

**EUR Region Performance Framework Document  
(EUR Doc 030 – Revision 2020)**

**FINAL DRAFT**

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## Table of Contents

|       |   |    |
|-------|---|----|
| 1     | Introduction .....  | 5  |
| 1.1   | Purpose .....   | 5  |
| 1.2   | Scope.....  | 5  |
| 1.3   | History.....  | 6  |
| 1.4   | Implementation experience.....  | 6  |
| 1.5   | Reasons for Revising this Document.....                                     | 7  |
| 2     | Global and Regional Context.....  | 8  |
| 2.1   | Global Air Navigation Plan .....  | 8  |
| 2.2   | European Context .....  | 9  |
| 2.2.1 | Use of Regional Performance Review .....                                    | 9  |
| 2.2.2 | Geographic Applicability in the EUR Region .....                            | 9  |
| 2.2.3 | Relationship with SES Performance Scheme .....                              | 10 |
| 2.2.4 | Relationship with National performance measurement .....                    | 12 |
| 3     | The EUR Region Performance Framework.....                                   | 12 |
| 3.1   | Introduction .....  | 12 |
| 3.2   | Principles.....   | 12 |
| 3.3   | Overview .....  | 13 |
| 3.4   | Contextual Data .....   | 14 |
| 3.5   | Performance Data .....  | 14 |
| 3.5.1 | Overview .....  | 14 |
| 3.5.2 | GANP KPAs and KPIs.....   | 15 |
| 3.5.3 | Other KPAs and KPIs used in the EUR Region Performance Framework.....       | 17 |
| 3.6   | Changes Introduced by this Revision .....                                   | 17 |
| 3.6.1 | Discontinued metrics, indicators and KPAs .....                             | 17 |
| 3.6.2 | Potential Other KPIs.....   | 18 |
| 4     | Implementation of the Regional Performance Framework.....                   | 18 |
| 4.1   | European Aviation System Planning Group (EASPG) .....                       | 18 |
| 4.2   | EASPG Programme Coordination Group (PCG) and other contributory bodies..... | 19 |
| 4.3   | Performance Task Force (PERF TF) .....                                      | 19 |
| 4.4   | States.....   | 19 |
| 4.5   | ICAO EUR Secretariat .....  | 19 |
| 4.6   | EUR Doc 030 Support Team .....  | 20 |
| 5     | The Annual Data Reporting Process.....                                      | 20 |
| 5.1   | Introduction .....  | 20 |
| 5.2   | General Principles for Monitoring and Reporting of Performance .....        | 20 |

|       |   |    |
|-------|---|----|
| 5.2.1 | Data-centric steps .....                              | 21 |
| 5.2.2 | Indicator-centric steps .....                         | 21 |
| 5.2.3 | Reporting-specific steps .....                        | 21 |
| 5.3   | Overview of the Annual Data Reporting Process.....    | 22 |
| 5.4   | Initiation of the Annual Data Reporting Process ..... | 22 |
| 5.5   | Roles and Responsibilities of States.....             | 22 |
| 5.6   | Support Mechanism.....                                | 23 |
| 5.7   | Roadmap and Milestones in the Annual Process .....    | 23 |
| 5.8   | Use of Templates .....                                | 24 |
| 6     | Preparation and Use of the Annual Report .....        | 24 |
| 6.1   | Consolidation of State Submissions.....               | 24 |
| 6.1.1 | Overview of the Process .....                         | 24 |
| 6.1.2 | Output of the Process .....                           | 24 |
| 6.2   | Production of the Annual Report.....                  | 26 |
| 6.3   | Use of the Annual Report.....                         | 27 |
| 7     | Specific Definitions and Guidance .....               | 27 |
| 7.1   | Contextual Data .....                                 | 27 |
| 7.1.1 | General.....  | 28 |
| 7.1.2 | Airspace.....   | 28 |
| 7.1.3 | Traffic .....   | 28 |
| 7.1.4 | ATC Facilities .....                                  | 29 |
| 7.1.5 | ATCOs in Operations .....                             | 29 |
| 7.2   | Performance Data .....                                | 30 |
| 7.2.1 | Capacity.....   | 30 |
| 7.2.2 | Flight Efficiency .....                               | 30 |
| 7.2.3 | Environment.....                                      | 30 |
| 7.2.4 | Cost Effectiveness .....                              | 30 |
| 7.2.5 | Participation by the ATM Community .....              | 31 |
| 8     | Acronyms .....  | 35 |
| 9     | Terminology .....                                     | 36 |

## Figures

|          |   |    |
|----------|---|----|
| Figure 1 | Geographical scope of the EUR Region performance framework.....     | 10 |
| Figure 2 | Relationship between SES and EUR Region performance framework ..... | 12 |
| Figure 3 | Overview of the EUR Region Performance Framework.....               | 13 |
| Figure 4 | The Eleven KPAs of the GANP .....                                   | 15 |

|   |    |
|---|----|
| Figure 5 Generic Data Flow Process Steps .....                | 20 |
| Figure 6 Annual data reporting process in the EUR Region..... | 22 |
| Figure 7 Examples of graphs produced for the RPRR .....       | 25 |
| Figure 8 Example page from the RPRR .....                     | 27 |

## Tables

|  |    |
|--|----|
| Table 1 Summary of the EUR Doc 030 KPAs, objectives, focus areas and indicators..... | 14 |
| Table 2 Overview of GANP 2019 KPIs (by KPA).....                                     | 16 |
| Table 3 Overview of GANP 2019 KPIs (by flight phase) .....                           | 16 |
| Table 4 Roadmap and Milestones in the Annual Process.....                            | 23 |

# 1 Introduction

## 1.1 Purpose

As the aviation industry has evolved into a less regulated and more corporatized environment with greater accountabilities, the advantages of transitioning from systems/technology based to performance-based planning are apparent. According to ICAO Doc 9883 the Performance-Based Approach (PBA) adheres to the following principles: strong focus on results through adoption of performance objectives (and targets if/where appropriate); informed decision making driven by the desired results and reliance on facts and data for decision making.

The overall objective of this effort is to achieve a safer and more efficient Air Navigation System through increased capacity, reduction in waste of resources, more equitable charging practices, identified cost savings and thus more efficient provision of services. According to the PBA methodology, the assessment of improvements is periodically checked through a performance review, which in turn requires adequate data collection, performance measurement capabilities as well as appropriate expertise.

As the work endeavour is challenging and requires a coordination of efforts, the aviation community is encouraged to follow a common approach, at national, regional and global level, towards the development and implementation of a performance framework making maximum use of already existing arrangements that could simplify the transition to the PBA.

The ICAO EUR region performance framework, as described in this document, aims to:

- implement a framework of performance objectives for the EUR region, with key performance areas and indicators and metrics;
- produce an annual Regional Performance Review Report (RPRR); and
- analyse the RPRR to identify areas where performance improvements are realistically possible;
- Contribute to regional/global developments.

## 1.2 Scope

This document defines the ICAO EUR Region performance objectives, suitable Key Performance Areas (KPAs), Indicators (KPIs) and (realistically measurable) metrics to be used as part of a performance framework enabling the regional implementation of the performance based approach, ultimately supporting the implementation of the Global Air Navigation Plan and adoption of the global performance management techniques, as part of the transition towards a performance-based global Air Navigation System<sup>1</sup>.

Delivered to the European Aviation System Planning Group (EASPG) in the Regional Performance Review Report (RPRR), the measured performance must adequately reflect the regional performance results and assist the informed decision making in identifying areas where improvements are required.

In the definition of this performance framework it is important to also put in place associated processes and to allocate roles and responsibilities to all actors involved at the different levels.

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<sup>1</sup> A performance-based global Air Navigation System is envisaged in the Global Air Traffic Management Operational Concept (Doc 9854) and related Manual on Air Traffic Management System Requirements (doc 9882).

### 1.3 History

In 2005, ICAO published Doc 9854, the Global Air Traffic Management Operational Concept (GATMOC). The document contained 11 GATMOC Expectations, not to be confused with Key Performance Areas (KPA's).

This was followed in 2009 by the publication of Doc 9883, the Manual on Global Performance of the Air Navigation System (MGPANS). The document defines terminology, methods, processes & good practices (including the six-step ICAO performance management process); and 11 KPAs derived from the 11 GATMOC Expectations. Part I Appendix E also included a list of performance indicators, but these were only examples of what was in use in some Regions; these were not globally standardized KPIs.

Subsequently ICAO organised a series of regional workshops to explain Doc 9883, and requested the Regions to start developing a regional performance framework, as the time was not yet ripe to harmonize at global level.

In response to this request, in 2010, the Programme Coordination Group (COG) of the European Air Navigation Planning Group (EANPG) decided at the COG/47 meeting 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 EUR Region. With this guidance in mind, the Task Force developed a relatively simple Regional Performance Framework which was to a large extent based on the indicators adopted in the SES Performance Scheme Reference Period 1 (RP1), covering the period 2012-2014.

In 2013, the Task Force delivered the first edition of EUR Doc 030, the EUR Region Performance Framework Document, to the EANPG/55 meeting. Following the EANPG endorsement the document was published in both English and Russian languages in early 2014.

The implementation of the regional performance framework was supported by a number of regional workshops to explain and promote the EUR Doc 030.

In 2016, the ICAO Secretariat, the European Commission, EUROCONTROL and EASA jointly agreed to set up a support mechanism which would make it possible to start data collection without causing duplication of effort for States participating in existing SES and EUROCONTROL data reporting processes.

### 1.4 Implementation experience

The first data reporting cycle and delivery of a Regional Performance Review Report (RPRR) took place in 2016, covering data for the year 2015 (2014 for the Cost Effectiveness KPA). Based on edition 1 of the EUR Doc 030 document, a total of 4 data reporting cycles have taken place. Over the years, the number of participating (submitting) States has steadily increased: from 18 in the first reporting cycle (2016), to 31 in the third one (2018). At the same time, a number of implementation challenges have been addressed, for example:

- limited participation from States located in the eastern part of the Region in the initial phase of implementation. To improve the situation, three out of five Regional Performance Workshops were organised in eastern States with Russian language support to support awareness and promote the regional framework. In this light the participation of States from the eastern part of the EUR Region has gradually improved.
- increase in the overall level of participation but still lack of continuity in States participating.

- lack of awareness of the support mechanism in some States, thus not benefiting of the support, creating additional efforts and a negative impact on the harmonization of contributions.
- not all States which requested the support with the pre-filled templates finally submitted the contribution to the ICAO Secretariat, thus potential exists for more States participating.
- some States reported difficulties in filling out the tables, due to insufficiently detailed guidance in the original EUR Doc 030 and not all supporting material available in Russian language.
- some data/indicators are difficult to provide without specialised tool support. For example for the computation of the Effectiveness of Safety Management (EoSM) score, this issue was mitigated by making available a dedicated stand-alone tool (courtesy EASA) for the benefit of the non-SES States which are not required to report their EoSM questionnaire answers to EASA directly.
- the Excel reporting templates have been designed to allow fully automated processing by the EUR Doc 030 Support Team. However, this is sometimes made difficult by States' submissions through scanned version of printed reports (not the electronic file), modifying the template format or entering invalid data.
- Late delivery of the performance reports from States thus making challenging the timely preparation and submission of the annual RPRR to EANPG

Furthermore the following measures have been implemented for having a meaningful regional performance report:

- although some States have not responded to the State Letter in providing the performance reports, their pre-filled results have been included in the annual RPRR in order to enrich the content of the report, however clearly distinguishable in a different colour to signify that these results have not been validated by the corresponding State.
- to encourage further growth in participation and mitigate any concerns on performance data disclosure, up till now the policy was to show State and airport results in the RPRR only in an anonymised manner.
- Regional Performance Workshops served to create awareness and a forum where additional guidance can be disseminated and experiences shared.

## 1.5 Reasons for Revising this Document

There are three main reasons for revising this document:

- 1) Since the publication of the initial EUR Doc 030, two editions of the Global Air Navigation Plan have been published: GANP 2016 and GANP 2019. As can be seen in those editions, significant progress was made in refining and expanding the performance based approach. This evolution has led to a set of globally accepted performance indicators (the GANP indicators) which is wider than what is included in the initial EUR Region Performance Framework.
- 2) Likewise since the publication of the initial EUR Doc 030, the SES Performance Framework has undergone several changes. In particular, several of the SES-derived indicators used in EUR Doc 030 will be discontinued as from 2020 (Reference Period 3, RP3) onwards.
- 3) With the merger of the former EANPG and RASG-EUR into the European Aviation System Planning Group (EASPG), as approved by the President of the ICAO Council in September 2019, a new organizational structure was implemented in the ICAO EUR Region.

In addition, it was found that there is too much detailed technical guidance in the document which gets quickly out-of-date. Details are better kept somewhere else where they can easily be updated without requiring the release of new editions of EUR Doc 030.

Both in terms of data availability and alignment with current global and regional developments, it was therefore appropriate to initiate a revision of this document. As a result the EANPG concluded in December 2018 (EANPG/60&RASG-EUR/07 Conclusion 15 – Implementation of the ICAO EUR Region Performance Framework) that *“the Performance Task Force [should] perform an assessment of the ICAO EUR Region performance framework (ICAO EUR Doc 030) against the developments at the regional and global level in the area of performance and to submit a proposal for the next steps at COG/RCOG in Spring 2019”*.

COG/74 (20-22 May 2019) noted *“that the COG PERF TF had met on 9 May 2019 and addressed the following areas: the preparation of the 2019 Regional Performance report, the update of the ICAO EUR Doc 030 to reflect the changes at ICAO Global level as well as at the Regional level. The Meeting also noted a roadmap with the activities that would be carried out by the Task Force in preparation for the EASPG in December 2019”*.

## 2 Global and Regional Context

### 2.1 Global Air Navigation Plan

The Global Air Navigation Plan (Doc 9750) is the ICAO’s highest air navigation strategic document and the plan to drive the evolution of the global air navigation system, in line with the Global Air Traffic Management Operational Concept (GATMOC, Doc 9854) and the Manual on Air Traffic Management System Requirements (Doc 9882). It also supports planning for local and regional implementation.

Starting with the sixth edition of the GANP (GANP 2019), Doc 9750 is made available via an interactive web portal (the GANP Portal, <https://www4.icao.int/ganportal/>) where all aviation stakeholders will be able to find the most relevant information related to the GANP.

In order to better communicate with technical and high-level managers and to not leave any State or stakeholder behind, the GANP Portal introduces a multilayer structure, tailored for the various audiences. This multilayer structure of four layers – two global levels, a regional level and a national one – will also provide a framework for alignment of regional, sub-regional and national plans.

- 1) **Level 1, the Global Strategic level (the GANP Strategy)** provides high-level strategic directions for decision makers to drive the evolution of the global air navigation system towards a common agreed vision. To this end, the global strategic level includes a common vision, global performance ambitions and a conceptual roadmap.
- 2) **Level 2, the Global technical level** supports technical managers in planning the implementation of basic air navigation services and new operational improvements in a cost-effective manner and according to specific needs, while ensuring interoperability of systems and harmonization of procedures. It contains:
  - a) two global technical frameworks:
    - i. the **Basic Building Blocks (BBB) framework**, which outlines the foundation for a robust air navigation system by defining the essential air navigation services that shall be provided for international civil aviation; and
    - ii. an updated version of the **Aviation System Block Upgrades (ASBU) framework** for scalable implementation, which provides the aviation



- community with the performance benefits expected from the implementation of specific air navigation operational improvements.
- b) an associated performance framework, which includes a **catalogue of performance objectives** and a **list of key performance indicators** (see also section 3.5.2.2) and
  - c) a **performance-based method** for implementation planning of air navigation operational improvements, making use of the above mentioned catalogue of performance objectives and indicators.
- 3) **Level 3, the regional level** addresses regional and sub-regional needs aligned with the global objectives. As such, it contains the ICAO Regional Air Navigation Plans (ANPs) and considers other regional initiatives.
  - 4) **Level 4**, under responsibility of the States, focuses on **national planning**. The development by States, in coordination with relevant stakeholders, of air navigation plans as a strategic part of their national development plans and aligned with regional and global plans is crucial to achieve the common vision being developed in the GANP. These air navigation plans should serve as reference documents for national investment in air navigation infrastructure.

The GANP will be periodically updated through a newly defined GANP maintenance process.

## 2.2 European Context

### 2.2.1 Use of Regional Performance Review

In the EUR Region, the development and use of a Regional Performance Framework serves a variety of purposes:

- To produce an annual Regional Performance Review Report (RPRR) which gives the EUR Region PIRG – the European Aviation System Planning Group (EASPG) – a better understanding of where ANS performance is above average, as well as where improvements are possible;
- To allow individual States to position themselves with regard to other States in the Region;
- To use the resulting data and qualitative understanding as input to the performance-based method for implementation planning of air navigation operational improvements, as envisaged in the Global technical level of the GANP;
- To contribute the results as EUR Region input to performance related activities at the Global ICAO level;
- In the spirit of No Country Left Behind (NCLB), to foster a performance oriented culture in all States of the Region, and motivate States to establish performance data collection and analysis processes and to develop local expertise in the area of performance measurement;
- Through the Performance Task Force and the organisation of Regional workshops, provide a forum for the exchange of ANS performance measurement knowledge, accessible to all States of the Region.

### 2.2.2 Geographic Applicability in the EUR Region

Figure 1 below illustrates the geographical scope of the EUR Region performance framework in the context of different geographical aggregations and groupings of States existing in the ICAO EUR Region.

*Figure 1 Geographical scope of the EUR Region performance framework*

In principle, the EUR Region performance framework applies to the ICAO EUR Region which comprises 55 States.

Two very small EUR Region States (San Marino and Andorra) are exempted from supplying data for the EUR Region performance framework. The same applies to the European States which are not a member of ICAO (Liechtenstein and Holy See/Vatican City).

The ICAO EUR/NAT office is accredited to one additional State (Iceland) which is not part of the EUR Region. Its participation is optional, on a voluntary basis.

EUROCONTROL's Maastricht Upper Area Control Centre (MUAC) is not a State, but as a multinational, cross-border civil-military air navigation service provider (ANSP) it is considered a separate reporting entity for certain data in the EUR Region performance framework.

That results in a geographical scope of 53 States plus 1 optional one plus 1 ANSP.

That geographical scope is considerably wider than the set of States participating in the SES performance scheme, the EUROCONTROL area covered by the annual Performance Review Reports (PRR) of the Performance Review Commission (PRC), or the European Civil Aviation Conference (ECAC) area.

With the aim to optimize work and avoid duplications, the working arrangements for the EUR Region data collection and processing have to consider the need to identify groupings of States already covered by on-going processes such as the ones mentioned in the previous paragraph.

Within the group of non-SES States, different levels of integration in the SES performance scheme do exist, and this needs also to be reflected in the data collection and processing mechanisms.

### 2.2.3 Relationship with SES Performance Scheme

The SES performance scheme is a regulatory tool of the EU, closely linked to the SES charging scheme. For Reference Period 3 (RP3, 2020-2024) the regulatory framework is specified in the *COMMISSION IMPLEMENTING REGULATION (EU) 2019/317 of 11 February 2019 laying down a performance and charging scheme in the single European sky and repealing Implementing Regulations (EU) No 390/2013 and (EU) No 391/2013*.

The SES performance scheme is designed to drive performance improvements in the SES Area (consisting of 30 or 29 States in RP3, the so-called SES-States) through target setting and incentive mechanisms, combined with the obligation for participating States as well as the Network Manager to draw up a performance plan for each upcoming Reference Period, in line with applicable targets; getting these plans approved (adopted); subsequent monitoring of performance; and adoption of corrective measures as needed. As part of the scheme, various Stakeholders (national supervisory authorities, air navigation service providers, airport operators, airport coordinators, airspace users and the Network Manager) have the legal obligation to provide certain performance data on a monthly and/or annual basis.

The SES performance scheme uses a performance framework covering four KPAs: safety, environment, capacity and cost-efficiency. Within each KPA a number of indicators are defined, which either can be:

- Key Performance Indicators (KPIs): indicators with targets; or
- Performance Indicators (PIs): indicators without targets, for monitoring purposes.

Targets for KPIs are set at a variety of levels:

- Union-wide level
- Various “local” levels
  - Functional Airspace Block (FAB) level
  - National level
  - ANSP level
  - En-route Charging Zone level
  - Terminal Charging Zone level
  - ACC level
  - Airport level
- Targets for the Network Manager

Targets are generally set in a top-down manner, starting with the Union-wide level, and cascading down to more local levels in such a way that consistency between the levels is assured. Some KPIs do not have a target at Union-wide level; in that case there is only a set of targets at (a) lower level(s).

Unlike the SES performance scheme, the ICAO EUR Region performance framework does not serve regulatory purposes; neither does the performance framework in the Global Air Navigation Plan (GANP). Hence, **ICAO does not get involved in target setting**. Therefore, **the indicators in this document are for monitoring only, and data provision is voluntary**.

The ICAO EUR Region performance framework published in 2013 took into consideration the different initiatives within the Region and to a large extent reused a subset of the SES performance scheme (K)PIs, with a view of aligning as much as possible with on-going processes and activities in the Region. The main motivation for using only a subset was to start with a very simple framework initially. This would improve the chances that the non-SES States of the EUR Region could successfully engage in the data collection process. This reasoning is still valid for the current update of EUR Doc 030.

On the other hand, the EUR Region performance framework also included a small number of indicators and KPAs not part of the SES performance framework to better respond to the needs and maturity in the region.

In the meantime, the GANP 2019 performance framework has adopted a number of the EUR Doc 030 indicators and also a number of SES performance framework indicators (some of which were not part of EUR Doc 030) have been promoted to the status of GANP indicator. When looking to revise the set of EUR Doc 030 indicators therefore the GANP indicators have to be considered.

In addition, EUR Doc 030 has defined some indicators and a set of contextual data (see further) that are not currently existing within the GANP. Given the experience that the EUR Region has with this extra data, this could be promoted for inclusion in future updates of the global framework.

The commonalities and differences between the SES performance scheme and the ICAO EUR Region initiative are illustrated in Figure 2.

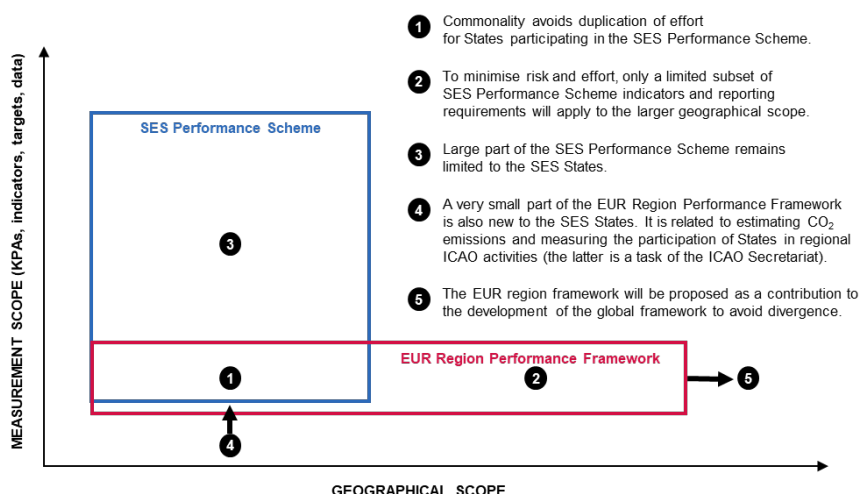


Figure 2 Relationship between SES and EUR Region performance framework

## 2.2.4 Relationship with National performance measurement

It is recognised that States, in addition to the implementation of the regional framework, may/will use additional and/or different data and indicators to take into account local circumstances. In this case they are invited to use – and where applicable modify – their existing data collection processes to the maximum extent possible to support the data reporting for the EUR Region performance framework.

# 3 The EUR Region Performance Framework

## 3.1 Introduction

The EUR Region Performance Framework measures oceanic and continental airspace separately due to the different technical and operational environments. The focus of the framework is on continental airspace and its airports.

The data collection consists of three distinct parts:

- a) Contextual data to be reported by States, not related to any KPA in particular
- b) KPA-related data to be reported by States
- c) Data for the Participation KPA, to be reported by the ICAO Secretariat

## 3.2 Principles

All data in a) and b) above are aggregated to annual values, for the State as a whole.

The reported data are not the indicator values themselves, but the underlying data from which the indicators are computed. This allows aggregation of States to groups of States or to the EUR Region as a whole (at least the combination of all reporting States). States only have to provide the underlying data (metrics); the computation of the indicator values is done automatically by the Excel template.

Data is collected in annual data collection cycles. In principle, the data is collected for year n-1. However, in some cases (more specifically for the cost effectiveness KPA) the most recent validated and final data is only available for year n-2. Therefore, the reporting templates have provisions for reporting data on two distinct years: n-1 and n-2. Some of the contextual data will need to be combined with KPA-related data for both year n-1 and n-2. Care has to be taken to ensure that the inputs for the computation of indicators are taken from the same year. Therefore some contextual data (such as number of flights, flight hours, etc.) needs to be reported for both years n-1 and n-2. The templates clearly indicate which data needs to be provided for which year.

The reporting templates submitted by individual States are collated into a single data file, which is used to produce the graphs which are at the heart of the Regional Performance Review Report (RPRR). As the main goal is to identify the level of performance in the region and areas where improvements are needed, the RPRR groups and presents performance results by KPA / metric / KPI, and not by State.

As the data is primarily used to show performance differences within the Region for a given year, it is imperative that all States use identical data/KPI definitions and the same questionnaires (e.g. for safety maturity).

When interpreting the RPRR 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.

### 3.3 Overview

Figure 3 provides a high level overview of the EUR Region Performance Framework.

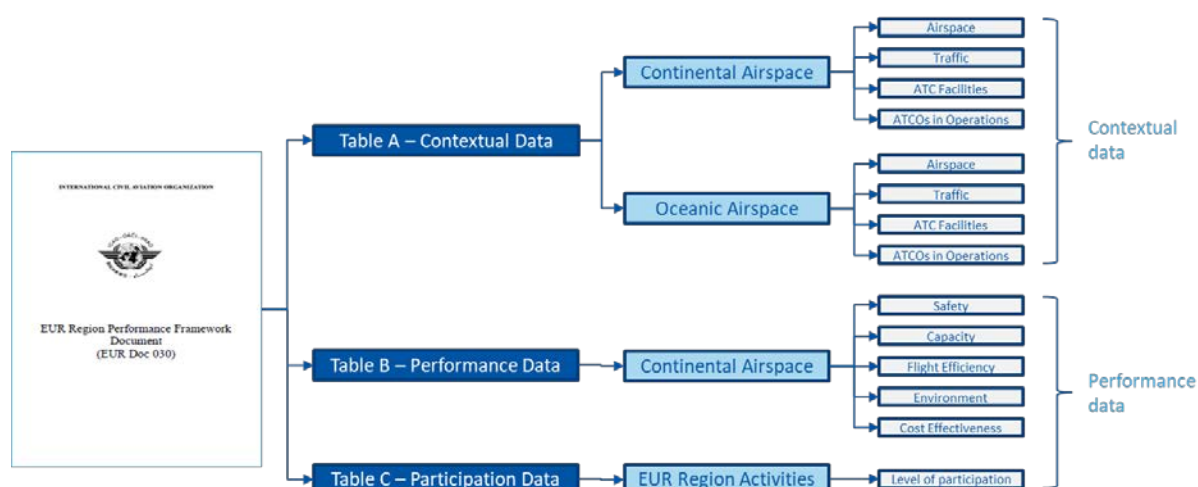


Figure 3 Overview of the EUR Region Performance Framework

### 3.4 Contextual Data

The performance results may vary from State to State due to differences in the characteristics of airspace, traffic and ATC organisational setup. To put in perspective and better understand the performance results achieved, States should provide to ICAO, together with their performance results, also a set of elements describing the main characteristics of their operational environment.

This part of the performance framework covers data on the following subjects, reported separately for continental and oceanic airspace:

- a) Airspace
  - Number of FIRs
  - Size of the area
- b) Traffic
  - Total number of IFR flights controlled
  - Number of domestic IFR flights controlled
  - Number of international IFR flights controlled
  - Number of IFR overflights controlled
  - Number of IFR flight-hours controlled
  - Number of IFR airport movements controlled (departures + arrivals)
  - Number of VFR airport movements controlled (departures + arrivals)
  - Average flight hours per IFR flight
  - Average IFR traffic density
- c) ATC Facilities
  - Number of ACCs
  - Number of co-located ACC/Approach Facilities
  - Number of stand-alone Approach Control Facilities
  - Number of co-located Tower/Approach Facilities
  - Number of stand-alone Towers
  - Number of co-located ACC/Tower/Approach Facilities
- d) ATCOs in Operations
  - Number of ATCOs in operations at ACCs
  - Number of ATCOs in operations at Terminal Facilities (APP + TWRs)

### 3.5 Performance Data

#### 3.5.1 Overview

Table 1 provides an overview of the KPAs, objectives, focus areas and indicators used in the regional framework.

*Table 1 Summary of the EUR Doc 030 KPAs, objectives, focus areas and indicators*

| KPA                | OBJECTIVES   | FOCUS AREAS                  | INDICATORS   |
|--------------------|--|------------------------------|--|
| CAPACITY           | Capacity meets demand for en-route and at airports                         | En-route ATFM Delay          | Average en-route ATFM delay generated by airspace volume   |
|                    |  | Airport ATFM Delay           | Average ATFM delay per flight in the main airports (to be identified by States)  |
| EFFICIENCY         | Ensure users may use most efficient routes                                 | Horizontal Flight Efficiency | Average horizontal en route flight efficiency (length of the en route part of the actual trajectory/last flight planned route vs great circle) |
| ENVIRONMENT        | Contribute to the protection of environment (fuel/CO2 emissions reduction) |                              | CO2 emissions related to inefficiencies in route extension   |
| COST EFFECTIVENESS | Contribute to optimization of costs for ANS                                | ATCO Productivity            | IFR Flights (en-route) per ATCO hour on duty   |
|                    |  |                              | IFR flight hours per ATCO hour on duty   |

| KPA                                | OBJECTIVES  | FOCUS AREAS | INDICATORS                                |
|------------------------------------|---|-------------|---|
|                                    |   |             | IFR movements per ATCO hour on duty       |
| PARTICIPATION BY THE ATM COMMUNITY | Ensure States' participation to Regional planning and implementation activities |             | Level of participation to meetings        |
|                                    |   |             | Level of responses to planning activities |
|                                    |   |             | Level of provision of performance results |

### 3.5.2 GANP KPAs and KPIs

As shown in Figure 4, the eleven KPAs of the GANP are clustered in three groups:

- Societal outcome
- Operational performance
- Performance enablers

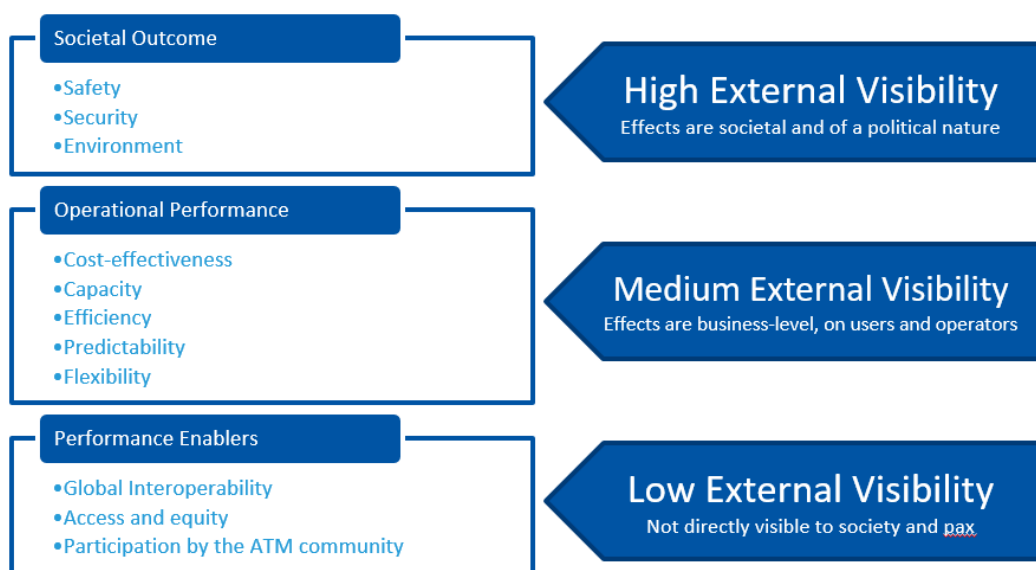


Figure 4 The Eleven KPAs of the GANP

Of the eleven GANP KPAs, the EUR Region performance framework currently covers the following five areas:

- Environment
- Cost-effectiveness
- Capacity
- Efficiency
- Participation by the ATM community

The GANP 2019 defines 19 KPIs. Their grouping per KPA and Focus Area is shown in Table 2; the grouping by flight phase and a high-level definition is shown in Table 3. Their detailed definitions can be found on the GANP Portal: <https://www4.icao.int/ganportal/ASBU/KPI>.

The Core KPIs have minimal data collection requirements (OOOI data, i.e. off-block, take-off, landing and on-block time stamps are sufficient); for the computation of the Additional KPIs more elaborate data sources are required (e.g. trajectory data, ATFM data etc.).

Table 2 Overview of GANP 2019 KPIs (by KPA)

| KPA             | Efficiency  |   |                            | Capacity  |  | Predictability   |                               |
|-----------------|---|---|----------------------------|---|--|--|-------------------------------|
| Focus Area(s)   | Additional flight time & distance   | Vertical flight efficiency  | Additional fuel burn       | Capacity, throughput & utilization                                      | Capacity shortfall & associated delay                          | Punctuality  | Variability                   |
| Core KPIs       | KPI02 Taxi-out additional time<br>KPI13 Taxi-in additional time   |   |                            | KPI09 Airport peak capacity<br>KPI10 Airport peak throughput            |  | KPI01 Departure punctuality<br>KPI14 Arrival punctuality | KPI15 Flight time variability |
| Additional KPIs | KPI04 Filed flight plan en-route extension<br>KPI05 Actual en-route extension<br>KPI08 Additional time in terminal airspace | KPI17 Level-off during climb<br>KPI18 Level capping during cruise<br>KPI19 Level-off during descent | KPI16 Additional fuel burn | KPI06 En-route airspace capacity<br>KPI11 Airport throughput efficiency | KPI07 En-route ATFM delay<br>KPI12 Airport/Terminal ATFM delay | KPI03 ATFM slot adherence                                |                               |

Table 3 Overview of GANP 2019 KPIs (by flight phase)

| Flight phase or event           | ID    | Name                                 | Definition   |
|---------------------------------|-------|--------------------------------------|--|
| Off-blocks (OUT)                | KPI01 | Departure punctuality                | Percentage of flights departing from the gate on-time (compared to schedule) [avg. per traffic flow, per airport or per cluster of airports]   |
| Taxi-out                        | KPI02 | Taxi-out additional time             | Actual taxi-out time compared to an unimpeded taxi-out time [avg. per airport or per cluster of airports]  |
| Take-off (OFF)                  | KPI03 | ATFM slot adherence                  | Percentage of flights taking off within their assigned ATFM slot (Calculated Take-Off Time Compliance) [avg. per airport or per cluster of airports]   |
|                                 | KPI09 | Airport peak capacity (departures)   | The highest number of operations an airport can accept in a one-hour time frame (also called declared capacity, or airport acceptance rate) [per airport]. Can be computed for arrivals, departures or arrivals + departures.                      |
|                                 | KPI10 | Airport peak throughput (departures) | The 95 <sup>th</sup> percentile of the hourly number of operations recorded at an airport, in the “rolling” hours sorted from the least busy to the busiest hour [per airport]. Can be computed for arrivals, departures or arrivals + departures. |
| Climb                           | KPI17 | Level-off during climb               | Distance and time flown in level flight before Top of Climb [avg. per departure per airport or per cluster of airports]  |
| En-route                        | KPI04 | Filed flight plan en-route extension | Flight planned en-route distance compared to a reference ideal trajectory distance [avg. per traffic flow or airspace volume]  |
|                                 | KPI05 | Actual en-route extension            | Actual en-route distance flown compared to a reference ideal distance [avg. per traffic flow or airspace volume]   |
|                                 | KPI18 | Level capping during cruise          | Flight Level difference between maximum Flight Levels on a measured airport pair and maximum Flight Levels on similar unconstrained airport pairs [avg. per flight]  |
|                                 | KPI06 | En-route airspace capacity           | The maximum volume of traffic an airspace volume will safely accept under normal conditions in a given time period [per airspace volume]   |
|                                 | KPI07 | En-route ATFM delay                  | ATFM delay attributed to flow restrictions in a given en-route airspace volume [avg. per airspace volume]  |
| Descent & terminal area arrival | KPI19 | Level-off during descent             | Distance and time flown in level flight after Top of Descent [avg. per arrival per airport or per cluster of airports]   |
|                                 | KPI08 | Additional time in terminal airspace | Actual terminal airspace transit time compared to an unimpeded time [avg. per airport or per cluster of airports]  |
| Landing (ON)                    | KPI09 | Airport peak capacity (arrivals)     | The highest number of operations an airport can accept in a one-hour time frame (also called declared capacity, or airport acceptance rate) [per airport]. Can be computed for arrivals, departures or arrivals + departures.                      |
|                                 | KPI10 | Airport peak throughput (arrivals)   | The 95 <sup>th</sup> percentile of the hourly number of operations recorded at an airport, in the “rolling” hours sorted from the least busy to the busiest hour [per airport]. Can be computed for arrivals, departures or arrivals + departures. |
|                                 | KPI11 | Airport throughput efficiency        | Airport throughput (accommodated demand) compared to capacity or demand, whichever is lower. Can be computed for arrivals, departures or arrivals + departures. [per airport]  |



| Flight phase or event            | ID    | Name                        | Definition   |
|----------------------------------|-------|-----------------------------|--|
|                                  | KPI12 | Airport/Terminal ATFM delay | ATFM delay attributed to arrival flow restrictions at a given airport and/or associated terminal airspace volume [avg. per airport or per cluster of airports]                     |
| Taxi-in                          | KPI13 | Taxi-in additional time     | Actual taxi-in time compared to unimpeded taxi-in time [avg. per airport or per cluster of airports]   |
| In-blocks (IN)                   | KPI14 | Arrival punctuality         | Percentage of flights arriving at the gate on-time (compared to schedule) [avg. per traffic flow, per airport or per cluster of airports]  |
| Per flight phase or gate-to-gate | KPI15 | Flight time variability     | Distribution of the flight (phase) duration around the average value [avg. per airport or per traffic flow]  |
|                                  | KPI16 | Additional fuel burn        | Additional flight time/distance and vertical flight inefficiency converted to estimated additional fuel burn attributable to ATM [avg. per flight, airport or per airspace volume] |

The EUR Region Performance Framework currently uses the following GANP KPIs:

- KPI04 Filed flight plan en-route extension
- KPI05 Actual en-route extension
- KPI07 En-route ATFM delay
- KPI12 Airport/Terminal ATFM delay
- KPI16 Additional fuel burn

### 3.5.3 Other KPAs and KPIs used in the EUR Region Performance Framework

- CO<sub>2</sub> emissions deriving from inefficiencies in flight efficiency (conversion of KPI16 Additional fuel burn into CO<sub>2</sub> emissions)
- IFR flights (en-route) per ATCO hour on duty
- IFR flight hours per ATCO hour on duty
- IFR movements (airport) per ATCO hour on duty
 

This indicator is considered less than ideal because it only relates the terminal & aerodrome ATCO hours on duty to the number of IFR airport movements. However certain States report a significant number of VFR airport movements, and obviously these ATCOs control the total number of airport movements. When aggregating to State level, this includes airports with a mix of IFR and VFR traffic, as well as airports predominantly used by VFR or IFR traffic. In particular the ATCO hours on duty include those at smaller (regional or local) controlled airports with a high proportion of VFR traffic.
- Level of participation of States and international organisations to planning and implementation meetings (e.g. EASPG and its contributory groups)
- Level of responses to State Letters asking for information on planning and implementation aspects
- Level of provision of performance results from States for Regional Performance Review Report (RPRR)

## 3.6 Changes Introduced by this Revision

### 3.6.1 Discontinued metrics, indicators and KPAs

The following metrics, indicators and KPAs have been removed from the regional performance framework, either because they were rarely reported by any State, they are corresponding to SES performance scheme indicators which will be discontinued from 2020 (Reference Period 3, RP3) onwards, or they are addressed in other ICAO performance frameworks.

- Radar Surveillance Coverage at FL 290

With the introduction of the performance dimension into the annual Regional Aviation Safety Plan (RASP) for the ICAO EUR Region which includes RASP targets and indicators (associated with supporting algorithms, rationales, limitations, calculation method/formula and data sources for each proposed indicator) the Safety KPA has been removed from the EUR Doc 030. The monitoring of the Safety KPA will be part of the new RASP EUR with more than 40 EUR Safety Performance Indicators (EUR SPI), which are all associated to one of the 6 goals of the 2020-2022 edition of the Global Aviation Safety Plan (GASP).

### 3.6.2 Potential Other KPIs

The aim of this update of EUR Doc 030 was not to introduce new KPIs for regional data collection. However with a view to the gradual implementation of the GANP performance framework at global level, EUR Region States could consider the use of other GANP KPIs (on a voluntary/optional basis) from the following list:

- KPI01 Departure punctuality
- KPI02 Taxi-out additional time
- KPI03 ATFM slot adherence
- KPI06 En-route airspace capacity
- KPI08 Additional time in terminal airspace
- KPI09 Airport peak capacity
- KPI10 Airport peak throughput
- KPI11 Airport throughput efficiency
- KPI13 Taxi-in additional time
- KPI14 Arrival punctuality
- KPI15 Flight time variability
- KPI17 Level-off during climb
- KPI18 Level capping during cruise
- KPI19 Level-off during descent

## 4 Implementation of the Regional Performance Framework

Implementing the regional performance framework implies a number of activities:

- Periodically updating EUR Doc 030 so that the framework stays relevant in a changing context (both at global and regional level);
- Using the framework, through annual data collection and the production of an annual Regional Performance Review Report (RPRR);
- Analysing the RPRR to identify areas where improvements are realistically possible.

The paragraphs below list the main roles and responsibilities of the different parties involved in implementing the Regional Performance Framework:

### 4.1 European Aviation System Planning Group (EASPG)

- a) Monitor the application and results of the performance framework at every EASPG meeting through a Regional Performance Review Report (RPRR) for air navigation systems;

- b) Identify major achievements and areas where improvements are needed and possible;
- c) Define a strategy for regional improvements;
- d) Approve proposed updated versions of EUR Doc 030;
- e) Task the ICAO EUR Secretariat to take initiatives to promote the implementation of the regional performance framework.

#### 4.2 EASPG Programme Coordination Group (PCG) and other contributory bodies

- a) Note status updates and support the implementation of the performance framework;
- b) Take into consideration the Regional performance framework in their planning activities;
- c) Task the Performance Task Force to periodically review regional and global developments and modify the performance framework accordingly.

#### 4.3 Performance Task Force (PERF TF)

- a) Periodically review regional and global developments and modify the performance framework accordingly (performance objectives, KPAs, KPIs, metrics, timeframe, etc.);
- b) Propose new technical elements for the continuous improvement of the performance framework;
- c) Manage the annual data collection process and the production of the RPRR;
- d) Conduct “lessons learned” exercises to ensure continuous improvement of the data collection and RPRR preparation processes;
- e) Support the ICAO Secretariat in the organisation of events to promote the implementation of the performance framework.

#### 4.4 States

- a) Establish enabling regulatory framework and national processes for the implementation of the regional performance framework set by EASPG;
- b) Identify roles and responsibilities of national actors involved;
- c) Develop and implement national data collection and management mechanisms consistent with the regional performance framework;
- d) Collect and analyse national data, assisted by the EUR Doc 030 Support Team where appropriate;
- e) Consult the relevant national actors (ANSPs or airports) before data submission to ICAO.
- f) Provide data and performance results to the ICAO EUR Secretariat (directly or through organisations entrusted by them);
- g) Use the GANP and the RPRR as (an additional) tool to monitor the performance of the national air navigation system and take remedial actions when needed;
- h) Take actions focused on national improvements as part of the strategy for regional improvements set by EASPG.

#### 4.5 ICAO EUR Secretariat

- a) Provide the Participation KPA data needed for the preparation of the RPRR;
- b) Organise 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;
- c) Support States (on their request) in developing their national performance framework;
- d) Collect the reporting templates submitted by States and forward these to the EUR Doc 030 Support Team;
- e) Prepare the Regional Performance Review Report (RPRR) to be submitted annually to EASPG and ICAO HQ;

- f) Update the EUR Air Navigation Plan (Basic and FASID) as appropriate.

#### 4.6 EUR Doc 030 Support Team

Following an agreement between the ICAO Secretariat, the European Commission, EUROCONTROL and EASA, the role of EUR Doc 030 Support Team is fulfilled by EUROCONTROL. The support roles and responsibilities include:

- Generate prefilled templates for States to be provided on their request;
- Act as a “help desk” for States during the annual data collection exercise;
- Perform quality checks on the templates submitted by States; collate these inputs into a single data file; and produce the graphs needed for the RPRR;
- Support the Performance Task Force in the production of the RPRR;
- Assist the Task Force and the ICAO Secretariat in the promotion and maintenance of the regional performance framework.

## 5 The Annual Data Reporting Process

### 5.1 Introduction

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 disclosure and confidentiality aspects have to be taken into account).

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).

### 5.2 General Principles for Monitoring and Reporting of Performance

The monitoring and reporting process can be broken down into the following generic steps:

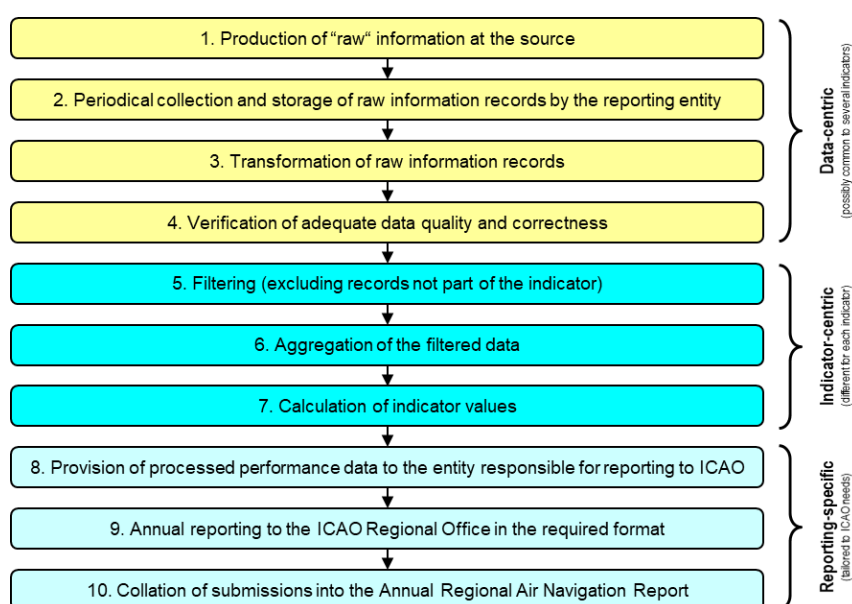


Figure 5 Generic Data Flow Process Steps

#### 5.2.1 Data-centric steps

1. Production of “raw” information at the source, with at least the data coverage as required by the performance framework(s) for which the data will be used.
2. Periodical collection and storage of raw information records by the reporting entity (the State or a body designated by the State), with at least the data coverage required by the performance framework(s) for which the data will be used.
3. Transformation of raw information records into a form suitable for statistical processing (includes classification/categorisation and initial error correction).
4. Verification of adequate data quality and correctness following agreed procedures.

#### 5.2.2 Indicator-centric steps

5. Filtering (excluding those records that by definition will not be used for indicator calculation).
6. Aggregation of the filtered data (production of intermediate statistics – in most cases simple counts and sums – at the required reporting levels).
7. Calculation of indicator values at the required aggregation level(s) (application of the indicator definition formulas).

#### 5.2.3 Reporting-specific steps

8. Provision of processed performance data (i.e. numerical results / indicator values) to the entity responsible for preparing the submission to ICAO.
9. Annual reporting to ICAO (preparation of submissions in the format required by ICAO, and transmission to the ICAO Regional Office).
10. Collation of submissions into the Regional Performance Review Report (RPRR), part of the annual Regional Air Navigation Report, for presentation at the EASPG.

For the execution of the above process, the responsible entity may be different depending on the step. This is illustrated in [Figure 6](#).

Essentially, the implementation of the EUR Region Performance Framework implies that all participating States are expected to report the same indicators and apply the same generic data flow process steps. However, there may be differences between States with regard to the practical execution of the individual steps.

### 5.3 Overview of the Annual Data Reporting Process

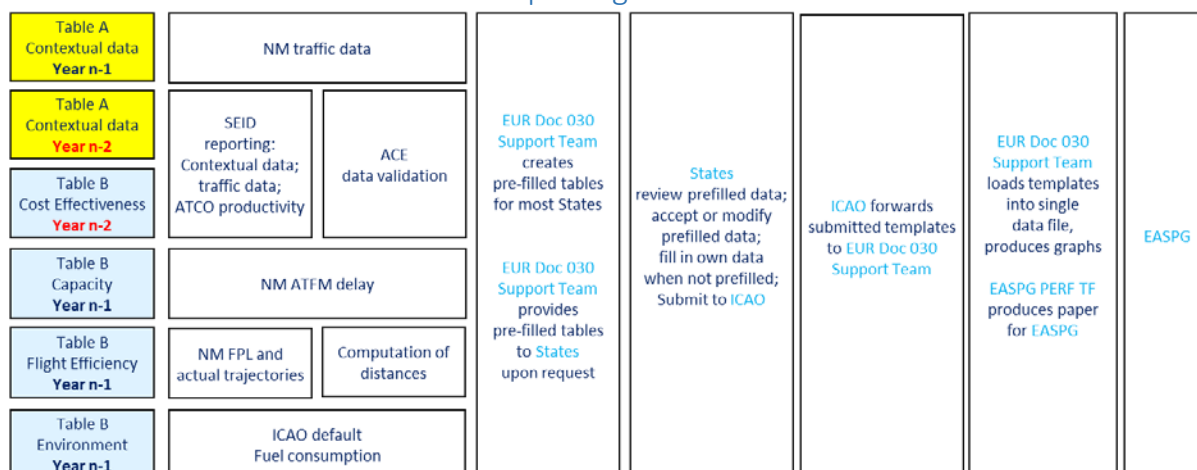


Figure 6 Annual data reporting process in the EUR Region

### 5.4 Initiation of the Annual Data Reporting Process

In the beginning of each year, the PERF TF conducts a “lessons learned” exercise on the data collection cycle of the previous year, with the aim to make technical improvements to the process and the reporting templates. As part of this activity the Task Force prepares a status update which is presented to the PCG.

In June, the ICAO Secretariat sends out a State Letter inviting the States to submit their reporting templates by a given deadline, usually towards the end of September.

Depending on the need, the ICAO Secretariat may also organise a Regional Performance Workshop for the benefit of the States, especially in those parts of the region where assistance is required.

### 5.5 Roles and Responsibilities of States

Throughout the year, States should collect and archive the raw data needed for performance reporting.

Upon receipt of the abovementioned State Letter, States are expected to dispatch it to their relevant entities and experts. For those States being part of the EU and Eurocontrol scope, they are invited to make use of the Support Mechanism, i.e. to contact the ICAO EUR Doc 030 Support Team via the email address [icaodoc030support@eurocontrol.int](mailto:icaodoc030support@eurocontrol.int) to request their prefilled reporting templates and obtain any clarification deemed necessary. The support mechanism is described in para 5.6.

States are also invited to consult the ICAO secure portal for additional guidance material from past workshops, available both in English and Russian:

<https://www.icao.int/EURNAT/Pages/Other-Meetings.aspx?RootFolder=%2FEURNAT%2FOther%20Meetings%20Seminars%20and%20Workshops%2FICAO%20EUR%20Regional%20Performance%20Framework%20Workshops>

Those States which have requested so, will receive their prefilled reporting template in August. The templates are prefilled with pre-validated data that was either reported by the State, its ANSP or airports at an earlier occasion (e.g. in the context of SES or ACE reporting), or is already available within EUROCONTROL.

States have time until approximately the end of September to complete any parts not prefilled, by adding data from own sources; validate the pre-filled sections, and directly submit the entire template to the ICAO Secretariat in electronic form, accompanied by a scan of the signed hard copy.

States have the final authority and responsibility for their data. This is the reason why prefilled templates are sent to the States rather than to the ICAO Secretariat directly.

In preparation for the EASPG Meeting at the end of the year, States are invited to review the annual Regional Performance Review Report (RPRR), check where they stand in comparison to the other States of the Region and identify possible areas of improvement.

## 5.6 Support Mechanism

As shown in Figure 6, a support mechanism has been put in place to ensure synergies with other performance reporting processes existing in the Region. This brings benefits such as avoiding duplication of work for States, and ensuring consistency of the data reported in different processes.

The ICAO EUR Doc 030 Support Team will:

- Create (partially) pre-filled templates for most States of the Region
- Provide pre-filled templates to States upon request
- Answer questions that States may have regarding the completion of the templates (even for States not benefitting from pre-filled templates).

## 5.7 Roadmap and Milestones in the Annual Process

Table 4 summarises the calendar of events for the annual data collection and reporting exercise.

*Table 4 Roadmap and Milestones in the Annual Process*

| Who   | What   | When (typically)                              |
|---|--|---|
| PERF TF   | Design technical improvements to the process and the reporting templates, to accommodate 'lessons learned' and adapt to a possibly changed context | By May  |
| ICAO Secretariat  | Send out a State Letter inviting the States to request their pre-filled templates and submit their performance results                             | End of June                                   |
| ICAO EUR Doc 030 Support Team                               | Generate the pre-filled templates and start sending them out upon request  | Starting July                                 |
| States for which pre-filled templates will be available     | Send requests for pre-filled templates   | Starting July                                 |
| States for which pre-filled templates will not be available | Fill in the template and submit it to the ICAO Secretariat   | Starting July                                 |
| States  | Submit completed templates to the ICAO Secretariat   | By end of September                           |
| ICAO Secretariat  | Confirm receipt of State submissions, archive them and forward them to the ICAO EUR Doc 030 Support Team for further processing                    | Immediately upon receipt of State submissions |

| Who                           | What   | When (typically)  |
|-------------------------------|--|-------------------|
| ICAO EUR Doc 030 Support Team | Collect submissions, and keep track of all events as the basis for a status report | Continuously      |
| PERF TF                       | Assess status of submissions and produce annual report (RPRR) to the EASPG         | By end of October |

## 5.8 Use of Templates

The data is reported to ICAO using reporting templates implemented as an Excel workbook. The template will be available in two languages: English and Russian.

In principle, each year a new version is issued; an empty copy is sent to States as an attachment to the State Letter. Pre-filled templates are generated by the ICAO EUR Doc 030 Support Team.

States are requested to return the Excel file to the ICAO Secretariat in electronic form, accompanied by a scan of the signed hard copy. It is the excel file which is processed. The scanned version is only needed for the signatures.

## 6 Preparation and Use of the Annual Report

### 6.1 Consolidation of State Submissions

#### 6.1.1 Overview of the Process

Upon receipt of State submissions, the ICAO Secretariat archives the material and forwards it to the ICAO EUR Doc 030 Support Team. The latter does a quality check of the material, performs editorial corrections where necessary, and contacts the State if there is some issue (e.g. missing or unreadable files, or obviously incorrect data).

The templates are then processed using a dedicated software tool: the contents of the submitted and pre-filled templates are imported into the tool; in those cases where a submitted template is available the pre-filled template is ignored. The result is a single data file which contains the results of all States in a collated form.

This data file is then used by the tool to automatically generate all the graphs needed for the Annual Report.

#### 6.1.2 Output of the Process

Figure 7 shows two examples illustrating the types of graphs produced for the Annual Report.

The graphs contain the following elements:

- **Title:** Identifies the data: year, scope (geographical and/or KPA), name of the data item, identifier code in the template
- **X-axis:** The list of anonymised States for the State- and ANSP-based data items (MUAC included as an ANSP), and the list of anonymised airports for the airport-based data items ( $\pm 180$  airports). Note that the labels are ranking numbers, not State/airport identifiers: in principle the mapping between numbers and States/airports is different for each graph.
- **Left y-axis:** The value of the data item, with the measurement units in the bottom left corner (blank means it is simply a count).
- **Grey line:** The average value (arithmetic mean), based on the number of States/ANSPs for which results are available for this data item (the length of the line indicates for how many



States/ANSPs data is available). This value is a proxy for the regional average: it will change as data for more States/ANSPs is available.

- **A series of grey and/or red bars:** The profile of individual State/ANSP/airport values in descending order. This provides a good picture of the differences within the region. The bars do not show the difference between a reported value of zero and the value not being reported, but this can be deduced from the grey line (absence of a bar below the grey line means value zero or a value too small to be visible in the graph).
- **A red dotted line:** For data items which are aggregatable over States/ANSPs/airports: the cumulative profile of the blue bars in percent (see right-hand axis).

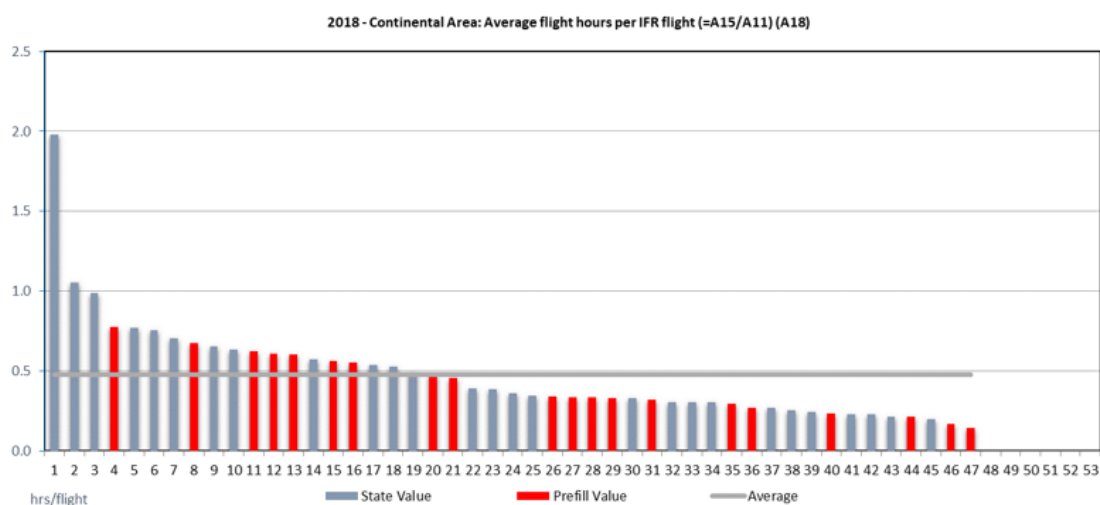
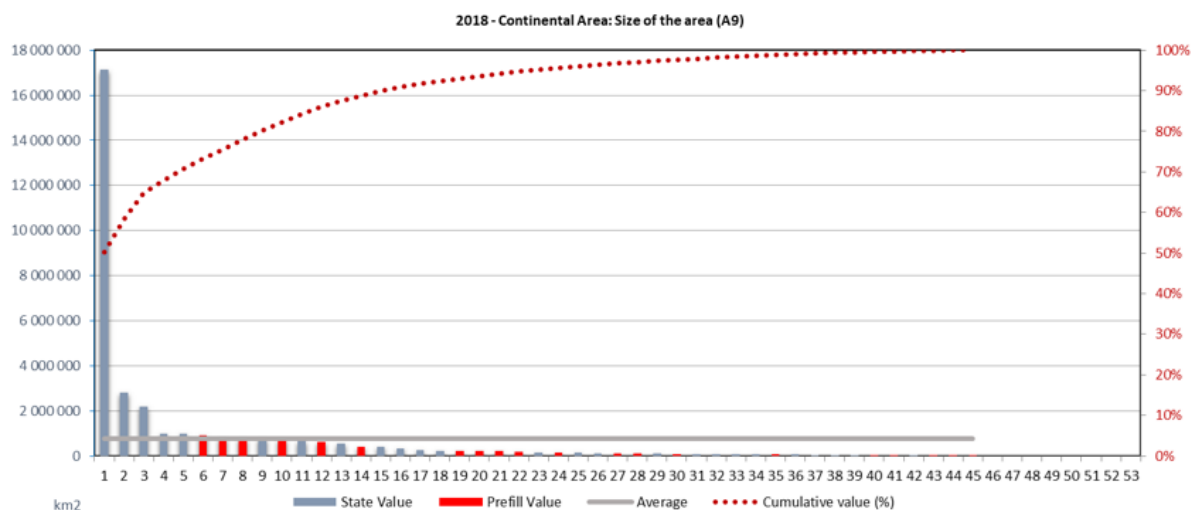


Figure 7 Examples of graphs produced for the RPRR

## 6.2 Production of the Annual Report

The Annual Report takes the form of an EASPG Working Paper, with an Annex containing the RPRR as a series of Slides.

The Performance Task Force analyses all the graphs, annotates them and produces short conclusions that describe the essential message that can be taken from each graph.

Questions to be asked during the analysis should first include:

- For graphs showing aggregatable variables (basic data/metrics):
  - What is the average value?
  - How big is the spread between the extremes in the graph (the “biggest” and “smallest”)? Note that high/low values do not necessarily imply good or bad performance.
  - How many (and which) top States are the main contributors to the overall value in the Region (e.g. how many States does it take to cover 50% or 75% of the total value in the Region)?
  - Are there particular groups of States with similar values, how many States are in each group, and what is the gap between neighbouring groups?
- For graphs showing non-aggregatable variables (typically indicators, e.g. computed ratios between metrics):
  - What is the average value?
  - How big is the spread between the extremes in the graph (the “best” and “worst”)?
  - How many States are significantly better than average and could be considered as ‘best in class’ examples for other States?
  - How many States are significantly under the average? This typically means that they should try to improve this variable as a matter of priority.

Next, the analysts should enhance the messages by putting the conclusions from individual graphs into perspective by relating them to other graphs. For example good or bad performance in a particular indicator needs to be related to the “size” of the State in terms of other variables. The bigger the “size” of the State, the more importance should be attached to its indicator values.

An example of how these results are presented in the RPRR is shown in Figure 8.

Time and workload permitting, the analysts could manually create other relevant graphs, for example scatter graphs plotting selected pairs of variables (metric and/or indicators) against each other.

After this, the results for the Participation KPA are attached (data provided by the ICAO Secretariat).

Finally, a summary and status report is produced as an EASPG Working Paper. This paper will highlight the most important messages contained in the RPRR.

Although we now have data covering several years, the Task Force has not embarked on comparing different years (trend analysis), because the sample of reporting States has been changing too much from year to year.

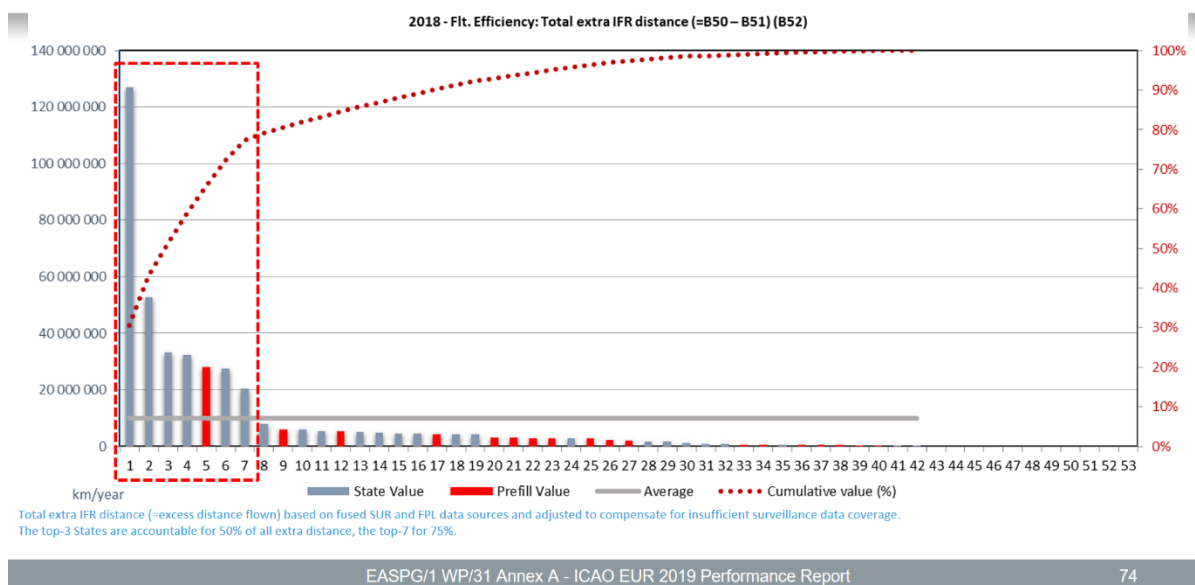


Figure 8 Example page from the RPRR

### 6.3 Use of the Annual Report

The RPRR gives the EASPG a better understanding of where ANS performance is above average, as well as where improvements are possible. This is helpful when defining a strategy for regional improvements.

Individual States are invited to position themselves with regard to other States in the Region: they know their own performance results; so on each of the graphs with ranked States, ANSPs and airports they can see where they are positioned. This allows them to see in general terms (as the results are annual values at State level) in which areas they can be considered as 'best in class' example for other States, and in which area they should try to improve as a matter of priority.

They can also use the resulting data and qualitative understanding as input to the performance-based method for implementation planning of air navigation operational improvements (ASBU Elements), as envisaged in the Global technical level of the GANP.

Where appropriate, the RPRR can also serve as EUR Region input to performance related activities at the Global ICAO level.

## 7 Specific Definitions and Guidance

The detailed lists of data items to be reported are contained in the reporting template. This is maintained separately from EUR Doc 030. The templates are likely to change on an annual basis, while updates to EUR Doc 030 will be more seldom.

This chapter provides some specific definitions and guidance that are helpful in interpreting the reporting template.

### 7.1 Contextual Data

For States that are participating in EUROCONTROL processes such as the ATM Cost-Effectiveness (ACE) benchmarking, the pre-filled templates contain data reported to EUROCONTROL by the State's en-route ANSP and figures derived from Network Manager data.

For interpreting these number and for States which have to provide the data themselves, the following definitions are useful.

#### 7.1.1 General

Contextual data for continental and oceanic airspace should be reported separately.

For year n-1 all reported values should relate to the State's airspace as defined by its FIRs which are part of the EUR Region. Data related to overseas territories is not to be included.

For year n-2 all reported values should relate to the airspace for which the State's en-route ANSP is responsible (see definition below).

#### 7.1.2 Airspace

The sum of the number of Flight Information Regions (FIR) and Upper Information Regions (UIR) of the State, representing the situation on the 1<sup>st</sup> of January of the reported year.

The pre-filled templates contain values derived from the European Aeronautical Database (EAD).

For year n-1: the sum of sizes (surface area) of the individual FIRs. In case of vertical FIR/UIR split the size of UIRs for which there is a corresponding FIR should not be included in the reported value to avoid double-counting of surface area.

For year n-2: the size (the surface area) of the airspace for which the State's en-route ANSP is responsible. This should include the area where ANS have been delegated to the ANSP by another provider, and exclude the area in which ANS have been delegated to another ANSP.

#### 7.1.3 Traffic

This figure relates to GAT IFR flights only. It is the sum of the domestic IFR flights, the international IFR flights and the IFR overflights.

IFR flights taking off and landing within the same State.

IFR flights taking off or landing within the reporting State, and taking off or landing in another State.

IFR flights crossing the airspace of the reporting State, but not taking off or landing at one of the State's airports.

This figure is obtained as the sum of the flight-hours controlled over the year by all the ATC units under an ANSP's control (ACCs and APPs and TWRs). For any given flight, the flight-hours controlled are computed as the difference between the entry time and the exit time in the controlled airspace of the flight trajectory. The flight trajectory to be used is based on the Current Tactical Flight Model (CTFM), which is the last filed flight plan enhanced with surveillance data to capture deviations from the flight plan which exceed 20 NM laterally, 700 feet vertically or 5 minutes longitudinally. Such deviations can be caused by ATFM delays, reroutes, diversions, or when directs are granted by ATC.

This figure should include only movements where the ANSP provides terminal ANS. For terminal and airport traffic purposes, one arrival and one departure is counted as two movements. A touch-and-go is counted as one movement.

This figure should represent the numbers of VFR airport movements controlled by the ANSP. It should not include VFR traffic at uncontrolled airports.

This figure is computed automatically as the Number of IFR flight-hours controlled divided by the Total number of IFR flights controlled.

This figure is computed automatically as the Number of IFR flight-hours controlled divided by the Size of the area.

#### 7.1.4 ATC Facilities

The number of ACC operational units for which the ANSP is responsible that correspond to an ATC unit providing en-route ATS in controlled areas under the ANSP's jurisdiction.

The number of APP operational units co-located within an ACC operational unit for which the ANSP is responsible to provide ATS.

The number of stand-alone APP operational units for which the ANSP is responsible to provide ATS.

The number of APP operational units co-located within a TWR operational unit for which the ANSP is responsible to provide ATS.

The number of airports with tower operational units for which the ANSP is responsible. Towers corresponds to an ATC unit at an airport, responsible for the provision of ATS in respect of flights that are landing and taking off, and other traffic that is on the active runway(s). Large airports may have more than one tower building but only one TWR control unit.

The number of ATS facilities where (remote) TWR, APP/DEP and en-route services are provided from within the same site.

#### 7.1.5 ATCOs in Operations

An ATCO is the holder of a valid ATC licence which permits the individual to control traffic at a specific operational unit. Executive controllers, planning controllers, and supervisors are ATCOs. For the purpose of performance assessment, the total number of ATCOs that hold a valid licence can be broken down into two subcategories: ATCOs in OPS and ATCOs on other duties.

“ATCOs in OPS” are defined as ATCOs who are 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, providing instruction in a simulator, or working in a full time management position.

It includes not only ATCOs directly providing ATC services, but also ATCOs on ATFM positions, shift supervisors and ATCOs on other positions.

On-the-job trainees are not counted as ATCOs in OPS.

The ANSPs total number of Full-time Equivalent (FTE) “ATCOs in OPS” for area control sector working positions.

The ANSPs total number of Full-time Equivalent (FTE) “ATCOs in OPS” for approach control sector and tower working positions.

## 7.2 Performance Data

### 7.2.1 Capacity

See GANP KPI07 En-route ATFM delay: <https://www4.icao.int/ganportal/ASBU/KPI?IDs=7>

See GANP KPI12 Airport/Terminal ATFM delay: <https://www4.icao.int/ganportal/ASBU/KPI?IDs=12>

### 7.2.2 Flight Efficiency

See GANP KPI04 Filed flight plan en-route extension:

<https://www4.icao.int/ganportal/ASBU/KPI?IDs=4>

And KPI05 Actual en-route extension: <https://www4.icao.int/ganportal/ASBU/KPI?IDs=5>

### 7.2.3 Environment

See GANP KPI16 Additional fuel burn: <https://www4.icao.int/ganportal/ASBU/KPI?IDs=16>

The resulting value will be converted to theoretical CO<sub>2</sub> emissions attributable to additional fuel burn. The fuel burnt is assumed to be JET-A kerosene, with a fuel to CO<sub>2</sub> conversion factor of 3.15.

### 7.2.4 Cost Effectiveness

States are requested to report the number of ATCO hours on duty of their main ANSP as specified below. These values will be combined with the number of ATCOs in OPS to compute ATCO productivity values.

#### 7.2.4.1.1 Number of ATCO hours on duty (ACCs)

This is the total number (sum) of hours that all “ATCOs in OPS” (as defined in Number of ATCOs in operations at ACCs) spend on duty in OPS, including breaks and overtime in OPS, but excluding time on “other duties” (e.g while participating in special projects, teaching at a training academy, providing instruction in a simulator, or working in a full time management position). Time spent receiving on-the-job training should also not be counted here as on-the-job trainees are not counted as ATCOs in OPS.

This figure could be available from a time recording system (using for example first clock-in and last clock-out times); it could be computed from the roster plan; or it could be calculated by adding the average overtime worked in OPS to the contractual working hours and subtracting the average time an ATCO is not on duty in OPS (i.e. on sick leave, receiving refresher training, or for other reasons).

#### 7.2.4.1.2 Number of ATCO hours on duty (APP+TWRs)

Same as above, but for the Number of ATCOs in operations at Terminal Facilities (APP + TWRs).

### 7.2.5 Participation by the ATM Community

The Participation KPA results are based on the collected data and response records which are managed by the ICAO Secretariat (Regional Office). They do not require additional reporting by States or international organisations.

The three indicators are:

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

In 2014, the PERF Task Force provided the ICAO Secretariat with the EUR Doc 030 Tool. This tool was designed to hold the participation monitoring database, which serves to hold all “raw data” necessary to compute and report the participation indicators. The tool is also capable of producing the required indicators and supports analyses to identify participation issues and trends within the Region as a whole, and within sub-regional groups of States.

Its database contains two interconnected fact tables:

- **Regional planning event table:** intended to contain one entry for each regional event (ICAO planning and implementation group meeting, State Letter invitation to meetings which require the participation from Member States/international organisations for its successful outcome etc.) for which participation is requested. Only specific events which qualify for being measured under the regional performance framework should be included.
- **Participation request-response table:** intended to contain one entry for each invitation sent out by the ICAO secretariat (one record per regional event and per invited State or international organisation). Note that States/organisations which are not invited to participate in a particular event (not all events apply to all States/organisations) should not appear in this table in relation to the event concerned. In such case they are not included in the computation of the participation indicators (i.e. they are not counted as non-participating).

Events in the Regional planning event table are characterised by two dates:

- **Event date 1:** Start date (in case of meeting) or requested deadline for response (in case of information request)
- **Event date 2:** End date (in case of meeting) or cut-off date for late responses (in case of information request)

In the Participation request-response table the “**Importance of participation**” field allows making a distinction between different groups of addressees within the same event. It can take the following values:

- Required participation
- Optional participation
- No participation expected (State/organisation included in distribution list for information purposes only)

The two tables should be updated by the ICAO secretariat at the following occasions:

- Records are added in both tables each time a new event is created (usually when a State Letter has been sent out).
- The Participation request-response table can be updated when the meeting has started or when the deadline for responses is passed (Event date 1).
- The Participation request-response table is updated once more after a second deadline (the cut-off date, Event date 2), to take into account attendance at all days of the meeting and to consider late responses, with the aim of finalising the “level of participation” for all States/organisations in relation to the event.

The key performance information is recorded in the field “**Level of participation**” which can take the following values:

- Pending (initial value)
- No response/participation
- Apologised
- Partial response/participation
- Full response/participation

“Apologised” is used if the State/organisation informed the ICAO secretariat in advance (before “Event date 1”) that no response or participation can/will be provided.

“Partial response/participation” is used if information is provided, but is of insufficient quality and/or quantity, or if the State/organisation was absent during a significant part of the meeting.

“No response/participation” is used if there is no response/participation and also no apologies; or if the provided response reached the ICAO secretariat after “Event date 2”.

This is complemented by “**Timeliness of participation**”:

- “On time” is used if there is response/participation by “Event date 1” at the latest.
- “Late” is used if there is response/participation after “Event date 1”, but at or before “Event date 2”.
- “Not applicable” is used if the level of participation is “No response/participation” or “Apologised”.



| Step                      | Description and Guidance   |
|---------------------------|--|
| 1. Raw data production    | The ICAO secretariat maintains the calendar of planning and implementation meetings, keeps the distribution lists up-to-date, sends out invitations, receives responses and maintains attendance/contact lists.  |
| 2. Periodical collection  | Based on documentation available (see Step 1), the ICAO secretariat updates the participation monitoring database as described above.  |
| 3. Transformation         | <p>The Regional planning event table and Participation request-response table are joined using the Event ID field in both tables.<br/>Each resulting request-response record (with associated Event data) is a fact record.</p> <p>These records are transformed into basic participation summary data cubes as follows.</p> <p><b>Basic metric:</b><br/>Participation count: the number of request-response records</p> <p><b>Dimensions:</b><br/>Event purpose<br/>Event type<br/>Event year<br/>State/organisation<br/>Level of participation<br/>Importance of participation<br/>Method of participation<br/>Timeliness of participation</p> |
| 4. Verification           | Double-check that data entry into the Regional planning event table and the Participation request-response table has been done without errors.   |
| 5. Filtering              | <p>The scope of this indicator is constrained using the following filter:</p> <p><b>Dimension filter:</b><br/>Event type: "Planning and implementation meeting"<br/>Importance of participation: "Required participation"</p>  |
| 6. Aggregation            | <p>All aggregations retain the following dimensions:<br/>Level of participation: to show participation counts for each individual level of participation (not just for "full participation")<br/>Event year: to show annual trends</p> <p>The data is summarised in two different ways:<br/>Participation count for each Event purpose (summed over all States/organisations)<br/>Participation count for each State/organisation (summed over all Event purposes)</p>   |
| 7. Calculation of results | <p>Results are shown in two ways:</p> <p>Absolute participation:<br/>Participation count for each Event purpose<br/>Participation count for each State/organisation</p>  |

|                                 |  |
|---------------------------------|--|
|                                 | <p>Relative participation (percentage of full participation):<br/>Participation percentage for each Event purpose<br/>Participation percentage for each State/organisation</p> <p>Relative participation is computed as the participation count per participation level divided by the total participation count summed over all participation levels.</p> |
| 8. Provision of results         | Not applicable (results are produced by the ICAO secretariat)  |
| 9. Reporting to ICAO            | Not applicable (results are produced by the ICAO secretariat)  |
| 10. Production of annual report | ICAO secretariat (regional office) to present the collected information to EASPG   |

| Step                            | Description and Guidance  |
|---------------------------------|---|
| 1. Raw data production          | The ICAO secretariat keeps the distribution lists up-to-date, sends out State letters, and receives responses.  |
| 2. Periodical collection        | As above.   |
| 3. Transformation               | As above.   |
| 4. Verification                 | As above.   |
| 5. Filtering                    | <p>The scope of this indicator is constrained using the following filter:</p> <p><b>Dimension filter:</b><br/>Event type: "State letter asking for information"<br/>Importance of participation: "Required participation"</p> |
| 6. Aggregation                  | As above.   |
| 7. Calculation of results       | As above.   |
| 8. Provision of results         | As above.   |
| 9. Reporting to ICAO            | As above.   |
| 10. Production of annual report | ICAO secretariat (regional office) to present the collected information to EANSPPG  |

| Step                      | Description and Guidance  |
|---------------------------|---|
| 1. Raw data production    | The ICAO secretariat keeps the distribution lists up-to-date, sends out State letters, and receives responses.  |
| 2. Periodical collection  | As above.   |
| 3. Transformation         | As above.   |
| 4. Verification           | As above.   |
| 5. Filtering              | <p>The scope of this indicator is constrained using the following filter:</p> <p><b>Dimension filter:</b><br/>Event type: "Request for provision of performance data"<br/>Importance of participation: "Required participation"</p> |
| 6. Aggregation            | As above.   |
| 7. Calculation of results | As above, except that there is no breakdown by purpose (single purpose).  |

|                                 |  |
|---------------------------------|--|
| 8. Provision of results         | As above.  |
| 9. Reporting to ICAO            | As above.  |
| 10. Production of annual report | ICAO secretariat (regional office) to present the collected information to EASPG |

## 8 Acronyms

|             |   |
|-------------|---|
| ACARS       | Aircraft Communication Addressing and Reporting System            |
| ACC         | Area Control Centre   |
| ACE         | EUROCONTROL ATM Cost-Effectiveness (benchmarking report)          |
| ANP         | ICAO Regional Air Navigation Plan                                 |
| ANS         | Air Navigation Services   |
| ANSP        | Air Navigation Service Provider                                   |
| APP         | Approach Control  |
| ASBU        | Aviation System Block Upgrades (framework)                        |
| ATC         | Air Traffic Control   |
| ATCO        | Air Traffic Controller  |
| ATFM        | Air Traffic Flow Management                                       |
| ATM         | Air Traffic Management  |
| ATS         | Air Traffic Services  |
| BBB         | Basic Building Blocks (framework)                                 |
| COG         | EANPG Programme Coordinating Group                                |
| COG PERF TF | Air Navigation Systems Performance Task Force of the EANPG COG    |
| CTFM        | Current Tactical Flight Model                                     |
| DEP         | Departure Control   |
| EAD         | European Aeronautical Database                                    |
| EANPG       | European Air Navigation Planning Group                            |
| EASA        | European Aviation Safety Agency                                   |
| EASPG       | European Aviation System Planning Group                           |
| ECAC        | European Civil Aviation Conference                                |
| EoSM        | Effectiveness of Safety Management                                |
| EU          | European Union  |
| EUR SPI     | EUR Region Safety Performance Indicator                           |
| EUROCONTROL | European Organisation for the Safety of Air Navigation            |
| FAB         | Functional Airspace Block   |
| FASID       | Facilities and Service Implementation Document                    |
| FIR         | Flight Information Region   |
| FTE         | Full-time Equivalent  |
| GANP        | Global Air Navigation Plan (ICAO Doc 9750)                        |
| GASP        | Global Aviation Safety Plan (ICAO Doc 10004)                      |
| GAT         | General Air Traffic   |
| GATMOC      | Global Air Traffic Management Operational Concept (ICAO Doc 9854) |
| ICAO        | International Civil Aviation Organization                         |
| IFR         | Instrument Flight Rules   |
| KPA         | Key Performance Area  |
| KPI         | Key Performance Indicator   |

|         |   |
|---------|---|
| MGPANS  | Manual on Global Performance of the Air Navigation System (ICAO Doc 9883) |
| MUAC    | EUROCONTROL Maastricht Upper Area Control Centre                          |
| NCLB    | No Country Left Behind  |
| NM      | Network Manager   |
| OOOI    | OUT – OFF – ON – IN (ACARS time stamps)                                   |
| PBA     | Performance-Based Approach  |
| PCG     | EASPG Programme Coordination Group  |
| PERF TF | Performance Task Force of the EASPG                                       |
| PI      | Performance Indicator   |
| PIRG    | Planning and Implementation Regional Group                                |
| PRC     | Performance Review Commission   |
| PRR     | Performance Review Report   |
| PRU     | Performance Review Unit   |
| RASG    | Regional Aviation Safety Group  |
| RASP    | Regional Aviation Safety Plan   |
| RCOG    | RASG-EUR Coordination Group   |
| RP      | Reference Period  |
| RPRR    | Regional Performance Review Report  |
| SES     | Single European Sky   |
| SoE     | Standard of Excellence  |
| TWR     | Tower Control   |
| UIR     | Upper Information Region  |

## 9 Terminology

**Data management.** Data management is the process of data collection, processing (including quality assurance), storage and reporting in support of the performance-based approach.

**Fact table.** Tables containing performance factual data (e.g. the values of supporting metrics, performance indicators and performance targets). Each fact (described by a set of metrics and/or indicator values) has a dimensional context which defines the scope covered by the value of the metrics/indicators.

**Focus area.** Specifically identified areas within KPAs in which there are potential intentions to establish performance management. Focus areas are typically needed where performance issues have been identified.

Note: For example, within the capacity KPA one can identify airport capacity, runway capacity and apron capacity as focus areas. Within the safety KPA, the list of focus areas might include: accidents, incidents, runway incursions, safety management system maturity, etc. There may be a need to define hierarchical groupings of focus areas.

**Indicator.** See: Performance indicator.

**Key performance area (KPA).** A way of categorizing performance subjects related to high-level ambitions and expectations.

**Key performance indicator (KPI).** See: Performance indicator.

**Performance-based approach (PBA).** A decision-making method based on three principles: strong focus on desired/required results; informed decision-making driven by those desired/required results; and reliance on facts and data for decision-making. The PBA is a way of organizing the performance management process.

**Performance framework.** The set of definitions and terminology describing the building blocks used by a group of ATM community members to collaborate on performance management activities. This set of definitions includes the levels in the global ATM performance hierarchy, the eleven key performance areas, a set of process capability areas, focus areas, performance objectives, indicators, targets, supporting metrics, lists of dimension objects, their aggregation hierarchies and classification schemes.

**Performance indicator.** Current/past performance, expected future performance (estimated as part of forecasting and performance modelling), as well as actual progress in achieving performance objectives is quantitatively expressed by means of indicators (sometimes called key performance indicators, or KPIs).

Note: To be relevant, indicators need to correctly express the intention of the associated performance objective. Since indicators support objectives, they should be defined having a specific performance objective in mind. Indicators are not often directly measured. They are calculated from supporting metrics according to clearly defined formulas, e.g. cost-per-flight-indicator =  $\text{Sum}(\text{cost})/\text{Sum}(\text{flights})$ . Performance measurement is therefore done through the collection of data for the supporting metrics.

**Performance management process.** A repetitive or continuous process which applies the principles of the performance-based approach to manage (generally improve) selected performance aspects of an organization or system (i.e. the air navigation system). The process is executed through a sequence of well defined steps.

Note: Examples of performance management processes are safety management, security management, and capacity management.

**Performance objective.** Within focus areas, the potential intention to establish performance management is “activated” by defining one or more performance objectives. These define — in a qualitative and focused way — a desired trend from today’s performance (e.g. improvement). A distinction is made between generic objectives and instantiated objectives.

**Stakeholder.** In this document, a stakeholder is any ATM community member who has an interest in, or is involved in, ATM performance management.