

REGULATING THE COMPETENCE OF ATM STAFF

Over the last few years, EUROCONTROL has been developing quantified models of accident and incident risk, mostly to support SESAR safety assessments. These models could help to provide information to demonstrate the competence requirements for certain tasks.

Gauthier Sturtzer and Eamonn Wylie explain a methodology called the Task Safety Impact Assessment Technique.

KEY POINTS

- **ATCOs and ATSEPs are currently the only staff with an EU competence regulation in the field of ATM.**
- **The ATM social partners work jointly to inform EASA's decisions with the support of EUROCONTROL.**
- **Jobs are different from one organisation to the next. Regulating a job would therefore be problematic.**
- **Regulating competence is the result of discussions involving all parties.**
- **Licences are not the only appropriate framework to deal with staff competence.**

The legislative obstacle

Through the vision of the Single European Sky and the subsequent entry into force of Regulation (EC) No 1108/2009, the scope of responsibilities of EASA was extended to cover personnel involved in ATM/ANS provision. One of the first steps was to introduce a European licence for air traffic controllers. In addition, air traffic safety electronics personnel (ATSEPs) also see their competence regulated at an EU level.

In conjunction with this extension of EASA's field of competence across ATM, the Agency included in its rulemaking programme tasks to cover all safety-related fields of ATM with both technical requirements but also competence requirements for staff performing various functions (for example MET, AIS, ATS, CNS). This overarching regulation is known as the ATM/ANS Common Requirements (Regulation 2017/373).

Annex XIII of this regulation, Part-PERS, was created as a still mostly vacant place to cover any regulation outside the scope of that established in other legislative locations, such as the 2015/340 (ATCO Licensing). Unfortunately, given the lack of safety evidence supporting the need for regulation, implementing those rulemaking tasks proved to be difficult. Therefore, in order to fill this annex in a proper manner, to have an up-to-date knowledge of this developing field of activities, as well as to ensure the most proportionate approach in any possible further related measures, the Agency decided to commission an external study to examine potential development processes and inform future decisions to propose (or not) regulations regarding ATM staff competence.

EASA's initial step

In 2013, EASA commissioned two consulting firms (ECORYS and NLR) to produce a regulatory impact assessment on new rules for training and



competence requirements of ATM/ANS personnel.

First, for each ATM/ANS service, a detailed list of functions was established and a list of jobs associated to these functions was derived. Following this framework of functions and jobs, a definition of safety-related and safety-critical was proposed based on the application of the EUROCONTROL 'accident incident model' (AIM, now known as the IRiS model), commissioned by SESAR.

A function is defined as safety-related if a failure of the function would impact

safety, using the AIM. A job is defined as safety-related if the job involves performing at least one safety-related function.

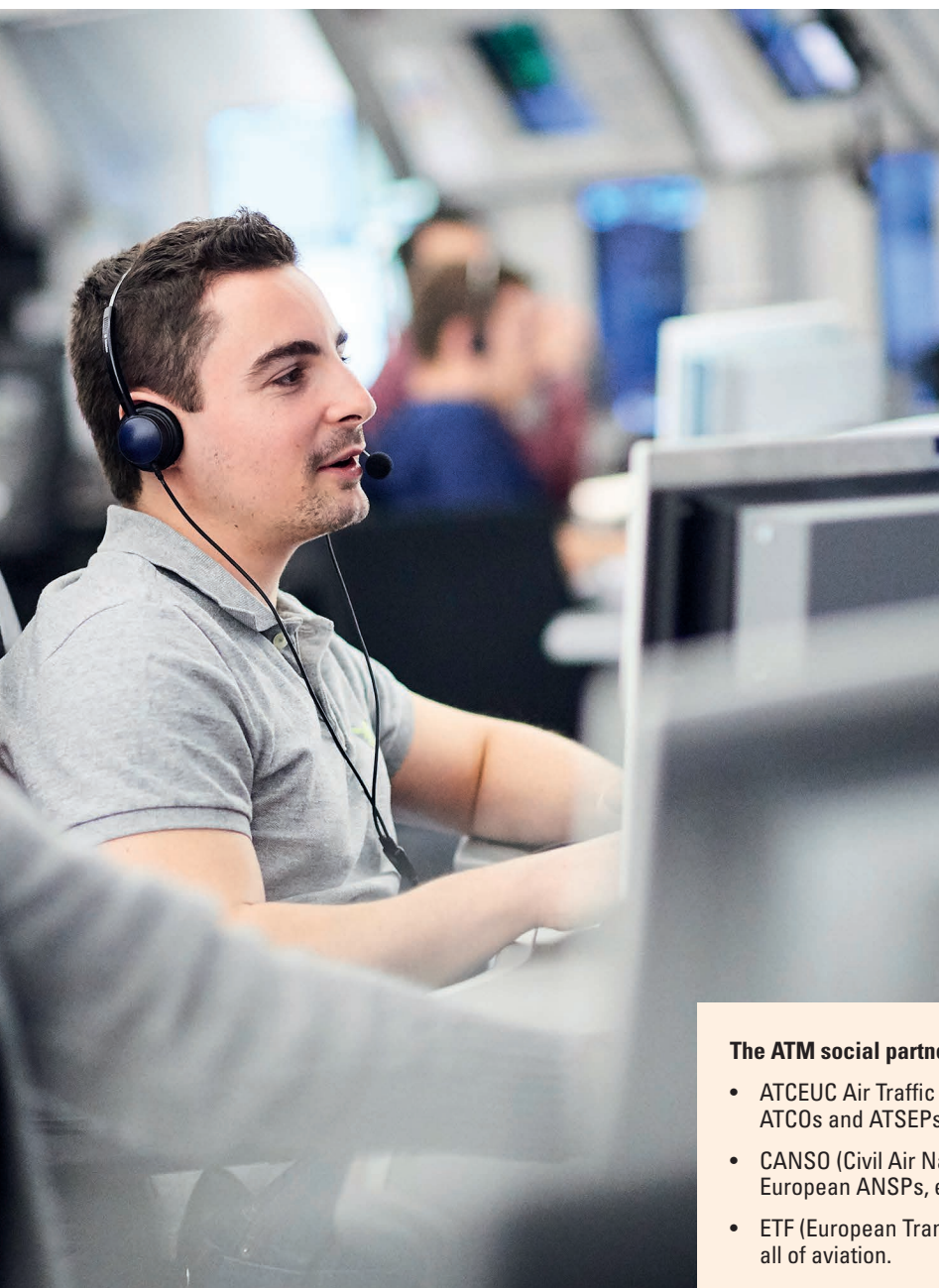
A function is safety-critical if a failure of the function would impact safety and no barrier within the ATM/ANS system is found in the model to prevent an accident following the failure of the function. A job is safety-critical if the job involves performing at least one safety-critical function.

Next, the proposed definitions were applied to the list of functions and jobs. The result was a list of safety-related

functions and safety-related jobs and a list of safety-critical functions and safety-critical jobs. In total 143 functions and 26 associated jobs were identified and regarded as safety-related, out of which 28 functions and nine associated jobs were identified as safety-critical. These jobs are: air traffic controller (ATCO), various kinds of ATSEPs, AIS officer, navigation data provision officer, and ATM/ANS technical system designer.

The conclusion inferred by the ECORYS assessment was that safety-critical jobs should require the development of associated rules and regulations. The content of the report was considered insufficient to meet its intended purposes for various reasons, but principally because:

- The association between jobs and functions did not fit all ANSPs as there is no standard ANSP structure. Functions could be assigned to any job, giving rise to many job variations. Regulating a job would therefore be problematic.
- There was a lack of rationale supporting the conclusions drawn by distinguishing safety-related functions from safety-critical functions.
- It was a fixed assessment, not considering the possibility of new jobs/functions or new failure modes being identified and integrated in the future.
- The recommended actions were hard to verify. The assessment was based on a perceived correlation between certain jobs/functions and their safety impact, with no proven causality that would lead to a safer system if the jobs would be regulated.
- The recommended actions were rather traditional, missing any innovative approach. It was considered that there were probably better options than training and competency, which we know are seen as 'soft barriers'.



The ATM social partners are:

- ATCEUC Air Traffic Controllers European Unions Coordination representing ATCOs and ATSEPs
- CANSO (Civil Air Navigation Services Organisation) who represent most European ANSPs, employers in the social dialogue context
- ETF (European Transport Workers' Federation), representing staff across all of aviation.

Notwithstanding the above, the report contained valuable roots for the design of the expected evidence, namely the EUROCONTROL Accident Incident Model, or IRiS.

An alternative approach – ASPReT and TSIAT

Following the publication of the report, the ATM social partners (see box) committed to establishing a methodology to support the need for competence requirements for ATM staff with duties affecting safety. This was done by a group of people gathered in a body named ASPReT (the ATM Social Partners Regulatory Taskforce). ASPReT sits under the ATM working group of the European Civil Aviation Social Dialogue Sectoral Committee, the official body for European Social Dialogue run by the European Commission's Directorate-General for Employment (DG EMPL).

Using the latest version of EUROCONTROL safety barrier model, the IRiS model, we developed a methodology called Task Safety Impact Assessment Technique (TSIAT).

TSIAT combines the 'safety-critical' concept, which could be regarded as a measure of severity – inherent to the AIM model, with the failure probability of that task. For the purpose of this methodology a task is expressed as a well-defined, distinct piece of work assigned to, falling to, or expected of a person. A person usually undertakes one or multiple tasks. Operational safety can be impacted to different extents by specific tasks.

A brief look at the TSIAT methodology

TSIAT is a technique that uses as its foundation the EUROCONTROL quantified accident and incident models. The models have been populated with in-service data and reflect how the human tasks protect against ATM/ANS related accidents. It uses these models to understand the extent to which a particular task contributes to the different aircraft incidents and accidents.

The process provides an understanding of both the task effectiveness/

performance and the extent of the contribution it makes to reduce the risk of an ATM/ANS related accident for all possible accident outcomes. Based on this understanding and expert analysis and judgement by subject matter experts (SMEs) and safety experts, the TSIAT methodology determines whether there is opportunity for safety improvement for a task using a quantifiable result related to the safety impact of a task.

All decisions and recommendations are recorded, capturing the task that has been reviewed, the personnel involved and the rationale for any recommendations. The final decision both on whether there is opportunity for safety improvement, and the resulting output by EASA regarding that task is deliberately placed in the hands of SMEs and safety experts.

The TSIAT methodology can help to determine whether there is 'opportunity for safety improvement' for a particular task. It goes beyond considering just the contribution a task makes in preventing ATM/ANS accidents but also considers its current effectiveness. Where there may be opportunities for safety improvement, it recommends not just whether it is appropriate to establish competency requirements for the particular task, but whether it might be more appropriate to propose less 'rule-based' alternative solutions, such as safety promotion, training or standardisation.

Test case – Opportunities and stumbling blocks

The TSIAT technique was presented to EASA and EUROCONTROL over the summer of 2017 with positive feedback from both organisations. Subsequently, test cases were run in late 2017, concluding that methodology is likely to deliver the intended advice on the safety relevance of development of competence requirements. Shortcomings within the current structure of the dataset were identified but are not insurmountable.

The IRiS model does not cover the full scope of ATM/ANS tasks since they are focused on the safety of air transport, subject to a separation standard in

controlled airspace. For example, there is no IRiS model that captures a commercial aviation aircraft coming into contact with general aviation aircraft outside controlled airspace. Until this is developed, these issues should be considered out of scope of TSIAT.

Similarly, the models are aimed at the identification of causes of accidents to reduce their likelihood. Consequently, the methodology cannot be relevant for tasks associated to dealing with an accident that has happened (mainly the tasks related to an alerting service).

In having identified these stumbling blocks with the technique, the group is already preparing processes and techniques to overcome them. The end result will not be to put an additional cost burden on ANSPs (and ultimately on airlines and travelling passengers) or to have all personnel licensed. Nor should it keep people constrained in their jobs by creating inappropriate hurdles to evolve. The idea, or rather ideal, is to establish relevant requirements enhancing safety and getting people to feel recognised for what they are and what they do.

Going forward

The continued work being conducted by ASPReT will, if successful, provide additional proof that competence requirements for certain tasks are needed. Ultimately it does not answer the next question: which requirements are appropriate? By promoting the preparatory work, the project can get the acknowledgement it deserves so that it may continue to develop and at a pace that fits the importance of the task.

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