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Air traffic management (ATM)

Flying is the result of both technology and human skills. Air traffic management (ATM) is about the process, procedures and resources which come into play to make sure that aircraft are safely guided in the skies and on the ground. You will find below a summary of the whole air traffic management process.

Air traffic management is composed of a number of complementary systems:

- Airspace management
- Air traffic flow and capacity management (ATFCM)
- Air traffic control (ATC)

These systems together, make sure that flights are safe and punctual. In Europe, air traffic management is the joint responsibility of the European ATM community: Member States, the aviation industry, the European institutions and EUROCONTROL. They are working together to develop the European ATM system of the future.

Airspace management

As aircraft fly through the sky, they follow pre-planned routes, much like motorways on the ground.

Since air traffic levels have doubled in the last decade, airspace design must be continuously rethought, to provide the best and the shortest routes for the increasing number of flights. This is airspace management, an activity which includes airspace modelling and design.

Together with the other European ATM players, EUROCONTROL helps coordinate airspace design and management, building more efficient skyways over Europe. As of mid 2011, EUROCONTROL was appointed as the Network Manager for European airspace.

Air traffic flow and capacity management

Once air routes have been planned, the next step is to match the flights with the available capacity. This is an important step as only a certain number of flights can be safely handled at any one time by each air traffic controller.

Each aircraft, using air traffic control files a flight plan and sends it to a central repository. All flight plans for flights into, out of and around Europe are analysed and processed, against the available capacity, in order to make the best use of airspace slots. This is done by air traffic flow and capacity management.

Matching the requested flights against available capacity is first done far in advance for planning purposes, then on the day before the flight, and finally, in real-time, on the day of the flight itself.

EUROCONTROL runs a Central Flow Management Unit which, along with national air traffic control centres, is responsible for the management of air traffic and capacity across the continent.

Air traffic control

Aircraft are safely separated in the sky as they fly and at the airports where they land and take off again – air traffic control takes care of this. In Europe, air traffic control is done by the air traffic control centres (ACCs) located in each country, which guide aircraft to and from airports.

How will Europe develop the future ATM system?

The current ATM system in Europe is fragmented - this reduces efficiency and adds to the cost of flying. With over 40,000 daily flights a day predicted for 2020, the current ATM system cannot cope with this volume of traffic in an efficient manner. Functional airspace blocks (FABs) are being created, marking a step further towards building a Single Sky for Europe.

EUROCONTROL, the European Commission and ATM stakeholders have realised that a change is needed to handle the future air traffic load both efficiently and safely. The European ATM community therefore created a public-private partnership, SESAR, to develop and manage the definition of the future air traffic management system.