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Agenda Item 24: Aviation Safety and Air Navigation Priority Initiatives

PEL SYSTEM: THE KEY FOR THE BRAZILIAN DPL SOLUTION AND NEW APPLICATION SOLUTIONS TO SUPPORT PEL PROCESSES AND REQUESTS ATTENDANCE

(Presented by Brazil and supported by 17 Latin American Civil Aviation Commission (LACAC) Member States¹)

REVISION NO. 1

EXECUTIVE SUMMARY

This paper addresses the implementation of application solutions for the National Civil Aviation Agency (ANAC) Brazil personnel licensing (PEL) process. These solutions are related to the issuance of digital licenses and to the online and on time requests of services and its attendances.

For having application solutions a civil aviation authority (CAA) must have a major system, based on structured and relational database, that supports the execution and management of the CAA PEL processes and procedures. This major system needs to be the backbone and the core of the CAA PEL Office.

Two Brazilian application solutions are highlighted: Brazilian digital personnel license – digital personal licence (DPL) and a mobile app to support professionals' requests of PEL services and their responses. However, the application solutions are only possible due to a backbone and core system named PEL system.

Action: The Assembly is invited to:

- note the information presented in this working paper;
- encourage Member States to consider the development of PEL systems that enable real-time data exchange between States, as described in this paper;
- invite Member States to take into account the Brazilian experience and the solutions developed as a potential benchmark for the implementation or enhancement of their own PEL systems; and
- support the ICAO “No Country Left Behind” initiative by urging Member States with established PEL systems to explore opportunities for cooperation and knowledge-sharing with those lacking the necessary resources to implement such systems

<i>Strategic Goals:</i>	This working paper relates to <i>Every Flight is Safe and Secure</i> and <i>Seamless, Accessible, and Reliable Mobility</i>
<i>Financial implications:</i>	N/A

¹ Argentina, Belize, Bolivia (Plurinational State of), Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Nicaragua, Peru, Uruguay, Venezuela (Bolivarian Republic of)

<i>References:</i>	Annex 1 — <i>Personnel Licensing</i> Doc 9379, <i>Manual of Procedures for Establishment and Management of a State's Personnel Licensing System</i>
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1. INTRODUCTION

1.1 Since 2012, the National Civil Aviation Agency (ANAC) of Brazil has a centralized Personnel Licensing (PEL) Office and specific IT system, based on structured and relational databases, to support all its PEL processes and procedures. As one of the major results, ANAC Brazil can build a personal file, with all PEL information and milestones, just by “clicking a button”. When ANAC Brazil PEL Office was challenged to quit the inefficient expenditure of resources, financial and human, related to the process of printing licenses, the development of a Brazilian Electronic Personnel License – EPL was natural and fostered.

1.2 However, since ANAC Brazil already had a PEL IT system to support the execution and management of the ANAC Brazil PEL Office's processes and procedures, it became clear that an EPL solution was, in fact, an application layer of this support system. The implementation of a digital personal license (DPL) by ANAC Brazil started in 2018, when Brazilian DPL first version was launched. Since then, new features have been implemented.

1.3 Nowadays, Brazilian DPL is a robust solution and is on its way to being considered an Annex 1 compliant solution. It has also been made available in an Official Brazilian government electronic wallet solution, with security layers well established. By the technical and operational experience gained from 2012 till now, ANAC Brazil PEL Office is now implementing a new version of its PEL System, granting the achievement of new and even more efficient security and data integration levels. In addition, the new version allows the development of new application solutions.

1.4 Besides the Brazilian DPL latest improvements, a mobile app was launched in 2024 to enhance the relationship between ANAC Brazil PEL Office and Brazilian civil aviation professionals. This tool, called ANAC SuperApp, in addition of being an official and reliable PEL personal file provider, is also supporting the issuance of private pilots' licenses, electronic logbooks registers and specific certificates issuance by ANAC Brazil. Improvements on the existing application tools and the development of new ones are being planned. However, it is important to reinforce that these actual and future projects are only possible because of a backbone and core integrated IT system called PEL System.

2. DISCUSSION

The technical and functional characteristics of the Brazilian PEL system and its applications are here explored.

2.1 PEL system

2.1.1 Structured database

2.1.1.1 Since 2012, all the records regarding licenses, ratings, medical certificate, knowledge and practical tests and language proficiency level are stored in relational databases, with specific data tables related to each PEL process' phase. As a result, any information regarding the issuance of a license and/or

rating are made available online, in a well established web-based IT solution, from now on called PEL System.

2.1.1.2 However, the PEL System focus on each part of the entire PEL process, without integration between different phases. This approach, besides proved to be an efficient solution, has been showing its limitations on constructing a complete personnel file. Aiming to have a more efficient PEL System, since 2023 ANAC Brazil is developing and implementing a new version of it, focused on the professional career and its milestones. By this, a personnel file is a natural product, facilitating any development and implementation of application solutions, such as Digital Personal License and Services Apps.

2.1.2 *Scalability database*

2.1.2.1 Since this new PEL System is based on the procedures established on Annex 1 — *Personnel Licensing* and the *Manual of Procedures for Establishment and Management of a State's Personnel Licensing System* (Doc 9379), on robust relational database provided by a relevant worldwide provider and is a web-based solution, it can be implemented to support PEL processes of any Member State. In addition, it is important to quote that the new PEL System architecture provides an optimal structure and functionality to support an efficient development of application solutions such as Brazilian DPL and ANAC SuperApp.

2.1.3 *Personal file unique record – Structure, usability and data interoperability*

2.1.3.1 As already pointed out, the PEL System records and correctly associates any milestone of a professional through his/her PEL process. By granting this technical feature, all the personal file data is easily traceable and made available to not only ANAC Brazil, but to any Member State that would need this data.

2.1.3.2 Important to quote that, since the new PEL System is based on modern architecture, the development of automatic data transfer/sharing solutions between ANAC Brazil and other Member States and ICAO is easy and fast.

2.2 **Brazilian digital personal license app**

2.2.1 *Data verification procedures – ANAC Brazil QR Code*

2.2.1.1 Information authentication procedures and their correct correlation between the professional and his/her PEL personal file are relevant questions that were properly addressed by applying well known codes, since the PEL system is based on relational database solution.

2.2.1.2 As a result, besides attending cybersecurity concerns, it is possible to create a unique ANAC Brazil QR Code to each professional. By reading this QR Code, and answering confirmation questions, any inspector can have access to that specific professional licenses, ratings, language proficiency and medical certificate data. This ANAC Brazil QR Code, as demanded by Annex 1, is placed in the Brazilian DPL solution.

2.2.2 *Data verification procedures – ICAO QR Code*

2.2.2.1 A specific QR Code is created for granting any international inspector the possibility of personnel license and ratings verification in a secure ICAO IT environment, as established in phase 1 of an ICAO accredited DPL solution. Besides being prepared for an ICAO solution, Brazilian DPL is in its final implementation for sharing personnel licenses and ratings info with this ICAO IT environment.

2.2.3 *Brazilian DPL in a government official digital wallet (gov.br)*

2.2.3.1 Since Brazilian DPL solution is a full digital solution, based on the data stored in ANAC Brazil PEL System, it became natural to make this document one of the official documents available in the Brazilian government document wallet, from now on called gov.br, through an specific agreement, made with the Brazilian government IT solution provider. This solution has its foundations on technical parameters related to the document lay-out and on how the PEL data is safely sent from ANAC Brazil to gov.br.

2.2.3.2 Since all PEL personnel data is refreshed on gov.br in a daily basis, the Brazilian DPL is always updated on the Brazilian official wallet, granting an efficient and trusted way of making this document reliable and with high level of availability. Important to quote that, as an additional safety layer, gov.br has specific access policies that includes biometric validation with official electoral and civil identification databases.

2.2.4 *Scalability*

2.2.4.1 Since Brazilian DPL solution is a full digital solution, it can be fit to any digital PEL Office Support System that is able to provide personal files, having licenses and ratings updated info. In addition, as Brazilian DPL solution is also compliant with Annex 1 requirements, only lay-out issues must be settled. As an example, Brazilian DPL has the same lay-out as the past printed documents.

2.3 **SuperApp**

2.3.1 *Data driven and performance*

2.3.1.1 Since the ANAC SuperApp is an application, based on PEL System, it was thought as a transactional facility between the professional and ANAC Brazil's PEL Office. ANAC SuperApp application is fully integrated with PEL System and its databases, granting real time data access. By this, besides being a place where the professionals can access fast data research, the ANAC SuperApp does not demand high processing capacities from the mobile devices where it is installed.

2.3.2 *Process based – other integration layer with PEL System*

2.3.2.1 The ANAC SuperApp, as a transactional application developed for the PEL System, has established and settled on it all the PEL processes' flows, Thus, the applicant can make requests and follow all the PEL processes milestones using only the ANAC SuperApp.

3. **CONCLUSION**

3.1 This paper has the main objective of showing that DPL or any other specific solution must be based on a robust and reliable IT system. Such system, called here PEL System, must be based

on well-known relational database technology and designed to provide a professional personal file instantaneously and to support all PEL processes performed by a State PEL Office.

3.2 This PEL System, then, must be based on Annex 1 and ICAO DOC 9379 requirements and recommendations to grant data interchange between Member States just by using data transfer/sharing solutions. Applications, like Brazilian DPL and ANAC SuperApp, are also fostered by this data and system architecture. It also turns possible instant verification of PEL data in a Ramp Inspection or any other inspection in a global scenario.

3.3 Since the Brazilian PEL System and its applications are based on worldwide well-known technology and based on requirements and recommendations established on Annex 1 and Doc 9379, it can be easily used as a benchmark or even shared with Member States.

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