious from the SES regulations where the pressure for improving ATM efficiency performance will effectively materialize. Several means could be envisaged, such as

dissemination of best practise and benchmarking, effective economic regulation, rules on governance, etc.

In order to provide additional emphasis on objectives and to allow assessment of progress, there should also be an obligation to make transparent the performance objectives set at national level according to the certification process of ANSPs. It is expected that these objectives will lead to improvements in economic efficiency, and that any objectives that lead to lower efficiency should be duly justified and documented. Member States and ANSPs should support this specific point.

In order to promote and encourage the use of incentive schemes that lead to improved performance a transparent method or framework for setting and implementing incentive schemes should be developed by the EC. Since the organisation of service provision usually depends on local specifics, this high level framework should allow various mechanisms to be established within the existing SES Regulations and in particular within the Common Charging Scheme Regulation. Member States and ANSPs should work with the Commission in developing this framework.

The PRC envisages that this framework should assist NSAs/States in implementing and overseeing an effective incentive regime. The specific details of the incentive scheme (e.g. allowable costs, capped revenue, etc) would, however, to be defined by individual NSAs/States and would take account of national organisation and local conditions.

Therefore, the PRC encourages Member States to implement such incentive schemes on the ANSPs providing services in the airspace under their responsibility.

In addition, the PRC considers that minimum performance criteria for the European ATM system should be developed and announced by the Commission (in particular in terms of cost-effectiveness) for each periodic review of the SES.

Should there be no future progress in this area by monitoring the evolution of the overall European cost-effectiveness indicator, the PRC suggests that the European Commission assess the need to revisit the original intent of the SES and consider the value of obliging States/NSAs to implement some form of financial incentives scheme for efficiency performance improvements. It is likely that this would depart from traditional full cost recovery.

- ➔ **Develop a common regulatory framework for NSAs** (in particular in terms of economics). (Recommendation 8)
- ➔ **Make the mechanism for performance objective setting and reporting transparent for performance review** (through the development of Performance Review Implementing Rules). (Recommendation 10)
- ➔ **Develop a guidance framework to assist in setting incentives for efficiency performance improvements.** (Recommendation 14)
- ➔ **Develop minimum performance criteria of the European ATM system to indicate expected performance improvements and to support periodic reviews on SES (2007-2010).** (Recommendation 11)
- Then, in the light of experience and of the performance results at the end of the next review period (2010), compared with the performance objectives set earlier, investigate the need to revise the SES regulations to achieve these objectives and in particular:
 - **Make it mandatory for States to establish incentives on ANSPs for efficiency performance improvements;** (Recommendation 15)

- **Reassess the mechanisms for the creation of FABs; (Recommendation 20)**
- **Reassess the process for route and sector design changes. (Recommendation 22)**

3.2.5.5 *Monopoly organisation of ATM*

In the SES, ATS and – to some extent - MET services are considered as monopoly services. The providers of such services must be designated on an exclusive basis within specific airspace blocks. The designation procedure is left to the discretion of States.

The PRC considers that more specific rules are needed when designating an ATSP, while at the same time fully recognising the primary role of States. The designation process should therefore be complemented by some specific high level requirements (e.g., selection process, terms and conditions of license, regime of economic oversight, etc.).

The PRC recommends that Member States make best use of the possibility offered to them by the SES to designate the most suitable Community certified air traffic service providers in the airspace under their responsibility.

While understanding that ATS competition for the en-route market is not in practice an option, at least under the current mode of operations, the possibility of organising ATS services at certain airports under market conditions should be actively considered and promoted in Europe. This has already taken place in some Member States where ATS services at airports are subject to competitive tendering for the market. This might require actions to alleviate any identified barriers to entry.

The SES already considers that the provision of communication, navigation, surveillance as well as aeronautical information services should be organised under market conditions. However, the legislation does not provide specific requirements to ensure that a market will effectively emerge. Such a market could reduce transaction costs and fragmentation by:

- Rationalisation of CNS infrastructure and avoidance of duplication;
- Synergies and reduction of maintenance costs;
- More effective implementation of new technology/infrastructure.

Therefore, the PRC considers that requirements could be defined and included in any future review of SES to ensure such market conditions and that Member States and ANSPs support this evolution.

- **Develop common criteria for designation of monopoly ATSPs and METSPs. (Recommendation 27)**
- **Develop the contestability of ATS at airports and MET services. (Recommendation 28)**
- **Ensure that CNS and AIS are effectively organised under market conditions. (Recommendation 29)**

3.2.5.6 *Civil/Military Issues*

As far as civil/military use of airspace is concerned, the SES fully relies on the willingness of Member States to implement the “Statement by the Member States on military issues related to the SES” which is attached to the SES regulations. The commitments of Member States in this statement (which is set out in full in Annex 4) include those to:

- co-operate with each other to apply the FUA;
- ensure that the interests of military users of airspace are taken into account in implementing the SES;
- involve military personnel where appropriate in work undertaken by Recognised Organisations;
- take into account the importance of EUROCONTROL in matters of ATM;
- enhance civil/military cooperation.

Flight-efficiency, both from the airspace design and the use of airspace view points is largely, but not only, influenced by the interaction between civil and military. The PRC considers that effective cooperation between civil and military is therefore crucial and it deserves greater focus in future while taking into account both the needs of civil and military users.

During the consultation it emerged that development of the civil/military relationship through the Second Pillar of the European Union may not be the most effective solution to focus efforts on ATM issues. The PRC therefore encourages Member States to develop this cooperation within EUROCONTROL, given its dual civil and military nature.

To complement this approach, the PRC believes that it is important to develop success criteria against which it will be possible to assess the progress made in respect of the implementation of FUA in the future.

It is also proposed to consider some EU financial support to foster civil/military cooperation. This financial support may be used to support integration between civil and military ATSPs where this may improve the overall efficiency of service provision.

- **Implement the Statement by the Member States on military issues related to the SES. (Recommendation 24)**
- **Develop success criteria against which progress can be measured with regards to the full and uniform application of FUA. (Recommendation 25)**
- **Develop mechanisms by which possible EU financial support can be allocated to more effective civil/military cooperation. (Recommendation 26)**

3.2.5.7 Existing Technology Development/Interoperability rules

The development of implementing rules for interoperability under the SES and the development of SESAR may negatively affect on-going technological developments if these new initiatives divert scarce resources from existing plans or research aimed at improving efficiency.

As in the field of safety, the interoperability framework should make best use of the various tools that the SES offers and in particular strike a proper balance between mandatory requirements specified in interoperability implementing rules and voluntary means of compliance (Community specifications) see also section 3.2.4.4 above.

- **Develop necessary interoperability implementing rules and voluntary community specifications by Ensuring a proper balance between mandatory requirements and voluntary means of compliance in future interoperability regulations. (Recommendation 31)**

3.2.5.8 *Financing of New Investments*

In order to promote allocative efficiency in ATM, the PRC recommends that consideration should be given to ensuring that Community funds and expertise – particularly in the form of EUROCONTROL’s resources – are effectively deployed.

Thus the European Commission should review expenditure so as to ensure that there is consistency between EC’s and other financial instruments (e.g. TEN-T, Cohesion Fund, FEDER EIB financing, etc.) and the SES objectives.

- ➔ **Make available EU financial support for the creation of FABs. (Recommendation 17)**
- ➔ **Develop mechanisms by which possible EU financial support can be allocated to more effective civil/military cooperation. (Recommendation 26)**
- ➔ **Ensure consistency between the provision of European financial support/expertise and SES objectives. (Recommendation 23)**

3.3 EFFECTIVE REGULATORY FRAMEWORK

3.3.1 What is at stake?

The fifth and final SES objective is to establish a harmonised regulatory framework.

The SES legislative package does create a new regulatory environment for ANS in Europe. It constitutes a reform that the High Level Group considered as a priority to solve recurring issues in ATM, meet the new challenges and face increasing demand.

The SES’ overall objective and test of success is improved performance of the European ATM system.

The most recent PRR 2005, summarised in section 2.4.2, identifies major performance shortfalls in today’s European ANS. The **question arises whether the SES** and other European Commission initiatives such as SESAR provide an effective ANS regulatory framework, which **drives improvements in performance fast enough** across Europe.

3.3.2 SES Regulatory Mechanisms

The following provisions of Single Sky regulations are identified as having a potential contribution to a better **management of ANS performance**:

- a) The **separation of regulation from service provision** and the **establishment of NSAs** (FR Art. 4).
- b) **Creation of an “industry consultation body”** (FR Art.6), which provides the industry with an opportunity to formulate a common vision and reach consensus on the way forward.
- c) **Certification of ANSPs against Common Requirements.** In particular (CR Annex I.2.2):
 - ANSPs shall produce a **business plan** covering 5 years minimum with appropriate **performance objectives** in term of quality and level of service, safety and cost-effectiveness;
 - ANSPs shall produce an **annual plan with indicators of performance**;
- d) **Mutual recognition** of those certificates allowing ANSPs to provide services everywhere in Europe (SPR Art.7.8).

- e) **Designation** by Member States of any ATSPs holding a valid certificate (SPR Art.8);
- f) **Performance review** by the European Commission (FR Art.11);
- g) **Mutual recognition** of European ATCO Licence (ATCOD Art.15) allowing ATCOs to work anywhere in Europe;
- h) Possible **Incentivisation** of ANSPs through the common charging scheme to encourage ANSPs to support improvement in increased capacity and reduction of delays (SPR Art.15.3.e);
- i) Legal tools for the **reconfiguration** of the **European airspace into FABs** (AR Art.5) regardless of existing boundaries with a view to **achieving maximum capacity and efficiency** of the air traffic management network;

3.3.3 General Strengths and weaknesses of the SES regulatory framework

As with Safety and Efficiency, the PRC has drawn extensively from consultation with stakeholders in its identification of strengths and weaknesses related to the objective to establish an effective regulatory framework. Since the Regulatory Framework is partly designed to improve safety and efficiency performance some items mentioned in 3.1.3 and 3.2.3 above are also relevant here. To avoid repetition, the detailed rationale for each recommendation has therefore been omitted.

Generally speaking the PRC recognises that the establishment of independent NSAs – together with a peer review of their activities – represents significant progress in the sector. In principle, it clarifies the roles and dependent on effective implementation, should ensure a “common playing field” across all Member States.

3.3.4 Identified Strengths

3.3.4.1 *Separation between regulation and service provision*

One of the most significant overall benefits of the SES is the requirement for the separation (at least at the functional level) of regulation and service provision. This is recognised as a fundamental step to ensuring effective regulation and avoiding conflicts of interest, and this is why the PRC has many different recommendations to assist NSAs to work effectively and with adequate capabilities and resources.

3.3.4.2 *Certification against Common Requirements*

Certification of ANSPs against Common Requirements is intended to be one of the most powerful instruments in SES. It will ensure that all ANSPs providing services in Europe comply with common minimum standards in the areas of safety management, quality management, security, organisational structure and finance. This should contribute to performance improvement overall, but particularly for less mature organisations/ANSPs.

As described earlier for Safety and Efficiency, in order to ensure a common playing field, the PRC recommends specific actions to support NSAs in their tasks.

- ➔ **Provide support to NSAs. (Recommendation 1)**
- ➔ **Promote regular cooperative forum for NSAs. (Recommendation 2)**
- ➔ **Promote and facilitate the use of Recognised Organisations. (Recommendation 3)**
- ➔ **European Commission to start peer review procedure of NSAs. (Recommendation 5)**
- **Then, on the basis of experience gained from peer reviews, if appropriate, Organise audits and inspections of NSAs at European level. (Recommendation 6)**

3.3.4.3 *Facilitation of Cooperation*

The very existence of the SES has created a momentum towards cooperation among stakeholders, with expected positive but unquantified impact on performance. Indeed, by creating a common legal framework and imposing obligations on States and ANSPs, SES has prompted more ambitious and larger scale cooperation between European ANSPs than previously:

- Member States, regulators, ANSPs and other stakeholders cooperate more closely and share expertise with new, as well as with existing, partners;
- Cooperation is more ambitious and far-reaching than before – States and ANSPs go deeper in their relationships, e.g. addressing the whole airspace rather than just marginal cross-border areas.

The Industry Consultation Body (ICB) also provides an opportunity for the industry to formulate a high-level common position/vision and ensure that this is effectively influencing policy makers.

More effective cooperation should provide significant benefits (although unquantifiable) for the European ATM network. The SES has the potential to contribute to it. The PRC recommends that all stakeholders use the opportunity of the SES to develop their cooperation.

3.3.5 **Identified Weaknesses**

3.3.5.1 *Lack of common vision for performance improvement*

An overall output of the consultation exercise has been to confirm the view of the PRC that there is no overall agreed vision for ATM that drives towards performance improvement. This means that several key issues today, including those in the areas of environment and the relationship between airports and ATM are outside the SES – the package intended to govern the sector in Europe.

The PRC recommends that the scope of the SES legislation should be adjusted to ensure that a common, explicit orientation is established to focus collective efforts towards improvement and to clarify the roles and obligations of the various institutions dealing with ATM. This should include:

- Making use of on-going work on the future institutional framework for ATM;
- Identifying options to organise service provision and regulation;
- Clarify appropriate organisation of supervision;
- Considering ATM as part of the overall aviation chain;
- Adjustment of the scope of SES to take into account newly emerging issues in ATM such as ATM-related environment issues, effective radio frequency management (an increasingly scarce, essential resource to cope with air traffic growth) and ATM-related airport issues.

→ Develop a common long term policy orientation for SES considering ATM as part of the overall aviation chain. (Recommendation 30)

3.3.5.2 *Lack of clear High Level Performance Objectives*

While the SES contains provisions for performance review, including monitoring of performance indicators, the SES does not contain quantified performance objectives to be achieved at European level. A corollary is a lack of focus for stakeholders and no clear success test for the SES initiative. The PRC notes that SESAR plans to define quantified objectives by end-2006 and that these must be in line with any future objectives or actions developed by the European Commission.

- ➔ **Make the mechanism for performance objectives setting and reporting transparent for performance review. (Recommendation 10)**
- ➔ **Develop minimum performance criteria of the European ATM system to indicate expected performance improvements and to support periodic reviews on SES (2007-2010). (Recommendation 11)**
- ➔ **Develop success criteria against which progress can be measured with regards to the full and uniform application of FUA. (Recommendation 25)**
- ➔ **Support the development of safety indicators. (Recommendation 12)**
- **Then, on the basis of experience gained, Include Safety indicators in SES to be used by ANSPs / NSAs / States. (Recommendation 13)**

3.3.5.3 *Risk of Uncoordinated/Conflicting Initiatives*

Improvements from SES can be expected from bottom-up initiatives as, in principle, ANSPs are best placed to identify and adopt efficiency improving procedures. However, even if some initiatives set and reach ambitious goals, there is an appreciable risk that the net result of un-coordinated, and potentially conflicting, initiatives is that low and slow performance improvement overall will result.

Apart from performance review and users' consultation, there is no strong mechanism in SES to ensure that individual initiatives are converging towards commonly agreed performance objectives.

At least some form of co-ordination of individual initiatives would appear to be needed. Member States and ANSPs should therefore ensure that the initiatives they are developing are coordinated and not conflicting with others.

- ➔ **Develop minimum performance criteria of the European ATM system to indicate expected performance improvements and to support periodic reviews on SES (2007-2010). (Recommendation 11)**
- ➔ **Develop success criteria against which progress can be measured with regards to the full and uniform application of FUA. (Recommendation 25)**
- ➔ **Develop a set of performance indicators to assess the performance improvements arising from FABs. (Recommendation 19)**
- **Then, in the light of the developments of the first years of implementation rules for optimised route and sector design, Reassess the process for route and sector design changes. (Recommendation 22)**

3.3.5.4 *Lack of European level incentives to address monopoly power*

The SES recognises the monopoly position (“on an exclusive basis”) of ATS providers within specific airspace blocks (SPR. Art. 8). Counter-power to the monopoly power enjoyed by ATSPs is left at Member States’ discretion. While this counter-power may be effective in some cases, nothing ensures that it will be effective in all cases.

Member States should therefore use the possibility offered to them through the SES to incentivise the ANSPs providing services in the airspace under their responsibility.

In the light of experience on the extent of use of incentive schemes by States, the European Commission will have to assess the need for mandatory incentive schemes when ANSPs are granted ATS services on an exclusive basis.

→ Develop a framework to assist in setting incentives for efficiency performance improvements. (Recommendation 14)

•• Then, in the light of the experience gained in the first years of SES implementation and in particular by reviewing the use of financial incentives on ANSPs, as provided for in the charging scheme regulation, **Make it mandatory for States to set incentives on ANSPs for efficiency performance improvements. (Recommendation 15)**

3.3.5.5 *Weakness of Mutual recognition of ANSP certificates*

The mutual recognition of ANSP certificates appears to be a weak instrument to foster performance, as Member States have full discretionary powers in designating ATSPs within specific airspace blocks. Beyond the requirements and conditions to obtain a certificate (SPR. Art. 6 & 7), there are no defined precise criteria for the designation process (e.g. terms and conditions of license, regime of economic oversight, etc.).

This is likely to preserve and freeze the status-quo for incumbent ATSPs and put little pressure on ANSPs to improve performance.

Although not directly clear from the SESFARR report, it can be assumed from States’ and ANSPs’ replies that a certain reluctance to change the status quo exists.

Therefore, the PRC recommends that Member States use the opportunity to designate any of the Community certified ATSPs and that specific criteria for the designation process are established.

→ Develop common criteria for designation of monopoly ATSPs and METSPs. (Recommendation 27)

3.3.5.6 *Risk of Regulatory Fragmentation*

Fragmentation is one of the identified main issues in ATM. The PRC considers that there is a high risk that the creation of NSAs adds regulatory fragmentation (and associated costs) to the existing fragmentation of service provision, and creates additional hurdles to the de-fragmentation of service provision. This is because different NSAs and different States are likely to interpret and apply regulations in different ways.

The PRC therefore recommends that effective support is provided to less mature NSAs in implementation of SES. This involves facilitating the exchange of information between NSAs in order to share best practices and ensure an even application of SES provisions. The PRC also recommends starting the process of peer review to strengthen the capabilities of NSAs and build trust within the European ATM community.

Should this peer review process fail to ensure regulatory commonality, the European Commission should then consider audits and inspections of NSAs to be instituted at a European level (in consistency with ICAO).

Moreover, despite the fact that the SES regulations provide for the use of Recognised Organisations, there is little evidence that States will make effective use of this provision. In fact, to date from the SESFARR project, only **two** NSAs (in Germany and Austria) made explicit use of a Recognised Organisation in their activities, mostly for certification and monitoring of support services (MET and COM).

Since there is a risk that the required level of capability may never be reached, depending on local circumstances, the PRC recommends that NSAs should organise their activities of supervision in the most effective way by making use of Recognised Organisations.

On the other hand, the PRC also considers that the process for recognising Recognised Organisations seems rather weak since this recognition can be done by any NSA, even by those which precisely need such Recognised Organisations due to their lack of expertise and capability. Since such recognition is valid within the Community for a period of three years, the PRC recommends improving this process in the medium term, in particular by establishing a validation at EU level. This would ensure a greater consistence and quality control of Recognised Organisations.

Finally, the PRC suggests that mature NSAs themselves could be used as Recognised Organisations by less mature NSAs provided they comply with the nine requirements set out in Annex I of the service provision Regulation.

The PRC also suggests developing a common regulatory framework for NSAs to encompass not only supervision of proper application of SES requirements but also to allow the NSAs to effectively assess the performance of ANSPs in terms of safety, use of airspace and efficiency. This would ensure a more harmonised regulatory framework in Europe. Thus a common and more comprehensive framework for ANS regulation, within which national NSAs can operate, is recommended, rather than a central European regulator.

Finally, as identified in 3.1.5.2, the safety regulatory framework is scattered amongst various instruments and should be unified in due course.

- **Provide support to NSAs. (Recommendation 1)**
- **Promote regular cooperative forum for NSAs. (Recommendation 2)**
- **Promote and facilitate the use of Recognised Organisations. (Recommendation 3)**
- Then, in the light of the experience gained from the use of Recognised Organisations, **Improve recognition process of Recognised Organisations. (Recommendation 4)**
- **European Commission to start peer review procedure of NSAs. (Recommendation 5)**
- Then, on the basis of the experience gained from peer reviews, **Organise audits and inspections of NSAs at European level. (Recommendation 6)**
- **Develop a common and consistent regulatory framework for NSAs. (Recommendation 8)**
- **Unify the safety regulatory framework. (Recommendation 9)**

4 RECOMMENDATIONS

4.1 INTRODUCTION

The explanation of the individual Recommendations given below follows on from the rationale for their use given in Section 3 above. All recommendations are summarised in Annex 3.

These recommendations are meant to build on SES strengths and to address its deficiencies.

The recommendations have been categorised according to the timeframe in which they should be applied:

- Applicability in the short term (0 – 2 years). These recommendations involve non-regulatory initiatives from stakeholders (including the European Commission), and regulatory initiatives using existing provisions of the SES Regulations.
- Applicability in the medium term (2 – 5 years). These recommendations involve actions to be started as soon as possible (required), or if preset criteria are met (conditional). They require some form of new regulatory initiative, which necessarily takes some time to become applicable.
- Applicability in the long term (5 years and beyond). These recommendations require not only the development of legislation but also the adoption of new policies at a European level or major changes in the ATM sector overall. These require a consensus of opinion among stakeholders at many levels and will necessarily take additional time to develop.

4.2 RECOMMENDED ACTIONS

The recommendations have been categorised into seven Domains of Action:

- Efficient and effective organisation of supervision and regulation;
- Performance criteria and objectives;
- Rationalisation of airspace and service provision;
- Civil/Military cooperation;
- Organisation of service provision;
- Policy orientation;
- Rule making process.

These Domains of action cross over the three axes of analysis; for example, an action may drive improvements in both Safety and Efficiency.

The relationships among recommendations are illustrated within each “Domain of Action”.

4.2.1 Organisation of Supervision and Regulation

4.2.1.1 Recommendation 1 - Provision of Support to NSAs (short term)

With the objective of assisting NSAs in their certification of ANSPs and supervision of SES implementation, the PRC recommends that additional support should be provided at European level. This support requires no regulatory action, but could be provided as a short term activity. It would build on the cooperation already evident in the industry and seek to strengthen regional ties, focusing on assisting less mature NSAs. It would take several forms, such as:

- providing practical support to the relevant NSAs;
- providing financial support to deploy necessary resources and/or the use of EUROCONTROL expertise to assist with technical matters;
- developing and disseminating guidance material for NSAs;
- supporting regional cooperation among NSAs.

Member States should also take the necessary measures to ensure that the NSAs have the sufficient capabilities and qualified resources to carry out the tasks assigned to them by the SES Regulations.

These activities are all intended to build on the strengths and address the weaknesses identified above, including in particular the lack of resources and capabilities to implement the SES Requirements.

4.2.1.2 Recommendation 2 - Promote regular cooperative forum for NSAs (short term)

In order to promote discussion, cooperation and coordination of NSAs as well as their representation at EU level and to ensure the sharing of best practice and the even application of SES Regulations, the PRC recommends that a regular cooperative forum for NSAs should be established.

This could involve the provision by the European Commission of the necessary channels of communication and publication of information to enable NSAs to meet. It is not envisaged that a cooperative forum (or fora) would be a formal institution that is part of the SES, but rather that it should build upon the existing cooperation between NSAs and the success achieved by informal, non-regulatory activity observed to date by the PRC. It would, however, be strengthened by the European Commission's central support. It is thus a non-Regulatory activity at the EU level and can be instigated in the short term. The commitment of the European Commission and the respective NSAs to such a forum would contribute to:

- exchange of best practice in terms of certification, supervision of certificates and supervision of proper application of SES regulations;
- representation of NSAs at EU level and help to convey collective NSAs' viewpoints at the EU level;
- building increased cooperation and coordination as familiarity and trust is developed through regular interaction between NSAs in an informal but focused environment;

- allow the exchange of information on Recognised Organisations in order to contribute to the reduction in NSA costs and resources.

In due course, depending on the effectiveness of the forum and the wishes of the NSAs taking part in its activities, the European Commission should assess the need for a more formal body, possibly with a permanent secretariat.

4.2.1.3 Recommendation 3 - Promote and facilitate the use of Recognised Organisations (short term)

The lack of resources (particularly in the technical field of safety regulation) to enable NSAs to carry out their duties effectively has been a key theme to arise during this study. The existing SES Regulations offer a tool to reduce the burden on States establishing NSAs and to provide the necessary capabilities: the use of Recognised Organisations is a way to take advantage of a wider pool of resources to perform certification and supervision tasks. There are two existing examples of such Recognised Organisations in the EU to date (in Germany and Austria).

The PRC believes that the use of Recognised Organisations can:

- facilitate the work of NSAs (both for certification and supervision of proper SES implementation);
- address issues of fragmentation of supervision since fewer organisations overall will be required to conduct certification activities and the scope for differing interpretation is thus reduced and more uniform application of rules occurs;
- address inefficiencies in supervision by requiring fewer resources overall and benefiting from economies of scale in fewer larger organisations - as opposed to all smaller States staffing their NSAs and so unnecessarily increasing costs.

In order to spread their use, therefore, the PRC recommends that the European Commission should act to:

- promote the recognition and use of Recognised Organisations among Member States;
- enhance awareness of existing Recognised Organisations.

This could be achieved for example, by means of the provision of information in the Single Sky Committee. No new regulatory activities are required for this action which can therefore begin in the short term.

The PRC also recommends that Member States and NSAs make best use of these Recognised Organisations. This is most likely to apply to smaller and less mature NSAs.

In addition, the PRC considers that mature NSAs themselves could be used as Recognised Organisations by less mature NSAs since they should be able to comply with the nine requirements set out in Annex I of the service provision Regulation. Those NSAs should therefore investigate the opportunities offered to them by the SES.

4.2.1.4 Recommendation 4 - Improve recognition process of Recognised Organisations (medium term)

Building on Recommendation 3 above and based on experience yet to be gained from use of Recognised Organisations by NSAs, the European Commission could take practical steps to promote credibility and confidence in the use of Recognised Organisations.

In fact, the PRC also considers that the process for recognising Recognised Organisations is rather weak since this recognition can be done by any NSA, even by those which precisely need such Recognised Organisations due to their lack of expertise and capability. Since such recognition is valid within the Community for a period of three years, the PRC recommends improving this process in the medium term, in particular by establishing a validation at EU level. This would ensure a greater consistence and quality control of Recognised Organisations.

Draft legislative proposals amending Article 3 of the Service Provision Regulation would be required in order to:

- Establish a validation process at EU level for the fulfilment of requirements set out in Annex I of Regulation 550/2004;
- Maintain and publish the list of Recognised Organisations in the Official Journal of the European Union so as to continue to promote their use and support confidence in their capabilities.

4.2.1.5 Recommendation 5 - European Commission to start peer review procedure of NSAs (short term)

In order to strengthen the capabilities of NSAs and build trust for mutual recognition of certificates so that safety can be effectively regulated and efficiency enhanced, there is a strong desire evident to ensure that compliance with Common requirements and supervision of the implementation of the SES is performed effectively across Europe.

Many stakeholders have commented to the PRC that they look forward to the outputs of the peer review process as an essential way to assess whether supervision is being carried out effectively, but some also see it as an opportunity to see and learn from how other more experienced NSAs are conducting the activity. In the latter case they have also stated that the initial years' of the process will be those where the peer review would be most useful. Noting that no new regulatory activity is required (only the application of Article 9 of the Common Requirements Regulation) and that this can therefore be instigated in the short term, the PRC urges the European Commission to start the peer review process as soon as possible and in particular:

- Establish a pool of national experts as required by the SES regulations;
- Define plans (list of NSAs and timescale) for peer reviews.

4.2.1.6 Recommendation 6 - Organise audits and inspections of NSAs at European level (medium term)

Based on the experience gained from peer reviews, in particular with regards to the selection process of national experts and the acceptance of experts by States, should the peer review process prove inadequate to ensure common application then further steps could be taken.

The European Commission should assess the need to reinforce the supervision of NSAs at European level. These would involve the following:

- Investigate the need to organise independent audits and inspections at EU level when needed, in consistency with ICAO and ESIMS⁸ audits, for example in the same way as for Airport security (Regulation (EC) No 2320/2002) in order to assess in particular the capabilities of NSAs;
- Include in these inspections effective mechanisms to ensure that failures are identified and corrective actions taken to ensure compliance with SES requirements;
- If necessary, repeal the peer-review procedure.

This activity is seen by ANSPs as a very high priority. Since it requires new legislation, it is a medium term activity.

4.2.1.7 Recommendation 7 - European Commission to start the review of compliance with the principles and rules for air navigation charges (short term)

In 2007, the Common Charging Scheme Regulation will enter into force providing precise rules for the establishment of air navigation charges. In order to address the identified weaknesses of the SES that allow the possibility of different interpretations of European rules, at national level and so as to ensure a common application of rules across States and effective compliance within the Community, the PRC recommends that the European Commission begins a review of compliance with the principles and rules of air navigation charges by applying the procedure referred to in Article 16 of the Service Provision Regulation.

This can be facilitated by establishing the practicalities for this review by making use of EUROCONTROL expertise.

4.2.1.8 Recommendation 8 - Develop a common and consistent regulatory framework for NSAs (medium term)

One of the highest priorities identified by the PRC is the development of a common regulatory framework for NSAs. This would develop the role of NSAs to not only supervise proper application of SES but also to assess the level of safety, efficiency and use of airspace, taking advantage of, and building on, the independence of NSAs from service provision. It would therefore cover wider aspects than today's role for NSAs. This recommendation is not for the establishment of one regulatory body but for a common and more comprehensive framework within which ATM can be regulated so as to focus on improved performance.

This common regulatory framework should consist of general principles for NSAs, including not only supervision but also regulation of ATSPs and METSPs designated on an exclusive (monopoly) basis:

- Safety: Transposition of ESARR1 is ongoing;
- Economic: Establishment of a common regulatory framework with general principles to protect users from the abuse of monopoly power (rights and obligations of the various stakeholders, organisation of public hearing,

⁸ EUROCONTROL ESARRS Implementation Monitoring and Support Programme.

transparency of decisions taken, etc) where ATS services are not provided in a contestable environment; and

- Airspace: Assessment of the use of airspace.

A further recommendation is that the need for regional NSAs (with the associated benefits of efficiencies and commonality of regulation) can be encouraged and symbolised by changing the name of NSAs (“National Supervisory Authorities”) into ANSAs (“Air Navigation Supervisory Authorities”).

This recommendation, although regarded as a high priority, cannot be achieved in the short term as legislative proposals are required and is therefore medium term action.

4.2.1.9 Recommendation 9 – Unify the safety regulatory framework (medium term)

In order to focus collective efforts towards safety performance improvements, it is necessary to clear away uncertainties stemming from the scattered European regulatory safety framework.

It would be beneficial to unify the safety regulatory framework by:

- ensuring proper and consistent transposition of ESARRs;
- considering removal of any duplication in the European safety regulatory rules;
- alleviating legal impediments in order to develop incident reporting in a “just culture” environment.

This recommendation, although regarded as a high priority, cannot be achieved in the short term as legislative proposals are required and is therefore medium term action.

4.2.1.10 Relationship of Recommendations

The relationship between the different recommendations in the domain of “Organisation of supervision and regulation” is shown in Figure 14 below.

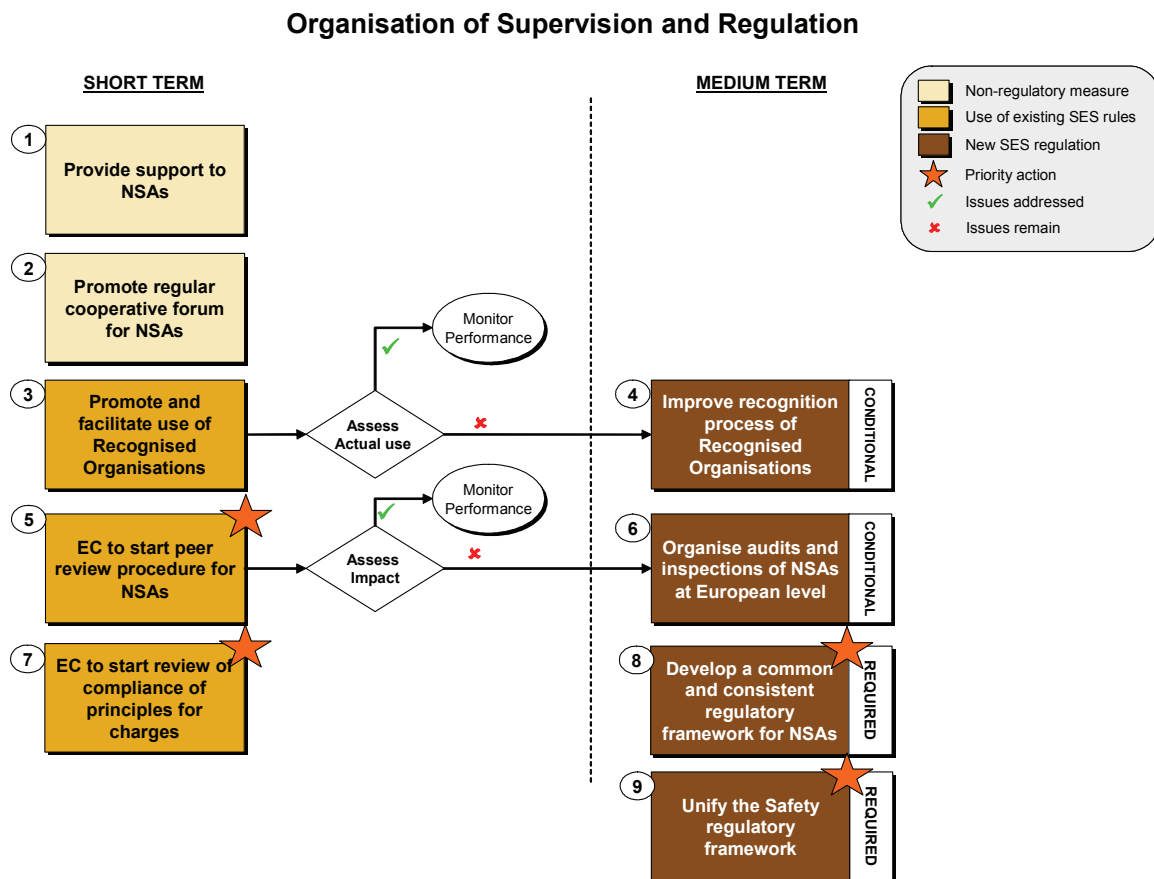


Figure 14: Recommendation Relationship - Organisation of Supervision and Regulation

4.2.2 Performance criteria and objectives

4.2.2.1 *Recommendation 10* - Make the mechanism for performance objectives setting and reporting transparent for performance review (short term)

In order to improve Efficiency and Safety performance the PRC recommends that the European Commission makes use of existing implementing rules on performance review. This is a short term action, building on the mandatory requirement for ANSPs to set performance objectives through the certification process.

Through the future performance review Regulation, the European Commission can deliver additional visibility to assess performance improvement by:

- making transparent for performance review the performance objectives (in terms of safety, cost-efficiency and capacity) that must be set at national level under the Common Requirements - so as to ensure that at least the European Commission (but preferably also the wider European stakeholders) has visibility of objectives and can then compare progress of an ANSP over time;
- including minimum requirements for open consultation with stakeholders, when establishing performance objectives - these requirements should include airspace users' views and explaining the rationale for decisions taken on which objectives are included, so putting pressure on providers to meet their users performance demands.

Transparency of such performance objectives provides a good starting point for improved performance. However, it should be considered that although it is particularly helpful when services are provided on an exclusive monopoly basis, it is less easy to achieve where there is effective contestability for services. The performance review requirement should therefore be sensitive to the fact that some providers may be concerned about the possibility of exposing commercially sensitive information by this means.

An additional and related recommendation that can be achieved through a non-regulatory measure is to:

- develop a performance framework to assist both ANSPs and NSAs in establishing performance objectives through the certification process (Common Requirements).

4.2.2.2 Recommendation 11 - Develop minimum performance criteria of the European ATM system to support periodic reviews on SES (2007-2010) (short term)

It is widely held that desired outcomes and performance achievements constitute the ultimate objective of SES initiatives. All initiatives should therefore, to a certain extent, be geared to this ultimate objective. It is therefore important to set clear performance criteria in advance, so as to focus stakeholders' attention on essential items, and to be able to test achievements against preset criteria.

While individual ANSPs must report their targets to their NSAs, the SES regulations do not contain any overall performance criteria. The European Commission could drive improvement in this area by signalling possible future initiatives if performance does not improve. This could take shape by setting and publishing minimum objectives for the European ATM system as a whole, consistent with SESAR objectives, such as:

- **Cost effectiveness:** for example by requiring a presumption that an annual decrease of 3% over the 3-year period in unit costs (this would be the presumption under the rules and it would be for the ANSP/State to explain why it cannot be reached);
- **Delay:** for example, requiring < 1 min/flight for each year over the 3-year period;
- **Airspace:** for example, requiring that the average extension of intra-European routes should not be longer than average extension of national domestic routes at the end of the 3-year period;
- **Safety:** for example, Safety maturity level of all NSAs and ANSPs > 70% at the end of the first 3-year period (as measured by the periodic EUROCONTROL survey).

This action is seen as a priority by the PRC to improve ANS performance and is considered as central in its set of recommendations.

4.2.2.3 Recommendation 12 - Support the development of safety indicators (short term)

Again without the use of new regulatory actions, but by communication and positive engagement, the European Commission can make use of current initiatives to press for the development of safety indicators in European ATM.

The PRC therefore recommends that Member States and ANSPs participating in the SAFREP group overtly support effective progress and encourage additional pressure for it to deliver a set of agreed safety performance indicators by the end of 2007.

4.2.2.4 *Recommendation 13 – Include Safety indicators in SES to be used by ANSPs/NSAs/States (medium term)*

On the basis of the conclusion of the SAFREP process referred to in Recommendation 12, and in order to enhance the overall level of safety the PRC recommends that safety indicators that allow measurement of safety performance should be adopted by ANSPs/NSA/States. These indicators would be implemented in the medium term and:

- be based on SAFREP conclusions on safety indicators;
- be included in Annex 1 of the Common requirements IR and in the Annexes of Performance Review IR.

This action is seen as a priority by the PRC to improve safety performance.

4.2.2.5 *Recommendation 14 – Develop a framework to assist in setting incentives for efficiency performance improvements (short term)*

As a short term way to provide assistance to NSAs/States in establishing incentives directed at improving overall efficiency as made possible through the Common Charging Scheme Regulation, the PRC recommends that a framework should be developed to assist in setting incentives for efficiency. This would be in the form of guidance material – not new regulation.

Thus, the European Commission should establish a transparent method to develop financial incentives on ANSPs that NSAs/States can implement and enforce through the Charging Scheme Regulation – this should include changing the presumption of performance improvement by placing the burden of responsibility onto the ANSP to deliver improvements unless there is good reason why they cannot be achieved.

Member States and ANSPs should actively contribute in the development of this framework so that local conditions may be taken into account.

Since the PRC views the introduction of some positive means of encouragement to improve performance, and favours the consideration of incentives, this recommendation is considered to be a priority.

4.2.2.6 *Recommendation 15 – Make it mandatory for States to establish incentives on ANSPs for efficiency performance improvements (long term)*

The PRC expects that (the optional) financial incentives on ANSPs provided in the Common Charging Scheme Regulation and supported by Recommendation 14 would achieve benefits but this will depend on each Member State's approach.

Therefore, through a review of the use of those financial incentives on ANSPs at the end of the next review period, the PRC recommends reassessing whether it is necessary to make it mandatory for Member States to establish incentives on ANSPs for efficiency performance improvements.

This would mean that the full cost-recovery system currently in operation would be replaced by a mandatory incentive scheme.

The intent is that each Member State should implement an incentive scheme on the basis of a common framework defined at European level which would allow for local specifics.

4.2.2.7 Relationship of Recommendations

The relationship between the different recommendations in this domain is shown in Figure 15 below.

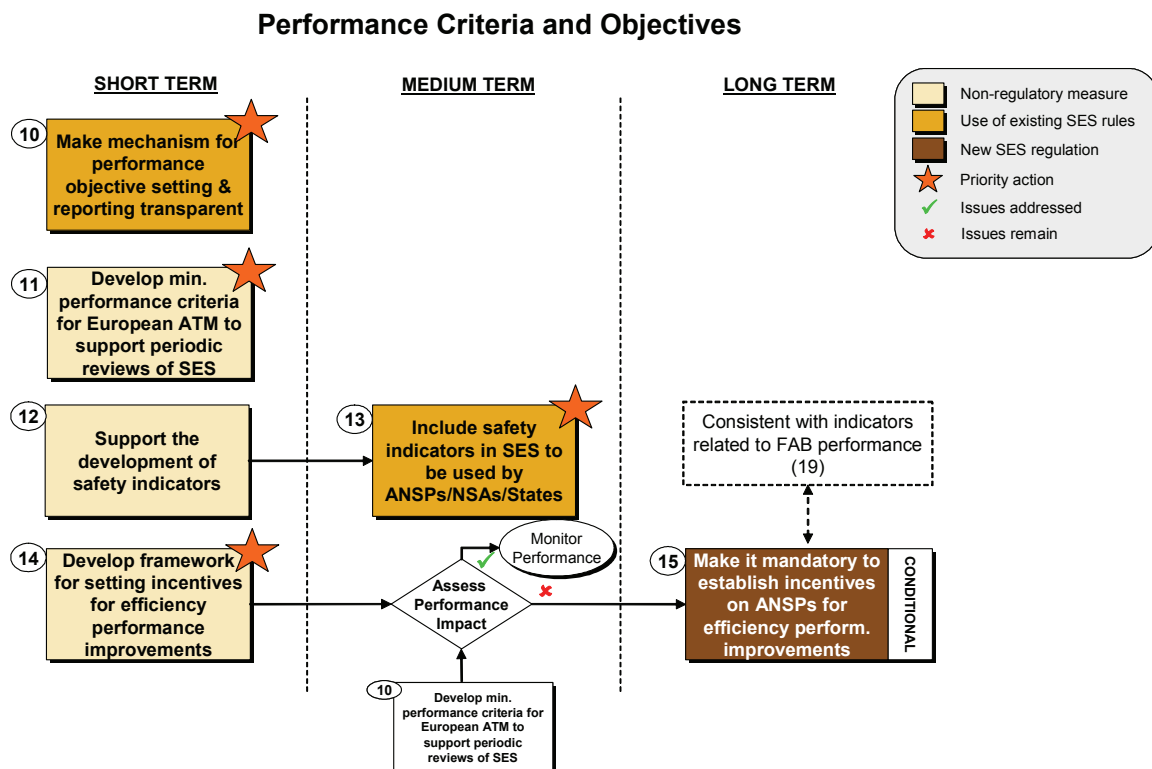


Figure 15: Recommendation Relationship – Performance Criteria and Objectives

4.2.3 Rationalisation of airspace and service provision

4.2.3.1 Recommendation 16 – Make the objectives of FABs clearer (short term)

While the Service Provision Regulation enables (if it does not drive) service provision consolidation, the mechanism for efficient consolidation of airspace is the FAB. However, as described in Section 3.2.5 above there is a lack of clarity over the objectives and expectations for FABs. Therefore, in order to focus collective effort on achieving real benefits from what is potentially a valuable tool to improve efficiency performance, the European Commission should seek to clarify the objectives of FABs. This should be instigated while FABs are still being created so that there is still an opportunity for flexibility in their definition.

The aim of this action is to clarify objectives and expectations for the outcome of FABs in particular in terms of:

- Airspace restructuring and rationalisation i.e. that they should:
 - Reduce airspace fragmentation;
 - Improve efficient use of airspace.
- Contribute to service provision consolidation by:

- Reducing the number of en-route ATS operational units and improve efficiency of service provision (infrastructure use, human resources, support functions etc.);
- Ensuring effective, integrated cross-border cooperation (e.g. through the procurement of new systems, training, planning, maintenance of CNS).

This action should be a **high priority** for the near future.

4.2.3.2 Recommendation 17 - Make available EU financial support for the creation of FABs (short term)

Depending upon the future development of the SES, yet to be assessed, and the effectiveness of FABs, the European Commission should act to provide support through public funding for transitional costs for FABs that would otherwise not be developed.

There is a need first to define conditions for this support that could include, for example:

- Setting a time limit to incentivise States to create appropriate FABs quickly;
- Setting criteria for cases where there are clear benefits and when transitional costs are particularly high, or when wider benefits could be captured with additional funding (than would be available from ANSP action alone).

4.2.3.3 Recommendation 18 - Develop common general principles for the establishment and modification of FABs (short term)

By utilising the existing implementing rules on FABs (through Article 5(3) of the Airspace Regulation), the European Commission can help to alleviate barriers to cross-border cooperation (in terms of institutional, civil/military and fiscal issues for instance) by providing States and ANSPs with clear views on the principles that FABs shall fulfil. Again this should be enacted while FABs are still being established and before obstacles become entrenched.

4.2.3.4 Recommendation 19 - Develop a set of performance indicators to assess the performance improvements arising from FABs (short term)

This recommendation is intended to assist member States during the creation of FABs and to allow the European Commission to assess performance improvement. There are two steps that could contribute to this aim:

- Develop specific FAB indicators;
- Develop means of compliance for FABs (e.g. possibly Community Specifications for CBAs).

The PRC is well placed to assist in the development of this action.

4.2.3.5 Recommendation 20 - Reassess the mechanisms for the creation of FABs (medium term)

Depending upon the success and development of the SES in the first years of implementation, and in particular on the basis of the results of the continuous monitoring of FABs by the Commission, the PRC recommends that the European Commission reassesses

the need to improve the mechanisms for the creation of FABs as indicated in its statement attached to the SES Regulations.

This recommendation is intended to foster the reorganisation of service provision and airspace at EU level by alleviating any identified difficulties or obstacles in the establishment of effective FABs. This should include consideration of the extent - or lack - of financial, legal or institutional support for their establishment.

Note that the PRC is not necessarily anticipating the imposition of top-down requirements, but the deployment of central resources to identify obstacles and barriers and to create a means to deal with them.

This will be a medium term requirement as it will require a Communication from the European Commission plus draft legislative proposals amending Article 5 of the Airspace Regulation.

4.2.3.6 Recommendation 21 - Develop Implementing Rules on optimised route and sector design (short term)

This recommendation is intended, by acting in the domain of rationalisation of airspace and service provision, to contribute to the better reorganisation of airspace structure at European level with the aim of alleviating civil/military issues. One way to ensure civil access to routes may be to ensure the availability of certain routes.

Thus the PRC recommends that the European Commission utilises the Implementing Rules on Route and Sector Design (Article 6 of the Airspace Regulation) to define simple high level criteria for route and sector design - e.g. for all the busy city-pairs (with criteria to be identified) that are longer than 200 NM, any route extension greater than 10% should be duly justified.

The PRC also recommends that the appropriate and effective structure shall be developed within EUROCONTROL to ensure a proper application of those criteria.

Member States and ANSPs should support the development of such common criteria and effectively implement them at European level.

4.2.3.7 Recommendation 22 - Reassess the process for route and sector design changes (long term)

In the light of the developments of the first years' of implementation of route and sector design under the SES, by monitoring the improvements with regards to the high level criteria suggested in Recommendation 21, the PRC recommends that the European Commission reassess the process of route and sector changes in order to alleviate any difficulties that may be blocking progress.

For instance, the need to have the approval of the Member States who have responsibility for the airspace to which the decision apply, while recognising its political sensitivity, may represent a key barrier in the effective restructuring of the European route network.

Therefore, it may be worthwhile defining stronger mechanisms to ensure a genuine and effective improvement in route and sector design.

4.2.3.8 Recommendation 23 – Ensure consistency between the provision of European financial support/ expertise and SES objectives (short term)

A short term, non regulatory measure associated with the effective administration of ATM in Europe, this action is intended to avoid unnecessary expenditure of funds or allocation of resources to invest in new facilities at a time when fragmentation should be reduced.

For example, neither EUROCONTROL nor the EU should be building new ACCs in isolation but the use of EU and other financial instruments (e.g. TEN-T, Cohesion Fund, FEDER EIB financing, etc.) should be applied consistently with SES objectives.

This should in particular consider the need for transitional costs to be supported in the development of FABs.

4.2.3.9 Relationship of Recommendations

As for the previous domains of action, the relationship between the different recommendations is illustrated in Figure 16 below.

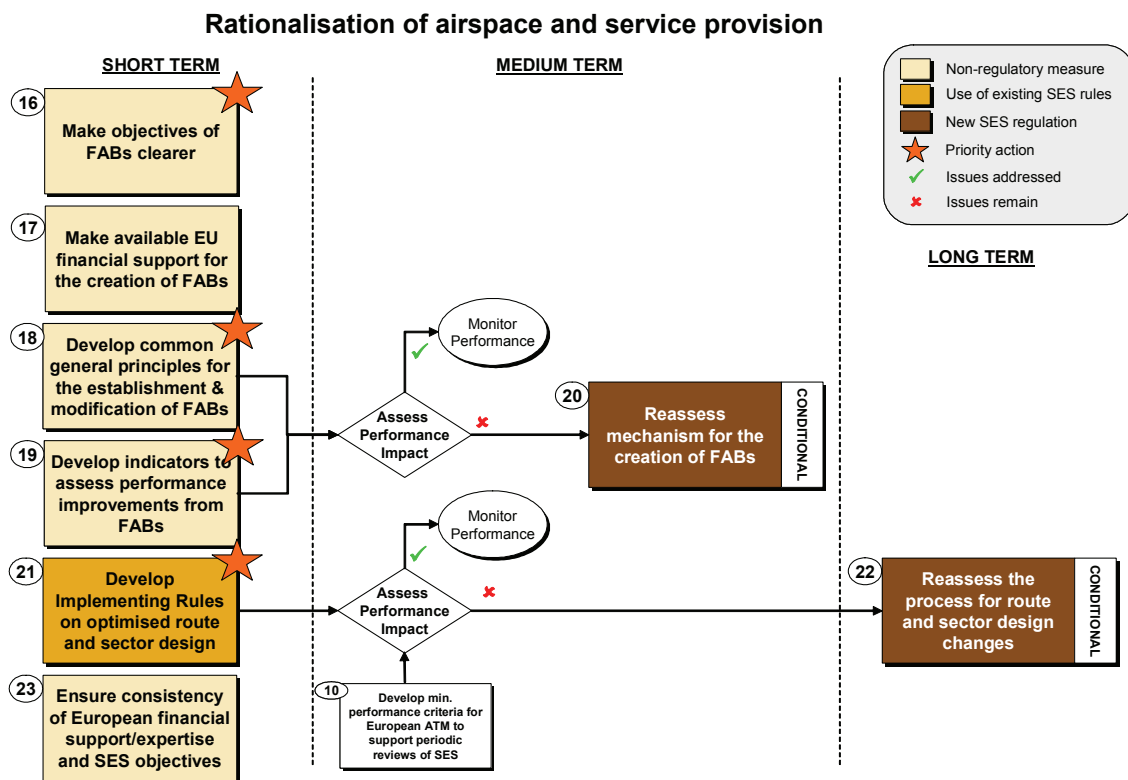


Figure 16: Recommendation Relationship – Rationalisation of airspace and service provision

4.2.4 Civil/military cooperation

4.2.4.1 Recommendation 24 – Implement the Statement by Member States on military issues related to the SES (short term)

When adopting the SES Regulations, Member States have adopted a statement on military issues related to the SES (see Annex 4 for the full text).

In order to achieve the SES objectives and, in particular, in order to improve efficiency of airspace use, the PRC urges the European Commission to encourage Member States to meet the commitments made in this statement.

In particular, the PRC recommends that States should take all necessary measures to implement the statement through the EUROCONTROL Organisation;

The PRC also recommends that States report to EUROCONTROL by end 2008 on the progress made towards achieving implementation of this statement.

4.2.4.2 *Recommendation 25 – Develop success criteria against which progress can be measured with regards to the full and uniform application of FUA in line with States’ statement on military issues (short term)*

Since the full and uniform application of FUA is considered one of the key elements for optimized use of airspace and improved flight efficiency, the PRC recommends developing success criteria to assess the degree and effectiveness of the application of FUA.

This will allow a proper assessment in the future of the evolution of the cooperation between civil and military.

4.2.4.3 *Recommendation 26 – Develop mechanism by which possible EU financial support can be allocated to civil/military cooperation (short term)*

A further recommendation intended to address flight inefficiency through improved civil/military integration requires a short term time scale.

The PRC understands that one of the obstacles to reorganising the use of airspace is the requirement of military users for military airspace to be located relatively near to military bases. There are examples, where, although a particular block of airspace could be used flexibly, it is too far from existing bases to be suitable for military use. In some cases one solution may be to move the military base nearer to the available airspace block but this may be prevented when funds are not readily available.

Thus the European Commission should investigate sources of financial support to:

- moving military training to less congested areas or periods;
- support equipment of military aircraft (e.g. 8.33 kHz) with a view to make effective use of existing capacity for all airspace users;
- support integration between military and civil air navigation services provision (so as to improve the overall efficiency of service provision).

4.2.4.4 *Relationship of Recommendations*

The relatively simple relationship between the recommendations in this domain of action, includes the need to ensure consistency with recommendations in the field of “Rationalisation of airspace and service provision” – as per Figure 17 below:

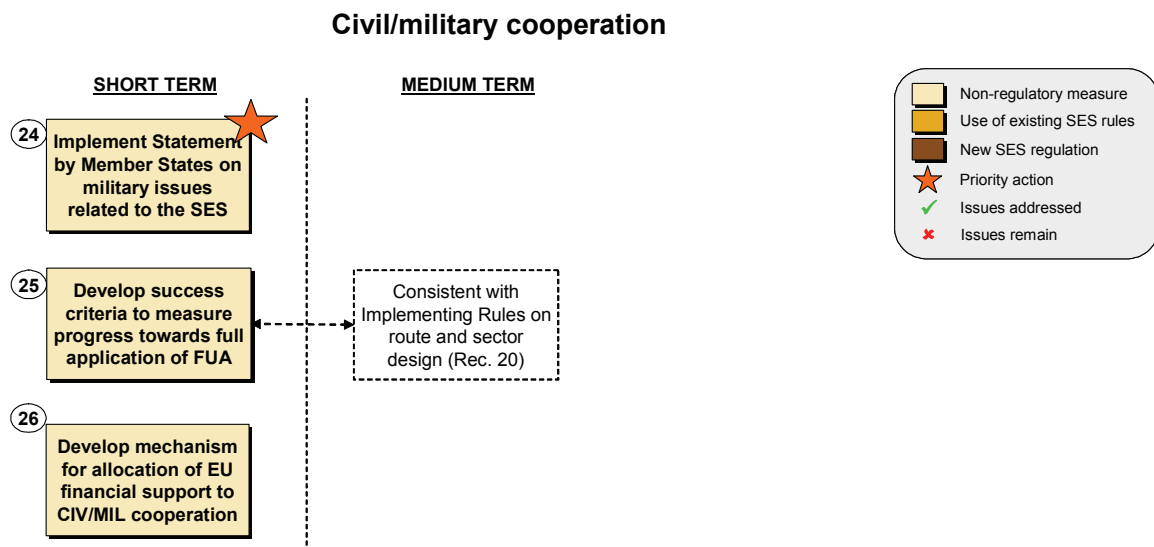


Figure 17: Recommendation Relationship – civil/military cooperation

4.2.5 Organisation of service provision

Recommendations under the domain of the organisation of service provision are intended to drive efficiency by reinforcing or introducing further contestability for service provision. As such they require not only new enabling or mandating regulations but also a change in approach requiring consensus among stakeholders.

4.2.5.1 *Recommendation 27 – Develop common criteria for designation of monopoly ATSPs and METSPs (medium term)*

In order to strengthen the usefulness of mutual recognition of certificates for service provision, the development of common criteria for the designation of monopoly ATSPs and METSPs should be developed. These criteria will allow States to periodically reassess their decisions as to which ANSP should provide services in a particular block of airspace.

New legislation to amend articles 8 and 9 of the Service Provision Regulation will be necessary to define common criteria for designation to be applied by States. These criteria could include:

- The duration of an exclusive designation of an ATSP or METSP;
- Rules on the process for granting designation (i.e. a tender process).

4.2.5.2 *Recommendation 28 – Develop the contestability of ATS at airports and MET services (long term)*

To improve efficiency in the provision of ATS at airports and in MET services, the PRC recommends that, over the long-term, contestability for these services should be made mandatory, so gradually introducing “competition for the market”.

Action will require new legislation and should also involve:

- the establishment of a timeframe for a progressive introduction of “competition for the market”;
- identification of relevant criteria for application;

- Identification and removal of any barriers to entry.

4.2.5.3 *Recommendation 29 - Develop the organisation of CNS and AIS under market conditions according to SES (medium term)*

A further recommendation designed to strengthen the application of current SES principles related to CNS and AIS involves action to ensure that such services are organised under market conditions as foreseen in Recital 13 of the Service Provision Regulation. A Communication from the European Commission and possible draft legislation could be required to develop unbundling of CNS and AIS.

4.2.5.4 *Relationship of Recommendations*

The three recommendations in this domain are directed towards the same end and are similar in nature, as shown in Figure 18 below they can be undertaken independently from each other. Note that they are either medium or long term activities.

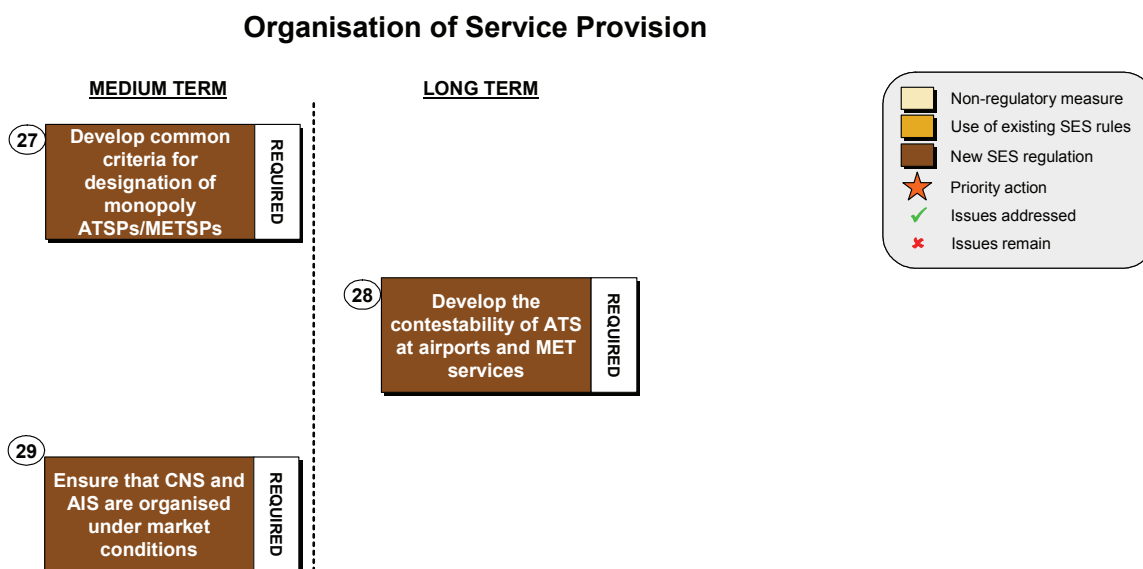


Figure 18: Recommendation Relationship - organisation of service provision

4.2.6 Policy orientation for the SES

4.2.6.1 *Recommendation 30 - Develop a common long term policy orientation for SES (short term)*

One overall view formed by the PRC is that SES would be likely to generate greater improvement where there is an agreed and clear direction for ATM understood across Europe.

Building on the momentum created by the SES initiative, the European Commission should focus collective efforts towards performance improvements by clearing away uncertainties and promoting such an orientation. The PRC recommends that such an orientation should:

- make use of the on-going work on future institutional framework for ATM;
- ensure the inclusion of some important but currently absent terminology to reflect the real issues in ATM (for example, the SES makes no mention of “consolidation” in view of reducing fragmentation, yet this is clearly identified by the PRC as an important driver to improved efficiency);

- identify options for organisation of service provision so as to produce improved performance overall (for example, adopting the maximum level of contestability to produce an incentive for improvement or alternatively arriving at a clear view that a single provider should be used, or again that a mixed solution is appropriate);
- clarify the appropriate organisation for supervision of ATM, in particular establish a single and strong ANS safety regulatory framework with a defined scope (rule making, regulation, supervision, oversight) so that roles and responsibilities are understood and the activity can be focused and efficiently undertaken. Such a framework should be based on the on-going revision of safety occurrence reporting and accident investigation directives and in particular should aim to alleviate legal impediments in order to develop incident reporting in a “just culture” environment;
- consider ATM as part of the overall aviation value chain recognising the inter-relationships between the sector and other entities who depend on it;
- consider adjusting the scope of SES to take into account newly emerging issues in ATM such as ATM related environment , radio-frequency management and ATM-related issues at airports.

4.2.7 Rule-making process

4.2.7.1 *Recommendation 31 - Ensure balance between mandatory requirements and voluntary means of compliance in future interoperability regulations (short term)*

In terms of interoperability of the European ATM network (EATMN), the SES is based on the Community “New Approach” which is used in many other areas of the European Union.

This approach offers various tools organised in three different levels:

- Mandatory essential requirements;
- Mandatory implementing rules which aim at achieving the essential requirements;
- Voluntary Community specifications which represent means of compliance for the two first mandatory levels;

When developing the interoperability part of the SES, there should be a proper balance between mandatory requirements specified in interoperability implementing rules and voluntary means of compliance (Community Specifications) while recognizing that interoperability of systems also necessitates minimum binding rules.

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5 OVERVIEW

It is too soon to determine the extent of the performance impacts of the SES, as its full implementation is yet to be completed. However, the project reveals that some positive impacts of the SES have already been observed, for example in the way that it has improved cooperation between ANSPs as well as States.

Moreover, it is already possible to identify in the SES mechanisms themselves some potential weaknesses that should be corrected over time – if issues are not addressed and performance improvements are not achieved.

The PRC's view is that any extension of new European regulation/legislation should be justified by appropriate regulatory impact assessments. Before introducing new regulation, alternative means of achieving the objectives should be explored first. This is why the PRC's recommendations take several forms. They include potential future regulatory action but also strive to provide non-regulatory recommendations as much as possible.

One of the most significant overall benefits of the SES is the requirement for the separation (at least at the functional level) of regulation and service provision. This is recognised as a fundamental step to ensuring effective regulation and avoiding conflicts of interest.

It is also generally anticipated that the SES will provide benefits – in particular through bringing minimum common safety standards to some States with less mature regulatory regimes. It is, however, unlikely to have a great impact on the mature States that already have strong safety regulation, established regulatory frameworks and large ANSPs with sophisticated safety management systems.

However, it is a central finding of the PRC that, at the overall European level, there is no guarantee that the SES in its current form will produce tangible performance improvements in respect of Efficiency and thus will not address effectively the key current issues in ATM. Despite the positive aspects, the SES lacks overall impetus and incentive to performance improvement. The most promising tools to improve performance lie in the hands of the States, which may result in potential inconsistencies in their application and prevent a genuine and effective level playing field.

In order to focus collective effort towards performance improvement, the PRC believes that the development of success criteria for the European ATM system is now crucial. These criteria would effectively set quantified performance objectives – at a high level – and form a central element of the suggested way forward set out in this report. Such minimum performance criteria will allow for empirical assessment of all future actions towards improved performance and are key to effective European ATM network in the future.

Many of the issues that remain for the SES to resolve can be described as issues at the European level rather than deficiencies in the regulatory package. These include addressing fair and effective civil/military access to airspace, providing incentives for ANSPs consolidation, and alleviating sovereignty issues.

The SES to date has shown that cooperation can achieve valuable benefits; it has encouraged Member States, regulators and service providers to be more ambitious, to seek to cooperate more deeply and to address current ATM issues more directly.

It is important that SES regulations lead to benefits that are greater than the costs they impose, taking into account local conditions and focusing on outcomes. Therefore the PRC's recommendations are intended to adapt the SES to focus directly on improving performance and delivering a safer and more efficient network within an effective regulatory framework.

ANNEX 1 OVERVIEW OF THE MAPPING PROCESS

The first part of this study consisted in the detailed identification of the SES regulatory provisions that can potentially have an influence on the SES main objectives as defined in Article 1 of the SES Framework Regulation.

A set of tangible factors (Key Performance Drivers) was then introduced for the purpose of this study in order to create a bridge between the Main SES Objectives and the Regulatory Provisions and to facilitate the mapping. Figure 19 illustrates the overall framework that has been used to break down the SES Main Objectives while Annex 2 provides the detailed mapping.

It is important to recognise that these drivers have been designed as an analysis tool and that they have limited meaning outside the context of this work.

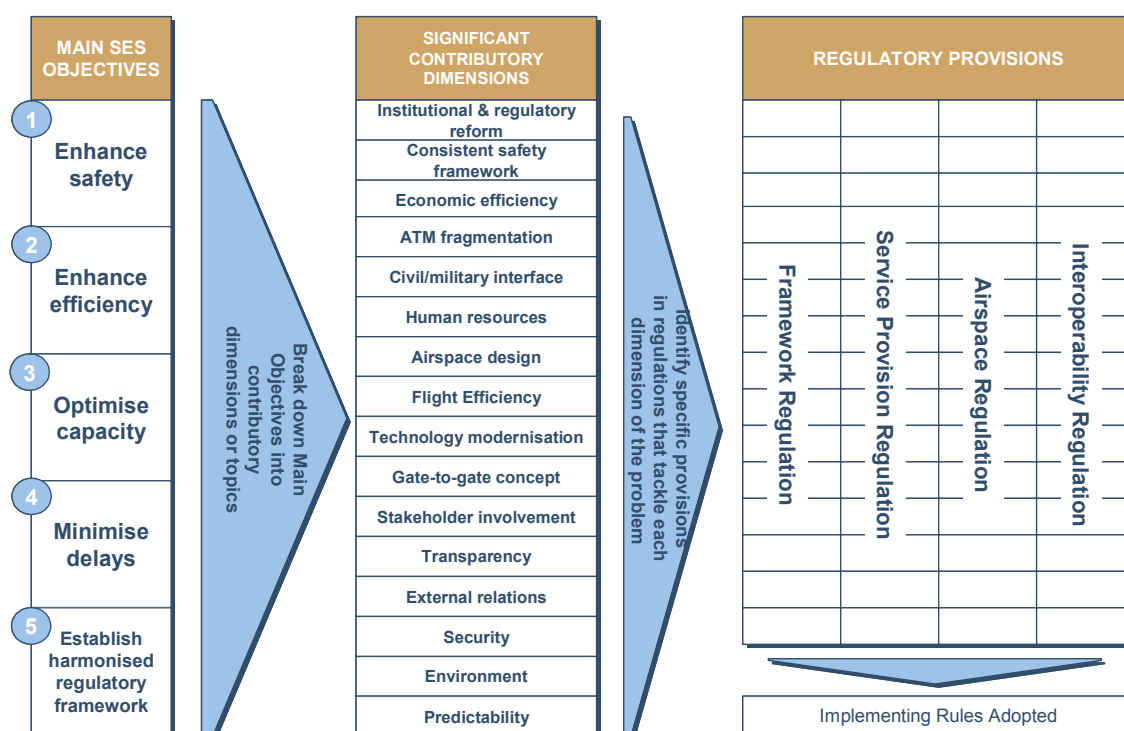


Figure 19: Overview of the Mapping Process

The analysis conducted here considers that the SES is defined by the contents of the final four Regulations and associated implementing rules (including subsequent Regulations such as on Common Requirements for Air Navigation Services and the Flexible Use of Airspace). In addition, areas of current focus identified by the PRC and those that stem from wider transport policy objectives have been analysed.

The SESAR programme, although a vital element in the delivery of the SES, is not included directly in this analysis.

The relation between each Main Objective and groups of key factors has been determined using, *inter alia*, the High Level Group report and the Performance Review Reports. The potential contribution of the SES initiative to each of the key factors was then assessed using the PRC’s best judgement to determine the likely impact of the provisions of each of the four SES Regulations on an article-by-article basis.

Using this approach it is possible to trace the potential impact of article of the SES Regulations on each of the original SES high level objectives.

DEFINITION OF KEY PERFORMANCE DRIVERS

The following sections introduce the Key Performance Drivers which were introduced as a bridge between the Main Objectives and the Regulatory Provisions.

Institutional and Regulatory Reform

Institutional and regulatory reform is a broad area and covers the degree to which best practice is implemented as highlighted by the High Level Group. It includes the following areas:

- the establishment of a strong independent European regulator in the form of the European Commission, which takes a Community rather than national view;
- separation of regulation and service provision as well as separation of safety and economic regulation;
- oversight and monitoring of performance and incentivisation of performance (outputs) improvements especially in monopoly situations undertaken at the appropriate level;
- application of common rules, formulated through a transparent process, where applicable subject to the principle of Subsidiarity;
- centralised strategic and tactical management of European airspace as a common asset and as a continuum regardless of national borders;
- implementation of a certification process for ATM based on common, minimum requirements.

Consistent Safety Framework

The Key Performance Factor on a consistent safety framework covers:

- establishment of a consistent European framework for safety regulation;
- establishment of best practice safety management within service providers;
- establishment of a regime for safety performance measurement, including definition of performance indicators and reporting requirements;
- promotion of safety culture throughout the ATM domain.

Economic Efficiency

Economic efficiency covers a range of issues:

- productive efficiency, similar to cost effectiveness as defined by the PRC, such that the ratio of outputs to inputs is maximised;
- allocative efficiency, the maximisation of the net benefit and tendency of prices towards marginal production costs;
- dynamic efficiency or ensuring the users get the service that they need when they need it;
- risk sharing such that risks are optimally allocated between the stakeholders.

ATM Fragmentation

ATM fragmentation covers two basic areas, both driven by national boundaries:

- fragmentation and suboptimal design of airspace due to the need to follow national boundaries, leading to inconvenience, inefficiency and indirect costs for the airspace users;
- fragmentation of service provision, leading to overprovision of infrastructure (too many centres, and communications, navigation and surveillance systems) as well as loss of economies of scale.

Civil/military Interface

The area of civil/military interface includes:

- allocation of airspace as and when needed (FUA);
- moving military operations out of congested areas to the degree possible;
- joint service provision.

Human Resources

The key area of human resources includes both matters of best practice in organisational terms as well as measures related to the role of human resources in supporting the operational roles of an ANSP, for example the approach taken to career development and staff training. It includes matters such as the inclusion of metrics on the retention of staff. In relation to this analysis it covers factors such as:

- recruitment, training and retention of staff;
- deployment of staff where and when they are needed;
- inclusion of staff in the development process.

Airspace Design

The key performance factor of airspace design includes:

- the reorganisation of airspace on the basis of the most efficient use of capacity;
- consideration of the constraining points in the European ATM system;
- the different requirements of the upper and lower airspace and terminal area.

Flight Efficiency

The key performance factor of flight efficiency includes:

- the tactical use of airspace (also considering military/civil requirements);
- variation in the allocation and use of airspace at weekends compared with week days;
- route selection by airlines;
- application of the best use of newly designed airspace;

- addressing the efficient use of airspace in different phases of flight (terminal and en route).

There is some overlap between key performance drivers as well as within objectives. For example, the use made of airspace at different times of the week which contributes to improving flight efficiency may also be related to the military use of airspace and therefore links to the civil/military interface above. Stakeholder involvement is also important to ensure flexible use of available routes is made by airspace users.

Technology Modernisation

Technology modernisation includes the promotion of common standards of equipment to enable the safer and more cost effective deployment of infrastructure and new systems.

A key factor in the development of technology modernisation will be the progress of the Europe's air traffic control infrastructure modernisation programme SESAR which will define the technology that will be made mandatory and that will be introduced at the same time through implementing rules of Regulation (EC) No 552/2004 on the interoperability of the EATMN.

Gate-to-gate Concept

The gate to gate concept refers to the need to address the issues that are of concern in European ATM through all phases of flight and not only from the ATM perspective.

Therefore, interactions with airport activities and operations are essential to address performance as a whole.

Stakeholder Involvement

The key performance area of stakeholder involvement relates to several issues including:

- Sharing of information to assist in the development of improved safety standards;
- Improvement of more efficient use of airspace but sharing information on available routes;
- The maintenance of a low average delay but sharing of information;
- The provision of earlier information so that predictability can be delivered and user costs reduced;
- The provision of plans and capacity requirements so that capacity and service provision can be optimised.

Transparency

Transparency refers to the visibility of the performance of an ANSP and/or National Supervisory Authority or other regulator so that other stakeholders can clearly see and compare performance in relation to:

Transparency of results of safety reporting including quantified results (so as to better identify safety issues):

- degree of implementation of regulations including safety rules (e.g. ESARRs) and their impacts;

- transparency in respect of financial matters including costs and revenue (facilitating measurement of cost effectiveness, economic efficiency and ensure that users understand that the costs of the service are accurately assessed and charges set the appropriate level.

External Relations

The issues addressed under this key performance area recognise the requirement to consider the airspace and ATM system beyond Europe's boundaries. Thus it includes the need to coordinate with third countries:

- to encourage an improvement in safety standards at pan-European level;
- to improve ATFM across borders and to minimise delays;
- to ensure that the structure of airspace takes account of external as well as internal requirements from ANSPs and users.

Security

The security key performance factor includes

- maintaining the integrity of the ATM system against attack, e.g. physical, cyber;
- preventing spoofing of users (i.e. compromising security by those attempting to represent themselves as legitimate user by intercepting and using electronic data with malicious intent).

Environment

Within wider European Transport Policy the protection of the environment from the harmful effects of aviation is a key performance factor in the delivery of the SES. As such key areas of activity under this key performance factor includes:

- minimisation of the negative impacts of air transport on the environment to the degree that this can be addressed by ATM;
- internalisation of external costs.

Predictability

The key performance factor predictability (a measure of the variability in delay performance) was not a focus of attention in the initial period of the SES, but has increasingly been recognised as important. The PRC estimates that compressing 50% of flight schedules by 5 minutes through improved predictability would generate over €1 billion in savings per annum. Areas of impact through addressing predictability of delay include:

- reduced user costs through improved use of fleets and tighter schedules;
- more efficient use of airport infrastructure;
- reduced ANSP costs through more efficient use of capacity.

ANNEX 2 MAPPING OF SES REGULATORY PROVISIONS TO ATM ISSUES

This Annex provides the detailed mapping of the different provisions of the Regulations in the SES package and the implementing rules against the key performance drivers.

Key Performance Drivers	Regulations			
	Framework	Service Provision	Airspace	Interoperability
Institutional & regulatory reform	<p>A3 Harmonised regulatory framework for all fields of ATM at Community level;</p> <p>A4 NSAs shall be created or designated;</p> <p>A5 European Commission acts with support of the SSC;</p> <p>A6 ICB;</p> <p>A8 Preparation of implementing rules through EUROCONTROL;</p> <p>A9 Effective, persuasive and effective sanctions at Member State level;</p> <p>A11 Commission in charge of performance review; IR on performance review;</p> <p>A12 Supervision, monitoring and impact assessment by Member States (annual report) and by the Commission every 3 years;</p> <p>A13 Safeguards in crisis situations</p> <p>Military developments following Member States' statement on military issues</p>	<p>A2 Compliance monitoring by NSAs at national level;</p> <p>A3 Common system of recognised organisations to assist NSAs;</p> <p>A4 IRs on safety (ESARRS) (partially done);</p> <p>A6 IR on common requirements;</p> <p>A7 Certification mechanism by NSA plus mutual recognition plus possibility to revoke certificate;</p> <p>A8 Designation of ATSPs plus information to Community;</p> <p>A9 Possible designation of MET providers plus information to Community;</p> <p>A12 Application of IAS by ANSP plus access of competent authority to the accounts;</p> <p>A13 Conditions of access to data shall be established by ANSPs, airspace users and airport and approved by NSAs;</p> <p>A14, A15 IR on common charging scheme;</p> <p>A16 Commission in charge of Review of charges;</p> <p>Call on EUROCONTROL to ensure scrutiny and comparison of performance</p>	<p>A3 Creation of EUR in ICAO;</p> <p>A3 Creation of a single AIP;</p> <p>A4 IR on airspace classification;</p> <p>A5 Common general principles on establishment and modification of FABs plus Community role when difficulties are experienced;</p> <p>A6 IR on route and sector design (Common general principles and criteria);</p> <p>A7 IR on FUA;</p> <p>A8 Temporary suspension of FUA;</p> <p>A9 IR on ATFM;</p> <p>A10 Potential to extend A3, A5, A6 to lower airspace</p> <p>Community decisions on the best configuration of airspace</p>	<p>A2 Essential requirements for systems, constituents and procedures for the EATMN;</p> <p>A3 IRs to be developed (mandatory) and the date of compliance/synchronisation to be specified (partially);</p> <p>A4 Development of community specifications;</p> <p>A5 Declaration verification of compliance;</p> <p>A6 Declaration of verification of compliance;</p> <p>A7 safeguards;</p> <p>A8 Introduction of notified bodies to assist in the assessment of conformity;</p> <p>A9 Revision of technical annexes;</p> <p>A10 Transitional arrangements</p>
Consistent safety framework	<p>A11 IR on performance review;</p>	<p>A4 Transposition of ESARRS (partially);</p> <p>A5 Licensing of ATCOs;</p> <p>A6 IR on Common requirements (Safety management, Operations manuals);</p> <p>A7 Regular check of certificates;</p> <p>Establishment of mandatory harmonised safety occurrence reporting system</p>	<p>A3 Creation single AIP;</p> <p>A4 Harmonisation of airspace classification;</p> <p>A5 Safety case to support creation of FABs; IR to be developed;</p> <p>A6 IR on Route and sector design;</p> <p>A7 IR on FUA</p>	<p>A2 Essential requirements for systems, constituents and procedures for the EATMN (Safety);</p> <p>A3 IRs to be developed;</p> <p>A4 Development of community specifications;</p>

		Regulations		
Key Performance Drivers	Framework	Service Provision	Airspace	Interoperability
Economic efficiency	A11 IR on performance review;	<p>A6 IR on Common requirements (Business planning, financial strength, transparent annual report);</p> <p>A7 Certificates to guarantee non-discriminatory access for airspace users (para 4);</p> <p>A9 Possible designation of MET providers plus information to Community;</p> <p>A10 Relations between service providers with obligations on exchange of data;</p> <p>A12 Transparency of accounts of ANSPs;</p> <p>A15 IR on a common charging scheme (Optional incentives to ANSPs and airspace users);</p> <p>A16 Commission in charge of the Review of charges More robust and mandatory economic regulation (price cap) in respect of quality and quantity</p>		
ATM fragmentation	A11 IR on performance review;	<p>A2 NSAs to conclude agreement when cross border service provision;</p> <p>A3 Recognised organisations (Recognition valid within the Community);</p> <p>A5 Licensing of ATCOs (harmonisation + mutual recognition);</p> <p>A6 IR on Common requirements (minimum harmonised requirements); Certificates plus A7 mutual recognition of certificates;</p> <p>A8 Designation of any certified ATSPs;</p> <p>A9 Possible designation of MET providers;</p> <p>A10 Relations between service providers with obligations on exchange of data;</p> <p>A12 Same financial reporting requirements for all providers;</p> <p>A13 Access to operational data;</p> <p>A15 IR on Common charging scheme (harmonisation);</p>	<p>A2 Harmonisation of division level (deviations are possible);</p> <p>A3 Creation of EUR and single AIP;</p> <p>A4 Harmonisation of airspace classification;</p> <p>A5 Creation of FABs; IR to be developed</p> <p>A6 IR on route and sector design;</p> <p>A7 IR on FUA;</p>	<p>A2 Essential requirements for systems, constituents and procedures for the EATMN (Seamless operations, Principles governing the logical architecture of systems, Principles governing the construction of systems);</p> <p>A3 IRs to be developed;</p> <p>A4 Development of community specifications;</p>
Civil/military interface	<p>A5 Two representatives per State in the Single Sky Committee;</p> <p>A11 IR on performance review;</p>	<p>A7 Possibility of military to provide services to GAT;</p> <p>A11 Establishment of written agreement with military authorities;</p>	<p>A6 IR on Route and sector design (Optimisation);</p> <p>A7 IR on FUA;</p> <p>A8 Temporary suspension of FUA</p>	<p>A2 Essential requirements for systems, constituents and procedures for the EATMN (Seamless operations, Civil-Military coordination);</p> <p>A3 IRs to be developed;</p> <p>A4 Development of community specifications;</p>
Human resource	A10 Consultation of professional staff;	<p>A5 Licensing of ATCOs;</p> <p>A6 IR on Common requirements (Human resources);</p> <p>Extend the European social dialogue to ATM</p>		<p>A2 Essential requirements for systems, constituents and procedures for the EATMN (Seamless operations-Human machine interface);</p> <p>A3 IRs to be developed;</p> <p>A4 Development of community specifications;</p>

Key Performance Drivers	Regulations			
	Framework	Service Provision	Airspace	Interoperability
Airspace design	A11 IR on performance review;	A2 NSAs to conclude agreements when cross border service provision; A8 Designation of any certified ATSPs; A11 Establishment of written agreement with military authorities; A15 IR on Common charging scheme (Financing of FABs);	A2 Harmonisation of division level (deviations are possible); A3 Creation of EUIR and single AIP; A4 Harmonisation of airspace classification; A5 Creation of FABs and provisions for modification; IR to be developed; A6 IR on Route and sector design (Optimisation); A7 IR on FUA;	A2 Essential requirements for systems, constituents and procedures for the EATMN (Seamless operations); A3 IRs to be developed; A4 Development of community specifications;
Airspace use	A11 IR on performance review;	A7 Certificates to guarantee non-discriminatory access for airspace users (para 4); A10 Relations between service providers with obligations on exchange of data; A13 Conditions of access to data shall be established by ANSPs, airspace users and airport and approved by NSAs; A15 IR on a Common charging scheme (incentives to users: modulation of charges);	A3 Creation of single AIP; A4 Harmonisation of airspace classification; A5 Creation of FABs; IR to be developed; A6 IR on Route and sector design (Optimisation); A7 IR on FUA; A9 IR on ATFM; Consistency between airport slots and CFMU slots	A2 Essential requirements for systems, constituents and procedures for the EATMN (Seamless operations); A3 IRs to be developed; A4 Development of community specifications;
Technological modernisation		A15 IR on Common charging scheme (incentives for new equipment plus common projects);		A2 Essential requirements for systems, constituents and procedures for the EATMN (Seamless operations, Support for new concepts of operation, Principles governing the logical architecture of systems, Principles governing the construction of systems); A3 IRs to be developed; A4 Development of community specifications SESAR programme has been launched (all stakeholders to agree on technical solutions to be transposed into mandatory IRS)
Gate-to-gate concept	A10 Involvement of airports (Consultation); A11 IR on performance review (airports)	A13 Access to operational data (para 2); A13 Conditions of access to data shall be established by ANSPs, airspace users and airport and approved by NSAs; A15 IR on Common charging scheme (Link between terminal charges and airport charges);	A9 IR on ATFM (involvement of all stakeholders: para 2);	A2 Essential requirements for systems, constituents and procedures for the EATMN (Seamless operations); A3 IRs to be developed; A4 Development of community specifications;
Security	A11 IR on performance review;	A6 IR on Common requirements (Security);		
Stakeholder involvement	A6 ICB; A10 Consultation of stakeholders; A11 IR on performance review (improving consultation process);	A6 IR on Common requirements (Open and transparent provision of services Annex I 8.1) A15 IR on Common charging scheme (Consultation);	A5 Creation of FABs (Consultation with interested parties on FABs: para 4);	

Key Performance Drivers	Regulations			
	Framework	Service Provision	Airspace	Interoperability
Environment	A11 IR on performance review;	Alignment with Community environment policy (external costs to be internalised in charges)	A6 IR on Route and sector design (environmentally efficient use of airspace);	A2 Essential requirements for systems, constituents and procedures for the EATMN (Environmental constraints); A3 IRs to be developed; A4 Development of community specifications
Transparency	A4 NSAs to notify name to European Commission; A10 Consultation of stakeholders; A11 IR on Performance review (dissemination); A12 supervision, monitoring and impact assessment by Member States (annual report) and by the Commission every 3 years; All IRS are published in the OJEU	A6 IR on Common requirements (Reporting requirements); A7 Monitoring of compliance with common requirements (part of annual report); A8 Information on which ANSP has been designated; A9 Information on which MET provider has been designated; A10 Agreements between providers to be notified to NSAs; A12 Transparency of ANSPs accounts; A15 IR on Common charging scheme (Transparency of cost bases and charging policies); A17 Publication of adjustment to technical progress; A18 Rules on confidentiality; All IRS are published in the OJEU	A3 Creation single AIP; A5 FAB decisions shall be notified and published; A7 IR on FUA (requirement for annual reports); A9 Creation of a single publication for information to GAT for route and traffic orientation as well as diversion from congested areas and priority rules; All IRS are published in the OJEU	A5 Declaration verification of compliance; A6 Declaration of verification of verification; A8 Publication of list of notified bodies; All IRs are published in the OJEU Community specifications are published in the OJEU;
External relations	A7 Relations with European third countries (some third States can be granted observer status in the SSC)		A3 Creation of EUIR (within ICAO); A5 Creation of FABs to comply with regional agreements;	A2 Essential requirements for the EATMN (seamless operation at all phases of flight, information sharing including relevant operational status information); Specific requirements for ATFM (see Annex II B.2.1, "offer dialogue capabilities with a view to achieving optimised use of airspace) and on FDP systems (B.3.1)
Predictability	A11 IR on performance review (improved ANS provision, efficiency and assist ANSPs to deliver the required services);	A10 Exchange of operational data between ANSPs A13 Exchange of operational data in real time between ANSPs, airspace users and airports.	A7 IR on FUA (better cooperation between military and civil) A9 IR on ATFM (support operational decisions by ANSPs, airport operators and airspace users)	
IRS not yet started or in progress		Initial objectives (2001 Commission proposal) not achieved	Initial objectives (2001 Commission proposal) achieved through other means	

ANNEX 3 SUMMARY OF RECOMMENDED ACTIONS

Domain of Action	Time frame ⁹	No	Action	Nature of action & stakeholders involved
Organisation of supervision and regulation	Short term	1	<p>Support to NSAs (<i>Objective: Assist NSAs in their tasks</i>)</p> <ul style="list-style-type: none"> – Support less mature NSAs in their tasks (certification / supervision of SES implementation) – Provide financial support and/or use of EUROCONTROL expertise; – Develop guidance material to assist in their tasks; – Support regional cooperation of NSAs. 	<p>Non EU Regulatory measures (States, NSAs, EUROCONTROL, European Commission)</p>
		2	<p>Promote regular cooperative forum for NSAs (<i>Objective: Ensure discussion, cooperation and coordination of NSAs as well as their representation at EU level in order to share best practice and ensure even application of SES regulations</i>)</p> <ul style="list-style-type: none"> – Exchange practices in term of certification, supervision of certificates and supervision of proper application of SES regulations; – Represent NSAs at EU level and convey collective NSAs' viewpoints at EU level; – Increase cooperation / coordination between NSAs; – Exchange information on Recognised Organisations; – In due time, assess the need for a more formal setup possibly with a permanent secretariat. 	<p>Non EU Regulatory measures (States, NSAs, EUROCONTROL, European Commission)</p>

⁹ Timeframes Definitions

- Short term 0 – 2 years
- Medium term 2 – 5 years (requires new regulatory instrument)
- Long term 5 years onward (requires adoption of new policies/ major changes in the sector)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Organisation of supervision and regulation	Short term	<u>3</u>	<p><u>Promote and facilitate the use of Recognised Organisations</u> <i>(Objective: Facilitate the work of NSAs (both for certification and supervision of proper SES implementation), address issues of fragmentation and inefficiencies of supervision, ensure better uniform application and limit unnecessary increased costs)</i></p> <ul style="list-style-type: none"> – Promote recognition and use of Recognised Organisations. Mature NSAs could also be candidate as Recognised Organisations to be used by other NSAs; – Enhance awareness of existing Recognised Organisations. 	Application of Article 3 of Service Provision Regulation (States, NSAs, EUROCONTROL, European Commission)
	Medium term	<u>4</u>	<p><u>On the experience gained from use of Recognised Organisations by NSAs:</u></p> <p><u>Improve recognition process of Recognised Organisations</u> <i>(Objective: Ensure uniform recognition of Recognised Organisations and adequate publicity in order for NSAs to make use of their service to encourage efficient regulation, promote confidence of use in Recognised Organisations)</i></p> <ul style="list-style-type: none"> – Establish a validation process at EU level for the fulfilment of requirements set out in Annex I of Regulation 550/2004; – Maintain and publish the list of Recognised Organisations in the Official Journal of the European Union. 	Draft legislative proposals amending Art.3 of Reg. 550/2004. (European Commission, States)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Organisation of supervision and regulation	Short term	<u>5</u>	<p><u>European Commission to start peer review procedure of NSAs</u> <i>(Objective: to strengthen the capabilities of NSAs and build trust for mutual recognition of certificates)</i></p> <ul style="list-style-type: none"> – Establish a pool of national experts as required by the SES regulations; – Define plans (list of NSAs and timescale) for peer reviews. 	Application of Art.9 of Common Requirements (European Commission, States, NSAs)
	Medium term	<u>6</u>	<p><u>Organise audits and inspections of NSAs at European level</u> <i>(Objective: ensure uniform application and trust in the way NSAs work)</i></p> <ul style="list-style-type: none"> – Investigate the need to organise independent audits and inspections of NSAs at EU level when it is needed, in consistency with ICAO and ESIMS audits, for example in the same way as for Airport security (Regulation (European Commission,) No 2320/2002) in order to assess in particular the capabilities of NSAs; – Include in these inspections effective mechanisms to ensure that failures are identified and corrective actions taken to ensure compliance with SES requirements; – If necessary, repeal the peer-review procedure. 	Legislative proposals. (European Commission, EUROCONTROL, States)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Organisation of supervision and regulation	Short term	<u>7</u>	<p><u>European Commission to start the review of compliance with the principles and rules for air navigation charges</u> <i>(Objective: to ensure a common playing field across States and effective compliance within the Community)</i></p> <ul style="list-style-type: none"> – Establish the practicalities for this review by making use of Eurocontrol expertise; 	Application of Art.16 of Service Provision Regulation (European Commission, EUROCONTROL)
	Medium term	<u>8</u>	<p><u>Develop a common and consistent regulatory framework for NSAs</u> <i>(Objective: develop the role of NSAs to not only supervise proper application of SES but also to assess the level of safety, of cost, etc. taking advantage of the independence of NSAs from service provision)</i></p> <ul style="list-style-type: none"> – Develop a common regulatory framework with general principles for NSAs including not only supervision but also regulation of ATSPs and METSPs designated on an exclusive (monopoly) basis: <ul style="list-style-type: none"> ○ Safety: Transposition of ESARR1 is ongoing; ○ Economic: common regulatory framework with general principles to protect users from the abuse of monopoly power, (rights and obligations of the various stakeholders, organisation of public hearing, transparency of decisions taken, etc); ○ Airspace: Assessment of the use of airspace. – Symbolise the need for regional NSAs by changing the name from <u>N</u>ational <u>S</u>upervisory <u>A</u>uthority (NSA) to Air Navigation <u>S</u>upervisory <u>A</u>uthority (ANSA). 	Legislative proposals (European Commission, States)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Organisation of supervision and regulation	Medium term	<u>9</u>	<p><u>Unify the safety regulatory framework</u> <i>(Objective: Ensure consistency of the European safety regulatory framework.)</i></p> <ul style="list-style-type: none"> – Ensure proper and consistent transposition of ESARRs; – Consider removal of any duplication and/or inconsistencies in the European safety regulatory rules. – Alleviate legal impediments in order to develop incident reporting in a “just culture” environment. 	Legislative proposals (European Commission, EUROCONTROL, States)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Performance criteria and objectives		<u>10</u>	<p><u>Make the mechanism for performance objectives setting and reporting transparent for performance review</u> <i>(Objective: Make use of the mandatory requirement for ANSPs to set performance objectives through the certification process to improve efficiency and safety performance)</i></p> <ul style="list-style-type: none"> – Make transparent for performance review the performance objectives (in terms of safety, cost-efficiency and capacity) that must be set at national level; – Include minimum requirements for open consultation with stakeholders, when establishing performance objectives. These should include airspace users' views and explain rationale for decision taken on which objectives. – develop a performance framework to assist ANSPs and NSAs in establishing performance objectives through the certification process (Common Requirements). 	<p>Implementing rules on Performance Review (States, ANSPs, European Commission)</p> <p>Non EU regulatory measures (EUROCONTROL)</p>
	Short term	<u>11</u>	<p><u>Develop minimum performance criteria of the European ATM system to support periodic reviews on SES (2007-2010)</u> <i>(Objective: Signal threat of intervention if performance does not improve by setting minimum objectives for bottom-up processes, in consistency with SESAR)</i></p> <ul style="list-style-type: none"> – <u>Cost effectiveness</u>: -3% per year in unit costs over the 3-year period; – <u>Delay</u>: < 1 min/flight for each year over the 3-year period; – <u>Airspace</u>: extension of intra-European routes should not be longer than extension of national domestic routes at the end of the 3-year period; – <u>Safety</u>: Safety maturity level of all NSAs and ANSPs > 70% at the end of the first 3-year period (as measured by the periodic EUROCONTROL survey). 	<p>EC Communication (EUROCONTROL, European Commission)</p>

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Performance criteria and objectives	Short term	<u>12</u>	<u>Support the development of safety indicators</u> (Objective: Make use of current initiative to press for the development of safety indicators) – Support progress in SAFREP with pressure to deliver by end 2007.	Non EU regulatory measures (States, ANSPs)
	Medium term	<u>13</u>	<u>Include Safety indicators in SES to be used by ANSPs/NSAs/States</u> (Objective: establish safety indicators to allow measurement of safety performance with a view to enhancing overall level of safety) – On the basis of the SAFREP conclusions, include safety indicators in Annex 1 of the Common requirements IR and in the Annexes of Performance Review IR	Update Common Req. and Performance Review IRs (European Commission, States)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Performance criteria and objectives	Short term	<u>14</u>	<u>Develop a framework to assist in setting incentives for efficiency performance improvements</u> (Objective: provide assistance to NSAs/States to facilitate incentives to improve overall efficiency) – Establish a transparent method to develop financial incentives on ANSPs that NSAs/States can implement and enforce through the Charging Scheme Regulation	Non-EU Regulatory measures (EUROCONTROL, States, European Commission)
	Long Term	<u>15</u>	<u>Make it mandatory for States to establish incentives on ANSPs for efficiency performance improvements</u> (Objective: to introduce high powered driver for efficiency improvement) – Replace full cost-recovery by mandatory incentive schemes.	Communication from the European Commission + draft legislative proposals (European Commission, States)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Rationalisation of airspace and service provision	Short Term	<u>16</u>	<p><u>Make the objectives of FABs clearer</u> <i>(Objective: Reinforce the objectives of FABs - while FABs are still being created - in order to focus collective effort on achieving real benefits)</i></p> <ul style="list-style-type: none"> - Clarify objectives and expectations for the outcome of FABs in particular in terms of: <ul style="list-style-type: none"> ▪ Airspace restructuring and rationalisation: <ul style="list-style-type: none"> ❖ Reduce airspace fragmentation; ❖ Improve efficiency of the use of airspace. ▪ Service provision consolidation: <ul style="list-style-type: none"> ❖ Reduce the number of en-route ATS operational units and improve efficiency of service provision (infrastructure use, human resources, support functions...); ❖ Ensure effective, integrated cross-border cooperation (procurement of new systems, training, planning, maintenance of CNS); 	European Commission Communication (European Commission)
		<u>17</u>	<p><u>Make available EU financial support for the creation of FABs</u> <i>(Objective: Support transitional costs through public funding to enable FABs that would otherwise not be developed)</i></p> <ul style="list-style-type: none"> - Define conditions for this support (set a time limit to incentivise States to create FABs quickly, set criteria for cases with clear benefits and when transitional costs are particularly high, or when wider benefits than eventually captured by ANSPs alone, etc) 	Non EU regulatory measures (States, European Commission)
		<u>18</u>	<p><u>Develop common general principles for the establishment and modification of FABs</u> <i>(Objective: provide States and ANSPs with clear views on the principles that FABs shall fulfil while they are being created, and to alleviate identified barriers to effective cross-border cooperation – institutional, civil/military, legal and fiscal issues)</i></p>	Implementing rules on FAB (Art. 5(3) of Airspace Reg.) (European Commission)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Rationalisation of airspace and service provision	Short Term	<u>19</u>	<p><u>Develop a set of performance indicators to assess the performance improvements arising from FABs</u> <i>(Objective: To assist member States during the creation of FABs and allows the European Commission to assess performance improvement)</i></p> <ul style="list-style-type: none"> - Develop FAB indicators; - Develop means of compliance for FABs. 	Non-EU regulatory measures (EUROCONTROL, European Commission)
	Medium Term	<u>20</u>	<p><i>In the light of the developments of the first years of implementation and in particular through the continuous monitoring of FABs by the Commission:</i></p> <p><u>Reassess the mechanisms for the creation of FABs</u> <i>(Objective: foster the reorganisation of service provision and airspace at EU level through alleviating any identified difficulties/obstacles in the establishment of effective FABs (such as financial, legal, institutional support)</i></p>	Legislative proposals amending Art.5 of Airspace Regulation (European Commission, States)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Rationalisation of airspace and service provision	Short Term	<u>21</u>	<p><u>Develop Implementing Rules on optimised route and sector design</u> <i>(Objective: reorganise effectively airspace structure at European level)</i></p> <p>Define simple criteria for route and sector design (e.g. for all the busy city-pairs longer than 200 NM, any route extension > 10% should be duly justified);</p> <p>Organise forum within EUROCONTROL to implement these criteria</p>	<p>Implementing rules on Route and Sector Design (Art. 6 of Airspace Reg) (European Commission, States)</p> <p>Non-EU reg. measures (EUROCONTROL)</p>
	Long Term	<u>22</u>	<p><u>In the light of the developments of the first years of implementation of route and sector design:</u></p> <p><u>Reassess the process for route and sector design changes</u> <i>(Objective: Ensure application of common criteria and define stronger mechanisms to ensure a proper improvement in route and sector design)</i></p>	<p>Legislative proposals amending Art.6 of Airspace Regulation (European Commission, States)</p>

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Rationalisation of airspace and service provision	Short Term	<u>23</u>	<p><u>Ensure consistency between the provision of European financial support / expertise and SES objectives</u> <i>(Objective: EU/EUROCONTROL should not contribute to the financing of new centres at a time where fragmentation has to be reduced)</i></p> <ul style="list-style-type: none"> - Use of EU and other financial instruments (TEN-T, Cohesion Fund, FEDER EIB financing, etc.) in consistency with SES objectives, in particular transitional costs incurred in developing FABs. 	<p>Non EU regulatory measures (EUROCONTROL, European Commission)</p>

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Civil/military cooperation		<u>24</u>	<p><u>Implement the Statement by the Member States on military issues related to the SES</u> <i>(Objective: Achieve the SES objectives and, in particular improve efficiency in terms of use of airspace and synergies)</i></p> <ul style="list-style-type: none"> - States to take all necessary measures to implement the statement through the EUROCONTROL Organisation; - States to report to EUROCONTROL by end of 2008 about implementation of this statement. 	Non EU regulatory measures (States, EUROCONTROL)
	Short Term	<u>25</u>	<p><u>Develop success criteria against which progress can be measured with regards to the full and uniform application of FUA in line with States' statement on military issues</u> <i>(Objective: support civil/military cooperation in order to address flight inefficiency)</i></p>	Non EU regulatory measures (EUROCONTROL, European Commission)
		<u>26</u>	<p><u>Develop mechanism by which possible EU financial support can be allocated to civil/military cooperation</u> <i>(Objective: support further civil/military integration in order to address flight inefficiency)</i></p> <ul style="list-style-type: none"> - Develop financial support to: <ul style="list-style-type: none"> o move military training to less congested areas or periods; o support equipment of military aircraft (e.g. 8.33 kHz) with a view to making effective use of airspace for all airspace users; o support integration between military and civil air navigation services provision (so as to improve the overall efficiency of service provision) and; 	Non EU regulatory measures (States, European Commission)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Organisation of Service Provision	Medium Term	<u>27</u>	<p><u>Develop common criteria for designation of monopoly ATSPs and METSPs</u></p> <p><i>(Objective: Strengthen usefulness of mutual recognition by allowing States to periodically reassess their decisions as to which ANSP should provide services in a particular block of airspace)</i></p> <ul style="list-style-type: none"> – Define common criteria for designation to be applied by States (e.g. duration of the designation, process for granting designation) 	Draft legislative proposals amending Art. 8 & 9 of Service Provision Reg. (European Commission, States)
	Long Term	<u>28</u>	<p><u>Develop the contestability of ATS at airports and MET services</u></p> <p><i>(Objective: improve efficiency in the provision of these services by a gradual introduction of "competition for the market")</i></p> <ul style="list-style-type: none"> – Set a timeframe for a progressive introduction of "competition for the market" – Identify relevant criteria for application (e.g. ATS at small and mid-size airports). 	Draft legislative proposals (European Commission, States)
	Medium Term	<u>29</u>	<p><u>Develop the organisation of CNS and AIS under market conditions according to SES</u></p> <p><i>(Objective: ensure proper application of current SES principles related to CNS and AIS)</i></p> <ul style="list-style-type: none"> – Develop unbundling of CNS and AIS. 	Draft legislative proposals (States, European Commission)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Policy orientation for SES	Short Term	<u>30</u>	<p><u>Develop a common long term policy orientation for SES</u> <i>(Objective: Focus collective efforts towards performance improvements by clearing uncertainties)</i></p> <ul style="list-style-type: none"> – Make use of the on-going work on future institutional framework for ATM; – Include some important missing key words (consolidation...); – Identify options for organisation of service provision and regulation (maximum contestability, single provider, mixed solutions, European regulator...); – Clarify appropriate organisation for supervision and in particular establish a single and strong ANS safety regulatory framework with a defined scope (rule making / regulatory / supervisory / oversight) with a view to alleviate legal impediments in order to develop incident reporting in a “just culture” environment; – Consider ATM as part of the overall aviation value chain – Adjust the scope of SES to take into account current issues in ATM such as Environment, Radio frequency management and ATM related issues at airports (congestion and delays / interaction between airports and ANSPs). 	Communication from the European Commission + possible draft legislative proposals (European Commission)

Domain of Action	Time frame	No	Action	Nature of action & stakeholders involved
Rule Making Process	Short Term	<u>31</u>	<p><u>Ensure balance between mandatory requirements and voluntary means of compliance in future interoperability regulations</u> <i>(Objective: Ensure application of better regulation principles and facilitate effective regulation)</i></p>	(European Commission)

ANNEX 4 STATEMENT BY STATES ON MILITARY ISSUES

31.3.2004

EN

Official Journal of the European Union

L 96/9

STATEMENT BY THE MEMBER STATES ON MILITARY ISSUES RELATED TO THE SINGLE EUROPEAN SKY

The Member States,

- taking into account that the Regulations aimed at creating the single European sky apply only to general air traffic and do not cover military operations and training,
- affirming the necessity to put into practice the legislative framework for the single European sky in a coherent and consistent way, taking full account of the needs related to national defence and security policy and international agreements,
- being convinced that the safe and efficient use of airspace can only be achieved through close cooperation between civil and military users of airspace, mainly based on the concept of flexible use of airspace and effective civil-military coordination as established by ICAO,

declare that they will:

1. cooperate with each other, taking into account national military requirements, in order that the concept of flexible use of airspace is fully and uniformly applied in all Member States by all users of airspace;
2. ensure that the interests of Member States' military users of airspace will, where relevant, be represented in the whole development, decision-making process and implementation of the single European sky, including the Single Sky Committee set up under Article 5 of Regulation (EC) No 549/2004 (framework Regulation);
3. ensure, where appropriate, that military personnel are involved in the work undertaken by recognised organisations set up under Article 3 of Regulation (EC) No 550/2004 (service provision Regulation);
4. take into account, in relation to matters of air traffic management, the fundamental importance of Eurocontrol;
5. enhance civil military cooperation and, if and to the extent deemed necessary by all Member States concerned,
 - facilitate cooperation between their armed forces in all matters of air traffic management, so as to make it possible to address relevant needs in the implementation of the regulatory framework for the single European sky;
 - taking into account the objective of establishing the regulatory framework for the single European sky by 31 December 2004, create the arrangements necessary to support such military cooperation in order to guarantee a balanced consideration of economic as well as security and defence requirements.



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