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## Safety in Air Traffic Control

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### Citation

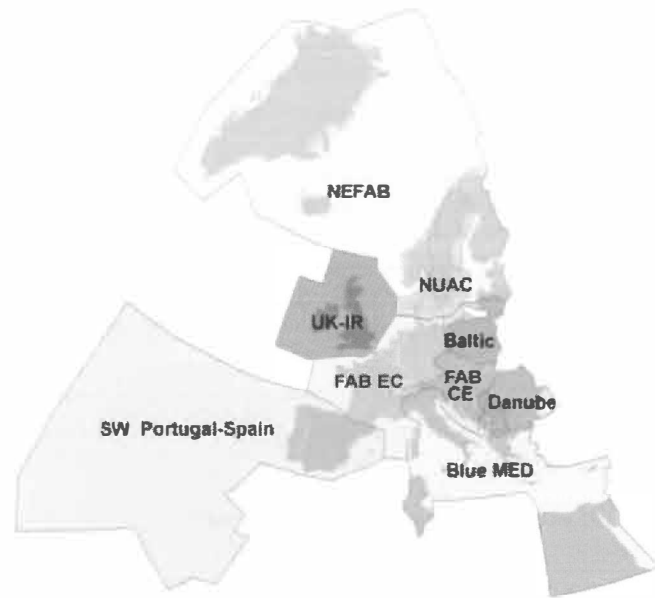
Appleton, R. (2011). Safety in Air Traffic Control. *Bestuurskundige Berichten*, 26(2), 17.  
Retrieved from <https://hdl.handle.net/1887/3211999>

Version: Not Applicable (or Unknown)

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Downloaded from: <https://hdl.handle.net/1887/3211999>

**Note:** To cite this publication please use the final published version (if applicable).



of ATM safety regulations and oversight activities.

EUROCONTROL has recently restructured, so as to align itself with the Single European Sky's goals; draw clear lines between its various functions; be more pro-active on the stakeholder front and become more transparent.

There are now three new directorates in the Agency: Single Sky (which gives regulatory support and oversight); Network Management and SESAR Research.

On 29 July 2010, EUROCONTROL was designated by the EU as the *Performance Review Body* (PRB) and will help the European Commission set up and manage the performance scheme for air navigation services.

By acting as the PRB through its own Performance Review Commission, EUROCONTROL will help set up the appropriate mechanisms.

It is expected that the European Union will invite EUROCONTROL to take on the role of Network Manager. In essence, the Network Manager has four main areas of activity:

- route network design and development
- flow management
- coordination of radio frequencies and radar transponder codes
- network crisis management.

The European Commission feels that a central manager will be able to expedite decision-making, draw up detailed plans for achieving

performance objectives – a key feature of the second SES package. The Network Manager will also be responsible for monitoring progress and addressing difficulties, from an operational perspective.

Substantial cost-savings can be made once air traffic management (ATM) service provision has been de-fragmented and ATM operational performance optimised. A single process of decision-making built on sound consultation processes will make future plans and their implementation consistent, uniform and focused on the performance of the network.

A lot of time and effort can be saved as well: this new cooperative decision-making process will take the interests of many parties into account and therefore make for a less complex and more efficient system overall. Scarce resources – like radio frequencies and transponder codes – have to be shared and fair, transparent access to these resources be made available to all. The Network Manager will centralise the allocation of these resources.

#### In Conclusion

As Giovanni Bisignani, the International Air Transport Association's Director General and CEO, has pointed out: "The Single European Sky will improve Europe's competitiveness and environmental performance. The inefficiency of the current system is a €5 billion burden on Europe's economy and wastes 16 million tonnes of CO<sub>2</sub> in delays and indirect routings."

EUROCONTROL, EASA and the European Commission are engaged in removing barriers in the sky as quickly as possible.

However, our coordination activities do not begin and end in Europe. As aviation is global, we have to ensure that our technical and operational developments dovetail properly with those in the rest of the world, too, and we are working closely with the United States to make sure that NextGen and SESAR are compatible.

All players will work together to make proper provision for the future so that people and goods can move freely, safely and securely through the skies - with minimal damage to the planet as a whole. ■

*Mr Ian Middleton is acting Director Single Sky at EUROCONTROL.*



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## Safety in Air Traffic Control

This article is a short discussion about advances in technology in Air Traffic Control (ATC). From a personal ATC perspective there are two particular improvements that have made a significant impact on overall safety.

The first of these is **Mode S**: A transponder is located in the cockpit of all aircraft. The primary function of the transponder is to transmit a unique 4 number code as well as the current height of the aircraft to ground based radars. These are known as Mode A and Mode C respectively. Aircraft now carry Mode S equipped transponders which download a number of other parameters from aircraft both in flight and on the ground to ATC radars capable of receiving them. These parameters, amongst others, include:

- Ground Speed
- Indicated Air Speed
- Heading
- Pressure setting in use
- Selected Flight Level (SFL)

All of the above are useful to ATC, Selected Flight Level (the level selected in the cockpit by the pilot to which the aircraft is climbing or descending) being by far the most useful. It allows air traffic controllers to compare the instruction they have given to what the pilot has input to the aircraft's Flight Management System. The ability to see and compare this information gives ATC the ability to prevent Level Busts - where pilots climb or descend to the wrong level - and exercise a significant impact on reducing the number of safety related incidents. Unfortunately, for the time being, the number of Air Traffic Service Providers with this equipment is very limited.

The second technology advance that I would like to discuss is **Traffic Collision Avoidance System** (TCAS). A TCAS display is provided in the cockpits of all airliners and gives pilots an audible warning of other aircraft in dangerous proximity combined with instructions of how to miss this traffic. TCAS software obtains its information from the transponder (discussed above) and communicates in real time with other transponders on other aircraft. If the software judges that two aircraft will get too close a warning is generated to both crews and advice is given by the TCAS display on how to miss each other. If ATC have made a mistake (and believe me, we are all human) this is a very effective last line of defence to prevent a mid-air collision.

Those of you familiar with pilot-ATC radio communication will know that it is normally carried out in a short, professional standard format. The only time that I have had anybody swear on my frequency was during a normal communication when suddenly the pilot received a TCAS Resolution Advisory and was so shocked that he stopped mid sentence.

In conclusion, having worked in ATC for more than 30 years, I have seen and witnessed a number of changes in technology. In a radar control environment, the primary tools remain the radar, the radio, the telephone and of course the human being. In all branches of aviation the first priority must always be safety and any technological advance that improves safety is most welcome.

<sup>1</sup> Since the liberalisation of aviation in Europe in 1993, traffic has grown by 54%.

<sup>2</sup> EUROCONTROL Long-Term Forecast: IFR Flight Movements 2010-2030, published 17 December 2010.