International Civil Aviation Organization

AN-Conf/12-WP/36
3/10/12

WORKING PAPER

TWELFTH AIR NAVIGATION CONFERENCE

Montréal, 19 to 30 November 2012

Agenda Item 1: Strategic issues that address the challenge of integration, interoperability and harmonization of systems in support of the concept of "One Sky" for international civil aviation
1.1: Global Air Navigation Plan (GANP) – framework for global planning
a) ASBU methodology and contents

THE EUROPEAN ATM MASTER PLAN AND AVIATION SYSTEM BLOCK UPGRADES

(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 presents a high level summary of the European ATM Master Plan which is aligned with the ICAO aviation system block upgrade (ASBU) and Global Air Navigation Plan (GANP). To facilitate and maintain global interoperability, a global GANP and ASBU maintenance process is needed, interfacing with national/regional ATM planning processes such as the European process maintaining the European ATM Master Plan.

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

1. INTRODUCTION

1.1 The European ATM Master Plan is the single European reference for the Technical Pillar of the Single European Sky (SES) Programme.

1.2 Edition 2 of the Master Plan was recently approved by the European governance bodies. The Master Plan, comprising three consistent levels of aggregation, is available through the Master Plan portal (www.atmmasterplan.eu).

[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. BACKGROUND

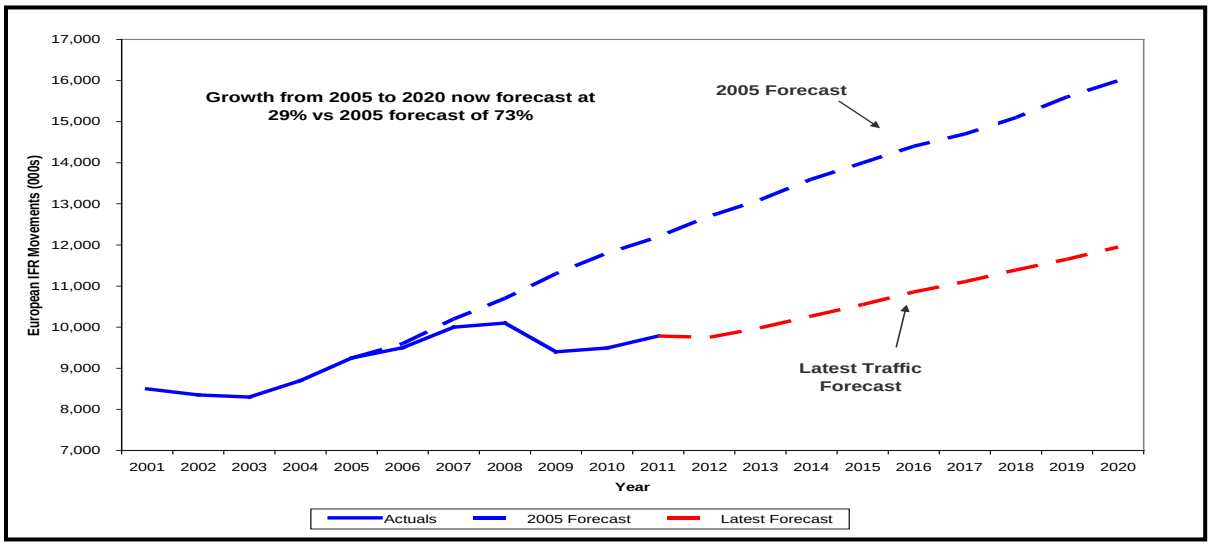
2.1 The Master Plan outlines the essential operational and technological changes that are required to contribute to achieving the European SES performance objectives. It is the agreed (but not legally binding) European "roadmap" connecting research and development with deployment scenarios.

2.2 The Operational Concept underlying the essential operational changes is aligned with ICAO's Global Operational Concept for global interoperability (ICAO Doc 9854 "Global Air Traffic Management Operational Concept").

2.3 The Master Planning process is strategic and performance-driven (the current Master Plan looks out to 2030) following the principles specified in the ICAO *Manual on Global Performance of the Air Navigation System* (Doc 9883). The performance needs are derived from the political high level goals and from forecast traffic evolution.

3. STRATEGIC PERFORMANCE OBJECTIVES

3.1 As shown in the figure below, air traffic has not evolved in line with the forecast which underpinned the previous edition of the Master Plan. Although there are still considerable uncertainties regarding the immediate future, the consensus of economic forecasts still supports a resumption of near-trend growth in the medium-term and it is on this basis that the Master Plan has been developed and subsequently updated. Furthermore, ATM operational concepts and technology developments not only lead to the capacity enhancements needed to handle significantly higher traffic volumes, but are also in the service of other operational and societal expectations; for example, expectations of a timelier, more resilient and environmentally friendlier service.

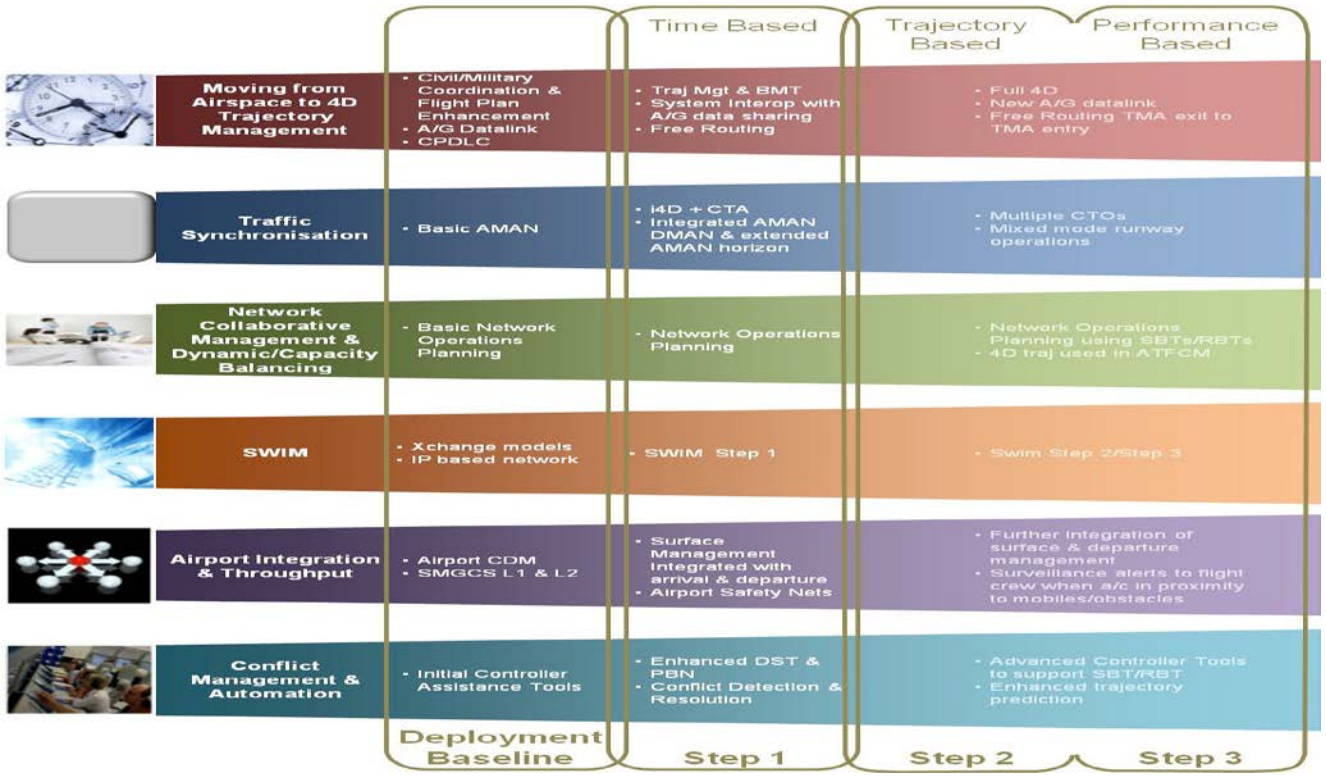


3.2 Performance needs are derived for the four main KPA's: safety; capacity; cost efficiency; and environment/fuel efficiency in either a qualitative or quantitative terms depending on the availability of suitable information. These performance needs estimate the performance required in a specific part of the ATM network at a given point in time on the basis of traffic forecasts and business requirements. They are then used as the basis to define the deployment views and allow there to be confidence that it will be possible to meet the targets set by the performance framework described in AN-Conf/12-WP/30, when the time has come to implement the changes.

4. ESSENTIAL OPERATIONAL CHANGES

4.1 The transition towards the target Operational Concept is scoped in three complementary Steps. Step 1: Time-based operations is the focus of the current Master Plan and progresses through to Step 2: Trajectory-based operations, and then to Step 3: Performance-based operations. Step 1 starts from a deployment baseline consisting of operational and technical solutions that have successfully completed the R&D phase and have either been implemented or are planned to be implemented.

4.2 As shown in the figure below, the Master Plan identifies 11 essential operational changes for Step 1. These will establish the foundations for the subsequent steps while responding to the performance needs. The essential operational changes are grouped in six Key Features that describe the main strategic orientations.



4.3 The operational changes are enabled through changes in technical systems, procedures, human factors and institutional changes including standardization and regulation. The Master Plan maintains roadmaps of all these changes for each Stakeholder Group ensuring that their deployment is planned in a performance driven and fully synchronized (e.g. between ground and air deployments) way to maximize the system wide benefits from Stakeholders' investments.

5. LINK WITH ASBUS

5.1 Global interoperability is essential for airspace users. It maximizes the return on their investments, which is a benefit for the Global ATM System.

5.2 The Master Plan contributes to global interoperability in three ways. All the operational changes are linked with the ASBU structure. The roadmaps, especially those for communication, navigation and surveillance are consistent with the roadmaps in the GANP. Moreover, the Master Plan includes a

standardization roadmap (see paper …) which reflects the European standardization needs for which a global standardization approach is required.

5.3 Global interoperability will only be ensured when all national and multi-national/regional ATM R&D and deployment programmes feed and maintain consistency with the global reference specified in the GANP and ASBUs.

5.4 An effective ICAO process should ensure that proposed changes to the global reference are timely captured, analyzed and concluded upon in a timely manner and translated into updates following a clear update cycle.

6. RECOMMENDATION

6.1 The Conference is invited to:

a) note the European ATM Master Plan as the consolidated and endorsed European view on the performance-driven evolution of the European ATM system;

b) note the alignment of the European ATM Master Plan with the ICAO ASBUs;

c) invite States and regions to use the GANP and the ASBUs as global reference for ATM R&D and deployment programmes;

d) request ICAO to develop and implement an effective process for maintaining the global reference based on inputs from ATM R&D and deployment programmes; and

e) request ICAO to prioritize the timely development of standards and procedures for the essential operational changes and for supporting ATM technology changes.

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