International Civil Aviation Organization

The Third Meeting of the APANPIRG ATM Sub-Group (ATM /SG/3)

Bangkok, Thailand, 03-07 August 2015

Agenda Item 3: Performance Frameworks and Metrics

MEASURING REGIONAL AIR TRAFFIC MANAGEMENT PERFORMANCE

(Presented by Singapore)

SUMMARY

This paper reiterates the importance of ATM performance measurement in the Asia Pacific region as highlighted at the 25th APANPIRG meeting and 51st DGCA Conference. The implementation of a performance measurement framework will benefit the region through greater understanding of where efforts could be directed at to enhance ATM performance. The paper further suggests that the Asia Pacific region begins its performance measurement journey with the development of a performance measurement framework based on certain key performance indicators.

1. INTRODUCTION

1.1 The Asia Pacific (APAC) Seamless ATM Plan V1.0, endorsed at APANPIRG/24, contains several Aviation System Block Upgrade (ASBU) Block 0 elements considered as critical that should be accorded the highest priority in terms of implementation. Subsequently at APANPIRG/25, ten regional priorities were identified and targets were set to be achieved by November 2015.

1.2 Aside from tracking implementation status of the set priorities and targets, the importance of measuring and monitoring ATM performance levels was also raised and discussed at the APANPIRG/25 and 51st DGCA Conference. A few key points were highlighted, chiefly, that monitoring ATM performance levels would enable early detection and effective mitigation of performance bottlenecks, and that States and Administrations should consider efforts to enhance the performance framework for improved monitoring of regional ATM system performance levels so as to be able to continually deliver safety and efficiency benefits for the aviation community. APANPIRG/25 also noted the merits of a proposed independent body to monitor and review the APAC regional / sub-regional ATM systems and tasked the ATM SG to review the establishment of this independent body as an action item.

2. DISCUSSION

Measuring for Effect

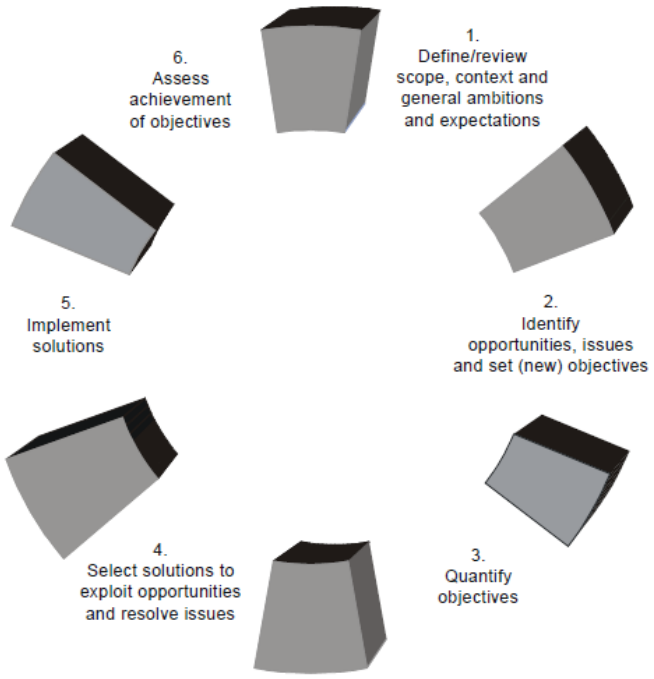
2.1 As mentioned, several regional priorities and targets have been set and agreed at APANPIRG/25 which focuses on the implementation of key ASBU Block 0 modules and civil-military coordination priorities. However, the degree of quantified improvement planned for remains unclear. To illustrate this point, a pertinent question might be asked: what would the successful implementation of some of the planned targets translate to in terms of ATM safety, capacity and/or efficiency improvement? While the current regional performance framework focused on tracking the implementation status of the priorities, the targeted level of efficiency improvement is somewhat elusive.

2.2 As the vast, heterogeneous APAC region comprises many Flight Information Regions (FIRs) of varying traffic flows and demands, naturally the implementation of a particular ATM initiative can be more effective in one area but less so in another as there is no one-size-fits-all. Measurements of positive ATM efficiency gains following a successful implementation of a certain initiative can be used as part of a business case to promote wider adoption of that initiative in other areas of similar characteristics. Over time, this can lead to better resource planning and optimisation while achieving maximum returns on investment.

2.3 The implementation of a performance measurement framework will benefit the region through the greater understanding of what, where and when enhancement efforts could be directed at for maximum effect. This helps to streamline the effort needed to and target key focus areas for future ATM initiatives. In addition, continual performance reporting will allow States to validate the key focus areas and redirect limited resources to appropriate operational gaps.

Managing Regional ATM Performance through Measurements

2.4 As stated in Part I, Chapter 2 of the ICAO Manual on the Global Performance of the Air Navigation System (Doc 9883), there can be many variations to performance management process in use today but all are based on a similar philosophy and principles. In a "generalised" version of a step-by-step description, the process can be broken down into manageable, easy-to-understand steps as depicted in the following diagram:



2.5 Of relevance to the context of this paper would be Steps 3 (Quantify Objectives) and 6 (Assess achievement of objectives) as described in the process above. The purpose of Step 3 is to ensure that several aspects of quantifying objectives are properly addressed, namely, objectives should be specific, measurable, achievable, relevant and time-bound (SMART). Performances of current, in the expected future, as well as actual progress in achieving performance objectives are usually quantitatively expressed by means of indicators (sometimes called Key Performance Indicators, or KPIs). These indicators are often calculated from supporting metrics according to clearly defined formulas, e.g. cost-per-flight-indicator = Sum(cost)/Sum(flights). Through an organised framework of data collection to support the required metrics, measurement and analysis of performance objectives can then be conducted.

2.6 Step 6 is used to review if performance objectives have been met, or how close does the actual performance measure up to the planned objectives. In a performance review, appropriate indicators are compared with targets as defined during Step 3 to draw conclusions on progress in achieving the objectives. This step also includes monitoring the progress of implementation projects, as well as checking periodically whether assumptions are still valid and that the planned performance can be delivered by the target solution(s).

2.7 Doc 9883 also contains comprehensive guidance on other aspects of performance management, including Appendix E in Part I on metrics and indicators. For starters, a proposed regional measurement framework, when set up, could include measurement of Key Performance Area 02 – Capacity. Some commonality can be found between indicators of airspace and airports. For airspace, indicators such as the number of IFR flights that are able to enter an airspace volume, or other aggregated number based on agreed airspace capacity rates defined as the number of IFR flights able to be present in sectors at any one time. For airport capacity, basic indicators such as the number of movements per unit of time that can be accepted during different meteorological conditions. Examples of indicators for airport capacity as quoted in the Doc 9883 Part I Appendix E are:

- hourly number of IFR movements (departures plus arrivals) possible during low visibility conditions (IMC);
- daily number of IFR movements (departures plus arrivals) possible during a 15-hour day between 07 00 and 22 00 hours local time during low visibility (IMC) conditions;
- average daily airport capacity for a group of 35 airports measured as a five-year moving average; and
- average daily airport capacity for a group of seven major metropolitan areas.

2.8 While it may be a challenge for the States to provide an extensive range of data for performance tracking, basic information can be readily produced and used as a starting point such as those briefly mentioned in paragraph 2.7. As the region takes on a project management approach to implementing the ASBUs, the performance measurement and management process as discussed in this paper can be relevant in assessing and monitoring the improvements of proposed solutions going forward.

2.9 In consideration of the above, the following draft Conclusion is proposed for the meeting's consideration:

Draft Conclusion

That, States and Administrations in the Asia Pacific region recognise the need for quantitative ATM performance measurement, and to consider efforts towards developing a regional performance measurement framework to support APAC Seamless ATM implementation.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Note the information in this paper;

b) Discuss the need for a performance measurement framework to support the implementation of the APAC Seamless ATM Plan, and options in which the region could consider to develop such a framework for measuring, monitoring and reviewing the regional ATM system performance;

c) Consider supporting the draft conclusion in para 2.9; and

d) Discuss any other matters related to this paper.

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