

SES RP2 (2015-2019)

Dashboard

Metadata and Glossary

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Metadata

RP2 (2015-2019)

SES Performance Scheme Reference Period 2 (2015-2019)

The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

RP2 SES States

The 28 EU Member States at the start of RP2 (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom) plus Norway and Switzerland (30 States in total).

Performance Indicators

SAFETY

Effectiveness of safety management (EoSM)

- The Effectiveness of Safety Management (EoSM) indicator should be measured by verified responses to questionnaires at State/competent authority and service provision level. For each question the response should indicate the level of implementation, characterising the level of performance of the respective organisation.

Application of risk analysis tool (RAT) methodology

- The measure determines to what extent the Severity classification based on the risk analysis tool (RAT) methodology was applied when assessing the severity of a safety occurrence.

Reporting of Just Culture (JC)

- Reporting of Just Culture (JC) aims at identifying possible obstacles and impediments to the application of Just Culture. Just Culture means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, willful violations and destructive acts are not tolerated.

ENVIRONMENT

Horizontal en-route flight inefficiency

- The measure provides an indication of the flight inefficiency en-route.
-

Additional time in the Arrival Sequencing and Metering Area (ASMA)

- The additional ASMA time is a proxy for the average arrival runway queuing time on the inbound traffic flow, during congestion periods at airports.

Additional taxi-out time

- The additional taxi-out time is a proxy for the average departure runway queuing time on the outbound traffic flow, during congestion periods at airports.

Effective use of the civil / military airspace structures

- The indicators address the effective use of the civil/military airspace structures.

CAPACITY

Minutes of en route ATFM delay per flight

- The measure provides an indication of ATFM delays (resulting from an air traffic management initiative, i.e. flow regulation) on the ground due to constraints en-route.

Airport ATFM delay

- The measure provides an indication of ATFM delays (resulting from an air traffic management initiative, i.e. flow regulation) on the ground due to constraints at airports.

Adherence to ATFM slots

- The measure provides an indication of the level of adherence to ATFM slots.

Air traffic control pre-departure delay

- The ATC pre-departure delay is the additional time that the aircraft is held at the stand to avoid queuing at the departure runway.

COST-EFFICIENCY

Determined unit cost (DUC) for en route ANS

- The measure addresses the costs for the provision of en-route air navigation services.

Determined unit cost (DUC) for terminal ANS

- The measure addresses the costs for the provision of terminal air navigation services.
-

Effectiveness of safety management

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

ref. EASA Annex to ED Decision 2014/035/R

- AMC1 SKPI

GENERAL DESCRIPTION : The Effectiveness of Safety Management (EoSM) indicator should be measured by verified responses to questionnaires at State/competent authority and service provision level. For each question the response should indicate the level of implementation, characterising the level of performance of the respective organisation.

A Management Objective (MO) has been derived for each of the elements of the ICAO State Safety Programme (SSP) and Safety Management System (SMS) as described in ICAO Document 9859 'Safety Management Manual'.

EFFECTIVENESS LEVELS AND EFFECTIVENESS SCORE : When answering the questions, one of the following levels of implementation should be selected:

- Level A which is defined as 'Initiating' — processes are usually ad hoc and chaotic;
- Level B which is defined as 'Planning/Initial Implementation' — activities, processes and services are managed;
- Level C which is defined as 'Implementing' — defined and standard processes are used for managing;
- Level D which is defined as 'Managing & Measuring' — objectives are used to manage processes and performance is measured;
- Level E which is defined as 'Continuous Improvement' — continuous improvement of processes and process performance.

ref. EASA Annex to ED Decision 2014/035/R

- AMC2 SKPI — Questionnaire for Measurement of Effectiveness of Safety Management KPI — State level
- AMC3 SKPI — Questionnaire for Measurement of Effectiveness of Safety Management SKPI — ANSP level

For each question, States should provide to the Agency information on the level of effectiveness (or level of implementation) and evidence to justify their answer. For each question, ANSPs should provide to their

NSA/competent authority information on the level of effectiveness (or level of implementation) and evidence to justify its answer.

ref. EASA Annex to ED Decision 2014/035/R

The results of the States' filled-in questionnaires are to be verified by means of EASA standardisation inspections.

The coordination between EASA and the competent authority should be done through the national coordinator appointed by the State in accordance with Article 6 of Commission Regulation (EC) No 736/2006.

The national coordinator should be responsible for coordination within the State authorities and for coordination with the ANSPs to provide the Agency with the responses to the questionnaires (both competent authority and ANSP, aggregated where required).

The competent authority/NSA may allocate the detailed verification task to a qualified entity or other entity.

The verification of the ANSP questionnaires by the NSA/competent authority should take place before the questionnaires and their results are submitted to EASA. ANSPs should assign a focal point for the purpose of the verification process.

A detailed description of the EoSM indicator and data requirements are available from the EASA Acceptable Means of Compliance and Guidance Material (EASA AMC/GM) ^[4].

3.2. Classification system

ref. EASA Annex to ED Decision 2014/035/R

- AMC2 SKPI Stat level
- AMC3 SKPI ANSP level
- Appendix 2 to AMC2 SKPI
- Appendix 2 to AMC3 SKPI

See EASA Acceptable Means of Compliance and Guidance Material (EASA AMC/GM) ^[5].

Two set of scores are computed:

- The overall effectiveness score which takes all answers into account; and,
- An effectiveness score for each Management Objective.

The scores are computed at two levels:

- State/competent authority (the NSA) level; and,
- ANSP level.

A snapshot of the formula is available at Media:Formula_State.jpg

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

ref. EASA Annex to ED Decision 2014/035/R

Management Objective (MO) has been derived for each of the elements of the ICAO State Safety Programme (SSP) and Safety Management System (SMS) as described in ICAO Document 9859 'Safety Management Manual'.

For each Management Objective, a question (or questions) has been derived and the levels of effectiveness have been described.

For both State and ANSP levels, EASA and PRB will monitor the performance regarding this indicator based on the received answers and on the results of the verification process by the States and by EASA

The questionnaires' sole intent is to monitor the performance (effectiveness) of Member States/competent authorities and ANSPs regarding ATM/ANS safety management.

ref. EASA Annex to ED Decision 2014/035/R

- AMC2 SKPI - State level

The Management Objectives of the SSP framework are grouped into 5 components:

Component 1	State safety policy and objectives	<ul style="list-style-type: none"> • State safety legislative framework • State safety responsibilities and accountabilities • Accident and incident investigation • Enforcement policy • Management of related interfaces
Component 2	Safety risk management	<ul style="list-style-type: none"> • Safety requirements for the air navigation service provider's SMS • Agreement on the service provider's safety performance
Component 3	Safety assurance	<ul style="list-style-type: none"> • Safety oversight • Safety data collection, analysis and exchange • Safety-data-driven targeting of oversight of areas of greater concern or need
Component 4	Safety promotion	<ul style="list-style-type: none"> • Internal training, communication and dissemination of safety information • External training, communication and dissemination of safety information
Component 5	Safety culture	<ul style="list-style-type: none"> • Establishment and promotion of safety culture • Measurement and improvement of safety Culture

ref. EASA Annex to ED Decision 2014/035/R

- AMC3 SKPI - ANSP level

The Management Objectives of the SMS framework are also grouped in 5 components:

Component 1	ANSP safety policy and objectives	<ul style="list-style-type: none"> • Management commitment and responsibility • Safety accountabilities - Safety responsibilities • Appointment of key safety personnel • Coordination of emergency response planning/contingency plan • SMS documentation • Management of related interfaces
Component 2	Safety risk management	<ul style="list-style-type: none"> • Safety risk assessment and mitigation
Component 3	Safety assurance	<ul style="list-style-type: none"> • Safety performance monitoring and measurement • The management of change • Continuous improvement of the SMS • Occurrence reporting, investigation and improvement
Component 4	Safety promotion	<ul style="list-style-type: none"> • Training and education • Safety communication
Component 5	Safety culture	<ul style="list-style-type: none"> • Establishment and promotion of safety culture • Measurement and improvement of safety culture

3.5. Statistical unit

ref. EASA Annex to ED Decision 2014/035/R

- GM 2 SKPI - General

The statistical units are States and ANSPs.

3.6. Statistical population

The statistical population comprises the States and ANSPs in the Single European Sky Area.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

2012 is the first year for which data is presented.

3.9. Base period

Not applicable.

4. Unit of measure

Based on the responses, the following scores should be derived:

- The overall effectiveness score should be derived from the combination of the effectiveness levels selected by the relevant entity (ANSPs or Member State/competent authority) against each question with the weightings as described in Appendices 2 to AMC 2 SKPI and 2 to AMC 3 SKPI;
- An effectiveness score for each Management Objective for the State/competent authority and for each study area for the ANSP.

More information is available at EASA Acceptable means of compliance and guidance material ^[4].

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

6.1. Legal acts and other agreements

Provisions are established in:

- Single Sky Framework Regulation as amended by Regulation (EC) 1070/2009;
- Commission Implementing Regulation (EU) No 390/2013;
- Performance Regulation (691/2010) as amended by Regulation (EU) 1216/2011;
- EASA Basic Regulation (EC) No 216/2008 ^[6];
- EASA Standardisation Inspection (EU) 736/2006 ^[7]; and,
- EASA AMC/GM for Safety KPIs, issued by EASA in coordination with PRB ^[4].

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

The information is released annually in June of the following year.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Information is disseminated on a yearly basis as soon as the data is verified.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

Documentation on methodology is available at EASA Acceptable means of compliance and guidance material ^[8].

12. Quality Management

The legal framework for quality management is established by EU legislation.

The national competent authorities (i.e. the NSAs) assess the quality of the questionnaires completed by the ANSPs. There are at least two types of NSA organisations for verifying the questionnaires: either there is a specific organisation or the existing oversight organisation is used to verify the questionnaire. The uniformity of NSA verification output across Europe is maintained through:

- the AMC/GM material published by EASA ^[8];
- the FAQ EASA web-page;
- the EASA helpdesk; and,
- the organisation of workshops and/or bilateral meetings.

EASA verifies both NSAs and ANSPs questionnaires through means of Standardisation Inspection, specifically:

- Light verification through desktop audits;
- Thorough verification during Standardisation inspections using Checklists and based on Findings and UNC's; and,
- Trustful verification through desktop audits based on reports on closure of Corrective actions, further verified during follow-up inspections.

The PRB is involved in some EASA verifications through temporary participation of PRU staff.

12.1. Quality assurance

For light and trustful verification: Once the questions (i.e. MOs) subject to verification have been selected through sampling, the first step is to observe the consistency between the selected level of effective implementation, the justifications provided and the evidence. In a second step the level of effective implementation is verified through external information available to EASA and PRB. Clarification questions could be addressed to the NSA in question either via mail or telephone.

For thorough validation: Each MO is linked to a protocol question of the EASA inspection questionnaire. When EASA conducts a Standardisation Inspection, the level of effective implementation is verified during the on-site audit through the assessment of the protocol questions which are linked to protocol questions.

EASA verification processes.

Belgium example to conduct the verification process of ANSPs questionnaires.

12.2. Quality assessment

Standard quality criteria to be defined.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

13.3. Completeness

The data is collected for the entire Single European Sky Area.

14. Accuracy and reliability

14.1. Overall accuracy

The accuracy depends on the ability of competent authorities and ANSPs to well understand the various questions (management objectives) and the the different levels of effective implementation (5 steps from A to E). Sufficient means have been set in order to control accuracy.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The EoS_M refers to a status of the indicator which was measured in a period of time between one year and nine months before its publication in the PRB annual report. When published in the online performance sheet, the data refer to a status which is measured less than none months before its publication.

15.2. Punctuality

The data is provided by the States/ANSPs before January of the following year and is displayed to the public in June the following year.

16. Comparability

Data are comparable being measured in the same way across European Member States. However, benchmarking is not allowed in safety.

16.1. Comparability — geographical

Geographical comparability is valid.

16.2. Comparability over time

Comparability over time is valid.

17. Coherence

17.1. Coherence — cross domain

It can be expected that:

- The NSA scores have a high correlation with the Lack of Effective implementation indicator published in ICAO ISTAR [9]; and,
- The ANSP scores have a high correlation with the CANSO maturity survey [10] .

17.2. Coherence — internal

The data is assumed to be internally coherent as provided.

18. Cost and burden

Not available.

19. Data revision

Data could change through time due to two reasons:

- to reflect a change in managing safety within an organisation (i.e. the competent authority or the ANSP changed the data; and,
- to reflect an improved verification (e.g. the questionnaire was first verified with a "light verification" and later with a "thorough verification").

20. Statistical processing

20.1. Source data

Questionnaires completed by States/competent authorities and ANSPs (see also Statistical concepts and definitions).

20.2. Frequency of data collection

After the first completion, ANSPs and competent authorities are requested to update the questionnaires at least once a year during the period between June of the year in progress and January of the following year.

20.3. Data collection

The State and ANSP questionnaires are collected by EASA through a web application.

20.4. Data validation

The competent authorities are responsible for verification of the questionnaires completed by ANSPs. They should report results of the verification to EASA through the web-interface.

Once the competent authorities have completed their own questionnaires and verified ANSPs questionnaires, EASA makes its own verification.

EASA verifies the updated questionnaires by March of the following year at the latest. After EASA verification, the following data is sent to the PRB by March of the following year at the latest.

The verification process may conclude that some questionnaires do not achieve an acceptable standard. In this case the data are not published.

(see also Quality Management)

20.5. Data compilation

The EASA web-interface integrates an algorithm which allows the computation of scorings immediately after the completion of questionnaires. Following the verification by EASA, the data is provided to the PRB. After the verification and analysis by EASA, the following data and analysis is provided to the PRB:

- the computed scores and the verification results for the questionnaires completed by each ANSP and each competent authority,
- the analysis of scores taking into account the verification results.

20.6. Adjustment

Not applicable.

21. Comment

No comment

Disclaimer

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Information provided on this page should not replace EASA Acceptable Means of Compliance and Guidance Material documents.

References

- [1] http://www.eurocontrol.int/prc/public/standard_page/doc_prr.html
- [2] http://www.eurocontrol.int/prc/public/subsite_homepage/homepage.html
- [3] <mailto:NSA-PRU-Support@eurocontrol.int>
- [4] <http://easa.europa.eu/system/files/dfu/Annex%20to%20ED%20Decision%202014-035-R.pdf#SKPI>
- [5] <http://easa.europa.eu/agency-measures/acceptable-means-of-compliance-and-guidance-material.php#SKPI>
- [6] http://www.easa.europa.eu/approvals-and-standardisation/docs/syllabi/Syllabus_216_General_05032009.pdf
- [7] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:129:0010:0015:EN:PDF>
- [8] <http://easa.europa.eu/document-library/agency-decisions/ed-decision-2014035r#SKPI>
- [9] <http://www2.icao.int/en/ism/istars/pages2/homepage.aspx>
- [10] <http://www.canso.org/cms/showpage.aspx?id=2704>

RAT methodology application

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

EU legislation requests EU Member States to use the Severity classification based on the RAT methodology in order to allow a harmonised reporting of severity assessment of Separation Minima Infringements, Runway Incursions and ATM Specific Technical Events.

The measure determines to what extent the Severity classification based on the risk analysis tool (RAT) methodology was applied when assessing the severity of a safety occurrence.

ref. Annex to ED Decision 2014/035/R

• AMC4 SKPI GENERAL DESCRIPTION ^[1]

The Severity classification based on the RAT methodology follows the principle of evaluating several criteria and allocating a certain score to each criterion, depending on how severe each criterion is evaluated to be.

Each criterion should have a limited number of options with corresponding scores. Some criteria have an ATM Ground and an ATM Airborne component and both scores should be counted when evaluating the ATM Overall score. Other criteria should be only relevant either for ATM Ground or ATM Airborne.

The overall score for severity of an occurrence should be the sum of the scores allocated to each applicable individual criterion. The overall score for the severity of an occurrence should be built from the sum of the score allocated to the risk of collision/proximity (itself a sum of the score allocated to the separation and the score allocated to the rate of closure) and the degree of controllability over the incident.

For ATM-specific occurrences (i.e. technical occurrences affecting the capability to provide safe ATM/ANS services) the criteria which should be considered are the service affected, service/function provided, operational function, type of failure, extension of the failure and its scope and duration.

The severity of occurrences reported by Member States should be the ATM Overall severity.

For ATM-specific occurrences, the ATM Overall coincides with ATM Ground severity.

Member States should ensure that arrangements are in place for the ATM Overall severity score to be reported.

ref. Annex to ED Decision 2014/035/R

• AMC8 SKPI RAT METHODOLOGY ^[1]

The Member States' points of contact, established in accordance with Directive 2003/42/EC and Commission Regulation (EC) No 1330/2007, should collect verified information regarding the application of the "Severity classification based on the RAT methodology" for the reported occurrences within the scope of Commission Regulation (EU) No 691/2010 as amended by Regulation (EU) No 1216/2011.

The collection of information relevant to the use of the "Severity classification based on the RAT methodology" should make use of existing safety data reporting mechanisms with enhancements where needed.

When the Member States report on the monitoring of the performance plans and targets, they should report the percentage of occurrences the severity of which has been evaluated by the use of the RAT methodology.

The following attached graphics are consistent with the EASA AMC/GM material and provide:

- an overview of the main components of the "Severity classification based on the RAT methodology"; and,
- a example of a marksheet to make the severity assessment in accordance with the RAT methodology.

Further information is available in the EASA Acceptable Means of Compliance and Guidance Material (EASA AMC/GM) available at: [8].

Note: Member States could decide to use different means of reporting. They could use the AST/ESARR2 data reporting mechanism which is already available. It should be noted that the European Central Repository (ECR) will remain the central source of safety information in the EU. Therefore, compatibility with the ECCAIRS system, the software tool used for the ECR, is an important criteria. Member States could decide to report the RAT methodology utilisation through the ECCAIRS 5 custom attribute on nationaml level. However, the reporting of RAT methodology utilisation through ECR is still under development. Furthermore, in the near future, States could have the possibility to report aggregate values on the RAT utilisation methodology via the EASA web-interface. A new metadata version will be released as soon as there are changes in the reporting mechanisms.

3.2. Classification system

The share of safety occurrences, for which severity has been assessed using the RAT methodology, can be provided by:

- accountable entity;
- State; and,
- at European level.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

When data on safety occurrences is submitted, States are requested to report "Severity classification based on the RAT methodology". One possible means of reporting is through the AST/ESARR2: Example of RAT reporting). Other examples of reporting will be made available as soon as they are available.

The indicator is expressed as a percentage and rounded to the last digit (i.e. 95, 55, 56, etc., but no digits after the comma).

3.5. Statistical unit

The statistical unit is the State.

The application of the "Severity classification based on the RAT methodology" by accountable entity can be computed by the NSA.

3.6. Statistical population

The statistical population comprises the States included in the Performance Scheme of the Single European Sky.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

2012 is the first year for which data is presented.

3.9. Base period

Not applicable

4. Unit of measure

Share of occurrences for which severity has been assessed using the "Severity classification based on the RAT methodology" for a given group of safety occurrences (expressed in %).

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Provisions are established in:

- Single Sky Framework Regulation (EC) 549/2004 as amended by Regulation (EC) 1070/2009;
- Commission Implementing Regulation (EU) No 390/2013;
- Performance Regulation (691/2010) as amended by Regulation (EU) 1216/2011;
- EASA Basic Regulation (EC) No 216/2008 ^[6];
- EASA Standardisation Inspection (EU) 736/2006 ^[7]; and,
- EASA AMC/GM for Safety KPIs, issued by EASA in coordination with PRB ^[8].

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

The data is released twice a year. In April and October.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Information is disseminated twice a year as soon as the data is verified.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

Documentation on methodology is available at EASA Acceptable means of compliance and guidance material ^[8].

12. Quality Management

The legal framework for quality management is established by EU legislation.

The assessment of data quality can be checked through two different practices:

- The comparison between data reported at the level of individual occurrences (e.g. AST or ECR) and the aggregated level (e.g. via the EASA website once available).
- The monitoring of effective implementation of the "Severity classification based on the RAT methodology " by EASA and NSAs.

The effective use of the "Severity classification based on the RAT methodology" can be checked through:

- the on-going compliance audits of NSA on ANSPs;
- the standardisation inspections of EASA on Member States.
- information available through other sources (PRB, NM, etc.)

12.1. Quality assurance

The following information could be checked in the framework of quality assurance:

- the complete list of all entities which are mandated to conduct investigations for incidents less than serious;
- the availability of tools to implement the "Severity classification based on the RAT methodology " in each entity which are mandated to conduct investigations;
- the availability of qualified and trained staff to use the RAT methodology and tools;
- samples of incidents whose severity has been assessed with the RAT methodology; and,
- the demonstration that the RAT methodology utilisation to assess severity is properly reported with one of the possible means (e.g. through AST/ESARR2])).

12.2. Quality assessment

The standard quality criteria is based on the effective use of the risk analysis methodology.

If the Severity classification based on the RAT methodology is not effectively used, the reporting of its utilisation in AST becomes partially or completely invalid.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

13.3. Completeness

The data is collected for the entire Single European Sky Area.

14. Accuracy and reliability

14.1. Overall accuracy

The overall accuracy is estimated in two ways:

- the degree of effective implementation, and
- standard quality checks before and after data processing.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

- AST

When the usage of the "Severity classification based on the RAT methodology" is collected through AST, data are published in preliminary and final status.

Data are available in April and October of each year. Data in April refer to the year - 2 in final status, and year - 1 in preliminary status; while Data in October refer to the year - 1 in final status.

- ECR

To be developed

15.2. Punctuality

When reporting through AST/ESARR2, the data is provided by the States/ANSPs in March and September and are displayed to the public in April and October.

16. Comparability

Data are comparable being measured in the same way across European Member States. However, benchmarking is not allowed in safety.

16.1. Comparability — geographical

Geographical comparability is valid.

16.2. Comparability over time

Comparability over time is valid.

17. Coherence

17.1. Coherence — cross domain

It should be expected that Member States reports are coherent across the different reporting mechanisms. A fundamental enabler is the compatibility of reporting mechanisms.

17.2. Coherence — internal

The data is assumed to be internally coherent as provided.

18. Cost and burden

Not available.

19. Data revision

- AST

Preliminary data (April) in AST will be updated 6 months later (October of the same year)

- ECR

to be developed

20. Statistical processing

20.1. Source data

ref. Annex to ED Decision 2014/035/R

- AMC 8 SKPI p.52 (Verification mechanism)

The Member States' points of contact, established in accordance with Directive 2003/42/EC and Commission Regulation (EC) No 1330/2007, should collect verified information regarding the application of the "Severity classification based on the RAT methodology" for the reported occurrences within the scope of Commission Regulation (EU) No 691/2010 as amended by Regulation (EU) No 1216/2011.

The collection of information relevant to the use of the "Severity classification based on the RAT methodology" should make use of existing safety data reporting mechanisms with enhancements where needed.

20.2. Frequency of data collection

- AST

When the data is collected through the AST/ESARR2 template, the periodicity of collection is twice a year .

- end of April (final data for the year n-2; e.g. April 2012 final for 2010);
- end of September (final data for year n-2 and provisional data for the year n-1; e.g. October 2012 final for 2011).
- ECR

To be developed

20.3. Data collection

- AST

The ASTs which contain are collected through the EUROCONTROL AST Focal Points.

- ECR

to be developed

- EASA website interface

to be developed

20.4. Data validation

Before publishing data on the utilisation of the Severity classification based on the RAT methodology, the PRB seeks advices from:

- EASA;
- EUROCONTROL DPS; and,
- the Network Manager.

For each Member State, based on inputs received, the PRB makes an overall qualitative assessment of:

- the effective implementation of the "Severity classification based on the RAT methodology"; and,
- the percent of safety occurrences where the "Severity classification based on the RAT methodology" was used.

20.5. Data compilation

The the share of safety occurrences for which the "Severity classification based on the RAT methodology" is computed for each group.

20.6. Adjustment

Not applicable.

21. Comment

None.

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Information provided on this page should not replace EASA Acceptable Means of Compliance and Guidance Material documents.

References

[1] <http://easa.europa.eu/system/files/dfu/Annex%20to%20ED%20Decision%202014-035-R.pdf>

Reporting of Just Culture

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

ref. EASA Annex to ED Decision 2014/035/R

- AMC9 SKPI Just Culture reporting at State level ^[1]
- AMC10 SKPI Just Culture reporting at ANSP level ^[1]

Reporting of Just Culture (JC) aims at identifying possible obstacles and impediments to the application of Just Culture.

Just Culture means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, willful violations and destructive acts are not tolerated.

In accordance with EU legislation, States and ANSPs are required to complete a questionnaire which measures the level of presence and corresponding level of absence of Just Culture.

A detailed description of the indicator and data requirements are available from the EASA Acceptable Means of Compliance and Guidance Material (EASA AMC/GM) ^[2].

Disclaimer

Just Culture is studied for the first time at European level.

The PRB and EASA acknowledge that the JC definition provided in EU IR691/2010 is just one of the available definitions of JC.

3.2. Classification system

The JC indicator is determined at State and ANSP level.

The areas surveyed in the questionnaire are:

- policy and its implementation,
- legal/judiciary, and occurrence reporting; and,
- and investigation.

The questions are answered with "yes" or "no" in order to reveal obstacles and impediments in each of the three areas.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

The metrics are based on two questionnaires (State and ANSP level) published in the EASA AMC/GM documents ^[2].

	Policy and its implementation	Legal/judiciary	Occurrence reporting and investigation
State level Questionnaire ^[1]	9 questions	7 questions	2 questions
ANSP level questionnaire ^[1]	13 questions	3 questions	8 questions

For each answer justification and evidence should be provided in order to better understand and assess possible obstacles and impediments to the application of JC.

Additionally to the questionnaires, States and ANSPs may report on Just Culture using the following formats:

- GM13 SKPI - Just culture - Reporting and Verification at State level ^[1]; and,
- GM14 SKPI - Just culture - Reporting and Verification at ANSP level ^[1].

It is expected that each certified provider completes the ANSP JC questionnaire, with exception of those who avail all the air navigation services to other certified ANSPs in accordance with Article 10 of (EC) 550/2004.

NSAs are required to gather information on JC from appropriate entities in the State (e.g. Minister of Transport, Justice Department) to complete the State questionnaire.

3.5. Statistical unit

The statistical units are States and ANSPs.

3.6. Statistical population

The statistical population comprises the States and ANSPs in the Single European Sky Area.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

2012 is the first year for which data is presented (available in 2013).

3.9. Base period

Not applicable.

4. Unit of measure

Answers provided by the States/ ANSPs.

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Provisions are established in:

- Single Sky Framework Regulation (EC) 549/2004;
- Commission Implementing Regulation (EU) No 390/2013;
- Performance Regulation (691/2010);

- EASA Basic Regulation (EC) No 216/2008 ^[6];
- EASA Standardisation Inspection (EU) 736/2006 ^[7]; and,
- EASA AMC/GM for Safety KPIs, issued by EASA in coordination with PRB ^[2].

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

Typically information is released annually in in June of the following year.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Information is disseminated on a yearly basis as soon as the data is verified.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

Documentation on methodology is available at EASA Acceptable means of compliance and guidance material ^[2].

12. Quality Management

The legal framework for quality management is established by EU legislation.

12.1. Quality assurance

EASA verifies both NSAs and ANSPs questionnaires through desktop audits. The PRB is involved in some EASA verifications through temporary participation of PRU staff.

For each State, EASA verifies the State's questionnaire, the questionnaire completed by the largest ANSP and one additional ANSP randomly chosen.

The quality assurance includes, inter alia, the following processes:

- verification of the legal references using the national gazette website,
- cross-check with data available in external sources (e.g. the Network Manager and/or EUROCONTROL),
- cross-check with information published in States's or ANSP's website.

Further, EASA will conduct a verification on the qualitative analyses which have been submitted by States and ANSPs through the tables contained in AMC 9 SKPI and AMC 10 SKPI.

12.2. Quality assessment

The NSAs are responsible to verify the questionnaires completed by ANSPs and to report results of the verification to EASA. There are at least two types of NSA organisation for verifying the questionnaires: either there is a specific organisation or the existing oversight organisation is used to verify the questionnaire. The uniformity of NSA verification output across Europe is maintained through:

- the AMC/GM material published by EASA ^[2];
- the FAQ EASA web-page;
- the EASA helpdesk; and,
- the organisation of workshops and/or bilateral meetings.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

13.3. Completeness

The data is collected for the entire Single European Sky Area.

14. Accuracy and reliability

14.1. Overall accuracy

The accuracy of the indicator can be influenced by the the NSAs and ANSPs interpretation of the survey questions.

While the JC indicator helps identifying obstacles to impediments to the application of JC, it does not provide an indication of the magnitude of those obstacles. The complementary qualitative analysis of the evidence and justifications provided by States and ANSPs is therefore an important element of the overall assessment.

15. Timeliness and punctuality

15.1. Timeliness

The data refer to the status of JC which was measured the year before its publication.

15.2. Punctuality

The data is updated by ANSPs and NSAs at least once per year. The data is then verified by EASA in March of the following year.

16. Comparability

Data are comparable being measured in the same way across European Member States. However, benchmarking is not allowed in safety.

16.1. Comparability — geographical

Geographical comparability is valid.

16.2. Comparability over time

Comparability over time is valid.

17. Coherence**17.1. Coherence — cross domain**

Not applicable.

17.2. Coherence — internal

The data is assumed to be internally coherent as provided.

18. Cost and burden

Not available.

19. Data revision

Data could change with time due to two reasons:

- to reflect a change in managing JC within a State or an ANSP ,
- to reflect an improved verification.

20. Statistical processing**20.1. Source data**

Questionnaires and forms completed by States and ANSPs (see also Statistical concepts and definitions).

The completed tables included in AMC 9 and 10 (optional).

20.2. Frequency of data collection

After the first completion, ANSPs and NSAs are requested to update the questionnaires on a yearly basis.

20.3. Data collection

The State and ANSP questionnaires are collected by EASA through a web application.

20.4. Data validation

EASA verifies the updated questionnaires by March of the following year at the latest. After EASA verification, the data described are sent to the PRB by March of the following year at the latest.

The data validation is done as follows:

- During the desktop verification, the consistency between the answer (yes or no), the justifications provided and the evidence is evaluated. In a second step, the level of JC implementation is verified through external information available to EASA, NM and PRB. Clarification questions could be addressed to the NSA either via mail or telephone.

20.5. Data compilation

Following the verification by EASA, the following data is provided to the PRB:

- the States' completed questionnaires including justifications and evidence;
- the ANSP questionnaires verified by EASA, including justifications and evidence;
- the JC PI computations for each State and each ANSP; and,
- the qualitative analyses on areas of improvements provided by ANSPs, NSAs and the ones directly performed by EASA.

20.6. Adjustment

Not applicable.

21. Comment

No comments.

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References

[1] <http://easa.europa.eu/document-library/agency-decisions/ed-decision-2014035r>

[2] <http://easa.europa.eu/document-library/acceptable-means-of-compliance-and-guidance-materials/skpi-amcgm-issue-2#SKPI>

Average horizontal en-route inefficiency

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The measure provides an indication of the flight efficiency en route.

The **average horizontal en-route flight efficiency** indicator compares the length of the en-route part of flight trajectories with a corresponding portion of the Great Circle (defined with respect to the reference area). 'En-route' is defined as the distance flown outside a circle of 40 NM around the airport.

In the first reference period (2012-14) the calculation of the KPI is based on the Filed Tactical Flight Model (FTFM) which corresponds to the last filed flight plan (see also Horizontal flight efficiency calculations).

3.2. Classification system

Average horizontal en route inefficiency is calculated for the reference area.

Complementary to the EU-wide KPI, a number of additional Horizontal flight efficiency calculations are carried out for monitoring purposes.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

Of interest for the calculation are the Great Circle reference area end-points (referred to as onset and terminus) and the couple(s) of entry/exit points in the measured area of the en-route portion of the flight model (i.e., excluding a 40 NM circle around the airports). More details are provided in Horizontal flight efficiency calculations.

3.5. Statistical unit

The statistical unit is a geographical area.

3.6. Statistical population

The statistical population comprises only one geographic area in RP1: the Single European Sky Area. In RP2 it includes units at the local level (e.g., FABs).

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

Data is available from 2011.

3.9. Base period

Not applicable.

4. Unit of measure

The KPI is presented as a percentage.

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (691/2010) and Commission Implementing Regulation (EU) No 390/2013.

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

The indicator values are released monthly.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Data is published monthly with the annual performance aggregate being available in January of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing or in Horizontal flight efficiency calculations please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

12.1. Quality assurance

The data is provided by the Network manager and as such it is their responsibility to perform any quality assurance activities.

EUROCONTROL ^[1] is not responsible for the procedures and processes used in the production of this data.

12.2. Quality assessment

Data is validated by random quality checks, e.g. missing data for given a day, adherent data, etc. Any issues are reported to the Network manager who works with the EUROCONTROL Performance Review Unit ^[2] to resolve them.

12.3. Completeness

It is assumed that the Network manager provides complete data for the entire Single European Sky Area.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

14. Accuracy and reliability

14.1. Overall accuracy

This data is provided by the Network manager and apart from the basic consistency checks, it is assumed that the data is accurate.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The data is published each month - in general between 14 and 16 days after the end of the month in question.

15.2. Punctuality

To be determined.

16. Comparability

16.1. Comparability — geographical

Not applicable: there is only one reference area.

16.2. Comparability over time

It is assumed that this highly aggregated indicator will remain comparable over time.

17. Coherence

17.1. Coherence - cross domain

Generally, data should be similar to flight efficiency data published in other sources.

17.2. Coherence - internal

The data is assumed to be internally coherent as provided.

18. Cost and burden

Not available.

19. Data revision

The data revision policy has not yet been defined.

20. Statistical processing

20.1. Source data

The source data is provided by the Network manager and is processed by EUROCONTROL ^[1].

20.2. Frequency of data collection

The data is collected daily.

20.3. Data collection

The Network manager provides information concerning several different Flight models and their intersections with airspaces of interest, such as the TMA areas around the airports and the FIRs.

20.4. Data validation

The data is validated as part of the quality assessment described in Section 12.2.

20.5. Data compilation

Computation of the en route section and the quantities needed for the computation of the KPI are performed at EUROCONTROL ^[1] and stored in a local database.

The calculation of the KPI in the 1st reference period (2012-14) is based on the Filed Tactical Flight Model (FTFM) which corresponds to the last filed flight plan (see also Horizontal flight efficiency calculations).

20.6. Adjustment

No adjustments are performed on this data, although invalid data elements are rejected.

21. Comment

No comments.

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Additional ASMA time

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The **additional ASMA time** is a proxy for the average arrival runway queuing time on the inbound traffic flow, during congestion periods at airports.

It is the difference between the actual ASMA time of a flight and a statistically determined unimpeded ASMA time based on ASMA times in periods of low traffic demand (see also **Unimpeded ASMA time - Technical Note**).

Uncertainty of approach conditions (e.g. pilot performance, landing clearance time, approach speed, wind conditions) makes traffic supply to runways a stochastic phenomenon. In order to ensure continuous traffic demand at runways and maximise runway usage, a minimum level of queuing is required. However, additional time in holding is detrimental to operations efficiency, fuel consumption and environment. Therefore, there exists a trade-off between approach efficiency and runway throughput.

As an output of the ATMAP Group, the additional ASMA time PI has been in use as a commonly agreed proxy for airport inefficiencies in the approach phase since 2008 and is compliant with the KPI definition in EU legislation.

3.2. Classification system

Additional ASMA time is classified per Member State, with a breakdown for each airport subject to performance monitoring within the SES performance scheme.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

The **Arrival Sequencing and Metering Area (ASMA)** is defined as a virtual cylinder with a 40-NM radius around the airport. The actual time spent by a flight between its last entry in the cylinder (Entry-time at 40 NM upstream) and the actual landing time (ALDT) is denoted **ASMA transit time**.

A **Unimpeded ASMA time** is determined for each group of flights with the same parameters (i.e. aircraft class, ASMA entry sector, arrival runway) and represents the transit time in non congested conditions.

The **Additional ASMA time** is the difference between the actual ASMA transit time and the unimpeded ASMA time calculated for non-congested conditions.

3.5. Statistical unit

The statistical unit is the airport. Airport level data is also aggregated to States.

3.6. Statistical population

The statistical population is the set of airports subject to performance monitoring within the SES performance scheme.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

2011 is the first year for which data is presented.

3.9. Base period

Not applicable.

4. Unit of measure

The additional ASMA time is measured in minutes per IFR arrival [min/arr].

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (691/2010) and Commission Implementing Regulation (EU) No 390/2013.

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

Additional ASMA time is released monthly with yearly aggregates.

8.2. Release calendar access

Not applicable

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Data is published monthly with the annual performance aggregate being available in January of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

Although data providers are responsible for data quality, the EUROCONTROL Performance Review Unit ^[2] performs data validation and quality checks.

12.1. Quality assurance

Data validation is performed by CODA, on behalf of PRU, on each data delivery by airports, and data validation report are returned to the data providers.

12.2. Quality assessment

Raw data is cross-checked with various sources (Network Manager, ANSP's, airport operators, airport coordinators and air carriers). A quality threshold is established, and data that does not pass the quality threshold is rejected.

If a field is found to be blank, it is tried to fill the missing value from an alternative data source (i.e. a missing aircraft type in the airport data flow can be filled with information from the Network Manager).

12.3. Completeness

The data is collected for all airports subject to performance monitoring within the SES performance scheme. Data completeness is determined each month as per the above-mentioned quality checks. Any missing data is reported to the provider.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

14. Accuracy and reliability

14.1. Overall accuracy

The accuracy of the measure is influenced by the availability of the entry point/runway configuration.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The information is published each month - in general around 30 days after the end of the month in question.

15.2. Punctuality

The internal databases are updated daily. The statistical processing is performed once per month.

16. Comparability

16.1. Comparability — geographical

The data is collected centrally by the EUROCONTROL Performance Review Unit^[2] with delegation to CODA^[1] and computed consistently for all airports subject to performance monitoring within the SES performance scheme.

The interpretation of the measure and comparisons across airports require due consideration of prevailing local circumstances (airport infrastructure, etc.).

16.2. Comparability over time

Comparison over time is valid.

17. Coherence

17.1. Coherence — cross domain

Checks have been carried out with a number of airports and there is generally a good level of coherence between the indicator results and the results from performance measurement systems of airport operators.

17.2. Coherence — internal

Data is fully coherent from an internal perspective.

18. Cost and burden

Not available.

19. Data revision

Subject to changes (i.e. airspace design), there might be a need to change unimpeded times accordingly.

20. Statistical processing

20.1. Source Data

In accordance with EU legislation, the data is collected centrally for all the airports subject to performance monitoring within the SES performance scheme.

The input variables used for the calculation are detailed in the Statistical concepts and definitions section.

20.2. Frequency of data collection

The data is collected on a daily basis and transmitted for statistical processing on a monthly basis.

20.3. Data collection

The data is collected by the EUROCONTROL Performance Review Unit ^[2] and the Central Office for Delay Analysis (CODA) ^[2].

20.4. Data validation

The data is validation as described in the Quality Management section.

20.5. Data compilation

The ASMA area is defined as a 40-NM radius cylinder.

Calculation of the indicator

Let

- c , a combination of aircraft class, ASMA sectors and arrival runway, as described in the technical note for unimpeded ASMA time,
- $f(c)$ a flight characterised by a combination c ,
- $AcASMA(f(c))$ the actual ASMA transit time for a flight $f(c)$, i.e. the elapsed time between the last entry of the flight $f(c)$ in its ASMA sector and its actual landing time (ALDT),
- $UASMA(c)$ the unimpeded ASMA time for a combination c .

The additional ASMA time $AdASMA(f(c))$ is calculated for each flight $f(c)$ as the difference between the actual ASMA transit time $AcASMA(f(c))$ of the flight and the unimpeded ASMA time $UASMA(c)$:

$$AdASMA(f(c)) = AcASMA(f(c)) - UASMA(c)$$

The additional ASMA time $AdASMA(c)$ for a given combination c is the average of the additional ASMA time $AdASMA(f(c))$ of all the flight $f(c)$ characterised by that combination c .

The additional ASMA time $AdASMA$ for a given airport is the weighted average of the additional ASMA time $AdASMA(c)$, for all the combinations c at that airport with their probability of occurrence.

20.6. Adjustment

Corrections may be made when issues are discovered as described in the Quality Assessment section of this document.

21. Comment

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References

- [1] <http://www.eurocontrol.int/articles/ir691-data-collection-process>
- [2] <http://www.eurocontrol.int/articles/ir691-data-collection-process>

Additional taxi-out time

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The **additional taxi-out time** is a proxy for the average departure runway queuing time on the outbound traffic flow, during congestion periods at airports.

It is the difference between the actual taxi-out time of a flight and a statistically determined unimpeded taxi-out time based on taxi-out times in periods of low traffic demand (see also **related technical note**).

Uncertainty of take-off clearance time and aircraft arriving time at runway holding stop bars makes traffic supply to runways a stochastic phenomenon. In order to ensure continuous traffic demand at runways and maximise runway usage, a minimum level of queuing is required. However, additional time is detrimental to taxi-out efficiency, fuel consumption and environment. Therefore, there exists a trade-off between taxi-out efficiency and runway throughput.

When monitoring taxi-out performance at airports, it is to be stressed that the goal is not to reduce taxi time to an unimpeded time - as this could negatively impact on runway throughput - but rather to reduce additional taxi-out time and associated fuel burn to the strict minimum.

As an output of the ATMAP Group, additional taxi-out time has been in use as a commonly agreed proxy for airport inefficiency in the taxi-out phase since 2008 and is compliant with the PI definition in the EU legislation.

3.2. Classification system

Additional taxi-out time is classified per Member State, with a breakdown for each airport subject to performance monitoring within the SES performance scheme.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

The **Taxi-out time** is defined as the time spent by a flight between its actual off-block time (AOBT) and actual take-off time (ATOT).

The **Unimpeded taxi-out time** is an average taxi-out time when there is no congestion. There is one unimpeded time by departure airport, departure runway and departure stand.

The **Additional taxi-out time** is the difference between the actual taxi-out time and the unimpeded taxi-out time.

3.5. Statistical unit

The statistical unit is the airport. Airport level data is also aggregated to States.

3.6. Statistical population

The statistical population is the set of airports subject to performance monitoring within the SES performance scheme.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

2011 is the first year for which data is presented.

3.9. Base period

Not applicable.

4. Unit of measure

Additional taxi-out time is measured in minutes per IFR departure [min/dep].

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (691/2010) and Commission Implementing Regulation (EU) No 390/2013.

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

Taxi-out additional time data is released monthly with yearly aggregates.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Data is published monthly with the annual performance aggregate being available in January of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

Although data providers are responsible for data quality, the EUROCONTROL Performance Review Unit ^[2] performs data validation and quality checks.

12.1. Quality assurance

Data validation is performed by CODA, on behalf of PRU, on each data delivery by airports, and data validation report are returned to the data providers.

12.2. Quality assessment

Raw data is cross-checked with various sources (Network Manager, ANSP's, airport operators, airport coordinators and air carriers). A quality threshold is established, and data that does not pass the quality threshold is rejected.

If a field is found to be blank, it is tried to fill the missing value from an alternative data source (i.e. a missing aircraft type in the airport data flow can be filled with information from the Network Manager).

12.3. Completeness

The data is collected for all the airports subject to performance monitoring within the SES performance scheme. Data completeness is determined each month as per the above-mentioned quality checks. Any missing data is reported to the provider.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

14. Accuracy and reliability

14.1. Overall accuracy

The accuracy of the measure is influenced by the availability of the stand/runway configuration and the type of AOBT recording at the airports (manual vs. automated).

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The information is published each month - in general around 30 days after the end of the month in question.

15.2. Punctuality

The internal databases are updated daily. The statistical processing is performed once per month.

16. Comparability

16.1. Comparability — geographical

The data is collected centrally by the EUROCONTROL Performance Review Unit ^[2] with delegation to CODA ^[1], and computed consistently for all airports subject to performance monitoring within the SES performance scheme.

The interpretation of the measure and comparisons across airports require due consideration of prevailing local circumstances (airport infrastructure, etc.).

16.2. Comparability over time

Comparison over time is valid.

17. Coherence

17.1. Coherence — cross domain

Checks have been carried out with a number of airports and there is generally a good level of coherence between the indicator results and the results from performance measurement systems of airport operators.

17.2. Coherence — internal

Data is fully coherent from an internal perspective.

18. Cost and burden

Not available.

19. Data revision

Subject to changes (i.e. infrastructure), there might be a need to change unimpeded times accordingly.

20. Statistical processing

20.1. Source data

In accordance with EU legislation, the data is collected centrally for all airports subject to performance monitoring within the SES performance scheme.

The input variables used for the calculation are detailed in the Statistical concepts and definitions section.

20.2. Frequency of data collection

The data is collected and transmitted for statistical processing on a monthly basis.

20.3. Data collection

The data is collected by the EUROCONTROL Performance Review Unit ^[2] and the Central Office for Delay Analysis (CODA) ^[2].

20.4. Data validation

The data is validation as described in the Quality Management section.

20.5. Data compilation

Calculation of the indicator

Let

- c , a combination of departure runway and group of stands, as described in the technical note for unimpeded taxi-out time,
- $f(c)$ a flight characterised by a combination c ,
- $AcTXOT(f(c))$ the actual taxi-out time for a flight $f(c)$, i.e. the elapsed time between the off-block time (AOBT) of the flight $f(c)$ and its actual take-off time (ATOT),

- $UTXOT(c)$ the unimpeded taxi-out time for a combination c .

The additional taxi-out time $AdTXOT(f(c))$ is calculated for each flight $f(c)$ as the difference between the actual taxi-out time $AcTXOT(f(c))$ of the flight and the unimpeded taxi-out time $UTXOT(c)$:

$$AdTXOT(f(c)) = AcTXOT(f(c)) - UTXOT(c)$$

The additional taxi-out time $AdTXOT(c)$ for a given combination c is the average of the additional taxi-out time $AdTXOT(f(c))$ of all the flight $f(c)$ characterised by that combination c .

The additional taxi-out time $AdTXOT$ for a given airport is the weighted average of the additional taxi-out time $AdTXOT(c)$, for all the combinations c at that airport with their probability of occurrence.

20.6. Adjustment

Corrections may be made when issues are discovered as described in the Quality Assessment section of this document.

21. Comment

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Effective use of the civil / military airspace structures

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The indicators described in this section address the effective use of the civil/military airspace structures.

Commission Regulation (EU) No 691/2010 laying down a performance scheme for air navigation services and network functions (the "performance regulation") requires the monitoring of the effective use of civil/military airspace structures during the first reference period, with target setting being foreseen for the second reference period.

The performance regulation states in Annex IV that national authorities shall provide data in support to tasks referred to in Article 4(1)(m) and (n) of Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace (FUA). Furthermore, the performance regulation states that this data shall be provided on an annual basis.

In view of the fact that Article 4(1) (m) and (n) of Commission Regulation (EC) No 2150/2005 already requires Member States to assess the performance of flexible use of airspace operations, and archive data on the requests, allocation and actual use of airspace structures, it is expected that the data required is already available at a national level, most probably in the Airspace Management Cells, the AMCs.

The intention is to monitor the number of hours that special use airspace (SUA) has been reserved for restriction or segregation from general air traffic; the number of hours that it was subsequently used for such activity. Additionally, the number of hours that previously reserved airspace were returned for use by general air traffic, with a notification period of three hours or more, shall be monitored.

The two indicators described above, are known as **Booking and Release Procedures**.

To balance the performance measurement, we will also report on the **Utilisation of Conditional Routes** by general air traffic.

3.2. Classification system

Booking and Release Procedures

The data is measured for individual SUAs but is reported as an aggregated EU wide statistic.

Utilisation of Conditional Routes

This data is measured for individual CDRs but is reported as an aggregated ECAC wide statistic.

3.3. Sector coverage

The measurement of the Effective use of the civil / military airspace structures pertains to the Air Transport, Air Traffic Management and Defence sectors of the economy.

3.4. Statistical concepts and definitions

- **Booking and Release Procedures** are shown as ratios of the total amount of time that airspace was allocated for an activity requiring the restriction or segregation of other traffic.
- **Utilisation of Conditional Routes** is shown using the FUA Indicator Rate of Aircraft Interested, (RAI):

3.5. Statistical unit

- **Booking and Release Procedures** are computed for individual Special Use Airspace (SUA). The individual SUA data is aggregated into an EU wide statistic.
- **Use of Conditional Routes** is based on the last filed flight plan of each flight, and on individual CDRs. The individual data is aggregated into an ECAC wide statistic.

3.6. Statistical population

- The statistical population comprises all special use airspace (SUA) volumes in the Single European Sky Area.

National authorities are requested to report on SUAs that have an impact on IFR traffic, for example where:
activation of the SUA impacts the available ATC capacity of the surrounding airspace;
activation of the SUA impacts the availability of Conditional Routes (CDR)s;
the SUA is located in an area of Free Route Airspace.

- The statistical population comprises all CDR1 and CDR2 conditional routes in the ECAC area.

3.7. Reference area

- Booking and Release Procedures pertains to the Single European Sky Area.
- Use of Conditional Routes pertains to the ECAC area.

3.8. Time coverage

The data will be presented from January until December, inclusive, for each calendar year beginning with 2012.

3.9. Base period

Not applicable.

4. Unit of measure

- **Booking and Release Procedures** is measured in time and is presented as a ratio.
- **Utilisation of Conditional Routes** is measured as the number of flight plans and is presented as a ratio.

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in:

- Performance Regulation (691/2010)
- Commission Implementing Regulation (EU) No 390/2013;
- FUA Regulation (EC) No 2150/2005.

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

The aggregated data is released annually.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

The aggregated data is disseminated annually.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

12.1. Quality assurance

Booking and Release Procedures

The data is provided by the Member States and as such it is their responsibility to perform any quality assurance activities.

Utilisation of Conditional Routes

The data is provided by the Network manager and as such it is their responsibility to perform any quality assurance activities.

12.2. Quality assessment

None.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

13.3. Completeness

Booking and Release Procedures

The data should be collected for the entire Single European Sky Area, however, this has not yet been validated by the individual Member States.

Utilisation of Conditional Routes

The data is collected for the entire ECAC region.

14. Accuracy and reliability

14.1. Overall accuracy

Booking and Release Procedures

It is acknowledged that, for many reasons, there will be differences between the actual time of use of an SUA and the recorded time of use. Such reasons can include safety buffers between the starting time of the booking and ensuring the area is cleared before commencing activities. In addition there can be differences due to early termination of the activity without ATC or the network being informed. A third source of errors is likely to arise in the process of recording the times, collating the aggregated times and reporting these to the European Commission via the PRU. Despite these and similar errors, since this indicator is at such a high level, it is expected to be sufficiently accurate for its purpose.

Utilisation of Conditional Routes

The metric assumes that the shortest distance is in fact the optimal route. However, it may be that the optimal route is not that which is shortest in distance, due to route charges, wind or ATFM delay. The metric also assumes that the CDR was available at the actual time of flight, although this metric is calculated post-ops using aggregated data. Despite these and similar errors, since this indicator is at such a high level, it is

expected to be sufficiently accurate for its purpose.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

To be determined.

15.2. Punctuality

To be determined.

16. Comparability

16.1. Comparability — geographical

The indicator does not change from one State to another, therefore it is comparable over geographical areas.

16.2. Comparability over time

Comparison over time is valid.

17. Coherence

17.1. Coherence — cross domain

The aggregated values computed here are from information made available to the EUROCONTROL Performance Review Unit ^[2]. If the indicators are calculated at local level using information that is only available locally then they will most likely differ considerably.

17.2. Coherence — internal

Data is fully coherent from an internal perspective.

18. Cost and burden

Not available.

19. Data revision

The data revision policy has not yet been defined.

20. Statistical processing

20.1. Source data

Booking and Release Procedures

The SES Member States provide the following data via electronic means:

- Specific SUA Reference,
- Sum of number of hours allocated (AUP),
- Sum of number of hours still allocated at H-3,
- Sum of number of initially allocated hours used,
- Ad hoc (Procedure 3) hours allocated (UUP) (optionally provided),
- Ad hoc (Procedure 3) hours used (optionally provided).

Utilisation of Conditional Routes

The Network manager provides this data via electronic means.

20.2. Frequency of data collection

Data are collected on a daily basis but provided to the EUROCONTROL Performance Review Unit ^[2] in annual aggregates.

20.3. Data collection

Data are collected and compiled by the Member States, EUROCONTROL ^[1] and the Network manager.

20.4. Data validation

Data validation is done by the data providers.

20.5. Data compilation

The data providers aggregate the data.

20.6. Adjustment

None.

21. Comment

To date only fourteen States have provided details for the person responsible for providing the required data.

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legal liability or responsibility for the accuracy, completeness or usefulness of this information. The PRB reserves the right to change or amend the information provided at any time and without prior notice.

Minutes of en-route ATFM delay per flight

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last posted	01 November 2016
2.3. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

Please note that software release 20.0 of the Network Manager on 04 April 2016 introduced a change in the computation of ATFM delay for operational purposes. For consistency reasons, ATFM delays used for regulatory purposes within the SES performance scheme will continue to be based on the methodology used before April 2016 on this web page. As a result, the data published on this website might deviate from the data directly published by EUROCONTROL for operational purposes. See the Source data section below for more information on the changes in NM release 20.0.

The measure provides an indication of ATFM delays on the ground due to constraints en route.

In accordance with EU legislation, Single European Sky Area FABs are required to adopt performance targets contributing adequately to and be consistent with the EU wide targets. The capacity KPI for the second reference period is the *en route ATFM delay per flight*.

In Europe, when traffic demand is anticipated to exceed the available capacity in en route airspace or at airports, Air Traffic Control (ATC) units may request the local Flow Management Position (FMP) to instigate an Air Traffic Flow Management (ATFM) measure, or regulation. Aircraft expected to arrive during a period of congestion are given Air Traffic Flow Management delay at their departure airport, under the authority of the Network Manager, in order to regulate the flow of traffic into the constrained downstream en route sector or airport, thus ensuring safety. The resulting ATFM delays are calculated as the difference between the estimated take-off time calculated from the filed flight plan including updates and the calculated take-off time allocated by the central unit of ATFM. The reason for the regulation is indicated by the responsible Flow Management Position (FMP). The delay is attributed to the FIR

containing the reference location of the most constraining capacity constraint.

En route ATFM delay has been in use as a commonly agreed proxy for en route capacity shortfalls since 1999. The calculation of ATFM delays is based on a well established and commonly accepted algorithm and is compliant with the KPI definition in the EU legislation.

3.2. Classification system

En route ATFM delay per flight is classified per Flight Information Region (FIR) within the Single European Sky Area.

For the monitoring of FAB Performance targets, the FAB is considered as the aggregation of the individual FIRs belonging to the Member state within the FAB

FAB Name	FIRs included	FMPs
Baltic FAB	EPWWFIR, EYVLFIR, EYVLUIR	EPWW2012, EYVCFMP, EPWWFMP
BLUE MED FAB	LCCCFIR, LCCCUIR, LGGGFIR, LGGGUIR, LIBBFIR, LIBBUIR, LIMMFIR, LIMMUIR, LIRRFIR, LIRRUIR, LMMMFIR, LMMMUIR	LIBBFMP, LGGGFMP, LGMDFMP, LCCCFMP, LMMMFMP, LIRRFMPs, LIRRFMPN, LIRRFMPc, LIMMFMP, LIMMFMPA, LIMMFMPe, LIMMFMPt, LIMMFMPw, LIPPFMP, LIPPFMP1, LIRRFMP
DANUBE FAB	LBSRFIR, LRBBFIR	LBSRFMP1, LRBBFMP1, LRBBFMP2, LRBCFMP, LRCKFMP, LRCLFMP, LBSRFMP2, LRARFMP, LBWRFMP, LBSRFMP, LRBBFMP
DK-SE FAB	EKDKFIR, ESAAFIR	EKDKFMPE, EKDKFMPW, ESMMFMP, ESMMLow, ESOSFMP, ESUNFMP, EKDKFMP, EKCHTMA
FABEC	EBBUFIR, EBURUIR, EDGGFIR, EDMMFIR, EDUUIR, EDVVUIR, EDWWFIR, EHAAFIR, LFBBFIR, LFEEFIR, LFFFFIR, LFFFUIR, LFMMFIR, LFRRFIR, LSASFIR, LSASUIR	EBBUFMP, EDBBFMP, EDBBFMP1, EDFFFMP, EDGGFMP1, EDGGFMP2, EDLLFMP, EDLLFMP1, EDMERGE, EDMMFMP, EDMMFMPA, EDMMFMPe, EDMMFMPN, EDMMFMPs, EDUUFMP, EDUUFMPc, EDUUFMPe, EDUUFMPs, EDUUFMPw, EDWWFMP, EDYYFMP, EHAAFMP, LFBBFMP, LFBBFMP1, LFBBFMP2, LFBBFMP3, LFBBFMP4, LFBBFMP5, LFBBFMP6, LFBBFMP7, LFBBFMP8, LFBBFMP9, LFBBFMP10, LFBBFMP11, LFBBFMP12, LFBBFMP13, LFBBFMP14, LFBBFMP15, LFBBFMP16, LFBBFMP17, LFBBFMP18, LFBBFMP19, LFBBFMP20, LFBBFMP21, LFBBFMP22, LFBBFMP23, LFBBFMP24, LFBBFMP25, LFBBFMP26, LFBBFMP27, LFBBFMP28, LFBBFMP29, LFBBFMP30, LFBBFMP31, LFBBFMP32, LFBBFMP33, LFBBFMP34, LFBBFMP35, LFBBFMP36, LFBBFMP37, LFBBFMP38, LFBBFMP39, LFBBFMP40, LFBBFMP41, LFBBFMP42, LFBBFMP43, LFBBFMP44, LFBBFMP45, LFBBFMP46, LFBBFMP47, LFBBFMP48, LFBBFMP49, LFBBFMP50, LFBBFMP51, LFBBFMP52, LFBBFMP53, LFBBFMP54, LFBBFMP55, LFBBFMP56, LFBBFMP57, LFBBFMP58, LFBBFMP59, LFBBFMP60, LFBBFMP61, LFBBFMP62, LFBBFMP63, LFBBFMP64, LFBBFMP65, LFBBFMP66, LFBBFMP67, LFBBFMP68, LFBBFMP69, LFBBFMP70, LFBBFMP71, LFBBFMP72, LFBBFMP73, LFBBFMP74, LFBBFMP75, LFBBFMP76, LFBBFMP77, LFBBFMP78, LFBBFMP79, LFBBFMP80, LFBBFMP81, LFBBFMP82, LFBBFMP83, LFBBFMP84, LFBBFMP85, LFBBFMP86, LFBBFMP87, LFBBFMP88, LFBBFMP89, LFBBFMP90, LFBBFMP91, LFBBFMP92, LFBBFMP93, LFBBFMP94, LFBBFMP95, LFBBFMP96, LFBBFMP97, LFBBFMP98, LFBBFMP99, LFBBFMP100
FAB CE (SES RP2)	LDZOFIR, LHCCFIR, LJLAFIR, LKAAFIR, LOVVFIR, LZBBFIR	LJLAFMP, LOVVFMP, LZBBFMP, LKAAFMP1, LKAAFMP2, LKAAFMP3, LKAAFMP4, LKAAFMP5, LKAAFMP6, LKAAFMP7, LKAAFMP8, LKAAFMP9, LKAAFMP10, LKAAFMP11, LKAAFMP12, LKAAFMP13, LKAAFMP14, LKAAFMP15, LKAAFMP16, LKAAFMP17, LKAAFMP18, LKAAFMP19, LKAAFMP20, LKAAFMP21, LKAAFMP22, LKAAFMP23, LKAAFMP24, LKAAFMP25, LKAAFMP26, LKAAFMP27, LKAAFMP28, LKAAFMP29, LKAAFMP30, LKAAFMP31, LKAAFMP32, LKAAFMP33, LKAAFMP34, LKAAFMP35, LKAAFMP36, LKAAFMP37, LKAAFMP38, LKAAFMP39, LKAAFMP40, LKAAFMP41, LKAAFMP42, LKAAFMP43, LKAAFMP44, LKAAFMP45, LKAAFMP46, LKAAFMP47, LKAAFMP48, LKAAFMP49, LKAAFMP50, LKAAFMP51, LKAAFMP52, LKAAFMP53, LKAAFMP54, LKAAFMP55, LKAAFMP56, LKAAFMP57, LKAAFMP58, LKAAFMP59, LKAAFMP60, LKAAFMP61, LKAAFMP62, LKAAFMP63, LKAAFMP64, LKAAFMP65, LKAAFMP66, LKAAFMP67, LKAAFMP68, LKAAFMP69, LKAAFMP70, LKAAFMP71, LKAAFMP72, LKAAFMP73, LKAAFMP74, LKAAFMP75, LKAAFMP76, LKAAFMP77, LKAAFMP78, LKAAFMP79, LKAAFMP80, LKAAFMP81, LKAAFMP82, LKAAFMP83, LKAAFMP84, LKAAFMP85, LKAAFMP86, LKAAFMP87, LKAAFMP88, LKAAFMP89, LKAAFMP90, LKAAFMP91, LKAAFMP92, LKAAFMP93, LKAAFMP94, LKAAFMP95, LKAAFMP96, LKAAFMP97, LKAAFMP98, LKAAFMP99, LKAAFMP100
NEFAB	EETTFIR, EFINFIR, EFINUIR, ENOBFIR, ENORFIR, EVRRFIR	EVRRFMP, ENTRFMP, ENSVFMP, ENOSFMP, ENBDFMP, EFPSFMP, EFINFMP, EETTFMP, EFESFMP, ENOSEFMP, ENOSWFMP
SW FAB	GCCCFIR, GCCCUIR, LECBFIR, LECBUIR, LECMFIR, LECMUIR, LPPCFIR	LECBFMP1, LECMFMPN, LECMFMPs, LECPFMP, GCCCFMP, LECBFMP, LECSFMP, LPPCFMP, LECMFMP
UK-Ireland FAB	EGPXFIR, EGPXUIR, EGTTFIR, EGTTUIR, EISNFIR, EISNUIR	EGTCFMP, EIDWFMP, EGTTOLYM, EGTTFMP1, EGTTFMP, EGTCOLYM, EISNFMP, EGPXFMP1, EGPXFMP, EGCCFMP

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

ATFM delays

“ATFM delay” is defined as the duration between the last Estimated Take-Off Time (ETOT) and the Calculated Take-Off Time (CTOT) allocated by the Network Manager. ATFM delay comprises both Airport ATFM delay and En route ATFM delay. This indicator is solely concerned with En route ATFM delay.

The delay is truncated to minutes.

Flights ^[1]

All the IFR flights which have filed a flight plan ^[2] and have entered the area of responsibility of the relevant ANSP(s) are taken into account.

Each flight is only counted once, regardless of its trajectory.

Attribution of Delay

ATFM delay to which a flight is subjected is defined to have as cause the most penalizing ATFM regulation which affects it. Depending of the type and the entity responsible for the reference location protected by the ATFM regulation the ATFM delay is classified as either an airport or an en route ATFM delay and attributed to the FIR containing the reference location .

Each ATFM regulation also comprises a designator referring to the cause of delay which can be used in further analysis.

3.5. Statistical unit

The statistical unit is the State/ ANSP to which the ATFM delays are attributed.

3.6. Statistical population

The statistical population comprises the States in the Single European Sky Area.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

2012 is the first year for which data is presented.

3.9. Base period

Not applicable.

4. Unit of Measure

The en route ATFM delay is measured in minutes per IFR flight.

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (691/2010).

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

En route ATFM delay data is released 12 times per year, once per month.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

En route ATFM data is published monthly with the annual performance aggregate being available in January of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

12.1. Quality assurance

The data is provided by the Network Manager and as such it is their responsibility to perform any quality assurance activities.

12.2. Quality assessment

Data is validated by random quality checks, e.g. missing data for given a day, adherent data, etc. Any issues are reported to the Network manager who works with the EUROCONTROL Performance Review Unit ^[2] to resolve them.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

13.3. Completeness

The data is collected for the entire Single European Sky Area.

14. Accuracy and reliability

14.1. Overall accuracy

The en route ATFM delay is the delay calculated by the central unit of ATFM as defined in Commission Regulation (EU) No 255/2010. This calculation is based on a well established methodology, which has been in place since 1999.

It is assumed that the data provided is accurate, given the caveats mentioned in sections 3.4 and 3.6.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The full set of Minutes of en route ATFM delay per flight is published each month - in general between 14 and 16 days after the end of the month in question.

15.2. Punctuality

The internal databases are updated daily. The statistical processing is performed once per month.

16. Comparability

16.1. Comparability — geographical

The data is collected centrally by the Network Manager and computed consistently throughout the entire Single European Sky Area which allows comparisons across different units.

16.2. Comparability over time

Comparisons over time are valid.

17. Coherence

17.1. Coherence — cross domain

ATFM delays is calculated relative to the flight plan.

Although not fully cohered, the delay reported by aircraft operators to CODA under the corresponding IATA delay categories shows a high correlation with the ATFM delay calculated by the Network Manager. It should be noted that the delay reported by aircraft operators relates to airline schedules rather than flight plan.

17.2. Coherence — internal

Data is fully coherent from an internal perspective.

18. Cost and burden

Not available.

19. Data revision

The data revision policy has not yet been defined.

20. Statistical processing

20.1. Source data

En route ATFM delay per flight targets

The EU-wide target is an average of 0.5 minutes per flight ATFM en route delay in 2014 and for all years in RP2 (2015-2019)

National or FAB performance targets are contained within the respective performance plans.

Actual en route ATFM delay

The Network Manager provides this data.

Please note that the delays caused by READY to Depart (REA) messages and ATFM slot extensions were excluded from the

ATFM delay computation with NM release 20 (4 April 2016) which reduces the overall amount of computed ATFM delay.

More information on the adjusted ATFM delay computation as of NM release 20.0 from 4 April can be found here:

NM release 20.0 - 4 April 2016 - FB750-Delay Calculation improvements.

For consistency reasons, the ATFM delay computation used for the SES Performance Scheme in RP2 (2015-2019) continues to be based on the old methodology which includes delays from READY to Depart (REA) messages and ATFM slot extensions. This leads to differences between the ATFM delay data in the SES performance scheme and the reporting for operational purposes as published by NM and the PRU.

Actual Number of IFR flights

The Network Manager provides this data.

20.2. Frequency of data collection

Data is collected for each individual flight in real time.

20.3. Data collection

Data is collected and compiled by the Network Manager.

20.4. Data validation

Data validation is the responsibility of the Network Manager.

20.5. Data compilation

The Network Manager aggregates the data for the different FIRs. The FIRs monitored during the second reference period are referred to as the SES RP2 Area.

20.6. Adjustment

Corrections may be made when issues are discovered as described in the Quality Assessment section of this document.

21. Comment

No comments.

Disclaimer

This data is published by the Performance Review Body (PRB) of the Single European Sky. Every effort has been made to ensure that the information and analysis contained on this website are as accurate and complete as possible. Despite these precautions, should you find any errors or inconsistencies we would be grateful if you could please bring them to the Performance Review Unit's attention.

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References

[1] <https://extranet.eurocontrol.int/http://atmllexicon.eurocontrol.int/lexicon/en/index.php/Flight>

[2] https://extranet.eurocontrol.int/http://atmllexicon.eurocontrol.int/lexicon/en/index.php/Flight_plan

Airport ATFM delay

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

Please note that software release 20.0 of the Network Manager on 04 April 2016 introduced a change in the computation of ATFM delay for operational purposes. For consistency reasons, ATFM delays used for regulatory purposes within the SES performance scheme will continue to be based on the methodology used before April 2016 on this web page. As a result, the data published on this website might deviate from the data directly published by EUROCONTROL for operational purposes. See the Source data section below for more information on the changes in NM release 20.0.

The measure provides an indication of ATFM delays on the ground due to constraints at airports.

In Europe, when traffic demand is anticipated to exceed the available capacity in en route centres or at airports, Air Traffic Control (ATC) units may request the local Flow Management Position (FMP) to instigate an Air Traffic Flow Management (ATFM) measure, or regulation. Aircraft expected to arrive during a period of congestion are given Air Traffic Flow Management delay at their departure airport, under the authority of the Network Manager, in order to regulate the flow of traffic into the constrained downstream en route sector or airport, thus ensuring safety. The resulting ATFM delays are calculated as the difference between the estimated take-off time calculated from the filed flight plan including updates and the calculated take-off time allocated by the central unit of ATFM. The reason for the regulation is indicated by the responsible Flow Management Position (FMP). The delay is attributed to the most constraining ATC unit.

As an output of the ATMAP Group, Airport ATFM delay has been in use as a commonly agreed proxy for airport capacity shortfalls since 2009. The calculation of Airport ATFM delay is based on a well established and commonly accepted algorithm and is compliant with the KPI definition in the EU legislation.

3.2. Classification system

Airport ATFM delay is classified per Member State, with a breakdown by airport.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

ATFM delays

“ATFM delay” is defined as the duration between the last Estimated Take-Off Time (ETOT) and the Calculated Take-Off Time (CTOT) allocated by the European ATM Network Manager. ATFM Delay comprises both Airport ATFM Delay and En-route ATFM Delay. This indicator is solely concerned with Airport ATFM Delay.

The delay is truncated to minutes.

Flights ^[1]

All the IFR flights which have filed a flight plan ^[2] and have landed at the relevant airport are taken into account.

Attribution of Delay

ATFM delay to which a flight is subjected is defined to have as cause the most penalizing ATFM regulation which affects it. Depending of the type and the entity responsible for the reference location protected by the ATFM regulation, the ATFM delay is classified as either an airport or an en-route ATFM delay and attributed to the relevant ANSP (en route) or airport. Airport ATFM delays generated by arrival or global regulations are attributed to the arrival airport as stated in the flight plan. If the regulation is protecting a group of airports, the delay is attributed to the destination airport of the affected flight.

Each ATFM regulation also comprises a designator referring to the cause of delay which can be used in further analysis.

3.5. Statistical unit

The statistical unit is the airport. Airport level data is also aggregated to States.

3.6. Statistical population

The statistical population is the set of airports subject to performance monitoring within the Single European Sky Performance Scheme.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

2009 is the first year for which data is presented.

3.9. Base period

Not applicable.

4. Unit of measure

Airport ATFM delay is measured in minutes per IFR arrival.

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (691/2010) and Commission Implementing Regulation (EU) No 390/2013;

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

Airport ATFM delay data is released monthly with yearly aggregates.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Airport ATFM data is published monthly with the annual performance aggregate being available in January of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

Documentation on procedures applied for quality management and quality assessment is under development.

12. Quality Management

12.1. Quality assurance

The data is provided by the Network Manager and as such it is their responsibility to perform any quality assurance activities.

12.2. Quality assessment

Data is validated by random quality checks, e.g. missing data for given a day, adherent data, etc. Any issues are reported to the Network manager who works with the EUROCONTROL Performance Review Unit ^[2] to resolve them.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

13.3. Completeness

The data is collected for the entire Single European Sky Area.

14. Accuracy and reliability

14.1. Overall accuracy

The Airport ATFM delay is the delay calculated as defined in Commission Regulation (EU) No 255/2010. This calculation is based on a well established methodology, which has been in place since 2009.

15. Timeliness and punctuality

15.1. Timeliness

The full set of Airport ATFM delay per IFR arrival at airports included in the performance scheme is published each month - in general between 14 and 16 days after the end of the month in question.

15.2. Punctuality

The internal databases are updated daily. The statistical processing is performed once per month.

16. Comparability

16.1. Comparability — geographical

The data is collected centrally by the Network Manager and computed consistently throughout the entire Single European Sky Area which allows comparisons across different airports.

16.2. Comparability over time

Comparison over time is valid.

17. Coherence

17.1. Coherence — cross domain

ATFM delays is calculated relative to the flight plan.

Although not fully cohered, the delay reported by aircraft operators to CODA under the corresponding IATA delay categories shows a high correlation with the ATFM delay calculated by the Network Manager. It should be noted that the delay reported by aircraft operators relates to airline schedules rather than flight plan.

17.2. Coherence — internal

Data is fully coherent from an internal perspective.

18. Cost and burden

Not available.

19. Data revision

The data revision policy has not yet been defined.

20. Statistical processing

20.1. Source data

The data for the calculation of this indicator is provided by the Network Manager.

Please note that the delays caused by READY to Depart (REA) messages and ATFM slot extensions were excluded from the

ATFM delay computation with NM release 20 (4 April 2016) which reduces the overall amount of computed ATFM delay.

More information on the adjusted ATFM delay computation as of NM release 20.0 from 4 April can be found [here](#):

NM release 20.0 - 4 April 2016 - FB750-Delay Calculation improvements.

For consistency reasons, the ATFM delay computation used for the SES Performance Scheme in RP2 (2015-2019) continues to be based on the old methodology which includes delays from READY to Depart (REA) messages and ATFM slot extensions. This leads to differences

between the ATFM delay data in the SES performance scheme and the reporting for operational purposes as published by NM and the PRU.

20.2. Frequency of data collection

Data is collected for each individual flight in real time.

20.3. Data collection

Data is collected and compiled by the EUROCONTROL Network Manager.

20.4. Data validation

Data is validated and cross-checked by the EUROCONTROL Network Manager.

20.5. Data compilation

Data is aggregated for different delay groups, airports, and Member States.

20.6. Adjustment

Corrections may be made when issues are discovered as described in the Quality Assessment section of this document.

21. Comment

Disclaimer

This data is published by the Performance Review Body (PRB) of the Single European Sky. Every effort has been made to ensure that the information and analysis contained on this website are as accurate and complete as possible. Despite these precautions, should you find any errors or inconsistencies we would be grateful if you could please bring them to the Performance Review Unit's attention.

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ATFM slot adherence

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

ATFM departure slots are allocated centrally by the European Network Manager upon the request of the local Flow Management Position (FMP), when an imbalance between demand and capacity is foreseen at airports and/or en-route. The purpose of such regulation is to hold aircraft on the ground.

An ATFM slot tolerance window is available to ATC to sequence departures. The standard slot tolerance window is [-5 minutes, +10 minutes]. ATC at the departure airport has a joint responsibility with aircraft operators to ensure that flights departure within the allocated ATFM slot tolerance window in order to optimise traffic flow. **ATFM departure slot adherence**, simply named ATFM slot adherence hereafter, measures the share of take-offs inside the slot tolerance window of [-5 minutes, +10 minutes].

ATFM slot adherence monitoring is a pre-requisite to fine tune traffic predictions at the departure, en-route airspace and at the destination airports. The higher the number of regulated departing aircraft inside the assigned ATFM standard window, the more accurate the predicted traffic and associated down-stream ATFM measures.

ATFM slot adherence monitoring is required by the Regulation (EU) No 255/2010. Under Article 11 of this regulation, the ATS units are required to provide the information regarding non-compliance to slot adherence for these airports where non-adherence equals or exceeds 20% of the *regulated* departures, as well as their action plans to mitigate such a non-compliance.

In application to Regulation (EU) No 255/2010, the Network Manager monitors ATFM slot adherence on a monthly basis.

The Performance Regulation (390/2013), Annex I Section 2 para 3.2(a) also require ATFM slot adherence to be monitored at local level, i.e. at national level with a breakdown at airport level.

3.2. Classification system

ATFM slot adherence is classified per Member State, with a breakdown for each airport subject to EU IR390.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

ATFM slot adherence is defined as the percentage of departures inside an ATFM slot tolerance window of [-5 minutes, +10 minutes].

3.5. Statistical unit

The statistical unit is the airport. Airport level data is also aggregated to States.

3.6. Statistical population

The statistical population is the set of the 2nd reference period (RP2) airports subject EU IR390/2013, within the Single European Sky Area.

3.7. Reference Area

The reference area is the Single European Sky Area of RP2 (2015-2019).

3.8. Time coverage

The Network manager has monitored slot adherence to ATFM since 2011, but in the scope of the Performance Scheme, 2015 is the first year for which data is presented.

3.9. Base period

Not applicable.

4. Unit of measure

ATFM slot adherence is measured in percentage of outbound regulated IFR flight [% of regulated departures].

5. Reference period

As fixed by the Performance Regulation (390/2013), the second reference period (RP2) for the performance scheme shall cover the calendar years 2015 to 2019 inclusive.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (390/2013).

7. Confidentiality

The information is public and disseminated in accordance with Article 21 of the Performance Regulation (390/2013).

8. Release policy

8.1. Release calendar

ATFM slot adherence is released monthly with yearly aggregates.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Data is published monthly with the annual performance aggregate being available in January of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

As per Performance Regulation (390/2013), Article 21 (3), *"The data providers shall take the necessary measures to ensure the quality, validation and timely transmission of the data, including providing evidence of their quality checks and validation processes, explanations in response to specific requests from the Commission regarding the quality of the data and, where necessary, action plans to improve data quality. The data shall be provided free of charge, in electronic form where applicable, using the format specified by the Commission."*

12.1. Quality assurance

Data validation is performed by the Network manager in the context of the Regulation (EU) No 255/2010.

12.2. Quality assessment

Quality assessment is under the responsibility of the Network manager in the context of the Regulation (EU) No 255/2010.

12.3. Completeness

The data is collected for all the RP2-airports.

13. Relevance

The information is published for performance monitoring purposes in accordance with Article 3 of the Performance Regulation (EU) No 390/2013.

14. Accuracy and reliability

14.1. Overall accuracy

The accuracy of the measure is influenced by the availability and the reliability of both the duration and the IATA codes as reported by local bodies.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The information is published each month by the Network Manager in their “NM Monthly Adherence to ATFCM Slots” bulletin.

15.2. Punctuality

The internal databases are updated daily. The statistical processing is performed once per month.

16. Comparability

16.1. Comparability — geographical

The data is collected centrally by the Network Manager, as required by the Regulation (EU) No 255/2010. In the scope of the Performance Regulation (390/2013), the data is transmitted to the EUROCONTROL Performance Review Unit and computed consistently for all the EU IR390 airports.

16.2. Comparability over time

Comparison over time is valid.

17. Coherence

17.1. Coherence — cross domain

Not available.

17.2. Coherence — internal

Data is fully coherent from an internal perspective.

18. Cost and burden

Not available.

19. Data revision

No data revision foreseen.

20. Statistical processing

20.1. Source data

The input variables used for the calculation are detailed in the Statistical concepts and definitions section.

20.2. Frequency of data collection

The data is collected on a daily basis and transmitted for statistical processing on a monthly basis.

20.3. Data collection

The data is collected by the Network manager for the purpose of Regulation (EU) No 255/2010 and transmitted to the EUROCONTROL Performance Review Unit for the implementation of the Performance Regulation (390/2013).

20.4. Data validation

The data is validation as described in the Quality Management section.

20.5. Data compilation

The departure time of a regulated flight is inside the slot tolerance window when its Actual Take-off time (ATOT) is in a window starting 5 minutes before and ending 10 minutes after its Calculated Take-Off time (CTOT), i.e.

$$CTOT - 5 \text{ min} \leq ATOT \leq CTOT + 10 \text{ min}$$

It should be acknowledged that the exceptional extension of the standard ATFM slot tolerance window [-5 minutes, +10 minutes], as described in the ATFCM User Manual under 4.6.4 “Adverse Operating Conditions at Aerodromes”, is **not** taken into account in the calculation of ATFM slot adherence. These exceptions represent in most cases less than 2% of regulated flights.

The adherence to ATFM slots determines the percentage of **regulated** flights with an ATOT inside the slot tolerance window.

The Actual Take-Off time of a flight can be determined when the NM received an ATC activation message from its departure airport. Therefore, the assessment is made only for those flights for which an activation message at the origin airport (FSA message) or a Departure message (DEP) is available.

20.6. Adjustment

Corrections may be made when issues are discovered as described in the Quality Assessment section of this document.

21. Comment

Disclaimer

This data is published by the Performance Review Body (PRB) of the Single European Sky. Every effort has been made to ensure that the information and analysis contained on this website are as accurate and complete as possible. Despite these precautions, should you find any errors or inconsistencies we would be grateful if you could please bring them to the Performance Review Unit's attention.

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ATC pre-departure delay

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The **ATC pre-departure delay** is the additional time that the aircraft is held at the stand to avoid queuing at the departure runway. It is a proxy of the delay which an aircraft ready to leave its gate can be subject to, at its origin airport, due to airports constraints, demand/capacity imbalances known prior to off-blocks, take-off restrictions and/or traffic intensity at the time of operations. It is however to be acknowledged that this indicator does not aim at filtering out push-back delays when these are generated by an apron management unit which is not under the control of the ANS provider.

As per the Commission Implementing Regulation (EU) No 390/2013, Annex I, Section 2, para 3.2, the ATC pre-departure delay is a performance indicator which will be collected for performance monitoring only, at national level with a breakdown at airport level. This performance indicator is further defined as follows:

- *“(i) the indicator is the average ATC pre-departure delay per outbound IFR flight;*
- *(ii) the indicator includes all IFR flights taking-off at the departure airport and covers delays in start up due to air traffic control constraints when the aircraft is ready to leave the departure stand;*
- *(iii) the indicator is calculated for the whole calendar year and for each year of the reference period.”*

As per EU IR390/2013, Annex V, para 3.1.(u), the causes for ATC pre-departure delay means the standard IATA delay codes as defined in Section F of CODA ^[1] Digest Annual 2011 ‘Delays to Air Transport in Europe’, with the duration of the delay. These delay causes relate to IATA delay Code 89 that aims at capturing off-block delays due to local ATC and push-back when the aircraft is ready to leave its stand. More specifically, these codes aim at reporting restrictions at airport of departure, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights.

Where several causes may be attributable to flight delays, a list of those causes shall be provided.

3.2. Classification system

ATC pre-departure delay is classified per Member State, with a breakdown for each airport subject to EU IR390.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

The **ATC pre-departure delay** is defined as the duration (in minutes) of delay as reported under IATA Code 89.

3.5. Statistical unit

The statistical unit is the airport. Airport level data is also aggregated to States.

3.6. Statistical population

The statistical population is the set of 'the 2nd reference period (RP2) airports' subject EU IR390/2013, within the Single European Sky Area.

3.7. Reference Area

The reference area is the Single European Sky Area of RP2 (2015-2019).

3.8. Time coverage

2015 is the first year for which data is presented in the scope of RP2.

3.9. Base period

Not applicable.

4. Unit of measure

The ATC pre-departure delay is measured in minutes per outbound IFR flight [min/departure].

5. Reference period

As fixed by the Performance Regulation (390/2013), the second reference period (RP2) for the performance scheme shall cover the calendar years 2015 to 2019 inclusive.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (390/2013).

7. Confidentiality

The information is public and disseminated in accordance with Article 21 of the Performance Regulation (390/2013).

8. Release policy

8.1. Release calendar

ATC pre-departure delay data is released monthly with yearly aggregates.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Data is published monthly with the annual performance aggregate being available in March of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

As per Performance Regulation (390/2013), Article 21 (3), *"The data providers shall take the necessary measures to ensure the quality, validation and timely transmission of the data, including providing evidence of their quality checks and validation processes, explanations in response to specific requests from the Commission regarding the quality of the data and, where necessary, action plans to improve data quality. The data shall be provided free of*

charge, in electronic form where applicable, using the format specified by the Commission."

The limitation of taxonomy and usage of IATA Code 89 has been acknowledged since many years. As an example, it is currently impossible to detect late push-back approval issued by an apron management body if it is not under ANS provider's responsibility.

The use of IATA delay sub-codes significantly improves the reporting accuracy. IATA delay sub-codes were introduced in the AHM731 (Airport Handling Manual) in 2011 and cater for more detailed reporting of ATC and reactionary delays. These sub-codes are already in use at some airports such as Dusseldorf and London Luton.

Data accuracy varies considerably across airports and airlines depending on the procedures which are in place to control the quality of Code 89 allocation. As per Article 21 (3) referred to above, both airports and airlines are encouraged to set up a clear process for appropriate allocation of Code 89 delay causes.

Although data providers are responsible for data quality, the EUROCONTROL Performance Review Unit performs data validation and quality checks.

12.1. Quality assurance

Data validation is performed by CODA, on behalf of PRU, on each data delivery by airports and airlines, and data validation report are returned to the data providers.

12.2. Quality assessment

Raw data is cross-checked with various sources (CODA, ANSP's, airport operators, airport coordinators and air carriers). A threshold is established for data coverage, and data that does not pass the quality threshold is rejected.

12.3. Completeness

The data is collected for all the RP2-airports. Data completeness is determined each month as per the above-mentioned quality checks. Any missing data is reported to the provider.

13. Relevance

The information is published for performance monitoring purposes in accordance with Article 3 of the Performance Regulation (EU) No 390/2013.

14. Accuracy and reliability

14.1. Overall accuracy

The accuracy of the measure is influenced by the availability and the reliability of both the duration and the IATA codes as reported by local bodies.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The information is published each month - in general around 30 days after the end of the month in question.

15.2. Punctuality

The internal databases are updated daily. The statistical processing is performed once per month.

16. Comparability

16.1. Comparability — geographical

The data is collected centrally by the EUROCONTROL Performance Review Unit ^[2] with delegation to CODA ^[1], and computed consistently for all the RP2-airports.

The interpretation of the measure and comparisons across airports require due consideration of prevailing local circumstances (airport infrastructure, etc.).

16.2. Comparability over time

Comparison over time is valid.

17. Coherence

17.1. Coherence — cross domain

Checks have been carried out with a number of airports and there is generally a good level of coherence between the indicator results and the results from performance measurement systems of airport operators.

17.2. Coherence — internal

Data is fully coherent from an internal perspective.

18. Cost and burden

Not available.

19. Data revision

Subject to changes (i.e. review of IATA codes by the European Airport Punctuality Network Group, EAPN), there might be a need to review ATC pre-departure delay accordingly.

20. Statistical processing

20.1. Source data

In accordance with Performance Regulation 390/2013, Annex IV, the data is collected centrally for all the RP2-airports.

The input variables used for the calculation are detailed in the Statistical concepts and definitions section.

20.2. Frequency of data collection

The data is collected and transmitted for statistical processing on a monthly basis.

20.3. Data collection

The data is collected by the EUROCONTROL Performance Review Unit ^[2] and the Central Office for Delay Analysis (CODA) ^[2].

20.4. Data validation

The data is validation as described in the Quality Management section.

20.5. Data compilation

ATC pre-departure delay is reported as provided by local bodies. There is no specific compilation.

20.6. Adjustment

Corrections may be made when issues are discovered as described in the Quality Assessment section of this document.

21. Comment

Disclaimer

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References

- [1] <https://www.eurocontrol.int/articles/central-office-delay-analysis-coda>

Glossary

(EU) No 390/2013

COMMISSION IMPLEMENTING REGULATION (EU) No 390/2013 of 3 May 2013 laying down a performance scheme for air navigation services and network functions.

REGULATION (EU) No 390/2013 ^[1]

References

[1] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:128:0001:0030:EN:PDF>

Additional time

In our framework, we refer to time which is added to the nominal flight time due to airport delays.

We are concerned with two types of additional time:

- Arrival Sequencing and Metering Area (ASMA)
- Taxi out

Aerodrome

Aerodrome is in our usage a synonym for Airport.

Air carrier

Article 2 of the Performance Scheme Regulation provides the following definitions

air carrier

Air carrier means an air transport undertaking with a valid operating license issued by a Member State in accordance with European Union Law.

airport coordinator

Airport coordinator means the function established at coordinated airports in application of EEC 95/93.

airport operator

Airport operator means the "managing body of an airport" as defined in EEC 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports.

binding target

Binding target means a performance target adopted by Member States as part of a national or functional airspace block performance plan and subject to an incentive scheme providing for rewards, disincentives and/or corrective action plans.

data

Data means qualitative, quantitative and other relevant information related to air navigation performance collected and systematically processed by, or on behalf of, the Commission for the purpose of the implementation of the performance scheme.

just culture

Just culture means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

key performance indicators

Key performance indicators means the performance indicators used for the purpose of performance target setting.

national authorities

National authorities means the regulatory authorities at national or functional airspace block level whose costs are eligible for recovery from airspace users when they are incurred in relation with the provision of air navigation services in application of Article 5(2) of Regulation (EC) No 1794/2006.

performance indicators

Performance indicators means the indicators used for the purpose of performance monitoring, benchmarking and reviewing.

performance monitoring

Performance Monitoring means the continuous process of collecting and analysing data in order to measure the actual output of a system versus predefined targets.

Air transport statistics

The following links provide perspectives on Statistics in Air Transport:

- Eurostat Air Transports Statistics Explained ^[1]
- Eurostat Reference Manual for Air Transport Statistics ^[2]
- Eurostat Illustrated Glossary for Transport Statistics ^[3]

References

- [1] http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Air_transport_statistics
[2] <http://epp.eurostat.ec.europa.eu/portal/page/portal/transport/documents/Aviation%20Reference%20Manual%20version%205.pdf>
[3] http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-RA-10-028

Aircraft interested

Interested flight:

A flight becomes "interested" in a certain route if that route is the shortest possible available. We refer here to "shortest distance" only. For more information, see the EUROCONTROL Guidelines for Airspace Management - the ASM Handbook ^[1].

References

- [1] <http://www.eurocontrol.int/airspace/gallery/content/public/ASM%20Handbook%20Ed3.pdf>

Airport

Airport in our usage is a synonym for Aerodrome.

A '691-airport' is an airport that is subject to Performance Regulation (691/2010).

Airport coordinator

Article 2 of the Performance Scheme Regulation provides the following definitions

air carrier

Air carrier means an air transport undertaking with a valid operating license issued by a Member State in accordance with European Union Law.

airport coordinator

Airport coordinator means the function established at coordinated airports in application of EEC 95/93.

airport operator

Airport operator means the "managing body of an airport" as defined in EEC 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports.

binding target

Binding target means a performance target adopted by Member States as part of a national or functional airspace block performance plan and subject to an incentive scheme providing for rewards, disincentives and/or corrective action plans.

data

Data means qualitative, quantitative and other relevant information related to air navigation performance collected and systematically processed by, or on behalf of, the Commission for the purpose of the implementation of the performance scheme.

just culture

Just culture means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

key performance indicators

Key performance indicators means the performance indicators used for the purpose of performance target setting.

national authorities

National authorities means the regulatory authorities at national or functional airspace block level whose costs are eligible for recovery from airspace users when they are incurred in relation with the provision of air navigation services in application of Article 5(2) of Regulation (EC) No 1794/2006.

performance indicators

Performance indicators means the indicators used for the purpose of performance monitoring, benchmarking and reviewing.

performance monitoring

Performance Monitoring means the continuous process of collecting and analysing data in order to measure the actual output of a system versus predefined targets.

Airport Fact-Sheet

Airport Fact-Sheet

A document defined by the ATMAP project which provided both static and dynamic data about an airport. The standard factsheet is composed of 5 pages:

- two pages of explanations and definitions
- one page describing the main performance affecting factors at the airport (No of runways, noise constraints, weather, etc.)
- two pages of performance indicators (one for IATA summer season and one for IATA winter season); each of the page is divided into two sections: air transport operational performance and ANS performance at the airport.

You could find an example at the following link ^[1]

References

[1] <http://prudata.webfactional.com/airports>

Airport operator

Article 2 of the Performance Scheme Regulation provides the following definitions

air carrier

Air carrier means an air transport undertaking with a valid operating license issued by a Member State in accordance with European Union Law.

airport coordinator

Airport coordinator means the function established at coordinated airports in application of EEC 95/93.

airport operator

Airport operator means the "managing body of an airport" as defined in EEC 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports.

binding target

Binding target means a performance target adopted by Member States as part of a national or functional airspace block performance plan and subject to an incentive scheme providing for rewards, disincentives and/or corrective action plans.

data

Data means qualitative, quantitative and other relevant information related to air navigation performance collected and systematically processed by, or on behalf of, the Commission for the purpose of the implementation of the performance scheme.

just culture

Just culture means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

key performance indicators

Key performance indicators means the performance indicators used for the purpose of performance target setting.

national authorities

National authorities means the regulatory authorities at national or functional airspace block level whose costs are eligible for recovery from airspace users when they are incurred in relation with the provision of air navigation services in application of Article 5(2) of Regulation (EC) No 1794/2006.

performance indicators

Performance indicators means the indicators used for the purpose of performance monitoring, benchmarking and reviewing.

performance monitoring

Performance Monitoring means the continuous process of collecting and analysing data in order to measure the actual output of a system versus predefined targets.

Airport Slot

Airport Slot

An airport slot is defined as the scheduled time of arrival or departure available for allocation by, or as allocated by, a coordinator for an aircraft movement on a specific date at a coordinated airport (Level 3 of Airport Activity). For scheduling purposes, the slot is the scheduled time of arrival or departure at the terminal, not the time of landing or takeoff from the runway (see IATA Worldwide Scheduling Guidelines Effective January 2010, 19th Edition). Airport slot is a time window of 30 minutes, starting 15 minutes before and ending 15 minutes after off/on block time. See the difference between Airport slot and ATFM slot, which are often confused.

Airspace users representative

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004 ^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],
- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation

service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004 ^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

References

[1] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R0550:20091204:EN:PDF>

[2] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R0549:20091204:EN:PDF>

ANSP

Air Navigation Services Provider

See: <https://extranet.eurocontrol.int/http://atmllexicon.eurocontrol.int/lexicon/en/index.php/ANSP>

Arrival sequencing and metering area (ASMA) additional time

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The **additional ASMA time** is a proxy for the average arrival runway queuing time on the inbound traffic flow, during congestion periods at airports.

It is the difference between the actual ASMA time of a flight and a statistically determined unimpeded ASMA time based on ASMA times in periods of low traffic demand (see also **Unimpeded ASMA time - Technical Note**).

Uncertainty of approach conditions (e.g. pilot performance, landing clearance time, approach speed, wind conditions) makes traffic supply to runways a stochastic phenomenon. In order to ensure continuous traffic demand at runways and maximise runway usage, a minimum level of queuing is required. However, additional time in holding is detrimental to operations efficiency, fuel consumption and environment. Therefore, there exists a trade-off between approach efficiency and runway throughput.

As an output of the ATMAP Group, the additional ASMA time PI has been in use as a commonly agreed proxy for airport inefficiencies in the approach phase since 2008 and is compliant with the KPI definition in EU legislation.

3.2. Classification system

Additional ASMA time is classified per Member State, with a breakdown for each airport subject to performance monitoring within the SES performance scheme.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

The **Arrival Sequencing and Metering Area (ASMA)** is defined as a virtual cylinder with a 40-NM radius around the airport. The actual time spent by a flight between its last entry in the cylinder (Entry-time at 40 NM upstream) and the actual landing time (ALDT) is denoted **ASMA transit time**.

A **Unimpeded ASMA time** is determined for each group of flights with the same parameters (i.e. aircraft class, ASMA entry sector, arrival runway) and represents the transit time in non congested conditions.

The **Additional ASMA time** is the difference between the actual ASMA transit time and the unimpeded ASMA time calculated for non-congested conditions.

3.5. Statistical unit

The statistical unit is the airport. Airport level data is also aggregated to States.

3.6. Statistical population

The statistical population is the set of airports subject to performance monitoring within the SES performance scheme.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

2011 is the first year for which data is presented.

3.9. Base period

Not applicable.

4. Unit of measure

The additional ASMA time is measured in minutes per IFR arrival [min/arr].

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (691/2010) and Commission Implementing Regulation (EU) No 390/2013.

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

Additional ASMA time is released monthly with yearly aggregates.

8.2. Release calendar access

Not applicable

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Data is published monthly with the annual performance aggregate being available in January of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

Although data providers are responsible for data quality, the EUROCONTROL Performance Review Unit ^[2] performs data validation and quality checks.

12.1. Quality assurance

Data validation is performed by CODA, on behalf of PRU, on each data delivery by airports, and data validation report are returned to the data providers.

12.2. Quality assessment

Raw data is cross-checked with various sources (Network Manager, ANSP's, airport operators, airport coordinators and air carriers). A quality threshold is established, and data that does not pass the quality threshold is rejected.

If a field is found to be blank, it is tried to fill the missing value from an alternative data source (i.e. a missing aircraft type in the airport data flow can be filled with information from the Network Manager).

12.3. Completeness

The data is collected for all airports subject to performance monitoring within the SES performance scheme. Data completeness is determined each month as per the above-mentioned quality checks. Any missing data is reported to the provider.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

14. Accuracy and reliability

14.1. Overall accuracy

The accuracy of the measure is influenced by the availability of the entry point/runway configuration.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The information is published each month - in general around 30 days after the end of the month in question.

15.2. Punctuality

The internal databases are updated daily. The statistical processing is performed once per month.

16. Comparability

16.1. Comparability — geographical

The data is collected centrally by the EUROCONTROL Performance Review Unit^[2] with delegation to CODA^[1] and computed consistently for all airports subject to performance monitoring within the SES performance scheme.

The interpretation of the measure and comparisons across airports require due consideration of prevailing local circumstances (airport infrastructure, etc.).

16.2. Comparability over time

Comparison over time is valid.

17. Coherence

17.1. Coherence — cross domain

Checks have been carried out with a number of airports and there is generally a good level of coherence between the indicator results and the results from performance measurement systems of airport operators.

17.2. Coherence — internal

Data is fully coherent from an internal perspective.

18. Cost and burden

Not available.

19. Data revision

Subject to changes (i.e. airspace design), there might be a need to change unimpeded times accordingly.

20. Statistical processing

20.1. Source Data

In accordance with EU legislation, the data is collected centrally for all the airports subject to performance monitoring within the SES performance scheme.

The input variables used for the calculation are detailed in the Statistical concepts and definitions section.

20.2. Frequency of data collection

The data is collected on a daily basis and transmitted for statistical processing on a monthly basis.

20.3. Data collection

The data is collected by the EUROCONTROL Performance Review Unit ^[2] and the Central Office for Delay Analysis (CODA) ^[2].

20.4. Data validation

The data is validation as described in the Quality Management section.

20.5. Data compilation

The ASMA area is defined as a 40-NM radius cylinder.

Calculation of the indicator

Let

- c , a combination of aircraft class, ASMA sectors and arrival runway, as described in the technical note for unimpeded ASMA time,
- $f(c)$ a flight characterised by a combination c ,
- $Ac_{ASMA}(f(c))$ the actual ASMA transit time for a flight $f(c)$, i.e. the elapsed time between the last entry of the flight $f(c)$ in its ASMA sector and its actual landing time (ALDT),
- $U_{ASMA}(c)$ the unimpeded ASMA time for a combination c .

The additional ASMA time $AdASMA(f(c))$ is calculated for each flight $f(c)$ as the difference between the actual ASMA transit time $AcASMA(f(c))$ of the flight and the unimpeded ASMA time $UASMA(c)$:

$$AdASMA(f(c)) = AcASMA(f(c)) - UASMA(c)$$

The additional ASMA time $AdASMA(c)$ for a given combination c is the average of the additional ASMA time $AdASMA(f(c))$ of all the flight $f(c)$ characterised by that combination c .

The additional ASMA time $AdASMA$ for a given airport is the weighted average of the additional ASMA time $AdASMA(c)$, for all the combinations c at that airport with their probability of occurrence.

20.6. Adjustment

Corrections may be made when issues are discovered as described in the Quality Assessment section of this document.

21. Comment

Disclaimer

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The information may be copied in whole or in part providing that the copyright notice and disclaimer are included. The information may not be modified without prior written permission from the PRB. The views expressed herein do not necessarily reflect the official views or policy of EUROCONTROL or of the European Commission, which make no warranty, either implied or express, for the information contained on this website, neither do they assume any legal liability or responsibility for the accuracy, completeness or usefulness of this information. The PRB reserves the right to change or amend the information provided at any time and without prior notice.

AST

Annual Summary Template

ATFM Airport Delay

For a full definition cf. https://extranet.eurocontrol.int/http://atmlexicon.eurocontrol.int/lexicon/en/index.php/ATFM_airport_delay

For Meta-Data concerning the SES indicator, cf. ATFM delays attributable to terminal and airport ANS.

ATFM delay

cf. https://extranet.eurocontrol.int/http://atmlexicon.eurocontrol.int/lexicon/en/index.php/ATFM_delay

ATFM delay causes group

ATFM delay causes groups

ATC & Aerodrome Capacity

code C : ATC Capacity

code G : Aerodrome Capacity

code S : ATC Staffing

ATC Other

code V : Environmental Issues

code I : Industrial Action (ATC)

code R : ATC Routeing

code T : Equipment (ATC)

Weather

code W : Weather

code D : De-icing

All other causes

code A : Accident/incident

code E : Equipment (non-ATC)

code M : Military activity

code N : Industrial Action (non-ATC)

code O : Other

code P : Special event

The exhaustive list of all ATFM delay causes can be found out in the ATFCM Users Manual ^[1], Annex 6. This Annex also reports the correlation between the regulation causes and the IATA delay codes.

References

[1] http://www.cfm.eurocontrol.int/cfm/gallery/content/public/library/handbook_supplements/basic_handbook/docu_atfm_users_manual_latest.pdf

ATFM En route Delay

cf. https://extranet.eurocontrol.int/http://atmlexicon.eurocontrol.int/lexicon/en/index.php/ATFM_en-route_delay

ATFM regulation

cf. https://extranet.eurocontrol.int/http://atmlexicon.eurocontrol.int/lexicon/en/index.php/ATFM_measure

ATMAP

Average horizontal en-route efficiency

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The measure provides an indication of the flight efficiency en route.

The **average horizontal en-route flight efficiency** indicator compares the length of the en-route part of flight trajectories with a corresponding portion of the Great Circle (defined with respect to the reference area). 'En-route' is defined as the distance flown outside a circle of 40 NM around the airport.

In the first reference period (2012-14) the calculation of the KPI is based on the Filed Tactical Flight Model (FTFM) which corresponds to the last filed flight plan (see also Horizontal flight efficiency calculations).

3.2. Classification system

Average horizontal en route inefficiency is calculated for the reference area.

Complementary to the EU-wide KPI, a number of additional Horizontal flight efficiency calculations are carried out for monitoring purposes.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

Of interest for the calculation are the Great Circle reference area end-points (referred to as onset and terminus) and the couple(s) of entry/exit points in the measured area of the en-route portion of the flight model (i.e., excluding a 40 NM circle around the airports). More details are provided in Horizontal flight efficiency calculations.

3.5. Statistical unit

The statistical unit is a geographical area.

3.6. Statistical population

The statistical population comprises only one geographic area in RP1: the Single European Sky Area. In RP2 it includes units at the local level (e.g., FABs).

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

Data is available from 2011.

3.9. Base period

Not applicable.

4. Unit of measure

The KPI is presented as a percentage.

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (691/2010) and Commission Implementing Regulation (EU) No 390/2013.

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

The indicator values are released monthly.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

Data is published monthly with the annual performance aggregate being available in January of the following year.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing or in Horizontal flight efficiency calculations please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

12.1. Quality assurance

The data is provided by the Network manager and as such it is their responsibility to perform any quality assurance activities.

EUROCONTROL ^[1] is not responsible for the procedures and processes used in the production of this data.

12.2. Quality assessment

Data is validated by random quality checks, e.g. missing data for given a day, adherent data, etc. Any issues are reported to the Network manager who works with the EUROCONTROL Performance Review Unit ^[2] to resolve them.

12.3. Completeness

It is assumed that the Network manager provides complete data for the entire Single European Sky Area.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

14. Accuracy and reliability

14.1. Overall accuracy

This data is provided by the Network manager and apart from the basic consistency checks, it is assumed that the data is accurate.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The data is published each month - in general between 14 and 16 days after the end of the month in question.

15.2. Punctuality

To be determined.

16. Comparability

16.1. Comparability — geographical

Not applicable: there is only one reference area.

16.2. Comparability over time

It is assumed that this highly aggregated indicator will remain comparable over time.

17. Coherence

17.1. Coherence - cross domain

Generally, data should be similar to flight efficiency data published in other sources.

17.2. Coherence - internal

The data is assumed to be internally coherent as provided.

18. Cost and burden

Not available.

19. Data revision

The data revision policy has not yet been defined.

20. Statistical processing

20.1. Source data

The source data is provided by the Network manager and is processed by EUROCONTROL ^[1].

20.2. Frequency of data collection

The data is collected daily.

20.3. Data collection

The Network manager provides information concerning several different Flight models and their intersections with airspace of interest, such as the TMA areas around the airports and the FIRs.

20.4. Data validation

The data is validated as part of the quality assessment described in Section 12.2.

20.5. Data compilation

Computation of the en route section and the quantities needed for the computation of the KPI are performed at EUROCONTROL ^[1] and stored in a local database.

The calculation of the KPI in the 1st reference period (2012-14) is based on the Filed Tactical Flight Model (FTFM) which corresponds to the last filed flight plan (see also Horizontal flight efficiency calculations).

20.6. Adjustment

No adjustments are performed on this data, although invalid data elements are rejected.

21. Comment

No comments.

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Binding target

Article 2 of the Performance Scheme Regulation provides the following definitions

air carrier

Air carrier means an air transport undertaking with a valid operating license issued by a Member State in accordance with European Union Law.

airport coordinator

Airport coordinator means the function established at coordinated airports in application of EEC 95/93.

airport operator

Airport operator means the "managing body of an airport" as defined in EEC 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports.

binding target

Binding target means a performance target adopted by Member States as part of a national or functional airspace block performance plan and subject to an incentive scheme providing for rewards, disincentives and/or corrective action plans.

data

Data means qualitative, quantitative and other relevant information related to air navigation performance collected and systematically processed by, or on behalf of, the Commission for the purpose of the implementation of the performance scheme.

just culture

Just culture means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

key performance indicators

Key performance indicators means the performance indicators used for the purpose of performance target setting.

national authorities

National authorities means the regulatory authorities at national or functional airspace block level whose costs are eligible for recovery from airspace users when they are incurred in relation with the provision of air navigation services in application of Article 5(2) of Regulation (EC) No 1794/2006.

performance indicators

Performance indicators means the indicators used for the purpose of performance monitoring, benchmarking and reviewing.

performance monitoring

Performance Monitoring means the continuous process of collecting and analysing data in order to measure the actual output of a system versus predefined targets.

Booking and Release Procedures

The indicator "Booking and Release Procedures" monitors the actual use of SUAs compared to the number of hours that they were notified as being restricted or segregated from general air traffic.

It is compiled using the number of hours that shared use airspace (SUA) has been reserved for restriction or segregation from general air traffic; the number of hours that it was subsequently used for such activity.

Additionally, the number of hours that previously reserved airspace were returned for use by general air traffic, with a notification period of three hours or more, is monitored.

Calculated Take-Off Time

cf. https://extranet.eurocontrol.int/http://atmllexicon.eurocontrol.int/lexicon/en/index.php/Calculated_Take-Off_Time

CATM

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004 ^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],
- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred

by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004 ^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

CDR

Conditional Route

see http://www.eurocontrol.int/airspace/public/standard_page/148_FUA.html

CFMU

The EUROCONTROL Central Flow Management Unit is now part of the EUROCONTROL Directorate of Network Management.

see <http://www.cfm.eurocontrol.int> ^[1]

References

[1] <http://www.cfm.eurocontrol.int>

Charging Scheme Regulation Article 2 definitions

Article 2 of the charging scheme regulation provides the following definitions

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Correlated Position Report (CPR)

Abbreviation

CPR

Definition

Aircraft position data derived from Air Traffic Control (ATC) surveillance systems, normally updated every 1 to 3 minutes.

Definition Source

EUROCONTROL, CFMU Glossary 2011

CRCO

EUROCONTROL's **Central Route Charges Office**, the CRCO ^[1].

References

[1] <http://www.eurocontrol.int/content/route-charges>

Current Tactical Flight Model (CTFM)

Abbreviation

CTFM

Definition

A mathematical model containing a point profile and airspace volume profile created in the Enhanced Tactical Flow Management System (ETFMS) for a flight which has been activated.

Definition Source

EUROCONTROL, CFMU Glossary 2011

DAIO classification

The DAIO classification considers the location of an airport with respect to an area (reference or measured):

DAIO code	Class	Departure Airport	Arrival Airport
D	Departing	Inside	Outside
A	Arriving	Outside	Inside
I	Internal	Inside	Inside
O	Over	Outside	Outside

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-

^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],

- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004 ^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

Determined Unit Rate for en-route-ANS

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The measure addresses the costs for the provision of en route air navigation services.

In accordance with EU IR691/2010, Single European Sky Area States are required to adopt performance targets contributing adequately to and consistent with the EU wide targets. The cost efficiency KPI for the first reference period is the **Determined Unit Rate for en route Air Navigation Services**.

The en route ANS Determined Unit Rate is defined as the en route determined costs (in real terms) divided by the total en route service units. The yearly values of the determined costs are fixed in advance, for the entire reference period. While monitoring performance, the en route actual unit cost (en route actual costs/actual en route service units) is compared against the determined unit rate.

It must be noted that the determined en route unit rates differ from the actual en route unit rates charged to users in application of the Charging Regulation which also takes into account, where applicable:

- the application of the difference between forecast and actual inflation,
- the carry-overs resulting from the implementation of the traffic risk-sharing,
- the carry-overs from the previous reference period resulting from the implementation of the cost risk-sharing,
- bonuses and penalties resulting from the financial incentives to the achievement of capacity performance targets,
- the over or under recoveries incurred by Member States up to the year 2011 included (for the first two reference periods),
- a deduction of the costs of VFR flights,
- a deduction for income from other revenues, where applicable.

3.2. Classification system

En route air navigation services determined unit rates are classified per En Route Charging Zone within the Single European Sky Area.

Generally, an En Route Charging Zone belongs to a single Country. In the context of the Single European Sky Area, Belgium and Luxembourg are the only States to have established a single shared en route charging zone.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

Costs are expressed as:

- Euro or National currencies outside the Euro area,
- costs in Real terms,
- costs in Nominal terms.

3.5. Statistical unit

The statistical unit is the En Route Charging Zone.

3.6. Statistical population

The statistical population comprises the En Route Charging Zones of the Single European Sky Area.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

Actual Costs are measured over the period 2009 to the year before the current year.

Forecasts cover the period from the present year through the end of the reference period.

3.9. Base period

2009 is the base year for the calculation of cost series in *real terms*.

4. Unit of measure

The en route determined unit rates are measured in:

- Local currency in real terms,
- EUR in real terms.

Real terms values are corrected for inflation relative to the base year.

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in:

Commission Implementing Regulation (EU) No 390/2013	laying down a performance scheme for air navigation services and network functions
Commission Implementing Regulation (EU) No 691/2010	laying down a performance scheme for air navigation services and network functions
EC 1794/2006	Defines the common European charging scheme for Air Navigation
EC 549/2004	Defines the single European sky framework for Air Navigation
EC 550/2004	Defines the provision of air navigation services in the single European sky

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

The monitoring data concerning the en route ANS determined unit rates are released on a yearly basis in June/July, after the June meeting of the Eurocontrol Enlarged Committee for Route Charges.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

The en route ANS determined unit rates are published at the beginning of the reference period and the actual unit costs are monitored on a yearly basis.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int [3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

12.1. Quality assurance

The data is provided by the concerned States and as such it is their responsibility to perform any quality assurance activities.

EUROCONTROL ^[1] is not responsible for the procedures and processes used in the production of this data.

12.2. Quality assessment

EUROCONTROL ^[1] performs systematic checks to verify that totals do indeed equal the sum of their parts. However, if discrepancies are found, they are simply reported to data provider who may or may not make corrections.

EUROCONTROL ^[1] does not change data elements nor does it prevent the publication of data that failed to verify the checks.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

13.3. Completeness

Data completeness is determined each year as per the above-mentioned quality checks. Any missing data is reported to the provider.

14. Accuracy and reliability

14.1. Overall accuracy

This data is provided by the States and displayed as provided. It is assumed that the States have provided perfectly accurate data.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The latest data displayed represents costs and rates that are at least eleven months old.

15.2. Punctuality

The data is provided by the States in June and November and is displayed to the public at the end of November.

16. Comparability

16.1. Comparability - geographical

Depending on the State, en route services may be more or less complex, traffic may be more or less dense, the geographical extent varies, etc. rendering difficult the validity of geographical comparison. Groups of States with similar operational and economic environment have been defined for comparison and benchmarking purposes. The comparator groups which were considered during the assessment of the States' performance plans for the first reference period are presented on page 50 of the Performance Review Body Assessment Report of 20 Sept. 2011 ^[1]

16.2. Comparability over time

Comparability over time is valid.

17. Coherence

17.1. Coherence — cross domain

Generally, data should be coherent with ATM Cost-effectiveness (ACE) information ^[2].

17.2. Coherence — internal

The data is assumed to be internally coherent as provided.

18. Cost and burden

Not available.

19. Data revision

The data revision policy has not yet been defined.

20. Statistical processing

20.1. Source data

Target Data

En route ANS Determined Unit Rates and related data

National/FAB performance plans adopted by the States for the first reference period.

Exchange rates (2009)

National/FAB performance plans adopted by the States for the first reference period.

Inflation rates

Forecast data: National/FAB performance plans adopted by the States for the first reference period.

Monitoring Data

Actual en route costs

States' charging reporting tables as defined in the annexes of EC 1794/2006 provided to the Eurocontrol Enlarged Committee for Route Charges (except Estonia which provides data directly to the European Commission).

Actual en route service units

CRCO annual "Reports on the Operation of the Route Charges System" (except Estonia).

Inflation rate

Actual data: Eurostat website (HICP All items).

20.2. Frequency of data collection

The data is collected twice a year (June & November) except for Estonia which provides data on a yearly basis.

20.3. Data collection

Air navigation service providers are required to fill reporting tables for each En route Charging Zone under their responsibility and supply it to the European Commission (Charging Regulation). All States, except Estonia, present these tables to the Eurocontrol Enlarged Committee for Route Charges in June and November. Estonia provides data on a yearly basis to the European Commission.

20.4. Data validation

The data is validated by the States/data providers under their own responsibility.

20.5. Data compilation

The data provided is loaded into databases at EUROCONTROL ^[1]. The actual unit costs are computed on the basis of the data provided, as per the definitions.

20.6. Adjustment

Depending on the exact methodology applied in the individual performance plans, the actual costs and service unit may be adjusted to correspond.

21. Comment

No comments.

Disclaimer

This data is published by the Performance Review Body (PRB) of the Single European Sky. Every effort has been made to ensure that the information and analysis contained on this website are as accurate and complete as possible. Despite these precautions, should you find any errors or inconsistencies we would be grateful if you could please bring them to the Performance Review Unit's attention.

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References

- [1] <http://www.eurocontrol.int/prc/gallery/content/public/Docs/PRB%20Final%20Report%20-%20P.%20Plan%20Assessment%20-%20Volume%20I.pdf>
- [2] http://www.eurocontrol.int/prc/public/standard_page/doc_ace_reports.html

EC 1794/2006

Commission Regulation (EC) No 1794/2006 of 6 December 2006 laying down a common charging scheme for air navigation services: (EC) No 1794/2006 ^[1]

References

- [1] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2006R1794:20101220:EN:PDF>
-

EC 1794/2006 Article 2 definitions

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004 ^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],
- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation

service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004 ^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

EC 2150/2005

COMMISSION REGULATION (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace:

REGULATION (EC) No 2150/2005 ^[1]

References

[1] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:342:0020:0025:EN:PDF>

EC 255/2010

COMMISSION REGULATION (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:080:0010:0016:EN:PDF>

EC 549/2004

REGULATION (EC) No 549/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 10 March 2004 laying down the framework for the creation of the single European sky, more commonly known as the "Framework Regulation."

REGULATION (EC) No 549/2004 ^[2]

EC 550/2004

Regulation (EC) No 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the single European sky:

The Service Provision Regulation EC 550/2004 ^[1]

ECAC

European Civil Aviation Conference

see <https://www.ecac-ceac.org/>

ECCAIRS

European Co-ordination Centre for Aviation Incident Reporting System (ECCAIRS)

EEC 95/93

COUNCIL REGULATION (EEC) No 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports: EEC No 95/03 ^[1].

References

[1] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1993R0095:20050730:EN:PDF>

En route ANS determined unit rate

The determined unit rate for en route air navigation services is defined in the Performance Regulation EU IR691/2010 as below. All references are to articles in that regulation:

- the indicator is the result of the ratio between the en route determined costs and the forecast traffic contained in the performance plans in accordance with Article 10(3)(a) and (b),
- the indicator is expressed in national currency and in real terms,
- the indicator is provided for each year of the reference period.

En route ANS Service Unit

En route air navigation charges, i.e. the price paid by airspace users, are equal to the total number of en route service units multiplied by the en route unit rate.

En route service units are defined in the Annex IV of the charging scheme regulation (all references below refer to articles of this regulation):

1. Calculation of en route service units

1.1. The en route service unit shall be calculated as the multiplication of the distance factor and the weight factor for the aircraft concerned.

1.2. The distance factor shall be obtained by dividing by one hundred the number of kilometres flown in the great circle distance between the entry and the exit point of the charging zones, according to the latest known flight plan filed by the aircraft concerned for air traffic flow purposes.

1.3. If the exit and entry point of one flight are identical in a charging zone, the distance factor shall be equal to the distance in the great circle distance between these points and the most distant point of the flight plan multiplied by two.

1.4. The distance to be taken into account shall be reduced by 20 kilometres for each take-off from and for each landing on the territory of a Member State.

1.5. The weight factor, expressed as a figure taken to two decimal places, shall be the square root of the quotient obtained by dividing by fifty the number of metric tons in the maximum certificated take-off weight of the aircraft as shown in the certificate of airworthiness or any equivalent official document provided by the aircraft operator.

Where this weight is unknown, the weight of the heaviest aircraft of the same type known to exist shall be used. Where an aircraft has multiple certificated maximum take-off weights, the maximum one shall be used. Where an aircraft operator operates two or more aircraft which are different versions of the same type, the average of the maximum take-off weights of all his aircraft of that type shall be used for each aircraft of that type. The calculation of the weight factor per aircraft type and per operator shall be effected at least once a year.

En route ANS service units

En route air navigation charges, i.e. the price paid by airspace users, are equal to the total number of en route service units multiplied by the en route unit rate.

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En route ANS unit rate

En route unit rates represent the unit price paid by airspace users, mainly commercial airlines, for the air navigation services provided, mainly air traffic control.

Terminal ANS unit rates are defined in the Annex IV of the charging scheme regulation (all references below refer to articles of this regulation):

2. Calculation of en route unit rates

2.1. The en route unit rate shall be calculated before the beginning of each year of the reference period.

2.2. It shall be calculated by dividing the forecast number of total en route service units for the relevant year into the algebraic sum of the following elements:

- the determined costs of the relevant year,
- the application of the difference between forecasted and actual inflation as referred to in Article 6(1),
- the carry-overs resulting from the implementation of the traffic risk-sharing referred to in Article 11a(2) to (7),
- the carry-overs from the previous reference period resulting from the implementation of the cost risk-sharing referred to in Article 11a(8),
- bonuses and penalties resulting from the financial incentives referred to in Article 12(2),
- for the first two reference periods, the over or under recoveries incurred by Member States up to the year 2011 included,
- a deduction of the costs of VFR flights as identified in Article 7(4).

En route charging zone

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference

period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004^[2],

- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

En route service units

En route air navigation charges, i.e. the price paid by airspace users, are equal to the total number of en route service units multiplied by the en route unit rate.

En route service units are defined in the Annex IV of the charging scheme regulation (all references below refer to articles of this regulation):

1. Calculation of en route service units

1.1. The en route service unit shall be calculated as the multiplication of the distance factor and the weight factor for the aircraft concerned.

1.2. The distance factor shall be obtained by dividing by one hundred the number of kilometres flown in the great circle distance between the entry and the exit point of the charging zones, according to the latest known flight plan filed by the aircraft concerned for air traffic flow purposes.

1.3. If the exit and entry point of one flight are identical in a charging zone, the distance factor shall be equal to the distance in the great circle distance between these points and the most distant point of the flight plan multiplied by two.

1.4. The distance to be taken into account shall be reduced by 20 kilometres for each take-off from and for each landing on the territory of a Member State.

1.5. The weight factor, expressed as a figure taken to two decimal places, shall be the square root of the quotient obtained by dividing by fifty the number of metric tons in the maximum certificated take-off weight of the aircraft as shown in the certificate of airworthiness or any equivalent official document provided by the aircraft operator. Where this weight is unknown, the weight of the heaviest aircraft of the same type known to exist shall be used. Where an aircraft has multiple certificated maximum take-off weights, the maximum one shall be used. Where an aircraft operator operates two or more aircraft which are different versions of the same type, the average of the maximum take-off weights of all his aircraft of that type shall be used for each aircraft of that type. The calculation of the weight factor per aircraft type and per operator shall be effected at least once a year.

En-route ANS unit rate

En route unit rates represent the unit price paid by airspace users, mainly commercial airlines, for the air navigation services provided, mainly air traffic control.

Terminal ANS unit rates are defined in the Annex IV of the charging scheme regulation (all references below refer to articles of this regulation):

2. Calculation of en route unit rates

2.1. The en route unit rate shall be calculated before the beginning of each year of the reference period.

2.2. It shall be calculated by dividing the forecast number of total en route service units for the relevant year into the algebraic sum of the following elements:

- the determined costs of the relevant year,
- the application of the difference between forecasted and actual inflation as referred to in Article 6(1),
- the carry-overs resulting from the implementation of the traffic risk-sharing referred to in Article 11a(2) to (7),
- the carry-overs from the previous reference period resulting from the implementation of the cost risk-sharing referred to in Article 11a(8),
- bonuses and penalties resulting from the financial incentives referred to in Article 12(2),
- for the first two reference periods, the over or under recoveries incurred by Member States up to the year 2011 included,
- a deduction of the costs of VFR flights as identified in Article 7(4).

Enhanced Tactical Flow Management System (ETFMS)

Abbreviation

ETFMS

Definition

a supporting tool for coordination between ATM, ATFCM, ATC, Airports and Aircraft Operators, providing global data to be shared throughout the ECAC and adjacent States, and a monitoring tool and support for decision making in short-term tactical actions. ATFCM and flight data are improved with current traffic position data and airport information.

See also: Enhanced Tactical Flow Management System – ETFMS web site ^[1]

Definition Source

EUROCONTROL (2010)

References

[1] <http://www.eurocontrol.int/network-operations/etfms>

Estimated Take-Off Time

cf. <https://extranet.eurocontrol.int/http://atmlexicon.eurocontrol.int/lexicon/en/index.php/ETOT>

EU IR691/2010

COMMISSION REGULATION (EU) No 691/2010 of 29 July 2010 laying down a performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation services

REGULATION (EU) No 691/2010 ^[1]

References

[1] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:201:0001:0022:EN:PDF>

EU wide targets

EU Wide Performance Targets RP1 2012-2014

During the first semester of 2010, the PRB, in consultation with Stakeholders, developed proposals for EU-wide targets. This resulted in the PRB report: Proposed EU-wide performance targets for the period 2012-2014 (September 2010) ^[1].

On this basis, the European Commission has adopted a Commission Decision ^[2] setting the EU-wide performance targets and alert thresholds for the period 2012-2014:

- the EU-wide Environment target is a reduction of -0.75% of the route extension in 2014 compared with 2009;
- the EU-wide Capacity target is set at 0.5 minute en-route ATFM delay per flight for the whole year 2014; and
- the EU-wide Cost-efficiency target is a set of three en-route determined unit rates expressed in €2009 per service unit: €57.88 in 2012, €55.87 in 2013 and €53.92 in 2014.

References

[1] <http://www.eurocontrol.int/sites/default/files/content/documents/single-sky/pru/performance-targets/rp1-eu-wide-targets-report-27092010.pdf>

[2] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:048:0016:0018:EN:PDF>

Eurocontrol Enlarged Committee for Route Charges

The EUROCONTROL ^[1] **Enlarged Committee for Route Charges** consisting of Member States' representatives at senior level, is the executive body in charge of supervising the operation of the system, and of preparing the decisions of the enlarged Commission. It is assisted in this function by the Eurocontrol Agency: Route charges system governance ^[1]

References

[1] <http://www.eurocontrol.int/articles/route-charges-system-governance>

Eurostat

Eurostat ^[1] is a Directorate-General ^[2] of the European Commission ^[3] located in Luxembourg.

Its main responsibilities are to provide the European Union ^[4] with statistical information at European level and to promote the harmonisation of statistical methods across the Member States of the European Union ^[5], candidate countries ^[6] and EFTA ^[7] countries.

The organisations in the different countries which actively cooperate with Eurostat are summarised under the concept of the European Statistical System.

References

[1] <http://ec.europa.eu/eurostat>

[2] <http://en.wikipedia.org/wiki/Directorate-General>

[3] http://en.wikipedia.org/wiki/European_Commission

[4] http://en.wikipedia.org/wiki/European_Union

[5] http://en.wikipedia.org/wiki/Member_State_of_the_European_Union

[6] http://en.wikipedia.org/wiki/Enlargement_of_the_European_Union

[7] http://en.wikipedia.org/wiki/European_Free_Trade_Association

FAB

Filed Tactical Flight Model (FTFM)

Abbreviation

FTFM

Definition

A mathematical model containing a point and airspace volume profile created in Enhanced Tactical Flow Management System (ETFMS) for a flight when Flight plan details, and any subsequent changes, are received from Central Flow Management Unit (CFMU).

Definition Source

EUROCONTROL, CFMU Glossary, Sept. 2011

Financial incentives

Article 12 of the EU Charging Regulation states:

Incentive Schemes

[...]

2. In accordance with Article 11 of Regulation (EU) No 691/2010, Member States, at national or functional airspace block level, may adopt financial incentives for the achievement of performance targets by their air navigation service providers. The unit rate may be adjusted to provide for a bonus or penalty according to the actual performance level of the air navigation service provider against the relevant target. Such bonuses or penalties shall only be activated where performance variations have a substantive impact on users. The applicable level of bonuses and penalties shall be commensurate with the targets to be reached and the performance achieved. The performance variation levels and the applicable level of bonuses and penalties shall be determined following the offer to consult referred to in Article 8 and set by the national or functional airspace block performance plan.

[...]

Flight model

There are several trajectories of interest for the analysis of horizontal flight efficiency:

FTFM

Filed Tactical Flight Model, corresponding to the last filed flight plan (see also FTFM ^[1]);

CTFM

Current Tactical Flight Model (see CTFM ^[2]);

CPF

Correlated Positions reports for a Flight, i.e., airspace profiles following as much as possible the actual flown trajectory (based on radar positions - see CPR ^[3]);

CPG_GEN

i.e., profiles generated by the CFMU path generation tool:

SCR

Shortest Constrained Route. IFPS compliant route (available CDRs open and RAD compliant);

SRR

Shortest RAD restrictions applied Route. All CDRs open;

SUR

Shortest Unconstrained Route. No RAD applied, all CDRs open;

DCT

Direct route. Any portion outside the FPM_AREA is “frozen”, i.e, not generated by the tool.

Comparisons

The comparison between values for different trajectories of the same flight provides indication on the effects of different factors:

- SUR vs DCT provides a measure of the effects of route design, because it compares the shortest theoretical course with the best one available using the route network.
 - SUR vs SCR provides a measure of the effects of route availability, because it compares the route potentially available on the route network with the one that could actually be filed.
 - FTFM vs SCR provides a measure of the route utilisation by Aircraft Operators, because it compares the route actually filed to the best that could have been filed.
 - CPF vs FTFM provides a measure of the effects of ATC because it compares the actual trajectory to the one that was filed.
-

References

- [1] <http://atmlexicon.eurocontrol.int/lexicon/en/index.php/FTFM>
- [2] http://atmlexicon.eurocontrol.int/lexicon/en/index.php/Current_Tactical_Flight_Model
- [3] <http://atmlexicon.eurocontrol.int/lexicon/en/index.php/CPR>

FMP

cf. [https:// extranet. eurocontrol. int/ http:/ / atmlexicon. eurocontrol. int/ lexicon/ en/ index. php/ Flow_Management_Position](https://extranet.eurocontrol.int/http://atmlexicon.eurocontrol.int/lexicon/en/index.php/Flow_Management_Position)

Free Route Airspace

c.f. [https:/ / extranet. eurocontrol. int/ http:/ / atmlexicon. eurocontrol. int/ lexicon/ en/ index. php/ Free_Route_Airspace](https://extranet.eurocontrol.int/http://atmlexicon.eurocontrol.int/lexicon/en/index.php/Free_Route_Airspace)

FUA

Flexible Use of Airspace

see http://www.eurocontrol.int/airspace/public/standard_page/148_FUA.html

Great Circle

The great-circle distance or orthodromic distance is the shortest distance between any two points on the surface of a sphere measured along a path on the surface of the sphere.

see also: http://en.wikipedia.org/wiki/Great-circle_distance

Horizontal flight efficiency calculations

In addition to the EU-wide environment KPI which is calculated at reference area level and based on the Filed Tactical Flight Model, a number of complementary measures can be computed for performance monitoring purposes.

The calculations can relate to different flight models and also enable calculations for different areas (FABs, States, ad-hoc areas). The available complementary calculations for horizontal flight efficiency are described below.

Input data

Available Flight Models

- **Filed Tactical Flight Model (FTFM)** - Corresponds to the last filed flight plan.
- **Current Tactical Flight Model (CTFM)** - A mathematical model containing a point profile and airspace volume profile created in the Enhanced Tactical Flow Management System (ETFMS) for a flight which has been activated.
- **CPR Flight Model (CPFM)** - flight profiles based on Correlated Position Report (CPR) following as much as possible the actual flown trajectory.

Profiles generated by the CFMU path generation tool

- Direct route (DCT) - Any portion outside the FPM_AREA is “frozen”, i.e, not generated by the tool.
- Shortest Constrained Route (SCR) - IFPS compliant route (available CDRs open and RAD compliant).
- Shortest RAD restrictions applied Route (SRR) - All CDRs open.
- Shortest Unconstrained Route (SUR) - No RAD applied, all CDRs open.

Comparisons

The comparison between values for different trajectories of the same flight provides indication on the effects of different factors:

- SUR vs DCT provides a measure of the effects of route design, because it compares the shortest theoretical course with the best one available using the route network.
- SUR vs SCR provides a measure of the effects of route availability, because it compares the route potentially available on the route network with the one that could actually be filed.
- FTFM vs SCR provides a measure of the route utilisation by Aircraft Operators, because it compares the route actually filed to the best that could have been filed.
- CPFM vs FTFM provides a measure of the effects of ATC because it compares the actual trajectory to the one that was filed.

Available quantities

Information on the computation and the available quantities can be found in the description of the Horizontal En route Flight Efficiency Methodology.

IATA

IATA is an international trade body, created over 60 years ago by a group of airlines. Today, IATA represents some 230 airlines comprising 93% of scheduled international air traffic. The organization also represents, leads and serves the airline industry in general.

see also: <http://www.iata.org>

IATA season

The northern summer scheduling season begins on the date of Daylight Saving Time (DST) introduction in European Union countries, which currently always takes place on the last Sunday in March. The northern winter scheduling season commences on the date Daylight Saving Time (DST) ends in European Union countries, which currently always takes place on the last Sunday in October.

see also: <http://www.iata.org/whatwedo/passenger/scheduling/pages/faq.aspx>

ICAO

International Civil Aviation Organization. See <http://www.icao.int/> ^[1]

References

[1] <http://www.icao.int/>

ICAO SSP

ICAO State Safety Programme (SSP)

IFR

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004 ^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],
- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004 ^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

Just culture

Article 2 of the Performance Scheme Regulation provides the following definitions

air carrier

Air carrier means an air transport undertaking with a valid operating license issued by a Member State in accordance with European Union Law.

airport coordinator

Airport coordinator means the function established at coordinated airports in application of EEC 95/93.

airport operator

Airport operator means the "managing body of an airport" as defined in EEC 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports.

binding target

Binding target means a performance target adopted by Member States as part of a national or functional airspace block performance plan and subject to an incentive scheme providing for rewards, disincentives and/or corrective action plans.

data

Data means qualitative, quantitative and other relevant information related to air navigation performance collected and systematically processed by, or on behalf of, the Commission for the purpose of the implementation of the performance scheme.

just culture

Just culture means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

key performance indicators

Key performance indicators means the performance indicators used for the purpose of performance target setting.

national authorities

National authorities means the regulatory authorities at national or functional airspace block level whose costs are eligible for recovery from airspace users when they are incurred in relation with the provision of air navigation services in application of Article 5(2) of Regulation (EC) No 1794/2006.

performance indicators

Performance indicators means the indicators used for the purpose of performance monitoring, benchmarking and reviewing.

performance monitoring

Performance Monitoring means the continuous process of collecting and analysing data in order to measure the actual output of a system versus predefined targets.

Key performance indicators

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KPI

KPI

SES Performance Scheme: a PI for which a binding target value has been defined.

All KPI's and PI should be described by Meta-Data.

National authorities

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Network manager

Formerly known as the CFMU, now see the European ATM Network Manager ^[1] website.

References

[1] <http://www.eurocontrol.int/dossiers/european-atm-network-manager>

Nominal terms

A statistical series is said to be expressed in nominal terms when the values are not deflated.

Expressing a statistical series in *nominal terms* is an equivalent expression to *at current prices*.

This is opposed to the concept of Real terms.

NSA

Occurrence

Accidents, serious incidents and incidents as well as other defects or malfunctioning of an aircraft, its equipment and any element of the Air Navigation System which is used or intended to be used for the purpose or in connection with the operation of an aircraft or with the provision of an air traffic management service or navigational aid to an aircraft.

Source: ESARR 2

Other revenues

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

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Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

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en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

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binding target

Binding target means a performance target adopted by Member States as part of a national or functional airspace block performance plan and subject to an incentive scheme providing for rewards, disincentives and/or corrective action plans.

data

Data means qualitative, quantitative and other relevant information related to air navigation performance collected and systematically processed by, or on behalf of, the Commission for the purpose of the implementation of the performance scheme.

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Performance Scheme Regulation Article 2 definitions

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PI

PI

Performance Indicator. A numerical value with explanation to describe its semantics. cf. KPI

PRU

The EUROCONTROL ^[1] Performance Review Unit.

See PRC/PRU website ^[2]

RAT

Risk Analysis Tool (RAT)

See also Risk Analysis Tool - Guidance Material ^[1]

References

[1] http://www.eurocontrol.int/safety/gallery/content/public/library/Safrep/Risk_Analysis_Tool.pdf

Rate of Aircraft Interested

Rate of aircraft interested (RAI) represents the average number of aircraft interested in filing flight plans to take advantage of an available CDR and is presented as the percentage of the number of flights planned on an available CDR relative to the number of potential users of this CDR.

Real terms

A statistical series is said to be expressed in *real terms* when the values are deflated relative to a base year. This allows for comparison and analysis of evolutions in volume.

Expressing a statistical series in *real terms* is an equivalent expression to *at constant prices*, e.g. at EURO 2009 prices.

This is opposed to the concept of *Nominal terms*.

Reference location

cf. https://extranet.eurocontrol.int/http://atmllexicon.eurocontrol.int/lexicon/en/index.php/Reference_location

Reference period

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-

^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],

- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

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VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

Reporting Period 1 Airport List

Name	Parent Entity	Description - url	Latitude	Longitude	ICAO Airport Code	IATA Airport Code	City Name	ICAO Country Code
Vienna	Austria	[1]						
Brussels	Belgium	[2]						
Sofia	Bulgaria	[3]	LB					
Las Palmas	Canary Islands	[4] Palmas	GC					
Tenerife Norte	Canary Islands	[5]						
Tenerife Sur/Reina	Canary Islands	[6]						
Larnaca	Cyprus	[7]	LC					
Prague/Ruzyně	Czech Republic	[8]						
Copenhagen/Kastrup	Denmark	[9]						
Tallinn/Ulemiste	Estonia	[10]						
Helsinki-Vantaa	Finland	[11]						
Basle/Mulhouse	France	[12]						
Lyon/Sartolas	France	[13]						
Nice	France	[14]						
Paris/Charles-De-Gaulle	France	[15]						
Paris/Orly	France	[16]						
Cologne/Bonn	Germany	[17]						
Dusseldorf	Germany	[18]						
Frankfurt	Germany	[19]						
Hamburg	Germany	[20]						
Hanover	Germany	[21]						
Leipzig/Halle	Germany	[22]	ED					
Munich	Germany	[23]						
Nuremberg	Germany	[24]						
Schoenefeld-Berlin	Germany	[25]						
Stuttgart	Germany	[26]						
Athens	Greece	[27]						
Budapest/Ferihegy	Hungary	[28]						
Dublin	Ireland	[29]						
Bergamo/Orio Alserio	Italy	[30]						
Bologna	Italy	[31]	LI					
Catania Fontanarossa	Italy	[32]						
Milan/Linate	Italy	[33]						
Milan/Malpensa	Italy	[34]						

Napoli Capodichino	Italy	[35]						
Rome/Fiumicino	Italy	[36]						
Venice/Tessera	Italy	[37]						
Riga Intl	Latvia	[38]						
Vilnius Intl	Lithuania	[39] Intl	EY					
Luxembourg	Luxembourg	[40]						
Malta/Luqa	Malta	[41]						
Amsterdam	Netherlands	[42]						
Bergen/Flesland	Norway	[43]						
Oslo/Gardermoen	Norway	[44]						
Stavanger/Sola	Norway	[45]						
Trondheim/Vaernes	Norway	[46]	EN					
Warsaw/Okecie	Poland	[47]						
Lisbon	Portugal	[48]						
Porto	Portugal	[49]	LP					
Otopeni-Intl.	Romania	[50]	LR					
Bratislava Ivanka	Slovakia	[51]						
Ljubljana	Slovenia	[52]	LJ					
Alicante	Spain	[53]						
Barcelona	Spain	[54]						
Bilbao	Spain	[55]						
Ibiza	Spain	[56]						
Madrid/Barajas	Spain	[57]						
Malaga	Spain	[58]						
Palma De Mallorca	Spain	[59] De Mallorca	LE					
Sevilla	Spain	[60]	LE					
Valencia	Spain	[61]						
Gotenborg/Landvetter	Sweden	[62]						
Stockholm/Arlanda	Sweden	[63]						
Geneva	Switzerland	[64]						
Zurich	Switzerland	[65]						
Aberdeen	United Kingdom	[66]						
Birmingham	United Kingdom	[67]						
Bristol/Lulsgate	United Kingdom	[68]						
Edinburgh	United Kingdom	[69]						

Glasgow	United Kingdom	[70]						
London/City	United Kingdom	[71]						
London/Gatwick	United Kingdom	[72]						
London/Heathrow	United Kingdom	[73]						
London/Luton	United Kingdom	[74]						
London/Stansted	United Kingdom	[75]						
Manchester	United Kingdom	[76]						
Newcastle	United Kingdom	[77]	EG					

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Risk-sharing

Risk sharing is defined in Article 11a of the EU Charging Regulation.

- traffic risk sharing in paragraphs 2-7,
- cost risk sharing in paragraph 8.

SES Performance Scheme

SES Performance Scheme

a legal instrument of the EU which has for goal the improvement of the performance of Air Traffic Management in Europe. This scheme is defined in Commission Regulation EU N°691/2010 ^[1].

References

[1] <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010R0691:EN:NOT>

SES Performance Scheme airports

SES Performance Scheme airports are airports to which the Performance Regulation (691/2010) applies.

1st Reference Period (2012-14)

Airports subject to performance monitoring

The list of airports is based on the criteria as specified in Annex 4 paragraph 3 of the Performance Regulation (691/2010), which states that data is to be collected from *Airport operators providing services at Community airports with more than 150 000 commercial air transport movements per year and to all coordinated and facilitated airports with more than 50 000 commercial air transport movements per year. In individual cases, Member States may include airports below this threshold. They shall inform the Commission thereof.* In addition to that criterion, Article 1(3) of the regulation also states that ... *Where none of the airports in a Member State reaches the threshold of 50 000 commercial air transport movements per year, performance targets shall apply as a minimum to the airport with the highest commercial air transport movements.* , the so called major state airports. In the first reference period (RP1) a total of 77 airports are included.

List of airports subject to performance monitoring in RP1 (2012-14).

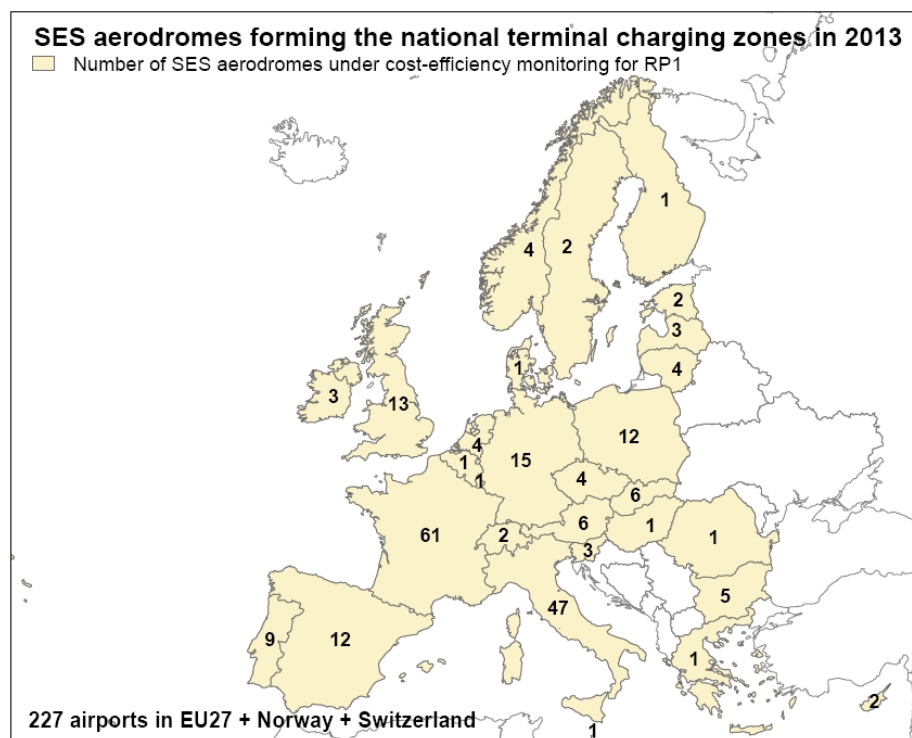
Download the SES RP1 Airport list in MS Excel

Terminal Charging Zones

A terminal charging zone is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

For the first time in June 2012, all 29 States (EU27, Norway and Switzerland) covering 227 aerodromes, which together compose the 31 terminal charging zones in Europe, have reported Terminal ANS costs and charges information.

List of aerodromes forming the terminal charging zones of the 29 States participating in the SES performance scheme (RP1)



SES RP1 ANSP

The ANSPs that are monitored during the first reference period are:

ANSP_NAME
Aena
ANA LUX
ANS CR
Austro Control
Avinor
Belgocontrol
BULATSA
DCAC Cyprus
DFS
DSNA
EANS
ENAV
Finavia
HCAA
HungaroControl
IAA
LFV
LGS
LPS
LYNL
MATS
MUAC
NATS (Continental)
NAV Portugal (FIR Lisboa)
NAVIAIR
Oro Navigacija
PANSA
ROMATSA
Skyguide
Slovenia Control

Severe weather

According to the Network Manager, a severe weather event is: A Storm, wind 25kts+, CBs with embedded lightning, snow & ice at airfields, which may lead to an ATM capacity reduction of 10%+ or severe en route traffic handling issues.

Single European Sky Area

The Single European Sky Area comprises the States included in Performance Scheme of the Single European Sky.

- In RP1 (2012-2014): 27 EU Member States at the start of RP1 plus Norway and Switzerland (29 States in total).
- In RP2 (2015-2019): 28 EU Member States at the start of RP2 plus Norway and Switzerland (30 States in total).

STATFOR

STATFOR

The Statistics and Forecast unit ^[1] of the EUROCONTROL ^[1] Agency.

References

[1] <http://www.eurocontrol.int/statfor>

STD

STD (Scheduled time of departure)

Scheduled date and time of departure, the estimated time at which the aircraft will commence movement associated with departure.

SUA

Special Use Airspace

In accordance with the FUA concept, Special Use Airspace is a defined portion of airspace which may be temporarily reserved for specific activities which require the restriction or segregation of other traffic (see TRA & TSA also defined in the FUA concept).

See also: [https:// extranet. eurocontrol. int/](https://extranet.eurocontrol.int/) [http:// atmlexicon. eurocontrol. int/ lexicon/ en/ index. php/ Special_Use_Airspace](http://atmlexicon.eurocontrol.int/lexicon/en/index.php/Special_Use_Airspace)

Terminal ANS Charges

Terminal navigation charges, i.e. the price paid by airspace users, are equal to the total number of service units multiplied by the terminal unit rate.

Calculation of terminal charges are defined in the Article 11 of the charging scheme regulation (all references below refer to articles of this regulation):

1. Without prejudice to the possibility pursuant to Article 3(3) of financing terminal air navigation services through other revenues, the terminal charge for a specific flight in a specific terminal charging zone shall be equal to the product of the unit rate established for this terminal charging zone and the terminal service units for that flight. For charging purposes, approach and departure shall count as a single flight. The unit to be counted shall be either the arriving or the departing flight.

Terminal ANS Costs

Terminal costs are those related to the provision of the following services:

- airport control services, airport flight information services including air traffic advisory services, and alerting services,
- air traffic services related to the approach and departure of aircraft within a certain distance of an airport on the basis of operational requirements,
- an appropriate allocation of all other air navigation services components, reflecting a proportionate attribution between en-route and terminal services.

The costs of terminal services are financed by means of terminal charges imposed on the users of air navigation services and/or other revenues, including cross-subsidies in accordance with Community law.

Terminal ANS Service Unit

Terminal service units are used to calculate the total amount of terminal navigation charges paid by airspace users, mainly commercial airlines, for the air navigation services provided.

Terminal service units are a result of the mass of the aircraft raised to a specific exponent as defined below.

Terminal navigation charges, i.e. the price paid by airspace users, are equal to the total number of service units multiplied by the terminal unit rate.

Terminal service units are defined in the Annex V of the charging scheme regulation (all references below refer to articles of this regulation):

1. Calculation of terminal service units

1.1. The terminal service unit shall be equal to the weight factor for the aircraft concerned.

1.2. The weight factor, expressed as a figure taken to two decimal places, shall be the quotient, obtained by dividing by fifty the number of metric tons in the highest maximum certified take-off weight of the aircraft, referred to in Annex IV point 1.5, to the power of 0.7. However, in a transitional period of five years following the calculation of the first terminal unit rate under this Regulation, this exponent shall be comprised between 0.5 and 0.9.

Terminal ANS Unit Rate

Terminal unit rates represent the unit price paid by airspace users, mainly commercial airlines, for the air navigation services provided, mainly air traffic control.

Terminal ANS unit rates are defined in the Annex V of the charging scheme regulation (all references below refer to articles of this regulation):

2. Calculation of terminal unit rates

2.1. The terminal unit rate shall be calculated before the beginning of each year of the reference period.

2.2. It shall be calculated by dividing the forecast number of total terminal service units for the relevant year into the algebraic sum of the following elements:

- the determined costs of the relevant year,
 - the application of the difference between forecasted and actual inflation as referred to in Article 6(1),
 - the carry-overs resulting from the implementation of the traffic risk-sharing referred to in Article 11a(2) to (7) ,
 - the carry-overs from the previous reference period resulting from the implementation of the cost risk-sharing referred to in Article 11a(8),
 - bonuses and penalties resulting from the financial incentives referred to in Article 12(2),
 - for the first two reference periods, the over or under recoveries incurred by Member States up to the year preceding the application of this Regulation to terminal charges,
 - a deduction of the costs of VFR flights as identified in Article 7(4).
-

Terminal ANS Unite Rate

Terminal unit rates represent the unit price paid by airspace users, mainly commercial airlines, for the air navigation services provided, mainly air traffic control.

Terminal ANS unit rates are defined in the Annex V of the charging scheme regulation (all references below refer to articles of this regulation):

2. Calculation of terminal unit rates

2.1. The terminal unit rate shall be calculated before the beginning of each year of the reference period.

2.2. It shall be calculated by dividing the forecast number of total terminal service units for the relevant year into the algebraic sum of the following elements:

- the determined costs of the relevant year,
- the application of the difference between forecasted and actual inflation as referred to in Article 6(1),
- the carry-overs resulting from the implementation of the traffic risk-sharing referred to in Article 11a(2) to (7) ,
- the carry-overs from the previous reference period resulting from the implementation of the cost risk-sharing referred to in Article 11a(8),
- bonuses and penalties resulting from the financial incentives referred to in Article 12(2),
- for the first two reference periods, the over or under recoveries incurred by Member States up to the year preceding the application of this Regulation to terminal charges,
- a deduction of the costs of VFR flights as identified in Article 7(4).

Terminal charging zone

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference

period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004^[2],

- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

Terminal Charging Zone

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004 ^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],
- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation

service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004 ^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

Terminal Costs

Terminal costs are those related to the provision of the following services:

- airport control services, airport flight information services including air traffic advisory services, and alerting services,
- air traffic services related to the approach and departure of aircraft within a certain distance of an airport on the basis of operational requirements,
- an appropriate allocation of all other air navigation services components, reflecting a proportionate attribution between en-route and terminal services.

The costs of terminal services are financed by means of terminal charges imposed on the users of air navigation services and/or other revenues, including cross-subsidies in accordance with Community law.

Terminal costs and unit rates

1. Contact	
1.1 Contact organisation	EUROCONTROL ^[1] : The European organisation for the safety of air navigation.
1.2 Contact organisation unit	Directorate Single Sky - Performance Review Unit (DSS/PRU) ^[2]
1.3 Contact name	Performance Review Unit - EUROCONTROL
1.5 Contact mail address	96 Rue de la Fusée 1130 Brussels BELGIUM
1.6 Contact e-mail address	NSA-PRU-Support@eurocontrol.int ^[3]
1.7 Contact phone number	+32 2 729 39 56
2. Metadata update	
2.1. Metadata last certified	not applicable
2.2. Metadata last update	01 November 2016

3. Statistical presentation

3.1. Data description

The measure addresses the costs for the provision of terminal air navigation services.

The European Commission is required to collect, consolidate and monitor **terminal air navigation service costs** and **unit rates** by the EU Performance Regulation and in accordance with EC Charging Scheme.

The EC Charging Scheme for air navigation services contributes to greater transparency in the determination, imposition and enforcement of charges to airspace users and also contributes to the cost efficiency of providing air navigation services and to efficiency of flights, while maintaining an optimum safety level.

The cost of air navigation services comprise for the most part, two elements:

- en-route costs,
- terminal costs.

The cost of terminal services is related to the following services:

- airport control services, airport flight information services including air traffic advisory services, and alerting services;
- air traffic services related to the approach and departure of aircraft within a certain distance of an airport on the basis of operational requirements;
- an appropriate allocation of all other air navigation services components, reflecting a proportionate attribution between en-route and terminal services.

The concepts of terminal ANS costs and unit rates are linked by the charges paid by airspace users. These charges are equal to the total number of service units multiplied by the terminal unit rate.

3.2. Classification system

Terminal air navigation services costs and unit rates are classified per Terminal Charging Zone within the Single European Sky Area.

Each Terminal Charging Zone belongs to a single State in the zone.

3.3. Sector coverage

The measures pertain to the Air Transport and Air Traffic Management Sector of the economy.

3.4. Statistical concepts and definitions

All cost values are expressed as:

- Euro or National currencies outside the Euro area,
- costs in Real terms,
- costs in Nominal terms.

3.5. Statistical unit

The statistical unit is the Terminal Charging Zone.

3.6. Statistical population

The statistical population comprises the Terminal charging zones of the Single European Sky Area.

3.7. Reference area

The reference area is the Single European Sky Area.

3.8. Time coverage

Actual Costs are measured over the period 2012 to the year before the current year.

Forecasts cover the period from the present year through 2014 or 2016.

3.9. Base period

2009 is the base year for the calculation of cost series in real terms.

4. Unit of measure

Costs and unit rates are measured in:

- Local currency in nominal terms,
- Local currency in real terms,
- EUR in real terms.

Real terms values are corrected for inflation relative to the base year.

5. Reference period

- The first reference period (RP1) covers the calendar years 2012 to 2014 inclusive.
- The second reference period (RP2) covers the calendar years 2015 to 2019 inclusive.

Unless decided otherwise, the following reference periods shall be of five calendar years.

6. Institutional Mandate

Legal acts and agreements are established in the Performance Regulation (691/2010) and the Charging Regulation (1794/2006).

7. Confidentiality

- The information is disseminated in accordance with Article 21 of the Performance Regulation (691/2010).
- The information is disseminated in accordance with Article 22 of Commission Implementing Regulation (EU) No 390/2013.

8. Release policy

8.1. Release calendar

The Terminal ANS costs and unit rates are released twice a year.

8.2. Release calendar access

Not applicable.

8.3. User access

Information is disseminated to the general public via the EUROCONTROL ^[1] website.

9. Frequency of dissemination

The Terminal ANS costs and unit rates are published on a yearly basis.

10. Dissemination format

The information is available on the EUROCONTROL ^[1] website.

11. Accessibility of documentation

11.1. Documentation on methodology

As per the pertaining regulations (see Institutional Mandate).

For technical questions not addressed in Statistical processing please contact: NSA-PRU-Support@eurocontrol.int ^[3].

Additional definitions of the terms used in the frame of the this KPI are available in the Glossary.

11.2. Quality documentation

There is no specific documentation on procedures applied for quality management and quality assessment.

12. Quality Management

12.1. Quality assurance

The data is provided by the concerned States and as such it is their responsibility to perform any quality assurance activities.

EUROCONTROL ^[1] is not responsible for the procedures and processes used in the production of this data.

12.2. Quality assessment

EUROCONTROL ^[1] performs systematic checks to verify that totals do indeed equal the sum of their parts. However, if discrepancies are found, they are simply reported to data provider who may or may not make corrections.

EUROCONTROL ^[1] does not change data elements nor does it prevent the publication of data that failed to verify the checks.

13. Relevance

The information is published for performance monitoring purposes in accordance with the relevant EU legislation.

13.3. Completeness

Data completeness is determined each year as per the above-mentioned quality checks. Any missing data is reported to the provider.

14. Accuracy and reliability

14.1. Overall accuracy

This data is provided by the States and displayed as provided. It is assumed that the States have provided perfectly accurate data.

14.2. Sampling error

There is no sampling and therefore no sampling error.

15. Timeliness and punctuality

15.1. Timeliness

The latest data displayed represents costs and rates that are at least eleven months old.

15.2. Punctuality

The data is provided by the States in June and November and is displayed to the public at the end of November.

16. Comparability

16.1. Comparability — geographical

Depending on the State, terminal charging zones may include from one to more than sixty airports, which would tend to reduce the validity of geographical comparison.

16.2. Comparability over time

The exact composition of a given terminal charging zone may vary over time, e.g. changes in the number of airports concerned, which would tend to reduce the comparability over time.

17. Coherence

17.1. Coherence — cross domain

Generally, data should be coherent with ATM Cost-effectiveness (ACE) information ^[2].

17.2. Coherence — internal

The data is assumed to be internally coherent as provided.

18. Cost and burden

Not available.

19. Data revision

The data revision policy has not yet been defined.

20. Statistical processing

20.1. Source data

Forecast Data

Terminal ANS costs and related data

National/FAB performance plans adopted by the States for the first reference period.

Exchange rates (2009)

National/FAB performance plans adopted by the States for the first reference period.

Inflation rates

Forecast data: National/FAB performance plans adopted by the States for the first reference period.

Monitoring Data

Actual terminal ANS costs

States' charging reporting tables as defined in the annexes of EC 1794/2006 provided to the European Commission.

Inflation rate

Actual data: Eurostat website (HICP All items).

20.2. Frequency of data collection

The data is collected twice a year (June & November).

20.3. Data collection

Air navigation service providers are required to fill a reporting table for each terminal charging zone under their responsibility and supply it to the European Commission (Charging Regulation).

20.4. Data validation

The data is validated by the States/data providers under their own responsibility.

20.5. Data compilation

The data provided is loaded into a database at EUROCONTROL ^[1] but no aggregation or modification is performed.

20.6. Adjustment

No adjustments are performed on this data.

21. Comment

Disclaimer

This data is published by the Performance Review Body (PRB) of the Single European Sky. Every effort has been made to ensure that the information and analysis contained on this website are as accurate and complete as possible. Despite these precautions, should you find any errors or inconsistencies we would be grateful if you could please bring them to the Performance Review Unit's attention.

The information may be copied in whole or in part providing that the copyright notice and disclaimer are included. The information may not be modified without prior written permission from the PRB. The views expressed herein do not necessarily reflect the official views or policy of EUROCONTROL or of the European Commission, which make no warranty, either implied or express, for the information contained on this website, neither do they assume any legal liability or responsibility for the accuracy, completeness or usefulness of this information. The PRB reserves the right to change or amend the information provided at any time and without prior notice.

Unimpeded ASMA time - Technical Note

Introduction

The **Arrival Sequencing and Metering Area (ASMA)** is defined as a virtual cylinder of a given radius around the airport. This radius is 40 NM by default, but is extended to 100 NM in some analyses.

The actual time spent by a flight between its last entry in the cylinder (Entry-time at 40 NM upstream) and the actual landing time (ALDT) is denoted **ASMA transit time**.

The **unimpeded ASMA time** is the ASMA transit time in non congested conditions at arrival airports. The unimpeded ASMA time is used in the calculation of the additional ASMA time.

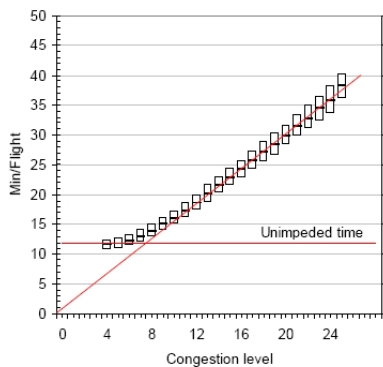
This technical note describes the methodology used in order to calculate the unimpeded ASMA time.

General approach

The computation of the unimpeded ASMA time is based on the statistical analysis of flights in non congested conditions.

In order to determine whether a flight is unimpeded or not, its **congestion level** is computed as the number of other aircraft ahead in the arrival queue, i.e. the number of aircraft that landed between the time the flight under consideration crossed the ASMA border and its own landing.

The graphic here below illustrates the evolution of the ASMA transit time as a function of the congestion level. In this picture, the range between the first quartile (bottom bar of each rectangle), third quartile (top bar) and the median (medium line) is depicted for each level of congestion.



As shown in this figure, as soon as a certain level of congestion is reached (at the inflection point of the curve), the ASMA transit time increases linearly with the level of congestion (red line passing through the origin). Beyond that inflection point, the ASMA transit time is directly proportional to the number of aircraft ahead. At a low level of congestion (before the inflection point), the ASMA transit time tends to be constant (horizontal red line). This constant ASMA transit time is considered to be the unimpeded time required by any flight to approach and land on the runway from the ASMA border. The intersection between the two red lines corresponds to the **saturation level**.

The greater the level of congestion compared to the saturation level, the greater the likelihood of a flight's being delayed due to traffic ahead. Therefore, to ensure that a flight is unimpeded, its congestion level needs to be sufficiently small compared to the saturation level. However, it needs to be ensured that the flight sample is big enough to produce a robust estimate of unimpeded ASMA time. Considering a flight as unimpeded if its congestion level is smaller than 50% of the saturation level has proved to be a good compromise between these two conflicting facts.

Night flights may be subject to special procedures that are not representative of daytime operations. In addition, when the airport is subject of a curfew, the first flights in the morning might be delayed in order to land after the curfew end time. In order to avoid that both night flights and 'first post-curfew' flights bias the traffic sample, flights between 6:30 and 22:00 only are used for the calculation of unimpeded ASMA time.

A different unimpeded ASMA time is determined for each combination of:

- landing runway;
- angular sector in which the flight enters the ASMA cylinder; and,
- aircraft class;

Although unimpeded ASMA time is relatively static in time, regular checks are made to ensure that it remains representative of the operations for the airport under consideration. In case a change of unimpeded time is detected, the causes of that change (new procedure implementation, change of TMA design) are investigated. When required, new unimpeded times are calculated. However, because this method is based on statistical analysis of the actual ASMA transit time, a period of several months after the change is required before new robust unimpeded times can be established.

Determination of the unimpeded ASMA time

Methodological assumptions

In this methodology, it is assumed that

- priority is given to approaches rather than departures and, consequently, departures do not affect congestion level for unimpeded ASMA time.

Input data required

The following input data are required in order to calculate the actual ASMA transit time:

Acronym	Description	Source
ASMA entry-point	Date-time + bearing from airport reference point (long. & lat.);	Actual trajectory from Correlated Position Report(CPR) ^[3] provided by NM;
Aircraft type	Aircraft ICAO designator.	Network Manager
ALDT	'Actual landing time' (ALDT) means the actual date and time when the aircraft has landed (touch down).	Airport data
Arrival runway designator	ICAO designator of the runway used for landing (e.g. 10L).	Airport data

Aircraft Classification

Because aircraft have different approach performances, aircraft are classified, based on their ICAO designator, into :

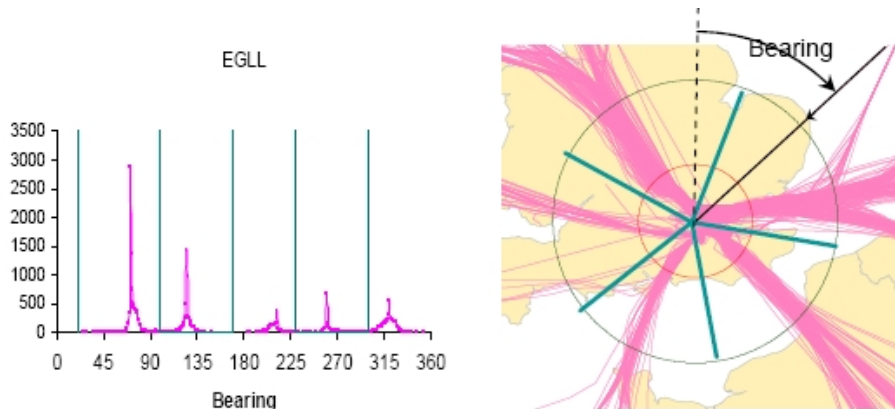
- Heavy (H),
- Medium Jet (MJ),
- Medium Turbo Prop (MT),
- Light jet (LJ),
- Light turbo prop (LT), and
- Light piston (LP).

In most of the cases helicopters do not interfere with other traffic. It was however experienced, in some cases, that helicopter traffic had to follow the published procedures and be sequenced with other aircraft. In order not to consider

a flight that could be delayed by preceding helicopter traffic as unimpeded, helicopter movements are counted in the congestion index. Helicopter movements are however not counted in the computation of the throughput used for the saturation level.

Determination of the ASMA entry sectors

For a given runway configuration, the ASMA transit time depends on the direction from which the ASMA cylinder is entered. For this reasons the ASMA cylinder is divided into **ASMA sectors**. The ASMA sectors are defined further to statistical clustering analysis of traffic distribution, as illustrated here below.



Unimpeded ASMA time calculation

Unimpeded ASMA times are calculated in five steps:

1st step : Input data quality check

- Landing times and ASMA-entry points are cross-checked for consistency and completeness, as described in the Quality assessment section here below.
- Detection and filtering of statistical outliers:
 - Flights with a transit time longer than 120 minutes are removed from the sample.

2nd step : For each arrival flight of the traffic sample

- Computation of the transit time between the ASMA entry-point and the actual landing time (ALDT).
- Determination of the congestion level by counting the number of other landings during the time interval]ASMA entry time, ALDT] of the respective flight.
- Determination of the arrival throughput (total number of landings at the airport) observed in the hour preceding the the actual landing time (ALDT).
- Determination of the triplet (arrival runway, aircraft class, ASMA sector) which the respective flight belongs to.

3rd step : Determination of the saturation level

- Estimation of the peak arrival throughput (R) of the airport using the 90th percentile of the arrival throughput within the preceding hour of all flights in the reference sample.

For each triplet (arrival runway, aircraft class, ASMA sector):

- Computation of a first unimpeded ASMA time estimate (U1) using the 20th percentile of all the ASMA transit times of the flights belonging to that triplet.
- Computation of the saturation level (L):

$$L = U1 * R / 60$$

4th step: Identification of the unimpeded flights

For each triplet (arrival runway, aircraft class, ASMA sector):

- Selection of flights with a congestion index $\leq 0.5 * \text{Saturation level}$

5th step Computation of the unimpeded time

For each triplet (arrival runway, aircraft class, ASMA sector):

- If the number of unimpeded flights in the group is less than 20, no unimpeded ASMA time is computed for that triplet;
- If the number of unimpeded flights is greater or equal to 20, the unimpeded time for this triplet is defined as the median of the observed transit times of the unimpeded flights.

Quality Assessment

Input data validation

- Consistency analysis between the landing times received from airports and the landing times computed by ETFMS ^[1];
- Completeness analysis of the Correlated Positions reports for a Flight (CPF) trajectory;
- Existence of the aircraft type ICAO Code to be matched with aircraft class.

Unimpeded ASMA time validation

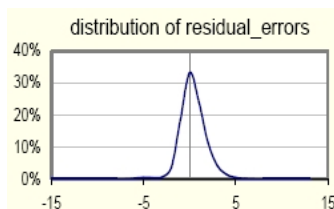
The following checks are performed to test the validity of the results:

Coverage test

The percentage of flights with valid data and for which it was possible to define an unimpeded reference time should be greater or equal to 90%.

Distribution of residual errors

Additional ASMA times for unimpeded flights should have a distribution centered around zero and with a standard deviation smaller than 3 minutes.



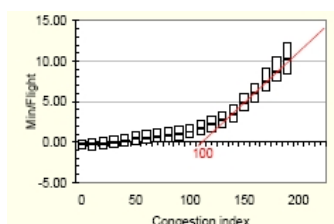
Evolution of the additional ASMA time with the congestion level

In order to be able to consolidate in a single graph for a given airport with different triplet (arrival runway, aircraft class, ASMA sector) and different saturation levels, the data has to be normalised.

For this reason a congestion index is defined as

$$\text{Congestion index} = 100 * \text{Congestion level} / \text{saturation level}$$

A value of 100 of the congestion index corresponds to a saturation level independent of arrival runway and ASMA Sector.

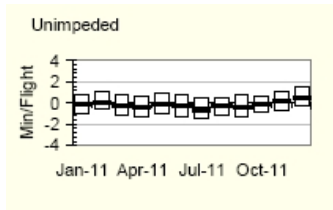


As a function of the congestion index, the additional ASMA times should:

- remain close to zero for low level of congestion (congestion index smaller than 100), and
- increase linearly for congestion index greater than 100.

Unimpeded ASMA times Monitoring

Additional ASMA times for unimpeded flights should remain close to zero. A change in the unimpeded time might indicate a change in operational procedures or a re-design of the TMA during the reference period under consideration. In such a case, new unimpeded ASMA times will be calculated in order to consider the impact of these changes.



Every month the following checks are carried out for each airport:

- The percentage of flight with valid data and associated unimpeded times should remain greater than 90%.
- For unimpeded flights,
 - the median of the Additional ASMA times distribution should remain within the interval]-1 minute, +1 minute[,
 - The standard deviation of the Additional ASMA times distribution should be smaller than 3 minutes, and
 - P75-P25 should be smaller than 3 minutes.

If one of these conditions is not met, reasons for the changes are investigated and new unimpeded ASMA times are calculated if required.

References

- [1] http://atmlexicon.eurocontrol.int/lexicon/en/index.php/Enhanced_Tactical_Flow_Management_System

Unimpeded taxi-out time - Technical Note

Introduction

The **actual taxi-out time** of a flight is the time elapsed between the off-block time of this flight and its take-off time.

The **unimpeded taxi-out time** is the taxi-out time in non congested conditions at airports. The unimpeded taxi-out time is used in the calculation of the additional taxi-out time.

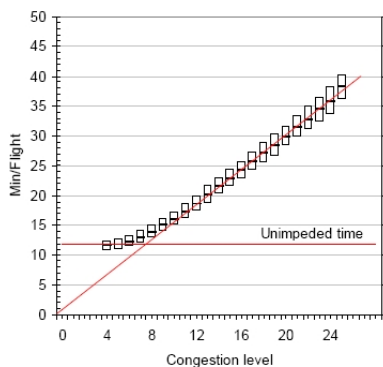
This technical note describes the methodology used in order to calculate the unimpeded taxi-out time.

General approach

The computation of the unimpeded taxi-out time is based on the statistical analysis of flights in non congested conditions.

In order to determine whether a flight is unimpeded or not, its **congestion level** is computed as the number of preceding movements (arrivals and departures) that occur between the off-block of the flight up to its own take-off.

The graphic here below illustrates the evolution of the actual taxi-out time as a function of the congestion level. In this picture, the range between the first quartile (bottom bar of each rectangle), third quartile (top bar) and the median (medium line) is depicted for each level of congestion.



As shown in this figure, as soon as a certain level of congestion is reached (at the inflection point of the curve), the actual taxi-out time increases linearly with the level of congestion (red line passing through the origin). Beyond that inflection point, the actual taxi-out time is directly proportional to the number of movements ahead. At a low level of congestion (before the inflection point), the actual taxi-out time tends to be constant (horizontal red line). This constant actual taxi-out time is considered to be the unimpeded taxi-out time required by any flight to taxi out and take off. The intersection between the two red lines corresponds to the **saturation level**.

The greater the level of congestion compared to the saturation level, the greater the likelihood of a flight's being delayed due to traffic ahead. Therefore, to ensure that a flight is unimpeded, its congestion level needs to be sufficiently small compared to the saturation level. However, it needs to be ensured that the flight sample is big enough to produce a robust estimate of unimpeded ASMA time. Considering a flight as unimpeded if its congestion level is smaller than 50% of the saturation level has proved to be a good compromise between this two conflicting facts.

Night flights may be subject to special procedures that are not representative of daytime operations. Therefore flights between 6:00 and 22:00 only are used for the calculation of unimpeded taxi-out time.

A different unimpeded taxi-out time is determined for each combination:

- departure runway; and,
- departure stand (or group of stands);

Although unimpeded taxi-out time is relatively static in time, regular checks are made to ensure that it remains representative of the operations for the airport under consideration. In case a change of unimpeded taxi-out time is detected, the causes of that change (new procedure implementation, change in use of infrastructure) are investigated. When required, new unimpeded times are calculated. However, because this method is based on statistical analysis of the actual taxi-out time, a period of several months after the change is required before new robust unimpeded taxi-out times can be established.

Determination of the taxi out unimpeded time

Methodological assumptions

Based on this definition of taxi-out time (from off-block time to take-off time), taxi-out time includes:

- possible push-day delay,
- possible remote de-icing time, and
- departure runway occupancy time.

Input data required

The following input data are required in order to calculate the actual taxi-out time:

Acronym	Description	Source
ADEP	Departure airport code using the standard ICAO 4-letter code as defined in ICAO Doc. 7910.	Airport data
AOBT	'Actual off-block time' means the actual date and time the aircraft has vacated the parking position (pushed back or on its own power).	Airport data
ATOT	'Actual take off time' means the actual date and time that an aircraft has taken off from the runway (wheels-up).	Airport data
DRWY	'Departure runway designator' means the ICAO designator of the runway used for take-off (e.g. 10L).	Airport data
DSTND	The designator of the departure stand, i.e. the last parking position where the aircraft was parked before departing from the airport.	Airport data

Group of stands

Actual taxi-out time depends on the distance between the departure stand and the departure runway. Because of the great number of possible stand-runway combinations, stands are grouped at some airports.

Unimpeded taxi-out time calculation

Unimpeded taxi-out time is calculated in five steps:

1st step : Input data quality check

- Off-block and take-off times received from airports are cross-checked for consistency and completeness, as described in the Quality assessment section here below.
- Detection and filtering of statistical outliers:
 - Flights with a negative actual taxi-out time are rejected from the traffic sample;
 - Flights with a actual taxi-out time greater than 5 hours are rejected from the traffic sample.

2nd step : For each departing flight of the traffic sample

- Computation of the actual taxi-out time, that is the difference between the actual off-block time (AOBT) and the actual take-off time (ATOT).
- Determination of the congestion level by counting the number of other take-offs and landings during the time interval]off-block time, take-off time[of the respective flight.
- Determination of the airport throughput (total number of movements, both take-offs and landings included, at the airport) observed in the hour preceding the actual off-block time (AOBT).
- Determination of the couple (departure runway, group of stands) which the respective flight belongs to.

3rd step : Determination of the saturation level

- Estimation of the peak airport throughput (R) of the airport using the 90th percentile of the airport throughput within the preceding hour of all flights in the reference sample.

For each couple (departure runway, group of stands):

- Computation of a first estimation of the unimpeded taxi-out time (U1) using the 20th percentile of the actual taxi-out times of the flights belonging to that couple.
- Computation of the saturation level (L):

$$L = U1 * R / 60$$

4th step: Identification of the unimpeded flights

For each group (departure stand(s); departure runway):

- Selection of flights with a congestion index $\leq 0.5 * \text{Saturation level}$

5th step Computation of the unimpeded taxi-out time

For each group (departure stand(s); departure runway):

- If the number of unimpeded flights in the group is less than 10, no unimpeded taxi-out time is computed for that couple;
- If the number of unimpeded flights is greater or equal to 10, the unimpeded taxi-out time for this couple is defined as the median of the observed actual taxi-out times of the unimpeded flights.

Quality Assessment

Input data validation

- Consistency analysis between the off-block times (AOBT) received from airports and airlines;
- Consistency analysis between the take-off times (ATOT) received from airports, airlines and NM.

Unimpeded taxi-out time validation

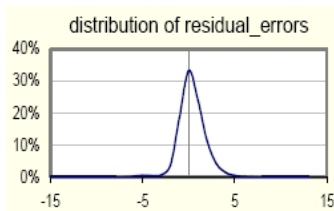
The following checks are performed to test the validity of the results:

Coverage

The percentage of flights with valid data and for which it was possible to define an unimpeded reference time should be at least 90%.

Distribution of residual errors

Additional taxi-out time for unimpeded flights should have a distribution centered around zero and with a standard deviation below 3 minutes.



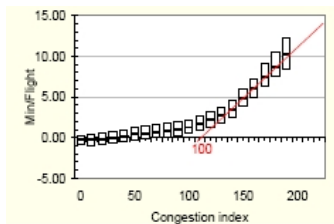
Evolution of the additional taxi-out time with the congestion level

In order to be able to consolidate in a single graph for a given airport with different groups (departure stand and departure runway) and different saturation levels the data has to be normalised.

For this reason a congestion index is defined as

$$\text{Congestion index} = 100 * \text{Congestion level} / \text{saturation level}$$

By construction, a value of 100 always corresponds to saturation independent of the departure stand or runway used.

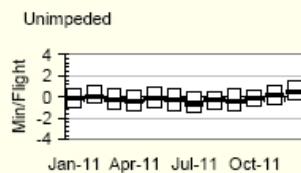


The additional time as a function of the congestion index should:

- remains close to zero for a low level of congestion; and,
- tends to a linear relationship when the congestion index is above 100.

Unimpeded taxi-out time Monitoring

Additional taxi-out time for unimpeded flights should remain close to zero. A change in the unimpeded taxi-out time might indicate a change in operational procedures or use of infrastructure during the reference period under consideration. In such a case, new unimpeded taxi-out times will be calculated in order to consider the impact of



these changes.

Every month the following checks are carried out for each of the airports:

- Percentage of flights with valid data and associated unimpeded times should remain greater than 90%.
- For unimpeded flights,
 - the median of the additional taxi-out times distribution should remain within the interval $]-1 \text{ minute}, +1 \text{ minute}[$,
 - The standard deviation of the additional taxi-out times distribution should be smaller than 3 minutes, and
 - P75-P25 should be smaller than 3 minutes.

If one of these conditions is not met, new unimpeded taxi-out times are calculated.

User of air navigation services

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004 ^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],
- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation

service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004 ^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

Utilisation of Conditional Routes

The indicator "Utilisation of Conditional Routes" is the average number of aircraft interested in filing a flight plan that would take advantage of an available CDR. The metrics used for this is *RAI: Rate of Aircraft Interested*, which is a performance indicator from the FUA programme.

VFR

Article 2 of the charging scheme regulation provides the following definitions

airspace users' representative

An *airspace users' representative* is any legal person or entity representing the interests of one or several categories of users of air navigation services.

commercial air transport

Commercial air transport means any aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

commercial air transport movements

Commercial air transport movements means the sum total of take-offs and landings for commercial air transport, calculated as an average over the three years which precede the adoption of the performance plans referred to in Article 12 of Regulation (EU) No 691/2010.

determined costs

Determined costs are costs pre-determined by the Member State as referred to in Article 15(2)(a) of Regulation (EC) No 550/2004 ^[1] as follows:

- the cost to be shared among airspace users shall be the determined cost of providing air navigation services, including appropriate amounts for interest on capital investment and depreciation of assets, as well as the costs of maintenance, operation, management and administration. Determined costs shall be the costs determined by the Member State at national level or at the level of functional airspace blocks either at the beginning of the reference period for each calendar year of the reference period referred to in Article 11 of the Regulation (EC) No 549/2004 ^[2], or during the reference period, following appropriate adjustments applying the alert mechanisms set out in Article 11 of the Regulation (EC) No 549/2004 ^[2],
- the costs to be taken into account in this context shall be those assessed in relation to the facilities and services provided for and implemented under the ICAO Regional Air Navigation Plan, European Region. They may also include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the relevant Member State and service provider in relation to the provision of air navigation services. They shall not include the costs of penalties imposed by Member States according to Article 9 of the framework Regulation nor the costs of any corrective measures imposed by Member States according to Article 11 of the Regulation (EC) No 549/2004 ^[2].

en route charging zone

An *en route charging zone* is a volume of airspace for which a single ANS cost base and a single En-route ANS unit rate are established.

IFR

IFR means Instrument Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

other revenues

Other revenues are revenues obtained from public authorities or revenues obtained from commercial activities and/or, in the case of terminal unit rates, revenues obtained from contracts or agreements between air navigation

service providers and airport operators, that benefit air navigation service providers with regard to the level of unit rates.

reference period

Reference period means the reference period for the performance scheme provided for in Article 11(3)(d) of Regulation (EC) No 550/2004 ^[1].

terminal charging zone

A *terminal charging zone* is an airport or a group of airports for which a single ANS cost base and a single Terminal ANS Unit Rate are established.

user of air navigation services

A user of air navigation services is the operator of the aircraft at the time when the flight was performed or, if the identity of the operator is not known, the owner of the aircraft, unless he proves that another person was the operator at that time.

VFR

VFR means Visual Flight Rules, as defined in Annex 2 of the 1944 Chicago Convention on International Civil Aviation (Tenth Edition — July 2005).

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