



WORKING PAPER

ASSEMBLY — 40TH SESSION

TECHNICAL COMMISSION

Agenda Item 30: Other issues to be considered by the Technical Commission

HUMAN-MACHINE INTERFACE IN AIRCRAFT OPERATION

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

Technology can induce emerging risk and if not properly mitigated, their consequences could be catastrophic, when advanced technology is not understood or inadequately managed.

For example the introduction of a new aircraft type or model remains a technological challenge for a State which is not the State of Design. Such States have generally very limited knowledge about the product or techniques to ensure safe operations under their jurisdiction. Data such as operational suitability data (OSD) or field services branch (FSB) helps handing over the necessary mandatory training from a State of Design's perspective; however ambiguity or confusion may exit when the content/level of such mandatory training may not be appropriate to the risk encountered, as evidenced by reports contained in some accident investigation reports.

Despite, the progress achieved by States recent accident aftermath shows that more is needed.

Action: The Assembly is invited to:

- a) instruct ICAO to streamline through Annex or guidance, the importation process of a new aircraft, including the roles and responsibilities between each of the involved States;
- b) instruct State of Design to continue providing design data essential to determine the safety level and to ensure the safe operation of aircraft is communicated, unrestrictedly, in timely manner to State of Registry/State of Operator. Confidentiality and IP right must be guaranteed but these could not be evoked as a principle of exception for disclosure of essential safety data; and
- c) urge States of Design to harmonize their certification procedures and specifications unless the difference is essential to safety.

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objectives Safety, Air Navigation Capacity & Efficiency & Security and Facilitation
<i>Financial implications:</i>	NA
<i>References:</i>	NA

1. INTRODUCTION

1.1 Technology can induce emerging risks and if not properly mitigated, their consequences could be catastrophic.

1.2 Aviation relies heavily on technology and human beings, and this will continue for decades even though the concepts of artificial intelligence and machine learning are growing in the aviation sector.

2. DISCUSSION

2.1 Because human beings often act as a last defence in aircraft operation or support to aircraft operation, it is vital that aviation personnel are very versatile and competent in understanding the machine and interface they are operating.

2.2 For example the introduction of a new aircraft type or model remains a technological challenge for a State which is not the State of Design. Such States have generally very limited knowledge about the product or techniques to ensure safe operations under their jurisdiction. Data such as OSD or FSB helps handing over the necessary mandatory training from a State of Design's perspective; however ambiguity or confusion may exit when the content/level of such mandatory training may not be appropriate to the risk encountered, as evidenced by reports contained in some accident investigation reports.

2.3 Consequently, it is important for:

- a) States of Registry and States of Operator to be guided and be able to ask the right questions and obtain the right responses from original equipment manufacturer (OEM) and States of Design to ensure that they can support the aircraft operation;
- b) aircraft operators to be guided too when it comes to introduction of a new aircraft model in their fleet. When the aircraft is brand new, this process may be simpler and smoother as compared to used aircraft where direct support from OEM or State of Design may not be easy to obtain;
- c) States of Design to establish a very collaborative approach for validating or accepting States to be enabled them to discharge their functions and as well allows a continuous flow of information towards State of Registry and Operators at all times (such as certification data or documents or status of report on event/incidents); and
- d) a harmonisation of the codes of airworthiness, certification basis; methods and procedures of certification to reduce the risk of a mix fleet of type design within the same aircraft operator and/or State e.g. the same aircraft model could have been introduced in the same fleet of an operator with an Federal Aviation Administration (FAA) type design and European Union Aviation Safety Agency (EASA) type design).