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Single European Sky vision: Increase capacity 3 times, reduction of ATM cost by half and ensuring improvement of safety by 10 times – how to satisfy this goal in safety area?

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Abstract

Despite of expected growth of traffic from 1.75 % up to 2.4 % in period 2010 - 2050 in the airspace of Europe (Eurocontrol/STATFOR) there is still the need to ensure high level of safety performance. The main goal – safe provision of Air Traffic Services and its achievement should be ensured by achievement of performance targets set by European commission for different reference period (RP) - RP 1 for years 2012-2014, RP 2 for years 2015-2019 and for RP3 for years 2020-2024.The performance targets should contribute to sustainable development of the air transport system by improving the air navigation services delivery across the key performance areas of safety, environment, capacity and cost-efficiency.

In RP 2 the key performance indicators for safety were defined: effectiveness of safety management system, the application of severity classification for the reported occurrences in air traffic by using Risk Analysis Tool (RAT) and adoption of just culture principles.

The last mid-air collision with direct contribution of Air Navigation Service Provider in Europe happened in 2002. After this year there is no record about accident directly caused by ANSP. Does it mean we have reached the maximum safety level? How we can improve in area of safety management system when lagging indicators such as accidents are missing? How we can define areas for potential improvement?

This article is focused on new approach in the measurement of safety management system (SMS) development which provides a structured approach to control safety risks in operations. The ATM safety management maturity measurement tool will provide a comprehensive picture to management of the organization in which area is necessary to improve and in which area the maximum

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potential was achieved. The effectiveness of the safety management have to take into account the organization's specific structures and processes related to safety of operations.

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Keywords: safety management system, maturity, effectiveness, human factor, just culture, modelling, measurement, occurrence, performance, reporting system, safety, severity

1. Introduction

The need for a framework within which aviation stakeholders can manage safety has been recognized at an international level and in a growing number of domestic regulations. ICAO Annex 19 and its complementary domestic regulations are, however, scoped as general statements against which compliance can be tested rather than providing an evolutionary pathway which drives a culture of continual improvement.

The coming decades will present many challenges for aviation, and ANSPs in particular. These challenges will include increased traffic demands, unmanned aircraft, and environmental and security considerations. ANSP management must solve these while maintaining (and even improving) the current levels of safety. To accomplish this, ANSP management must continually strive to improve the ways they identify risks and manage safety.

Across the industry, ANSPs are at different stages of SMS development. Some have very mature systems which are fully integrated into the operations. Others are starting to build formalized safety management practices and a culture which assures the priority of safety.

Based on the prediction of air traffic growth, the European Commission expects that the volume of traffic in EU will be doubled by 2020, and of course its main objective is to keep the same safety levels as they are nowadays. De Bondt and Leleu (2014).

A set of regulations for performance of air navigation service providers was established on the European level to ensure that safety within the European Union will be kept on a tolerable safety level.

2. Stakeholder requirements

It is important that the definition and purpose of each high-level safety key performance indicator (KPI) is documented and clearly communicated to all stakeholders. Figure 1 indicates the key principles for KPIs for different stakeholders, while recognizing the need to assist stakeholders in obtaining appropriate understanding of safety levels and outcomes.

A holistic approach to performance monitoring is an essential input to safety decision making. It is important to ensure that good safety performance is attributing to the efficient performance of the safety system and not simply to a lack of incidents. Very essential is that chosen metrics match the requirements of the stakeholders and decision-makers involved in safety improvements. Licu and Kelly (2007)

Stakeholders in wider aviation industry and the general public require a relatively small number of indicators which can give an instant "feel" for the overall position regarding safety performance. Conversely, those involved in the management of the services concerned need a more detailed set of metrics on which base decisions regarding the management of the services and facilities being reviewed.

The pyramid figured below provides an outline of the key principles for KPIs for various stakeholders, where level of detail is much higher at the bottom of the pyramid than at the top. This was governing principle for the development and use of safety indicators.