ICAO EUR REGION APPROACH TO THE DEFINITION OF A PERFORMANCE FRAMEWORK

COG Performance Task Force v 1.0
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1. INTRODUCTION

1.1. As the aviation industry evolved into a less regulated and more corporatized environment with greater accountabilities, the advantages of transitioning from systems based to performance-based planning are apparent. The Performance-Based Approach (PBA) adheres to the following principles: strong focus on results through adoption of performance objectives and targets; collaborative decision making driven by the results and reliance on facts and data for decision making.

1.2. The overall objective of this effort will result in a safer and more efficient system through identified cost savings, reduction in waste of resources, more equitable charging practices, and more efficient provision of services. According to the PBA methodology the assessment of achievements is periodically checked through a performance review, which in turn requires adequate data collection, performance measurement capabilities as well as appropriate expertise.

1.3. As the work endeavour is challenging and requires a coordination of efforts, the aviation community should be encouraged to follow a common approach, at national, regional and global level, towards the development and implementation of a performance framework. Taking into consideration that several initiatives are already going on at all those levels, the aviation community is also encouraged to make maximum use of already existing arrangements that could simplify the transition to the PBA.

2. BACKGROUND

2.1. The ICAO Global ATM Operational Concept (Doc 9854) provides a clear statement of the expectations of the Air Traffic Management (ATM) Community. Eleven of these expectations, also referred to as key performance areas (KPAs) have been identified in the operational concept. To support this approach, the Manual on Global Performance of the Air Navigation System (Doc 9883) was developed.

2.2. ICAO Doc 9883 provides a step by step approach to performance-based planning on the basis of the KPAs identified in the operational concept. In addition to this, the Global Aviation Safety plan lays the foundation for measuring safety performance.

2.3. On this base, COG/47 (Rostov-on-Don, 15-18 June 2010) decided to create an Air Navigation Systems Performance Task Force of the EANPG COG (COG/PERF TF), aiming at the development of a Regional Performance Framework by using the relevant ICAO guidance material and, as far as appropriate, the already existing material and arrangements within the Region.

2.4. In conducting this work the Task Force has taken into account the following guidance principles, which resulted from the discussion held at COG/47 as well as during a dedicated workshop of the ATMGE on the ICAO performance framework (Paris, 23-27 August 2010):

   a) Ensure that activities will aim at the improvement of the system (as a whole) with the benefit of the end users (strong focus on outcomes);
b) Avoid duplication of efforts and use, to the maximum extent possible, existing arrangements/solutions;

c) Whenever possible, build on current or developing processes, or existing data/statistics that may contribute to a specific KPA;

d) Exploit existing best practices in other areas that might contribute to this work;

e) Ensure, to the maximum extent possible, that whatever recommendations are put forward as an output, should also be suitable for application in the NAT Region;

f) Give due regard to the resource implications associated with any proposals;

g) Follow a stepwise approach starting from a subset of realistic indicators (qualitative rather than quantitative) to ensure a smooth transition and to alleviate the workload for the collection, consolidation and analysis of data.

2.5. In the preparation of this document due consideration has been given to the ICAO provisions as well as to the more stringent implementation of performance regulation in some parts of the Region (e.g. SES Performance Regulation (EU) No. 691/2010, EASA regulation (EC) No 216/2008 on the extension of competences to ATM/ANS and EASA standardisation inspections regulation (EC) No 736/2006).

2.6. The main elements proposed in this document have been presented to stakeholders during a dedicated workshop, held in Rome on 21-22 September 2011, on Regional Performance Framework Workshop for the ICAO EUR Region. The outcome of the workshop has been duly considered by the Task Force in the refinement of the details related to the regional performance framework.

3. **SCOPE**

3.1. Starting from the documents and provisions stemming from ICAO which give a general definition of the performance framework, the scope of this document is to define the EUR Region approach to the development of performance objectives, suitable Key Performance Areas (KPAs), Indicators (KPIs) and (realistically measurable) metrics to be used for the definition of a performance framework to allow for the regional implementation of the performance based approach. Those areas and indicators must correctly reflect the regional performance results and be capable of identifying areas where improvements are required.

3.2. In the definition of this approach it is of paramount importance to clearly identify the technical details, the processes to be put in place as well as to define roles and responsibilities of all actors involved at the different levels.

3.3. The first implementation of this performance framework will result in a report on the regional performance status at every EANPG meeting, so that the EANPG will be in the position to identify and decide on areas where improvements may be needed and to define a strategy for achieving such improvements.
3.4. The Task Force started the activity in carrying out an analysis of existing initiatives, arrangements and processes in the Region (including the NAT Region) with the aim to identify a common ground for the development of a flexible performance framework, which would be applicable to all complexity/density levels of airspace and therefore for the use of the entire EUR Region (and possibly the NAT Region).

3.5. As a result the proposal has been kept as simple as possible, limiting the focus on a subset of KPAs and related objectives and indicators, beneficial for the Region without asking for huge efforts from all parties involved.

3.6. The transition to the PBA will not be a “one-off” exercise. This initial proposal therefore shall be considered as a stable base for the continuous evolution of the framework based on changing objectives and priorities, data gathering/analysis capabilities and overall maturity of the subject.

3.7. During the work, the Task Force has also considered the activities related to performance carried out by other regional bodies, e.g. Regional Aviation Safety Group (EUR RASG), PBN Task Force, Route Network Development Group-East (RDGE), ATM Group East (ATMGE).

3.8. Finally, it has to be highlighted that the definition of the EUR Region performance framework could also represent the Regional contribution to the ongoing ICAO HQ activities, aimed at defining a set of key performance indicators and metrics to be used in the global implementation of the performance based approach, as well as a possible input to the activities related to performance going on in within the States of the Region, the European Union and Eurocontrol areas.

4. ROLES AND RESPONSIBILITIES

4.1. After identification of the need for a harmonized performance framework which can be adapted to the different contexts in the EUR Region and aimed at identifying areas where improvements are realistically possible, there is a need to define the role that States, ICAO bodies and stakeholders will play in the functioning of such system.

4.2. The paragraphs below list the main activities to be carried out by the different parties involved:

**EANPG (in cooperation with EUR RASG for Safety):**

a) set and manage the performance framework (performance objectives, KPAs, KPIs, metrics, timeframe, etc);

b) monitor the application and results of the performance framework at every EANPG meeting through a Regional Performance Review Report (RPRR) for air navigation systems (to note that a standard format will be developed by ICAO HQ in 2011);

c) identify major achievements and areas where improvements are needed and possible;

d) define a strategy for regional improvements.

**COG and other contributory bodies:**

a) support the implementation of the performance framework;

b) propose new technical elements for the continuous improvement of the performance framework;

c) take into consideration the Regional performance framework in their planning activities.

**States:**
a) develop and implement a national framework consistent with the regional performance framework set by EANPG;
b) identify roles and responsibilities of national actors involved;
c) collect national data
d) provide data and performance results (directly or through organizations entrusted by them);
e) monitor the performance of the national system and take remedial actions when needed.

ICAO EUR Secretariat:
a) organize workshops to provide detailed guidance to States and stakeholders on the development and functioning of the regional and national performance frameworks for air navigation systems;
b) support States (on their request) in developing their national performance framework;
c) collect and assemble indicator values provided by States;
d) prepare the Regional Performance Review Report (RPRR) to be submitted annually to EANPG and ICAO HQ;
e) update the EUR Air Navigation Plan (Basic and FASID) as appropriate.

5. KPA/KPI/METRICS

5.1. Based on ICAO provisions and on-going initiatives at regional and national level, taking into consideration the content and the experience gained in the European Union area with the development of an EC Regulation which laid down a performance scheme for air navigation services with EU-wide performance targets, targets at national or FAB level in the areas of Safety, Capacity, Environment and Cost-Efficiency, and considering the outcome of the ATMGE workshop, the need for a stepwise approach in the identification of suitable KPAs and the development of KPIs has been identified.

5.2. At the regional level the main goal is to identify a list of useful, realistic and measurable indicators that are applicable in the whole EUR Region (and possibly also in the NAT Region), that can be reported by all States without huge efforts (in terms of resources, data collection/extraction/distribution, etc) and that can be implemented through a layered approach.

5.3. On this base the Task Force has identified, out of the 11 ICAO KPAs, a first set of KPAs and related objectives, KPIs and metrics that are proposed for the implementation of the first phase of the Regional performance framework.

5.4. SAFETY
The objective for safety is: safety remains the main priority in aviation, the aim is to ensure the improvement of safety through the reduction of ATM related safety occurrences and the implementation of uniform safety standards.

The indicators identified to monitor the achievement of those objectives are:

1) Effectiveness of Safety Management (measured by a methodology based on ATM safety framework maturity survey)
2) Level of State Safety/Just Culture (safety culture survey)
3) Adoption of an harmonized occurrences severity classification methodology
5.5. **CAPACITY**
The objective for Capacity is: ensure that Air Navigation Service capacity meets demand for en-route and at airports.

The indicators identified to monitor the achievement of this objective are:

1) En-route ATFM delays
   a) Average ATFM delay per flight generated by the airspace volume (en-route)

2) Airport ATFM delays
   a) Average ATFM delay per flight in the main airports (to be identified by States in advance and based on the regional relevance)

5.6. **EFFICIENCY and ENVIRONMENT**
The Efficiency and Environment KPAs have been considered together because in this context they are strictly interlinked.

The objective for Efficiency is: ensure that users use the most efficient routes – focussing on the horizontal flight-efficiency.

The indicator identified to monitor the achievement of this objective is:

1) Average horizontal en route flight efficiency, defined as the difference between the length of the en route part of the actual trajectory (where available) or last flight planned route and the great circle.
   In this context specificities shall be considered for flights longer than 1000 nm where the optimum could differ from the great circle (wind optimal routes, etc.).

The objective for Environment is: contribute to the protection of environment – focussing on fuel savings/CO2 emission reductions.

The indicator identified for the achievement of this objective is:

1) CO2 emissions deriving from inefficiencies in flight efficiency (conversion of additional distance into CO2 emissions based on standard values formula)

Discussion within the Task Force highlighted that future developments of the framework will have to consider the impact of aviation noise on environment.

5.7. **COST-EFFECTIVENESS**
The objective for cost-effectiveness is: contribute to optimise the costs for air navigation services – focussing on productivity.

The indicators identified to monitor the achievement of this objective are:

1) IFR flights (en-route) per ATCO hour on duty
2) IFR flight hours per ATCO hour on duty
3) IFR movements (airport) per ATCO hour on duty

5.8. **PARTICIPATION BY THE ATM COMMUNITY**
The objective for participation by the ATM community is: ensure States participation to regional planning and implementation activities so that air navigation system development plans and action within the EUR/NAT Region remain coherent and compatible with those of the adjacent ICAO Regions and with the ICAO global plan and world-wide provisions.

The indicators identified to monitor the achievement of this objective is:

1) Level of participation of States and international organisations to planning and implementation meetings (e.g. EANPG and its contributory groups)
2) Level of responses to State Letters asking for information on planning and implementation aspects
3) Level of provision of performance results from States for Regional Performance Review Report (RPRR)

A summary of all Areas, objectives and indicators is reported in the following table.

<table>
<thead>
<tr>
<th>KPA</th>
<th>OBJECTIVES</th>
<th>FOCUS AREAS</th>
<th>INDICATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFETY</td>
<td>Ensure safety continuous improvement through reduction of ATM related safety occurrences and implementation of uniform safety standards</td>
<td>En-route ATFM Delay</td>
<td>Effectiveness of Safety Management (Safety Maturity Questionnaire)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Airport ATFM Delay</td>
<td>Level of State Safety/Just culture (Safety Culture Questionnaire)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Adoption of an harmonized occurrences severity classification methodology</td>
</tr>
<tr>
<td>CAPACITY</td>
<td>Capacity meets demand for en-route and at airports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFFICIENCY</td>
<td>Ensure users may use most efficient routes</td>
<td>Horizontal Flight Efficiency</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENT</td>
<td>Contribute to the protection of environment (fuel/CO2 emissions reduction)</td>
<td></td>
<td>CO2 emissions related to inefficiencies in route extension</td>
</tr>
<tr>
<td>COST EFFECTIVENESS</td>
<td>Contribute to optimization of costs for ANS</td>
<td>ATCO Productivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IFR Flights (en-route) per ATCO hour duty</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IFR flight hours per ATCO hour on duty</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IFR movements per ATCO hour on duty</td>
</tr>
<tr>
<td>PARTICIPATION BY ATM COMMUNITY</td>
<td>Ensure States’ participation to Regional planning and implementation activities</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Level of participation to meetings</td>
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<td></td>
<td></td>
<td></td>
<td>Level of responses to planning activities</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Level of provision of performance results</td>
</tr>
</tbody>
</table>

Table 1

Based on the mandate received by the Task Force to make maximum use of already existing arrangements and solutions, it is clear that similarities exist when comparing the proposed areas and indicators with the ones already used by States in European Union and Eurocontrol context. This is the case especially for Safety, Capacity, Efficiency and Cost Effectiveness.
6. MONITORING, REPORTING AND REVISION PROCESS AT REGIONAL/NATIONAL LEVEL

6.1. Assessment of achievements must be periodically checked through performance reviews, which in turn require adequate performance measurement and data collection capabilities. Putting in place a performance-based approach requires technical systems, knowledge sharing, training and specific expertise. In the long run, all of this is expected to result in a safer and more efficient aviation system.

6.2. The number one principle of the Performance-Based Approach is a strong focus on desired/required results. The ability to reach consensus on the desired outcome of performance management in terms of performance results to be achieved (i.e. to agree on objectives and targets), is a basic prerequisite for the successful application of the approach.

6.3. Data collection, processing, storage and reporting are fundamental to the performance-based approach and are based on the participation from many ATM community members and their willingness to participate relies on the establishment of a performance data reporting culture (in some cases, like for safety data, disclosure and confidentiality aspects have to be taken into account).

6.4. Data need to be collected, quality-checked and stored with the aim to condense them into a few indicators which represent the high level indication of the regional system performance. This will require initiatives at the technical level to ensure harmonization and standardization of reporting requirements to allow consistent interpretation of data across different reporting sources. This in turn is a prerequisite for meaningful benchmarking (comparison of reporting sources) and aggregation of data (calculation of totals across reporting sources).

6.5. In this context it has to be kept in mind that strong interrelationships exist across multiple KPAs and within a KPA across multiple KPIs. It means that performance improvements in one area can be achieved through a trade-off in performance with another interdependent area. This link and the need for trade-offs shall be duly considered when reading performance results and when setting objectives and priorities.

6.6. It is important to highlight that this initial proposal represents a first attempt to create a performance framework at regional level, covering a wide area with a large number of States that have very different characteristics in terms of airspace, traffic, complexity, service provision arrangements, etc. As a consequence and also considering the lack of reference values from the past, it has to be clear that at this stage no targets will be set at the regional level, leaving this possibility to the future evolution of the framework.

6.7. The performance results may vary from State to State due to differences in the characteristics of airspace, traffic and organizations. To better understand the performance results achieved, it was found beneficial within the Task Force to have available some contextual information. Therefore States will be invited to provide, together with their performance results, also a set of elements describing the main characteristics of their environment. A template for those data is reported in Annex 3.

6.8. The processes describing the activities to be performed at regional and national level as well as the interactions between the two levels consist of various steps, as described in Figure 1.
The flow of activities for the functioning of the framework within the Region will be managed based on the structures and arrangements available. A graphic describing the different steps is reported in figure 2.
7. TECHNICAL DETAILS AND TEMPLATES

Templates and technical details are reported in Annexes to this document as follows:

Annex 1: Performance Framework Forms (PFF)
Annex 2: Regional Performance Review Report (RPRR) – (under development within ICAO HQ)
Annex 3: Template for contextual information
Annex 4: Details related to the data relevant for the implementation of the performance framework
Annex 5: Terminology

8. ROADMAP FOR THE REGIONAL IMPLEMENTATION OF THE PERFORMANCE BASED APPROACH

8.1. A progress report of the activities of the Task Force has been given at EANPG 52 and COG 50 (Malmoe, 21-23 June 2011).

As reported in paragraph 2.6 above a dedicated workshop was held in Rome on 21-22 September 2011 to present the details of the work performed by the Task Force and to collect views of States and stakeholders on the regional performance framework development.
The outcome of the workshop has been considered by the Task Force to refine the document that will be presented and discussed at COG 51 (Paris, 18-20 October 2011). The performance framework will then be presented, discussed and, if appropriate, endorsed at EANPG 53.

8.2. Based on the proposed plan, it is envisaged an early implementation of the measures contained in this document starting from 2012 onwards, with a first progress report on the results of the implementation of the framework at EANPG 54 (end 2012). The aim of the first report will be to:

- identify main issues and difficulties linked to the implementation of the system;
- identify areas where fine-tuning or updates are needed;
- have a first assessment of the performance at regional level.

8.3. Based on the outcome of discussion at EANPG 52 (December 2010) and pending the EANPG endorsement, the relevant parts of this document will be reported in the EUR Air Navigation Plan, Volume I (Basic ANP) for the system description provisions and Volume II (FASID) for the technical details.

9. REFERENCE MATERIAL

- (Doc 9854) Global Air Traffic Management Operational Concept
- (Doc 9882) Air Traffic Management System Requirements
- (Doc 9883) Manual on Global Performance of the Air Navigation System
- (Doc 9750) Global Air Navigation Plan
- EC Regulation 691/2010 “performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation services”
- European ATM Master Plan (SESAR)
- Eurocontrol PRU – Technical Note “Measuring Operational ANS performance at Airports” v 1.0
- U.S./Europe Comparison of ATM-related Operational Performance (2009)
- Eurocontrol Performance Review Report 2010
- Eurocontrol ATM Cost-Effectiveness (ACE) 2009 Benchmarking Report
- Reference to the amendment to Regulation 691/2010 on Safety KPIs to be added when available
10. ANNEXES

ANNEX 1: PERFORMANCE FRAMEWORK FORMS

   Under development

ANNEX 2: RPRR

   Under development
ANNEX 3: TEMPLATE FOR CONTEXTUAL INFORMATION

ALL Contextual Data provided by States are voluntary and meant to help in understanding potential factors contributing to differences in performance results

**STATE**

<table>
<thead>
<tr>
<th>Contextual Data Element</th>
<th>Year N</th>
<th>Continental</th>
<th>Oceanic*</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>Size of the area - Square km</td>
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<tr>
<td>Number of FIRs</td>
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<tr>
<td>IFR flights controlled (‘000)</td>
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<tr>
<td>IFR flight-hours controlled (‘000)</td>
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<tr>
<td>IFR airport movements controlled</td>
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<tr>
<td>Average flight hours per “flight” (decimal hours)</td>
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<tr>
<td>IFR hours per square km</td>
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<tr>
<td>Radar Surveillance Coverage at 29K ft.</td>
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<tr>
<td>IFR Tower Movements</td>
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<td>Controlled VFR Tower Movements</td>
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<tr>
<td>En Route ATFM delays per flight</td>
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<td>Airport ATFM delays per flight</td>
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<td>Total ATCOs in Operations</td>
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<tr>
<td>Number of ACCs</td>
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<tr>
<td>Number of ATCOs in Operations</td>
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<tr>
<td>Number of Co-located ACC/Approach Facilities</td>
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<tr>
<td>Number of ATCOs in Operations</td>
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<tr>
<td>Number of Approach Control Facilities</td>
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<td>Number of ATCOs in Operations</td>
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<tr>
<td>Number of Co-located Tower/Approach</td>
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<td>Number of ATCOs in Operations</td>
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<tr>
<td>Number of Stand-alone Towers</td>
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<tr>
<td>Number of ATCOs in Operations</td>
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<tr>
<td>Number of Co-located ACC/Tower/Approach</td>
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<tr>
<td>Number of ATCOs in Operations</td>
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</tbody>
</table>

* For States having an Oceanic Area
### Contextual Data

#### Definitions

The definitions below are provided as guidance.

#### IFR hours per sq km

States should disclose the size (the surface area) of the airspace for which they are responsible. This should include the area where ANS have been delegated to the State by another State, and exclude the area in which ANS have been delegated to another State. The sq km here should be consistent with ACC coverage with respect to total area. Differentiation for facilities controlling only upper or lower airspace will be addressed in the comments column.

#### Sq. km – Oceanic and Continental

See above

#### Radar Surveillance Coverage at 29K ft.

Subset or all of Continental Sq. Km. ANSPs with only lower airspace can input “0”.

#### Number of FIRs

ICAO definition

#### Average flight hours per “flight” (decimal hours)

Calculate average flight hours for all activities (flights) including in flight hour computation

#### IFR Tower Movements

One movement each for arrivals and departures. Touch and Go or Go Around equals one movement. Include helicopters (if they are IFR).

#### Controlled VFR Tower Movements

As defined by the State

#### Total ATCO's in Operations

ATCO in OPS (i.e., ATCO on operational duty): An ATCO who is participating in an activity that is either directly related to the control of traffic or is a necessary requirement for an ATCO to be able to control traffic. Such activities include manning a position, refresher training and supervising on-the-job trainee controllers, but do not include participating in special projects, teaching at a training academy or providing instruction in a simulator.

#### Number of Co-located ACC/Approach Facilities

Number of ATCOs in the relevant unit

#### Number of Approach Control Facilities

Number of ATCOs in the relevant units

#### Number of Co-located Tower Approach

Number of ATCOs in the relevant units

#### Number of Stand-alone Towers

Number of ATCOs in the relevant units

#### Number of Co-located ACC/Tower/Approach

Number of ATCOs in the relevant units
# ANNEX 4: RELEVANT DATA

ICAO EUR Region approach to the definition of a performance framework

## KPA: Safety, Capacity, Efficiency, Environment, Cost Effectiveness

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Measurement</th>
<th>Safety</th>
<th>Capacity</th>
<th>Efficiency</th>
<th>Environment</th>
<th>Cost Effectiveness</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES II Effectiveness of Safety Management</td>
<td>Questionnaires</td>
<td>State Identifier</td>
<td>State Identifier</td>
<td>Year Calendar</td>
<td>Management objectives</td>
<td>Level of achievement (1-5)</td>
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<tr>
<td>SES II Just Culture</td>
<td>Questionnaires</td>
<td>All EUR region States, annually</td>
<td>State Identifier</td>
<td>Year Calendar</td>
<td>Management objectives</td>
<td>Level of achievement (1-5)</td>
<td>X</td>
</tr>
<tr>
<td>Safety Occurrences</td>
<td>Occurrence analysis reports</td>
<td>All EUR region States</td>
<td>Occurrence Identifier</td>
<td>Occurrence type</td>
<td>Separation Minima (SMI), Runway Incursion (RI), ATM Specific Technical Event</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Legend: 'X' identifies the data elements in rows, which are supporting the calculation of indicators in columns. Grey Attribute/Measurement fields contain measurement data. White Attribute/Measurement fields contain identification, context and categories.
### ICAO EUR Region approach to the definition of a performance framework

#### KPA Efficiency Environment

<table>
<thead>
<tr>
<th>Measured entities</th>
<th>States and ANSPs</th>
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#### Data set

| Flights | Main flight records | Unique Flight No. | Flight plan | Identifier | Flight rules | Encoded | Dep airport | Identifier | Dest airport | Identifier | Dep/Dest category | 'Circular flight', 'Dep-Dest distance <= 80 nm', 'Dep-Dest distance > 80 nm' | Off time stamp (last flight plan) | Date/Time | Off time stamp (ATFM slot) | Date/Time | Departure delay | Attribution | Magnitude of departure delay | Minutes | Departure delay cause | Encoded | Departure delay originating location | Location Type (airspace volume, airport) | Departure delay originating State | State of originating location (Identifier) |
|---------|---------------------|-------------------|-------------|------------|-------------|---------|-------------|------------|-------------|------------|-----------------|--------------------------|-----------------------------|------------|-----------------------------|---------|--------------------------|---------|--------------------------|---------|--------------------------|----------------|-------------------------|-----------------|
|         | GAT IFR flights in all EUR region States | Unique Flight No. | Flight plan | Identifier | Flight rules | Encoded | Dep airport | Identifier | Dest airport | Identifier | Dep/Dest category | 'Circular flight', 'Dep-Dest distance <= 80 nm', 'Dep-Dest distance > 80 nm' | Off time stamp (last flight plan) | Date/Time | Off time stamp (ATFM slot) | Date/Time | Departure delay | Attribution | Magnitude of departure delay | Minutes | Departure delay cause | Encoded | Departure delay originating location | Location Type (airspace volume, airport) | Departure delay originating State | State of originating location (Identifier) |
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|         | GAT IFR flights in all EUR region States | Unique Flight No. | Flight plan | Identifier | Flight rules | Encoded | Dep airport | Identifier | Dest airport | Identifier | Dep/Dest category | 'Circular flight', 'Dep-Dest distance <= 80 nm', 'Dep-Dest distance > 80 nm' | Off time stamp (last flight plan) | Date/Time | Off time stamp (ATFM slot) | Date/Time | Departure delay | Attribution | Magnitude of departure delay | Minutes | Departure delay cause | Encoded | Departure delay originating location | Location Type (airspace volume, airport) | Departure delay originating State | State of originating location (Identifier) |

#### Data set Subset Applicability Attribute(s) Measurement

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ICAO EUR Region approach to the definition of a performance framework

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Legend: 'X' identifies the data elements in rows, which are supporting the calculation of indicators in columns. Grey Attribute/Measurement fields contain measurement data. White Attribute/Measurement fields contain identification, context and categories.
ANNEX 5: TERMINOLOGY

Access and equity: A global Air Navigation System should provide an operating environment that ensures that all airspace users have the right of access to ATM resources needed to meet their specific operational requirements; and ensures that the shared use of the airspace for different airspace users can be achieved safely. The global Air Navigation System should ensure equity for all airspace users that have access to a given airspace or service. Generally, the first aircraft ready to use the ATM resources will receive priority, except where significant overall safety or system operational efficiency would accrue or national defence considerations or interests dictate by providing priority on a different basis.

Capacity. The global Air Navigation System should exploit the inherent capacity to meet airspace user demand at peak times and locations while minimizing restrictions on traffic flow. To respond to future growth, capacity must increase, along with corresponding increases in efficiency, flexibility, and predictability while ensuring that there are no adverse impacts to safety giving due consideration to the environment. The Air Navigation System must be resilient to service disruption, and the resulting temporary loss of capacity.

Cost effectiveness. The Air Navigation System should be cost-effective, while balancing the varied interests of the ATM community. The cost of service to airspace users should always be considered when evaluating any proposal to improve ATM service quality or performance. ICAO guidelines regarding user charge policies and principles should be followed.

Efficiency. Efficiency addresses the operational and economic cost effectiveness of gate-to-gate flight operations from a single-flight perspective. Airspace users want to depart and arrive at the times they select and fly the trajectory they determine to be optimum in all phases of flight.

Environment. The Air Navigation System should contribute to the protection of the environment by considering noise, gaseous emissions, and other environmental issues in the implementation and operation of the global Air Navigation System.

Flexibility. Flexibility addresses the ability of all airspace users to modify flight trajectories dynamically and adjust departure and arrival times thereby permitting them to exploit operational opportunities as they occur.

Global interoperability. The Air Navigation System should be based on global standards and uniform principles to ensure the technical and operational interoperability of Air Navigation Systems and facilitate homogeneous and non discriminatory global and regional traffic flows.

Participation by the ATM community. The ATM community should have a continuous involvement in the planning, implementation, and operation of the system to ensure that the evolution of the global Air Navigation System meets the expectations of the community.

Predictability. Predictability refers to the ability of the airspace users and air navigation service providers to provide consistent and dependable levels of performance. Predictability is essential to airspace users as they develop and operate their schedules.

Safety. Safety is the highest priority in aviation, and ATM plays an important part in ensuring overall aviation safety. Uniform safety standards and risk and safety management practices should be applied systematically to the Air Navigation System. In implementing elements of the global aviation system, safety needs to be assessed against appropriate criteria, and in accordance with
appropriate and globally standardized safety management processes and practices.

**Security.** Security refers to the protection against threats, which stem from intentional (e.g. terrorism) or unintentional (e.g. human error, natural disaster) acts affecting aircraft, people or installations on the ground. Adequate security is a major expectation of the ATM community and of citizens. The Air Navigation System should therefore contribute to security, and the Air Navigation System, as well as air navigation related information, should be protected against security threats. Security risk management should balance the needs of the members of the ATM community who require access to the system, with the need to protect the Air Navigation System. In the event of threats to aircraft or threats using aircraft, ATM shall provide responsible authorities with appropriate assistance and information.

**ATFM delay.** At times the capacity of the controlled airspace in certain areas or at airports is not sufficient to accommodate the demand of traffic. This may be due to structural lack of capacity, weather problems, technical outages, industrial actions, etc. Air Traffic Flow Management (ATFM) provides a service to:

1) Avoid overload of the Air Traffic Control (ATC) services which might endanger safety.
2) Minimize the penalty imposed to the aircraft operator by the congestion.

The main ATFM measures are rerouting aircraft over non-congested areas or staggering departure times by imposing appropriate ground delay. “ATFM delay” is therefore defined as the duration between the last Take-Off time requested by the aircraft operator and the Take-Off slot given by the ATFM Unit.