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Agenda Item 2: Aerodrome operations – improving airport performance
2.1: Airport capacity

INTEGRATION OF AIRPORT OPERATIONS WITH AIR TRAFFIC MANAGEMENT

(Presented by the Presidency of the European Union on behalf of the European Union and its Member States[1]; by the other Member States of the European Civil Aviation Conference[2]; and by the Member States of EUROCONTROL)

SUMMARY

This paper encourages ICAO to systematically consider airport operations when planning for performance-based ATM systems. It presents the high-level outline of a European vision for the integration of airport operations with air traffic management and suggests considering it as a valuable example in this context.

Action: The Conference is invited to agree to the recommendation in paragraph 6.

1. INTRODUCTION

1.1 The objective of this paper is to encourage ICAO to systematically consider airport operations when planning for performance-based air traffic management (ATM) systems, and to consider the Single European Sky programme as a valuable example in this context. Through the development of global standards ICAO will support States in implementing appropriate measures to ensure increased cost-efficiency through improved system performance by integration of airports and ATM processes and the application of network operations.

1.2 This goal can be achieved by the effective utilisation of ICAO's coordination mechanisms. With the successful development of a network manager, the European experience would benefit other Regions, and by applying such mechanisms, all ICAO regions would be able to address and resolve inconsistencies therefore providing transparency at the interfaces between the regions.

[1] Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom. All these 27 States are also Members of ECAC.

[2] Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Croatia, Georgia, Iceland, Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

2. MATCHING CAPACITY WITH DEMAND – TOWARDS IMPROVED PERFORMANCE

2.1 A Gate-to-Gate approach[3] requires the full integration of airport operations with en-route, and where applicable with ATM network operations. Increased cooperation between airport operators and their business partners[4] from the strategic planning phase will improve the coherence between local (ground) and global (en-route) processes.

2.2 Airport operations must be addressed in this context because they can have a significant impact upon en-route traffic, and their variability can lead to peaks of traffic and demand exceeding capacity at the en-route phase of flight and/or the airport of arrival. In addition, the impact of cumulative delays on aircraft operations can be significant, which in turn will result in even greater distortion of the operations which will impact individual aircraft operator and global performance.

2.3 Predictability and common situational awareness is essential to enable each stakeholder to perform according to its requirements. Airport collaborative decision-making processes implemented in a harmonised manner (i.e. complying with commonly agreed standards) are an essential building block of such an improvement. This would constitute the starting point towards a more comprehensive approach where all main airport processes could be collaboratively managed to achieve common situational awareness and optimum levels of predictability.

2.4 Planning processes must safely provide capacity where and when required, while ensuring flight efficiency, based on expected demand and operational context. This is achieved through increased flexibility and predictability between ground and en-route flight phases, while minimizing the effect on global operations and uncoordinated decisions. If this is not possible, it is our view that schedules could be amended/planned – balancing the optimisation of the network with the needs of the customer. Civil and military demand requirements are met through synchronised agreements, and airspace configurations (including en-route and TMA structures) are adapted dynamically to the traffic demand and military exercises in order to respond to any users' performance requirements, for instance by enabling that airspace users benefit from capacity opportunities as soon as they become available.

2.5 In Europe, the airport capacity declaration (and the subsequent airport slot allocation) process and airspace planning are closely linked. The quality of the data used for planning purposes is significantly enhanced by the provision of more accurate data directly from airport operators, airport coordinators and airspace users. In addition, data from all airports that generate any significant levels of traffic are used as inputs to the network planning process, so that a complete and accurate picture of expected traffic situations can be established.

2.6 Comprehensive airport capacity assessments are carried out to ensure that all aspects of the slot allocation process are fully aligned, and that accurate data are used as part of the network planning process. The agreed capacity figures ("declared") capacity in the European legislation) issued by airports are to be seen as a form of contract. The planning process, from strategic through pre-tactical to tactical operations, incorporates a constant quality management cycle including post operational analysis, which is consistent with the application of the gate-to-gate and air-to-air concept.

[3] This notion includes the consideration of the whole trajectory on the ground and the turn-around process.
[4] Mainly aircraft operators, ground handling operators and Air Navigation Service Providers.

3. INTEGRATING AIRPORTS FROM PLANNING TO POST-OPERATIONS

3.1 Global aviation is driven by enhanced stakeholder participation in a rolling cooperative process from planning to post-operations by continuously sharing latest flight intentions. This translates into a better match between demand and available capacity, by considering the plans as a target for all actors, taking into account operational updates, evaluating operations against performance targets, and updating the plans.

3.2 It is therefore essential that operational stakeholders ensure the timely development of operational plans, performance forecasts and supporting tools and data. They will have to recommend measures to improve the transparency of the overall process and, in particular, to develop an effective, interactive approach with stakeholders in order to reach a consensus on operational planning aspects. The timely sharing of dynamic operational data by ATM will improve predictability of sector capacities and contribute to improving capacity and flight efficiency coordination processes in the network, and improve effective application of measures.

3.3 As far as airports are concerned, linking airport operations using Airport-collaborative decision-making (A-CDM) will provide both pre- and post- operations improvement through enhanced common awareness, while post-operational analyses will also allow for adequate planning review and possibly a better planning of en-route (or sector) capacity for future operations.

4. A GLOBAL REGULATORY APPROACH

4.1 Since 2007, the process of establishing a regulatory framework for the Single European Sky has continued at a fast pace. A second package of legislation was adopted in 2009 with the objective of ensuring that a Single Sky[5] is in place from 2012 onwards. Today, the framework is almost complete, and airports and air traffic management together constitute the key infrastructure of this architecture. They are essential to the network and if capacity on the ground is lacking, the performance objectives of the Single Sky will be negatively affected. In other words, increasing capacity in the air will be pointless if it exceeds airport capacity.[6]

4.2 This calls for a set of global standards, as performance may be affected by the proliferation of different procedural and/ or technological choices. For instance, the extension of performance-based navigation to encompass ground operations clearly requires a standardised approach.

4.3 In addition, A-CDM is recognized globally as an enabler for better performance and ultimately quality of service, and is therefore eligible for inclusion in this approach to avoid the proliferation of local procedures, which will be detrimental to efficient operations overall.

4.4 Furthermore, A-CDM is the baseline for developments being undertaken by SESAR[7], in particular the airport operations plan (AOP), which will provide the link between an airport and the network operations plan (NOP). This will further enhance airports' integration into the ATM network (e.g. better engage them in the management of arrival traffic), and ensure a proactive performance management.

[5] The Single European Sky is a European Commission initiative by which the design, management and regulation of airspace will be coordinated throughout the European Union

[6] Source: European Commission Communication COM(2011)823

[7] The SESAR (Single European Sky ATM Research) programme is the technological and operational dimension of the Single European Sky (SES).

4.5 The proposals in this paper strengthen the role of airport managing bodies as coordinators of ground operations with overall responsibility for the coordination of ground-handling services at an airport[8]. They provide airports with a set of new tools with which to do this, for example, to require minimum standards to be respected by all ground-handlers at their airport. These measures should also strengthen the resilience of airports facing major disruptions. The central role of the airport operators is also reflected in the recent safety rules presented by EASA on aerodrome design and operation.

5. CONCLUSION

5.1 Airlines, airports, air traffic management, ground handling and other relevant service providers, being parts of a wider network, are heavily interconnected and interdependent and thus need to cooperate in the most optimised manner to continue to perform in terms of safety, mobility, quality and resilience.

5.2 Europe's coordinated efforts have led to the development of a unique platform for cooperation and harmonisation geared towards building the Single European Sky that will deliver the ATM performance required for the 21st century. Its achievements in integrating aerodrome operations into the ATM network and the successes of our transatlantic co-operation using the performance framework to provide ICAO with tangible added-value, in terms of much-needed harmonisation mechanisms.

5.3 Ultimately, a global regulatory roadmap integrating all airports aspects will have to be considered to ensure a fully harmonized approach to the challenges facing global aviation in the 21st Century.

6. RECOMMENDATIONS

6.1 The Conference is invited to:

a) encourage ICAO, ICAO regions and States to ensure that airport capacity, including relevant airport planning and operational issues, are addressed or accounted for when planning for air traffic management capacity and system performance; and

b) encourage ICAO to consider the European experience in integrating airports and air traffic management (ATM) in a network when developing global standards for performance-based ATM systems.

— END —

[8] As proposed by the European Commission in COM(2011) 824 final of 01/12/2011, "Proposal for a Regulation of the European Parliament and of the Council on ground handling services at airports and repealing Council Directive 96/97/EC"