SIP/2012/ASBU/Dakar-WP/5

# Performance Framework for Efficiency

H. Sudarshan

Workshop on preparations for ANConf/12 − ASBU methodology
(Dakar, 16-20 July 2012)

# Outline

- Background
- Performance Framework
  - Requirements, terminology
- Measurement approach
- Metrics
- Next Steps

# Vision Statement

To achieve an interoperable global ATM System for all users during all phases of flight that:

- meets agreed levels of safety
- provides for optimum economic operations
- is environmentally sustainable
- meets national security requirements

# What is a Global ATM System

It is a system of systems which:

- facilitates interoperability of different technologies;
- accommodates different procedures;
- covers all elements of AN systems (ATM, CNS, AGA, AIM and MET); and
- provides harmonization thus leading to seamlessness across regions.

This is achieved through progressive, cost effective and cooperative implementation of air navigation systems worldwide.

# Performance Framework Background

- Eleventh Air Navigation Conference, held in September 2003, urged ICAO to develop a performance framework for Air Navigation Systems

- 35th Session of the ICAO Assembly, held in September 2004, adopted Resolution A35-15, App B and urged ICAO to ensure that the future global ATM system is performance based and that the performance objectives and targets for the future system are developed in a timely manner

# Performance Framework Principles

- Focuses on results
  - through adoption of performance objectives and targets
- Encourages collaborative decision making
- Relies on facts and data for decisions
- Emphasizes on performance monitoring

# Performance Framework Requirements

- Once an organization, State or a region has adopted performance based planning, it must acknowledge the following :
  - Commitment *(at the top)*
  - Agreement on goals *(desired results)*
  - Responsibility *(who is accountable)*
  - Human resources and know-how *(Culture & Skills)*
  - Data collection, processing, storage and reporting
  - Collaboration and coordination *(with other partners)*
  - Cost implication *(what does it cost)*

# Performance Framework Advantages

- Result oriented, transparent and promotes accountability
- Shift from prescribing solutions to specifying performance
- Employs quantitative and qualitative methods
- Avoids a technology driven approach
- Allows optimum resource allocation

# Performance Framework Terminology (1/3)

- **Expectation or Key Performance Area**
  - 11 high level expectations are defined in the OCD (Access/ Equity, Capacity, Cost-effectiveness, Efficiency, Environment, Flexibility, Global interoperability, Participation by the ATM community, Predictability, Safety and Security)
- **Focus Area**
  - Focus areas may be defined as areas where performance must be addressed in a any given KPA. For example, in the safety KPA, focus may be in such areas as CFIT accidents, runway incursions. For capacity, focus area could be enroute airspace or terminal airspace.

# Performance Framework Terminology (2/3)

- **Performance Objective**
  - Each expectation should be reached through a set of specific, measurable, achievable, relevant and timely (SMART) performance objectives
  - Performance Objectives is defined in a qualitative way - a desired trend from today's performance (e.g. improvement), within a well specified ATM planning environment. In other words it is a high level statement of outcome that satisfies ATM community expectations. Example : In ASBU approach the module itself becomes performance objective – ASBU B0-15: Improve traffic flow through runway sequencing
- **Performance Target**
  - A set of agreed numerical values of related performance indicators, representing the minimum performance levels at which an objective is considered to be 'achieved'.
  - Example: Ten percent increase in the capacity of terminal airspace.

# Performance Framework Terminology (3/3)

- **Performance Indicator**
  - Indicators are defined when there is a need to document current performance levels and progress in achieving an objective. It is a measure of progressive achievement of performance objective. Example: Three percent increase in the capacity of terminal airspace
- **Performance Metric**
  - Metrics are quantitative measures of system performance – through data. Example: Number of movements per day per aerodrome; Kilograms of fuel saved per operation; Kilograms of $CO_2$ emissions reduced per operation.

# Performance Framework Tools

**GAP analysis**

**operational enhancements/Technology**

**Safety analysis**

**Safety case and safety assessment**

**Economic analysis**

**Develop aircraft movement forecasts, assess costs and benefits of technology, calculate NPV, determine funding sources, agree on cost recovery methodology, identify risk factors and implement risk mitigation techniques – the process is known as "Business case"**

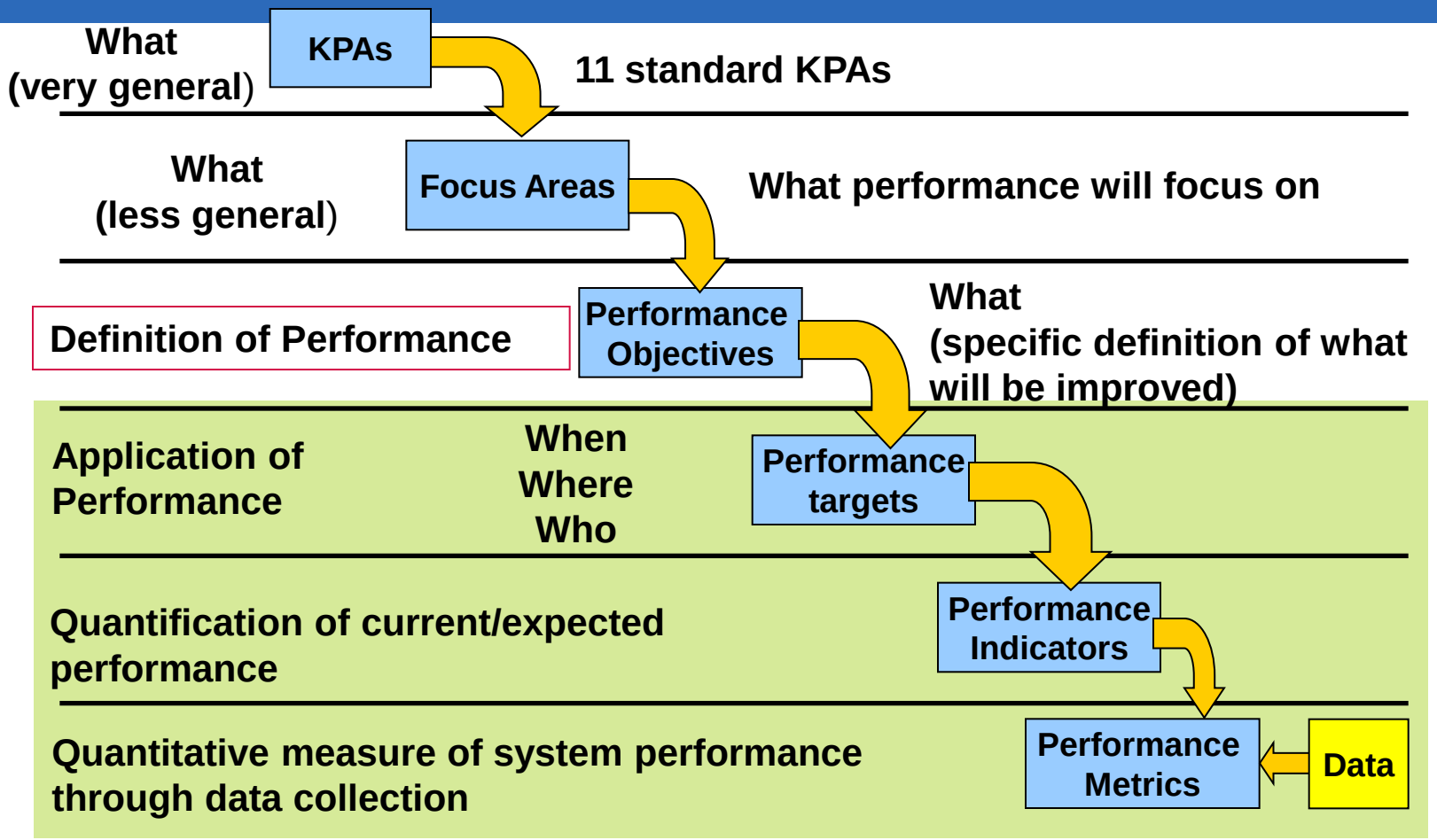
# Performance Framework Definition

- In essence, a Performance Framework is a set of
  - principles
  - requirements
  - terminology
  - describes the building blocks/tools
  - used by ATM community members to collaborate and cooperate on performance driven activities/tasks

# Measuring success

- Success of global air navigation system implementation
  - Based on outcomes
  - Meet 11 expectations of ATM Community
  - Each PIRG will choose measurable metrics related to KPAs

# Measurement Approach



# REGIONAL AIR NAVIGATION PLANNING- SUGGESTED PERFORMANCE METRICS

| Key Performance Area | Related Performance Metrics |
|---|---|
| 1. Access & Equity | 1. KPA/Access: Percentage of instrument runway ends having an APV |
| | 2. KPA/Access: Duration of Special Use Airspace (SUA) limits Civil Operations |
| | 3. KPA/Equity Percentage of aircraft operators by class who consider that equity is achieved |
| | 4. KPA/Access: Percentage of requested flight level versus cleared flight level |
| 2. Capacity | 1. Number of movements per day per aerodrome |
| | 2. Average ATFM delay per flight at an airport |
| | 3. Number of aircraft entering a specified volume of airspace per hour |
| | 4. Average en-route ATFM delay generated by airspace volume |
| 3. Cost effectiveness | 1.IFR movements per ATCO hour on duty |
| | 2. IFR flights (en-route) per ATCO hour duty |
| 4. Efficiency | 1. Kilograms of fuel saved per operation |
| | 2. Average ATFM delay per flight in the airport |
| | 3. Percentage of PBN routes |
| 5. Environment | 1.Kilograms of $CO_2$ emissions reduced per operation |
| 6. Flexibility | To be decided |
| 7. Global Interoperability | 1. Number of ATC automated systems that are interconnected |
| 8. Participation of the ATM Community | 1. Level of participation in meetings |
| | 2. Level of responses to planning activities |
| 9. Predictability | 1. Arrival/departure delay (in minutes) at airport) |
| 10. Safety | 1.Percentage of instrument runway ends having a precision approach procedure |
| | 2.Number of runway incursions per aerodrome per year |
| | 3.Percentage of certified aerodromes used for international operations |
| | 4. Number of aircraft fitted with ADS-B IN |
| | 5. Number of aircraft fitted with ACAS / logic Version 7.1 |
| | 6.Percentage of aerodromes with PBN STAR implemented |
| | 7. Percentage of aerodromes with CDOs implemented |
| | 8. Number of ADS-Cs available over oceanic and remote Areas |
| | 9. Number of continental CPDLC systems established |
| | 10. Percentage of aerodromes with PBN SIDs implemented |
| | 11. Percentage of aerodromes with CCOs implemented |
| | 12. Number of States implemented WGS-84 |
| 11. Security | Not applicable |

# ICAO

## Uniting Aviation on

## Safety | Security | Environment