

THE DANCE OF CHANGE IN TURKISH AIRSPACE

Turkey's airspace and air navigation service provider has undergone significant change over the last few years, with enormous increases in traffic, associated with changes in demand and traffic flows. How does an organisation and its people cope with such changes? In this article, **Önder Toydemir** and **Arife Aycan Mutlu** outline the changing situation in Turkey.

KEY POINTS

- **Being a learning organisation means being ready to anticipate, react and respond to change, complexity and uncertainty to sustain the safety of airspace.**
- **Highlighting team learning and personal mastery enhances employees' capacity to create a more effective air traffic control service.**
- **Constant communication and ongoing dialogue with all stakeholders integrates all employees via systems thinking and building a shared vision.**

In Turkey's airspace, overflight traffic increased by 47% between 2014 and 2017. This might be seen as an extreme change for the provision and safety of air traffic services. At the same time, a number of serious events affected air traffic control service, especially en-route control. 'The Dance of Change', as systems scientist and organisational learning specialist Peter Senge called it, had direct consequences on the organisational culture of the ATC Centre in Turkey. Here are some of the changes:

- The minimum separation has lowered to 5nm from 10nm as prescribed by ICAO Doc 4444 since July 2016. This change is very important for all European airspace due to the efficient use of ACC capacity.
- The crisis situation in Ukraine and the attack on flight MH17 in 2014 led to a significant number of flights avoiding the entire Ukrainian airspace due to concerns about safety. They instead moved to neighbouring countries, including Turkey. Traffic numbers increased dramatically, up

40-50% in a short time. According to the EUROCONTROL (2018) report 'The Challenges of Growth', it is expected that Turkey will face 2.5 times as many flights by 2040, and so west neighbouring countries will experience high level of traffic demand with expected growth around or greater than 80% compared to 2016.

Turkish airspace is in a critical 'bridge' position between Europe and Asia, and also Russia and the Middle East.

- The traffic between Europe and Middle East and Asia re-routed via Iran and Turkey because of the security situation, affecting flight efficiency. So major enhancements and changes were necessary in routes and the organisation of interfaces between ANKARA FIR - Baghdad FIR and the ANKARA FIR - Teheran FIR.

▪ ATS route network development was launched not only in the east neighbouring countries of Turkey, but also in the west neighbouring countries of Turkey. Reorganisation of interfaces between FS Sofia and ANKARA ACC and the new interface between FS Varna and ANKARA ACC, combined with new sectorisation, provided significant additional capacity. As a result, complexity was reduced significantly without any difference in safety performance. Average en-route delay per flight in ANKARA ACC decreased from 0.22 minutes per flight in summer 2015 to zero minutes per flight during the same period in 2016, and also in 2017.

- After the recovery of the travel ban of Russia on charter flights to Turkey, a noticeable change occurred between the Russian Federation and Turkey, which increased by 243% (+101 flights/day) in 2017 as a whole compared to the previous year.

- In 2015, there were two big changes in operation, with implications for competency and expertise for the safety of air traffic management: 1) transfer of current ANKARA, Istanbul and Izmir ACCs into the Turkish 'SMART' systems (see Toydemir and Mutlu, 2018, *HindSight 27*) with a new ATC system; 2) transfer of Istanbul ACC and Izmir ACC to new ANKARA ACC for FL245 and above. In 2014 there were just 10 sectors in ANKARA ACC. This grew to 22 sectors in ANKARA ACC.

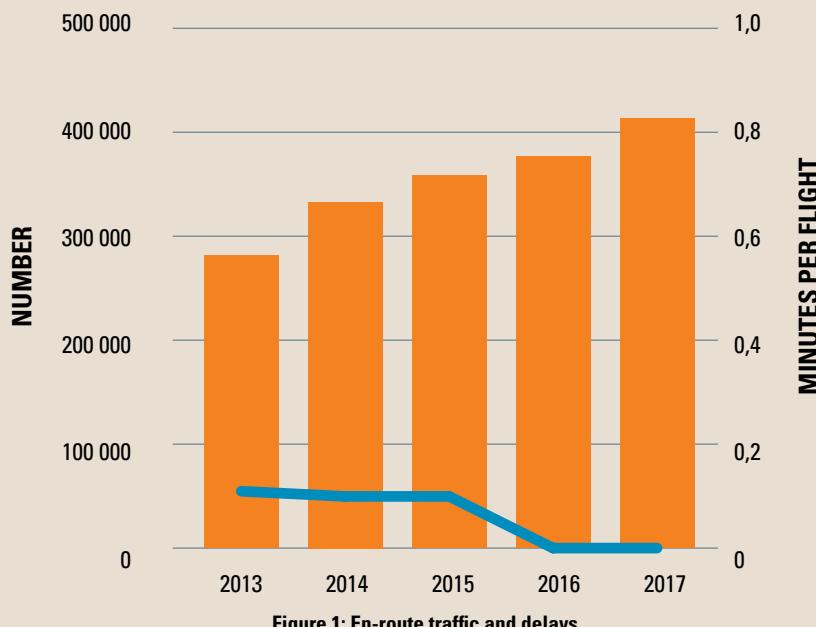


Figure 1: En-route traffic and delays

- Lastly, there was a change in the required expertise and competency in ANKARA ACC: 'mini sectorisation'. This change was necessary to maintain the safety of Turkish airspace.

Turkish airspace is in a critical 'bridge' position between Europe and Asia, and also Russia and the Middle East. So within just 4 years, the question is how these big changes were managed effectively while ensuring the safety of this 'bridge'.

The answer was to become a learning organisation. Peter Senge (1990) defined a learning organisation as "a group of people continually enhancing their capacity to create what they want to create". Senge outlined five characteristics of a learning organisation (see Figure 2).

Yogesh Malhotra (1996) defined a learning organisation as "an organisation with an ingrained

philosophy for anticipating, reacting and responding to change, complexity and uncertainty" (p. 2). So we must be ready to react and respond to rapid changes and uncertainty while being sure that these can be handled safely, and be willing to sustain personal and

It is necessary to be a learning organisation in order to handle a 47% traffic increase in just four years while maintaining safety and efficiency, and survive and thrive in the aviation sector.

organisational learning. Otherwise, an ANSP, which has 'learning diseases' such ignorance of problems, resistance to change, and lack of sharing of information, is unable to understand the system as a whole. It is necessary to be a learning organisation in order to handle a 47% traffic increase in just four years while maintaining safety and efficiency,

and to survive and thrive in the aviation sector.

As in Senge's five characteristics of a learning organisation, to be able to handle changes while creating safety, a number of applications and systems in ANKARA ACC are listed below:

- **Systems thinking:** Ongoing dialogue with all stakeholders to improve and refresh letters of agreements, considering the whole picture.
- **Team learning:** Interactive meetings, frequent briefings and brainstorming sessions. Having a supporting team ready to help the controllers while adapting changes.
- **Personal mastery:** Continuous learning and simulator practice.
- **Shared vision:** Constant communication between supervisors and controllers to discuss the problems and solutions.
- **Mental models:** Improving understanding by listening to the opinions of the airspace users, and making necessary changes to the system (people, procedures, equipment, etc).

To be ready for the expected increase in traffic in the run up to 2040 without compromising the safety of air traffic management and aviation, many important changes are planned, such as Istanbul's new airport, LTFM. This airport will offer flights to more than 300 destinations with an annual passenger capacity of up to 200 million, making it the largest airport in the world. This will be a major phase in the history of DHMI. These achievements and ongoing projects are all footsteps in the dance of change for DHMI and ANKARA ACC. S





Figure 2: Peter Senge's five characteristics of a learning organisation



Figure 3: Ankara ACC



Önder Toydemir is Air Traffic Manager of the Turkish Air Traffic Control Center. He graduated from Anadolu University Faculty of Aeronautics and Astronautics in Eskişehir in 1994 and attended to DHMI in the same year. He worked as approach and area controller, OJTI and shift supervisor for nineteen years. Between 2008-2013, he was the manager of TATCA Ankara Branch. He has been working as the Air Traffic Manager since 2013 in Turkish Air Traffic Control Center (SMART Project). Onder.Toydemir@dhmi.gov.tr



Arife Aycan Mutlu is an Air Traffic Controller in Turkish Air Traffic Control Center, THTKM. She has been working as an en-route and approach controller since 2010 in General Directorate of State Airports Authority (DHMI). Her undergraduate degree is in management engineering from Istanbul Technical University. Her master degree is in economics from Koç University, and she has doctoral degree in management at Gazi University.
ArifeAycan.Kasap@dhmi.gov.tr

References

EUROCONTROL (2018). European aviation in 2040: The challenges of growth (Edition 2). Brussels: EUROCONTROL. Available at <https://www.eurocontrol.int/articles/challenges-growth>

Malhotra, Y. (1996). Organisational learning and learning organisations: an overview. Available at <http://www.brint.com/papers/orglrgn.htm>

Senge, P. (1999). The fifth discipline, the dance of change: The challenges to sustaining momentum in a learning organisation. Crown Business.

