
An action plan for airport capacity, efficiency and safety in Europe

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(1) The liberalisation of the European air transport sector is a major success: air traffic in Europe has tripled between 1980 and 2000. Between 1992 and 2005 the number of intra-EU routes has increased by 150%. European citizens can now enjoy a diversified range of air services at an affordable price.

Concrete measures have been taken by the European Community in order to sustain this growth whilst maintaining a high level of safety and efficiency:

- The European Aviation Safety Agency (EASA) was created in 2002 in order to rationalise European activities in the field of air worthiness;
- The Single European Sky legislative package adopted in 2004 aims at comprehensively reforming the Air Traffic Management sector, with a view to increasing the safety and efficiency of the European sky.

(2) If demand for air traffic continues in line with current trends, it will double in 20 years. This will clearly have serious environmental implications. The Commission is addressing this issue with a series of initiatives aimed at internalising the external costs of transport and at reducing the air transport contribution to the greenhouse effect.

The mid-term review of the Commission's 2001 Transport White Paper¹ recognises that measures are needed to reduce the negative environmental effects caused by the rapid growth of traffic. The aim of this document is to optimise the use of existing infrastructure, promote the use of technological developments, to improve safety and efficiency, and to improve the planning framework of new infrastructure when it is needed.

(3) In a modern society connectivity is the basis for economic competitiveness, social and regional cohesion and cultural development. Consequently, not only do the economic and commercial needs of globalisation drive the growing demand for air transport, but the demand for air travel is also boosted by evolving societal and cultural needs.

(4) After liberalising the air transport market by the creation of the internal market and addressing the "saturation of the skies" through the Single European Sky initiative, the Commission will now focus on airports. Capacity will not be able to match demand and risks becoming the most constraining factor on air transport. The knock-on network effects of this weakest link threatens the efficiency of the whole air transport chain. Since air transport is seen as a 'motor' for economic growth, this in turn risks undermining the overall competitiveness of the European economy.

Airports are of significant economic importance, both on a local and global scale. While the operators of Europe’s airports directly employ some 120 000 staff to serve 580 million passengers per year, the total on-site employment of airline, maintenance, catering, retailing and air traffic control company’s amount to some 1.1 million workers.

The airport sector directly creates on average 925 jobs per million workload units\(^2\). Proximity to a major airport is for 31% of companies a key location factor for manufacturing plants. For banking and insurance services, air transport makes up to 50% of total transport demand\(^3\).

An efficient air transport industry therefore contributes to the objectives laid down in the Lisbon agenda.

1. **THE EXPECTED “CAPACITY CRUNCH”**

Airport capacity is a function of both runway and ground infrastructure. The runway capacity corresponds to the maximum number of aircraft landing and/or taking off, taking into account physical constraints which have an impact on safety like wake turbulences vortices. The ground infrastructure capacity corresponds to the physical lay out of the terminals (parking spaces and boarding gates, etc.) and the efficiency of their management.

Given the expected traffic evolution, Europe will face an ever growing gap\(^4\) between capacity and demand. This is referred to as the “capacity crunch”. If current capacity levels are not drastically increased, it is estimated that over 60 European airports will be heavily congested and the top 20 airports will be saturated at least 8-10 hours per day by 2025.

Such congestion is likely to have a severe impact on airlines’ ability to maintain their schedules, especially at hub airports, and will therefore result in a less efficient European air transport industry. Congestion will also result in environmental and safety costs, since the density and complexity of operations will reach an unprecedented level.

The capacity crunch at airports poses a threat to the safety, efficiency and competitiveness of all actors involved in the air transport supply chain.

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\(^2\) A workload unit is either a passenger or 0.1 ton of freight.


2. A STRATEGIC VISION TO DEAL WITH THE CAPACITY CRUNCH

(9) There is no “golden bullet” solution available for such a complex issue. Beyond the multiplicity of actors and the very technical nature of operations, planning horizons in the airport sector are also a challenge:

– It takes up to 5 to 10 years or more to provide new infrastructure;
– 1 to 5 years are needed in order to plan and optimise the use of existing runways, including the surrounding airspace.

(10) Between mid-September 2005 and early 2006 the Commission consulted stakeholders to seek possible solutions to address the airport capacity shortfall. Responses from government agencies, airlines, airport operators, pilots, air navigation service providers, experts, private citizens and environmental organisations all provided valuable input. A main finding of the consultation was that there was a broad consensus as to the existence of the problem and the need to find market-driven and environmentally sustainable solutions. Many contributors highlighted the necessity for improved collaboration and information sharing between all actors involved in the operational chain at airports.

(11) Discussions on the capacity issue took place during the high level meetings of the Directors General of Civil Aviation under the UK Presidency in 2005 and in Salzburg under the Austrian Presidency in May 2006.

(12) As a result of this consultation, a number of actions are listed:

– The need for a more efficient use of existing runways and support for new infrastructure;

– An appropriate balance between market-led solutions (market mechanisms for slot allocation) and regulatory measures (Single European Sky and airport safety oversight) must be sought;

– The European Community could also support the airport sector through its financial instruments: TEN-T, European Cohesion Policy's programmes through European Regional Development and the Cohesion Funds (according to the Community Strategic Guidelines for Cohesion and the priorities defined in each programme), or through initiatives such as SESAR (Single European Sky ATM Research);

– In order to promote safety binding Community rules are needed in particular on the safety for the aerodrome air side, including not only the infrastructure, but also operations and management;

– Aviation security must be a paramount consideration when seeking to increase airport capacity;

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5 Consultation paper and reactions are available on following address: http://europa.eu.int/comm/transport/air/consultation/2005_11_30_en.htm
– **Regional airports** are important to the development of an integrated European air transport network. In this respect, it would be desirable to unlock existing latent capacity at regional airports provided that Member States respect Community legal instruments relating to state aids⁶. Global Navigation Satellite Systems could play a significant role for increasing capacity and flexibility of operations at those airports without increasing the cost of local infrastructure. Member States should endeavour to improve the **accessibility** of such airports by rail and road to allow them to act as reliever airports.

Given these elements, the Commission will develop five key actions:

– Make better use of existing airport capacity;
– A consistent approach to air safety operations at aerodromes;
– Promote “co-modality”, the integration and collaboration of the transport modes;
– Improve the environmental capacity of airports and the planning framework for new airport infrastructure;
– Develop and implement cost efficient technological solutions.

The stakeholder consultation confirmed the urgent need for co-ordinated action. This paper proposes a list of concrete actions which could be best taken at EU level. The European Commission shall monitor progress made by setting up an observatory.

### 3. MAKE BETTER USE OF EXISTING AIRPORT CAPACITY

#### 3.1. Capacity assessment and medium term planning methodologies

(13) Capacity assessment should be based on an accurate **inventory** of the existing and planned airport throughput. At present, such a Europe-wide inventory does not exist. Moreover, airports are using different methods and taxonomies to assess their capacity. This makes comparison and benchmarking difficult.

Eurocontrol, the European Organisation for the Safety of Air Navigation, supports the Commission in the implementation of the Single European Sky by undertaking a series of technical activities in order to prepare draft implementing rules that can be used as a basis for a Commission proposal to be adopted under the comitology procedure.

The Commission proposes to use these working arrangements in order to develop an implementing rule on common definitions and common analytical tools for aerodrome capacity assessment as well as procedures for the involvement of airport operators in medium term capacity planning.

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⁶ Articles 87-89 of the EC Treaties and the Community guidelines on financing of airports and start-up aid to airlines departing from regional airports - OJ C 312, 9.12.2005
Eurocontrol has developed a systematic and well-functioning process for air traffic management capacity planning at a European level. The Commission proposes to extend this exercise to airport capacity planning, which would enable the sector to have a global view on airport capacity issues in Europe. The Commission will invite Member States, relevant authorities and stakeholders to form an observatory on airport capacity which will supervise this planning process. The observatory which could start working in 2007 would be a forum to exchange and monitor data and information on airport capacity in order to establish a pan-European vantage point on this important matter.

The Commission will issue a mandate to Eurocontrol to develop harmonized airport capacity and assessment methodology tools in early 2007.

The observatory on airport medium term capacity planning under the aegis of the Commission will use the EU-wide capacity assessment inventory to improve awareness and information on regional capacity needs and will deliver an annual report to that effect.

3.2. Airport slots and flight plans

In Europe, aircraft operators are required to submit a flight plan at least one hour prior to the flight departure. They receive in return an Air Traffic Flow Management (ATFM) slot, which corresponds to the time at which the aircraft can take off without creating an overflow in the air traffic management system. ATFM slots are typically issued when there is a lack of intrinsic capacity, in air traffic control centres or airports7, or when there is an unexpected constraint on capacity (such as fog, thunderstorms, technical systems failure, etc.).

In practice, verification of flight plans against airport slots does not take place in a systematic manner, leading to interferences in the optimal use of airport slots. A side effect is that aircraft occupy taxi and runway capacity longer than necessary, thereby having an adverse effect on the environment.

Eurocontrol received in 2005 a mandate to develop in close co-operation with the Commission implementing rules on ATFM8. The draft implementing rule is expected to be presented to the Single European Sky comitology committee during the beginning of 2007.

If necessary, Article 14 of the slot Regulation9 could be modified in such a way that the competent air traffic management authorities are compelled to reject an aircraft operator’s flight plan whenever an air carrier does not hold the required airport slots.

In accordance with the Single European Sky framework Regulation10, Eurocontrol has also been requested to provide technical assistance to the Commission in preparing a

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7 50% of ATFM delays in Europe are due to airports.
10 Article 12(2) of Regulation (EC) 549/2004 of 10 March 2004 laying down the framework for the creation of the single European sky.
progress report by 20 April 2007, to the Council and the European Parliament on the implementation of the SES legislation.

In close co-operation with the Commission, the mandate given to Eurocontrol on ATFM measures will propose solutions to ensure consistency between airport slots and flight plans, and will recommend any required amendments to relevant legislation. The draft AFTM implementing rule will be submitted to the Single European Sky comitology committee for its opinion. The Commission will also evaluate the findings and potential impact of the 2007 Single European Sky implementation report on airport operations.

3.3. Increasing predictability and reducing airport delays via Collaborative Decision-Making (CDM)

Predictability is of major importance for airlines and airports in their operations management. For example, airlines build into their schedule a “buffer” which allows for an absorption of unexpected delays in arriving or departing aircraft. Cutting five minutes off this buffer would be worth around € 1 000 million in better use of airline and airport resources.

In addition “airlines, airports, air traffic control and the ATFM community need to move from an “insular perspective” to a more general focus on overall air transport performance”\textsuperscript{11}. Enhanced \textit{decision-making capabilities} through information sharing amongst all airport partners bring many quantitative and qualitative benefits to the operation of not only individual airports but more importantly for the airport network. This inclusive information sharing process in an institutionalised form is called Collaborative Decision-Making (CDM). Airport collaborative decision-making would decrease knock-on delays at the network level and improve recovery from weather or other disturbing occurrences leading to airport capacity wastage.

The Commission believes that airport collaborative decision-making can bring substantial benefits to the operation of the airport network as a whole if a critical mass of partners participates. It is also considered that the increased operational efficiencies would also result in obtaining welcomed environmental benefits.

The Commission proposes to give a mandate to Eurocontrol to develop implementing rules for the introduction of Airport-CDM at European airports in 2008.

4. A consistent approach to air safety operations at airports

4.1. Extension of the responsibilities of EASA to aerodrome safety regulation

Intensive aerodrome use and higher traffic volumes require improved safety levels. Aerodromes have been the least safety regulated link in the aviation chain. Voluntary

\textsuperscript{11} Report on Punctuality Drivers at Major European Airports, page 48, prepared by the Performance Review Unit – May 2005.
efforts by the group of aerodrome safety regulators\textsuperscript{12} have produced remarkable results. However, common binding rules are needed in order to provide uniform levels of aviation safety to the European citizens, as advocated in the new ICAO requirements on aerodrome safety. Moreover, since Member States do not uniformly implement the ICAO provisions, there is no level playing field among airport operators\textsuperscript{13}, and it forces companies operating aerodromes in different Member States to apply a disparate set of national or even local safety Regulations.

(22) As announced, the Commission will therefore adopt a legislative proposal to extend EASA’s role to the safety of aerodromes\textsuperscript{14}. A preliminary impact assessment for an “Extended EASA” was carried out in 2005. During 2006 EASA itself will develop its opinion on the matter, having consulted in detail the stakeholders through their “Notice of Proposed Amendment” (NPA) procedure.

\begin{boxedtext}
A legislative proposal on the matter is planned to be adopted by the Commission in early 2008.
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4.2. Exploiting Global Navigation Satellite Systems (GNSS) for enhanced safety at airports

(23) The EU has long invested in the development of satellite based navigation. Despite ICAO recommendations and the availability of certified airborne avionics, those systems are not widely exploited today. From a safety point of view, GNSS could offer one more source of position information. GNSS contributes to preventing “Controlled Flight into Terrain”, which is still the most significant cause of fatal accidents, especially for the least sophisticated aircraft. GNSS could also allow more flexibility for approach and departure route design in order to avoid obstacles, reduce noise impact or allow safe operations of more closely spaced airports or runways.

\begin{boxedtext}
The Commission will enable the certification of the EGNOS/Galileo signal in space, while including GNSS exploitation in the European Radio-Navigation Plan. A comprehensive inclusion of GNSS into ATM operational processes is expected from the SESAR programme which will provide benefits for the 'gate to gate' network.
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5. Promote co-modality of transport modes

5.1. Improve airport access and co-modality

(24) Air and rail transport should become more complementary. At least three interfaces between air and rail exist that each brings specific benefits to the society as a whole, and will also derive a positive impact on the environment:

\textsuperscript{12} The GASR was established in 1996 and counts today 27 European States.
\textsuperscript{13} Annex 14, chapter 1, section 1.3 and the Manual on Certification of Aerodromes (Doc 9774 of October 2001).
– Links to the city with the benefits of decongestion of road traffic and better air quality around airports;

– Links to the region with the same benefits as above and the additional benefit of expansion of the airport’s catchment area;

– Link between the airport and major metropolitan areas through High Speed Rail with the same benefits as above and additional potential for short haul slots to be freed for long-haul flights, which for airports and air carriers represent higher slot productivity.

Conventional rail can play an important role and its development to connect secondary and regional airports should be encouraged through Member States and Community funding.

Stockholm Arlanda Airport (about 17 million passengers per year) has three underground rail stations. One is for long haul rail services and the other two situated at the two extremities of the airport are used by the Arlanda Express fast train. Arlanda Express connects the airport to the city 4-6 times an hour and covers the 45km trip in 20 minutes at speeds of up to 200km/h. If for any reason the train is more that two minutes late, passengers can ask for a full refund of the ticket.

(25) There is a need for efficient co-modal infrastructures and the improvement of the modal split for airport access. The Commission will give further attention and resources to the promotion and funding of inter-modal infrastructures. Such projects can be promoted through European Cohesion Policy and continue to be eligible for financing under the European Regional Development and Cohesion Funds.

Funding from the TEN-T and from the European Regional Development and Cohesion Funds for co-modality projects is still available for the period 2007-2013. The Commission also invites Member States to support the development of inter-modal inter-changes at airports (rail links to and railway stations at airports), which promote efficiency of both rail and air transport.

5.2. Air/Rail Inter-modality

(26) The principal drivers for passengers when choosing a mode of transport are relatively stable and consistently important across Europe. Passengers will choose rail options when the time, fare, frequency, access etc. offer them an advantage, and choose air when that mode offers an advantage. Inter-modal development should therefore seek to work with and support passenger market choices. Factors such as information, ticketing, languages, service integration and other issues do play a part in further optimising the service.

The main reason to encourage rail as a complement for air should concentrate on improving the attraction of the rail product. This will encourage passengers to test the rail option for both point to point and transfer journeys. Given an increase in demand, many of the secondary issues will be resolved with further co-operation by operators and customer feedback. Air/Rail inter-modality cannot be considered as a primary way to decongest airports because in general the decongesting effect amounts to one or two years of air traffic growth. However, it is useful for achieving
a greater efficiency of the transport system and of airports in particular. Moreover, the environmental burden on airports will be reduced. A conclusion of the Rail/Air Inter-modality Facilitation Forum that took place between September 2003 and June 2004 was that the absence of integrated air-rail tickets was seen as an obstacle to the further development of Air/Rail inter-modality in terms of services and passenger interest.

The Commission intends to encourage integrated air-rail ticketing and will publish a consultation paper on the issue in early 2007.

6. NEW AIRPORT INFRASTRUCTURE NEEDS CAREFUL CONSIDERATION

6.1. Improve the environmental capacity of airports (noise)

(27) Sensitivity to aircraft noise is a major constraint to airport development. The total phase out of the noisiest older aircraft (the so-called Chapter 2 aircraft) from 1 April 2002 onwards represented a leap forward for the improvement of the noise climate around airports. However, in light of the expected growth of aviation activities this improvement may soon be eroded, Directive 2002/30/EC on noise restrictions makes it possible to phase out the noisiest "Chapter 3" aircraft, subject to a number of conditions which aim at the implementation of the so-called “balanced approach”.

The Balanced Approach to Noise, agreed at the 2001 ICAO Assembly, provides ICAO Contracting States with an international approach to address aircraft noise problems at individual airports in an environmentally responsive and economically responsible way. It encompasses four principal elements:

– Reduction of noise at source;
– Land-use planning and management;
– Noise abatement operational procedures;
– Noise operating restrictions on aircraft.

Noise operating restrictions on aircraft should not be applied as a first resort, but only after consideration of the benefits to be gained from other elements. The Balanced Approach provides a framework for assessing, consulting and taking decisions which takes into account the views of all stakeholders.

The principles of the Balanced Approach to Noise have been incorporated in Community law.\(^{15}\)

A study was launched in 2006 to examine the implementation of the Directive and to analyse the changes that took place with regard to the noise levels at Community Airports since its entry into force.

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\(^{15}\) These principles are enshrined in Directive 2002/30/EC on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Community airports (OJ L 85, 28.3.2002, p. 40).
When considering the balanced approach to noise, Member States should also have due regard to the provisions of the Ambient Noise Directive (2002/49/EC) which will be reviewed in 2009.

In 2007 a report on the implementation of the Directive will be prepared and the Commission will decide whether a proposal for amending the Directive is required.

6.2. Improve the planning framework for new airport infrastructure

(28) There is considerable room for improvement in the land-use planning and management in the EU:

- only a minority of Member States provide planning authorities and the public with airport plans containing information on long range projections concerning airport infrastructure, including areas affected by obstacle limitation and high noise levels;

- only half of Member States integrate all the information on airports and the impact of their operations on the surrounding area;

- publishing both long term airport plans and land-use plans as standard practice, would improve the accessibility and quality of information available to the public and would help to ensure that the public is properly informed.

(29) Good land-use policies must also be viewed in the context of the balanced approach to noise and the possibilities offered by GNSS. Arrangements in place should be reviewed with the aim of ensuring that competent authorities are in receipt of long term airport plans and that such information is adequately co-ordinated with land-use planning.

(30) With a view to promoting an efficient air transport system, information obtained from capacity calculation as well as land-use planning shall be taken into account when co-ordinating and assessing the regional or network capacity needs as a whole.

(31) A simplification and acceleration of planning procedures requires co-operation amongst Member States and co-ordination between Member States and the Commission, in particular where projects of common European interest are concerned. Whilst maintaining the relevant standards and compliance with the relevant environmental legislation, including Environmental Impact Assessment and Strategic Environmental Assessment Guidelines, a time span of five years for planning, approval and construction should be targeted.

The Commission, together with experts from Member States and stakeholders, will seek to simplify procedures as well as develop a recommendation on best practice guidelines to promote improved co-ordination of airport plans and wider land-use plans.
7. DEVELOP AND IMPLEMENT NEW TECHNOLOGIES

(32) The Commission through its Research Framework Programmes has funded a number of projects dealing with Advanced-Surface Movement Guidance and Control Systems. These technologies have now reached a sufficient level of maturity. In addition, the programme has attained a global recognition and harmonisation through ICAO.

(33) In particular, the surveillance and control part of the A-SMGCS concept can be very effective in all weather conditions to ensure the highest level of safety whilst supporting a continuous growth of aircraft movements.

A-SMGCS or Advanced-Surface Movement Guidance and Control Systems is a system providing routing, guidance and surveillance for the control of aircraft and vehicles in order to maintain the declared surface movement rate under all weather conditions within the aerodrome visibility operational level whilst maintaining the required level of safety.

The surveillance and control functions have been tested and exploited to such an extent that the performance requirements are mature to be used as guidelines for the implementation of these two functions of an A-SMGCS system.

(34) The SESAR programme will develop new technologies aiming at further increasing the safety and efficiency of airport operations. In particular:

– New wake vortex prediction and detection devices will enable to safely reduce separation minima between aircraft;
– New sensors will enable remote tower operations;
– New generations of airports airside management tools will enable the optimisation of ground movements.

(35) The development of a System Wide Information Management system will produce an air transport wide CDM, is expected to further increase the predictability and efficiency of aircraft and airport operations. Such increased operational efficiency will also result in obtaining environmental benefits.

(36) Technologies such as Radio Frequency Identification Devices (RFID) that raise the internal logistical efficiency of airports could also contribute to overcoming congestion. At congested airports any departure delays can have serious consequences on slot and flight planning.

New technologies such as radio tagging of boarding cards and baggage could significantly reduce the 10% of aircraft delays attributable to passengers not presenting themselves for boarding. The system would enable passengers to be located or if necessary have their hold baggage identified and removed more efficiently.

16 See for example the EU funded OpTag Project http://www.optagconsortium.com/presentation1.htm
However, such technologies would only be fully effective if common interoperability standards on Radio Tags, as well as a common legal framework for the protection of passenger information are achieved at international level.

Mature technologies such as A-SMGCS surveillance and control functions should be implemented throughout European airports. The SESAR programme will further develop new tools and systems that will significantly increase airport capacity.

8. CONCLUSION

(37) The Commission is prepared to take up the challenge of the expected “capacity crunch”. Following intense consultation an action plan is proposed in this paper. This action plan (detailed in the annex) has been designed to strike a balance between legislative proposals, financial support and the promotion of more co-ordinated planning.

(38) All actors should collaborate to meet the challenge to further build a more efficient, safe and environmentally sound air transport system in Europe that complies with the ambitious goals of the Lisbon strategy.

17 These factors are subject will be addressed in the follow up to the European Commission's public consultation on Radio Frequency Identification Devices www.rfidconsultation.eu
ANNEX

| The Commission will issue a mandate to Eurocontrol to develop harmonized airport capacity and assessment methodology tools. | Early 2007 |
| An observatory on airport medium term capacity planning under the aegis of the Commission will improve awareness and information on regional capacity needs by delivering an annual report. | 2007 |
| The mandate given to Eurocontrol on ATFM measures will propose solutions to ensure consistency between airport slots and flight plans, with the required modifications of relevant legislation. | Q1 2007 for mandate results – 2008 for adaptation of legislation |
| A legislative proposal on the extension of EASA to airport operations. | Early 2008 |
| The Commission will enable the certification of the EGNOS/Galileo signal in space and include GNSS exploitation in the European Radio-Navigation Plan. | From 2008 |
| A comprehensive inclusion of GNSS into ATM operational processes is expected from the SESAR programme. | 2007 |
| Funding from the TEN-T, European Cohesion Policy's programmes through the European Regional Development and the Cohesion Funds for eligible co-modality projects. | From 2007 onwards |
| The Commission intends to encourage integrated air-rail ticketing and will publish a consultation paper on the subject. | Early 2007 |
| Prepare a report on the implementation of the Noise Directive with a view to amending legislation, if so required. | 2007 - 2008 |
| Best practice guidelines and simplification of procedures to be developed to promote coordination of airport plans. | 2007 |
| Early implementation of mature technologies such as A-SMGCS surveillance and control functions throughout European airports. | From 2007 onwards |
| The SESAR programme will further develop new tools and systems that will significantly increase airport capacity. | 2007 - 2013 |
The Commission will also consider the findings and potential impact of the 2007 implementation of the Single European Sky report on airport operations. From mid 2007 onwards

The Commission will issue a mandate to Eurocontrol to develop implementing rules on the introduction of Airport-CDM at European airports. 2008