SLOVAK ANS PERFORMANCE

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Abstract *– Air Navigation Services (ANS) are essential for the safety, efficiency and sustainability of civil and military aviation, and to meet wider economic, social and environmental policy objectives. This paper deals with the key performance areas of Slovak ANS system and its provider – Letové prevádzkové služby (LPS)*

Key words – ANS performance, analysis, KPA, KPI

INTRODUCTION

„Air traffic management (ATM) is the dynamic, integrated management of air traffic and airspace — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties." (ICAO Doc 9854) [3]

The general objective of ANS is to enable aircraft operators to meet their planned times of departure and arrival and adhere to their preferred flight profiles with minimum constraints without compromising safety. Air traffic management as an essential part of ANS is composed of a number of complementary systems:

1. Airspace Management (ASM)
2. Air Traffic Flow and Capacity Management (ATFCM)
3. Air Traffic Services (ATS)

In Europe, Air Traffic Management is the joint responsibility of the European ATM community: Member States, the aviation industry, the European institutions and EUROCONTOL. They are working together to develop the European ATM system of the future.

SLOVAK ANS ENVIRONMENT

SLOVAK AIRSPACE

According to ICAO, Flight Information Region (FIR) is defined as „An airspace of defined dimensions within which flight information service and alerting service are provided." [10] The Slovak FIR is surrounded by FIRs of 5 States: Austria, the Czech Republic, Poland, Ukraine and Hungary. The Division Flight Level separating upper from lower ATS airspace is FL 245. Slovak airspace is divided into controlled and uncontrolled one. Controlled airspace in the Slovak Republic includes airspace from 8000ft/2450m AMSL or 1000ft/300m AGL, depending which one is higher, to FL 660 and airspace within CTRs and TMAs. Uncontrolled airspace is airspace class "G", which is from GND to 8000ft /2450m AMSL or 1000ft/300m AGL, depending which one is higher except of CTRs and TMAs. Upper Flight Information Region (UIR) is not established. From the charges point of view the airspace of the Slovak Republic covers two charging zones: terminal charging zone (the airspace within a distance of 20km from the public controlled aerodromes) and en-route charging zone (the controlled airspace not belonging to terminal charging zone). Air Traffic Service airspace in the Slovak Republic are classified into 7 different classes: A-G.

Size of controlled airspace: 48 700 km2.

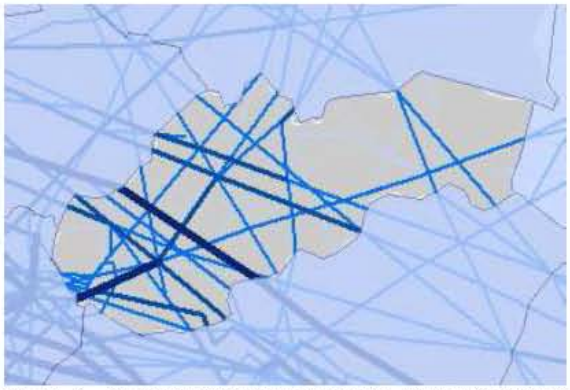

Figure 1 *– Controlled airspace and main air traffic flows [5]*

TRAFFIC

Further sections provide a high-level view of ANS performance in the wider context of air traffic operating under Instrument flight rules (IFR). The traffic section compares year to date [YTD] data with the same period in previous years. Slovak airspace is becoming increasingly popular from the view of en-route traffic. As is shown on figure below the year 2013 has a highest volume of traffic with 1087 daily flights and with 4,7 % change compared to 2012.

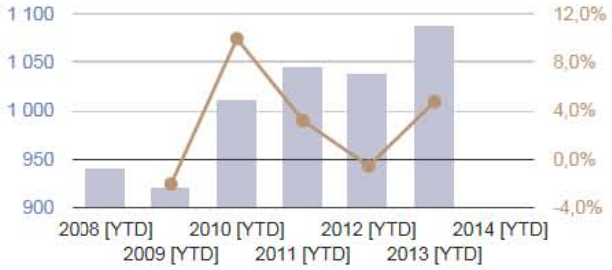

Figure 2 *– Average daily IFR flights (2008-2013) [1]*

Figure 3 shows monthly traffic for 2013. As usual busiest months are during the summer with an average about 1500 IFR flights per day while during December and January, these values are only around 800 movements per day.

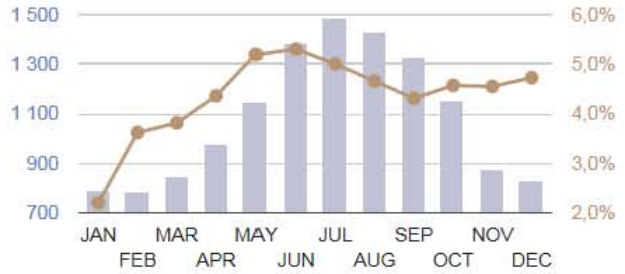

***Figure 3** – Average daily IFR flights (2013) [1]*

NATIONAL STAKEHOLDERS CIVIL/MILITARY

- The Ministry of Transport, Construction and Regional Development of the Slovak Republic
- The Ministry of Interior of the Slovak Republic
- The Transport Authority of the Slovak Republic
- Letové prevádzkové služby Slovenskej republiky - Air Navigation Services Provider
- Slovak Hydrometeorological Institute
- Aviation and Maritime Investigation Authority - Accident/Incident Investigation Body
- The Ministry of Defence of the Slovak Republic
- Slovak air force
- Military Aviation Authority
- Airports

INSTITUTIONAL BACKGROUND

In the field of Air Traffic Management, the Slovak Republic is a member of various important international organizations. List of organizations is shown in the following summary table.

***Table 1** – Membership of Slovakia in ATM international organizations [4]*

Organization	*Membership since*
ECAC	1993
ICAO	1993
EUROCONTROL	1997
JAA	2003
EASA	2004
EUROPEAN UNION	2004
NATO	2004
ECAA	2006

PROVIDING OF ATS

According to Aeronautical Information Publication of the Slovak Republic, Part GEN 3.3 AIR TRAFFIC SERVICES (ATS): „Air traffic services are provided for the entire territory of the Slovak Republic within the BRATISLAVA FIR." [5]

The following types of services are provided:

- Air Traffic Control Service (ATC)
- Area Control Service (ACC) inclusive radar services
- Approach Control Service (APP) inclusive radar services
- Aerodrome Control Service (TWR)
- Flight Information Service (FIS)
- Alerting Service
- Central Air Traffic Services Reporting Office (CARO)

Flight Information and Alerting Services are provided by:

- Bratislava Information Centre (FIC) in class G airspace
- Aerodrome operators at uncontrolled aerodromes or aircraft operators
- ATC Units in area of appropriate responsibility [2]

CROSS-BORDER OPERATIONS

1. in airspace falling under the responsibility of the Slovak Republic

Portions of airspace where cross-border provision of ATS takes place are qualified as CARs (Cross-border Airspace Relations) which, where relevant or when the information provided in the previous reporting period allowed it, are broken down as CABs (Cross-border Airspace Blocks). In this are there are two CARs/CABs - first is RUTOL-box designated as SKHU-01. Air Traffic Services are provided by Hungarian HungaroControl. Search and rescue co-ordination and operations provided by appropriate authorities of the Slovak Republic. There is also a new National Supervisory Authorities Cooperation Agreement dealing with supervision and safety oversight signed in Bratislava on 30 May 2011.

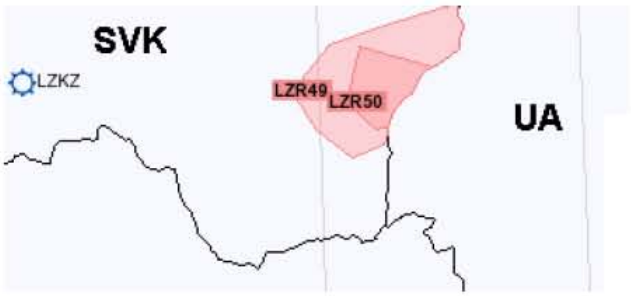

***Figure 4** – Restricted airspace LZR49 and LZR50 [5]*

Second CAB/CAR is area of Restricted airspace LZR49 and LZR50 in the eastern part of Slovakia, near the Ukrainian border. (fig.1) This area is marked as SKUA-01. Air Traffic Services provider in this space is UkSATSE. Entry approval must be obtained from Uzhorod APP/TWR on operating frequency, which is specified in Ukraine AIP.

2. ATS provided in the airspace falling under the responsibility of another State by Slovak ANS provider

There is one CAB/CAR designated as HUSK-01, shown on figure 5. This airspace area (Košice TMA 2) is under responsibility of Hungary, but Air Traffic Services are provided by Slovak ANSP - Letové prevádzkové služby Slovenskej republiky. Košice TMA 2 is available only for civil aircraft approaching RWY 01 in Košice. Aircraft has to be equipped with SSR transponder. Using TMA 2 by state aircraft is excluded unless they have received a diplomatic clearance from the Ministry of Foreign Affairs of the Republic of Hungary.

***Figure 5** – TMA Košice [5]*

EUROPEAN ANS PERFORMANCE REVIEW

In 1998, the EUROCONTROL Organisation launched Performance Review by creating the independent Performance Review Commission (PRC), supported by the Performance Review Unit (PRU). This was in line with ECAC's Institutional Strategy for Air Traffic Management in Europe which called for strong, transparent and independent performance review and a target setting system. The aim was to facilitate more effective management of the European ATM system, encourage mutual accountability for system performance and provide a better basis for investment analyses and provide States with guidelines on economic regulation. Currently, Performance Review incorporates all aspects of Air Navigation Services.

The second Single European Sky legislative package, adopted in 2010, has introduced a SES Performance Scheme as its key feature. The European Commission formally designated EUROCONTROL as the Performance Review Body (PRB) of the Single European Sky, acting through its PRC and supported by PRU. At present, this designation is valid until 30 June 2015. [1]

The Performance scheme of the SES is one of the key pillars of the Single European Sky aiming at achieving the general objectives of the SES as detailed in Article 1 of Regulation 549/2004. These objectives are:

- to enhance current air traffic safety standards;
- to contribute to the sustainable development of the air transport system; and
- to improve the overall performance of ATM and ANS for GAT in Europe, with a view to meeting the requirements of all airspace users.

The key provisions of the performance scheme are contained in Article 11 of the Framework Regulation which can be found in Regulation 549/2004 as amended, as well as in Regulation 691/2010 and Regulation 390/2013 laying down the performance scheme for air navigation services and network functions. By setting down EU-wide and local targets, as well as performance monitoring and corrective actions, the SES Performance Scheme aims at driving performance improvements in European aviation - initially in the fields of safety, capacity, the environment and cost efficiency. [1]

The Performance scheme is organised around fixed Reference Periods (RPs) before which performance targets are set both at EU-wide level and National/FAB level. These targets are legally binding for EU Member States and designed to encourage air navigation service providers to be more efficient and responsive to traffic demand, while ensuring adequate safety levels.

PERFORMANCE TARGETS (KPAS, KPIS)

Table 2 shows the main performance areas and its key performance indicators. These determinants are given by the PRB and it is evaluated annually for each country or scoped area such as Functional airspace blocks.

***Table 2**– Performance targets*

KPA	*KPI*
SAFETY	Effectiveness of safety management
	Application of severity classification
	Application of Just Culture (JC)
	Separation infringements
	Runway incursions
	ATM-specific occurrences at ATS units
	Airspace infringements
	Level of occurrence reporting
ENVIRONMENT	Horizontal flight efficiency of last filed
	Horizontal flight efficiency of actual
	Effectiveness of booking for FUA
	Rate of planning of CDRs
	Effective use of CDRs
	Additional time in taxi-out phase
	Additional time in terminal airspace
CAPACITY	En-route ATFM delay
	Arrival ATFM delay
	ATFM slot adherence
	ATC pre-departure delay
	Additional time in taxi-out phase
	Additional time in arrival sequencing
COST-EFFICIENCY	Determined Unit Cost for en-route-
	Determined Unit Cost for terminal ANS
	Terminal costs
	Terminal unit rate
	Costs of EUROCONTROL

HIGH-LEVEL VIEW OF SLOVAK ANS PERFORMANCE

Performance Review incorporates all aspects of Air Navigation Services.This section deals with the main KPAs (capacity, safety environment and cost eficiency) and its values for year 2013.

CAPACITY

Slovakia traditionally has a high level of airspace capacity. Average delay for 2013 was 0. Figure 6 shows that in August delay was 0,0016 minute per flight with a large margin under European 0,19 minute target. Blue line represents cumulative average.

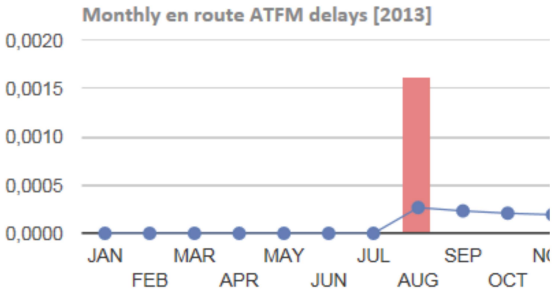

***Figure 6** – Monthly en-route delays [1]*

SAFETY

This KPA is analyzed in coordination with EASA. TheEffectiveness of safety management (EoSM) indicator is measured by calculating scores based on the verified responses toquestionnaires completed by the State/competent authorities (normally the NSA) and ANSPsrespectively. Slovak EoSM score for 2013 is 70 which is slightly below European average.

ENVIRONMENT

Data for the Horizontal en-route flight efficiency are not available yet, but we can expect high efficiency due to progressive implementation of the free route airspace concept. Second KPI is the Effective use of the civil/military airspace structures. Slovak airspace had 25% share of time when was segregated from general air traffic.

COST EFFICIENCY

Cost efficiency represents indicators derived from ANSP balance sheets and capitalexpenditures. Slovakia represents 0.7% of European system gate-to-gate ATM/CNSprovision costs. In 2013 reached 984,989 service units with 6,9% growth. Planned service units were 977,545. Actual service units vs planed were 0,8% higher. Figure 7 shows evolution during the year. Rate for the service unit was 55,45 €.

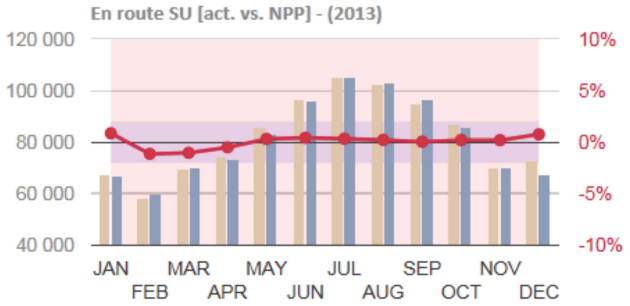

***Figure 7** – Planned en route service units [1]*

CONCLUSION

Slovakia is a specific country with Medium Capacity needs for en-route ACC in terms of movements per busy hour and Low Capacity needs for Airports and TMAs in this terms.This article is the starting basis for further analysis of the Slovak ANS performance within FABCE.

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