Kazakhstan is the largest landlocked country in the world. At some 2.7 million square kilometres, it is roughly the size of Western Europe. That makes air transport absolutely vital.

Kazaeronavigatsia was established in 1995 to manage the country’s vast airspace and it has used the two decades since to make major improvements. It now boasts one of the most advanced and modern air navigation systems in the Commonwealth of Independent States.

But this is just the beginning, says Azat Bekturov, Director General of Kazaeronavigatsia. “In December 2015, we adopted a long-term development programme, to run until 2025,” he informs. “This identified opportunities for organisational, economic, and technical improvement to ensure the continued effective use of airspace.”

Improvement in the skies is also helping home airline, Air Astana. The airline will have a fleet of 35 aircraft by 2020 and plans to expand its network to link the Kazakh capital, Astana, with major financial centres, including Dubai, Hong Kong, Tokyo, Singapore and New York.

Greater flexibility

Performance-based navigation (PBN) is the centrepiece of the development. A working group has been established, and consultations are being held with international organisations, such as ICAO and IATA, and with the ANSPs of neighbouring countries.

By the end of 2018, required navigation performance, part of PBN, should be operational in upper airspace. This will give overflights
greater flexibility, making Kazakhstan more attractive to those airlines flying between Europe and Asia.

“The next step will be the flexible use of airspace,” says Bekturov. “From 2020, free routing is planned, allowing airspace users to develop their own preferred routes. At the same time, we will upgrade the climb and descent procedures to continuous climb and descent (CCO/CDO). This will reduce an aircraft’s fuel consumption and CO₂ emissions.”

Kazaeronavigatsia also plans to implement the Global Navigation Satellite System (GNSS), beginning in 2018. By 2020, it is envisaged this will transition to being the mainstay of the organisation, bringing some relief to the costly maintenance of hundreds of ground facilities.

Secondary radar will be supplemented with automatic dependent surveillance—broadcast (ADS-B). Decommission of secondary en-route radars will begin in 2020 as ADS-B gradually takes over.

Going digital

A lot of work has also been done on the digital side of the business. Since 30 March 2017, the Aeronautical Information Publication (AIP) has been in electronic format and, further ahead, all forms of information exchange will be automated. Moreover, to reduce the human factor in the provision of air navigation services, data integrity and quality control mechanisms are being implemented.

“Digital NOTAM and automated pre-flight information systems, with unified access to aeronautical and meteorological information for self-briefing, are also being developed,” says Bekturov. “By 2019, there will be electronic air navigation charts. Work is also underway to introduce electronic data on terrain and obstacles.”

In addition, an Internet flight scheduling system will allow the prompt submission and editing of flight plans and the calculation of flight routes. This will be supplemented by automated billing so Kazaeronavigatsia can promptly bill airspace users.

All these measures are aimed at the complete automation of information provision, the reduction of manual data entry and the simplification of procedures.

Supporting training

Kazaeronavigatsia’s training centre in Astana is available to the entire civil aviation industry. In April 2016, it became a full member of the ICAO TRAINAIR PLUS program, which means all aviation personnel trained at the centre use standardised programmes approved by ICAO, resulting in certification recognised around the world.

The October 2017 ICAO Aviation Training Symposium and TRAINAIR PLUS was held in Kazakhstan, the first time the country has hosted the event. “It was an opportunity for Kazakhstan to contribute to the further development of the aviation industry in the Eurasian continent,” says Bekturov.

Like much else, the training centre is being modernised. Work has begun on the construction of a new facility in Astana, which will comply with international best practice and set the tone for the future of Kazakh ATM.

Flight flexibility

Bekturov accepts that all the work requires considerable investment, which has to be paid for using the net profit of Kazaeronavigatsia.

But the advantage of being at the crossroads of the European-Asian air transport market is the potential for increasing overflight revenues.

Since 1995, the length of available transit air routes has increased almost tenfold – from 8,900 km to 82,600 km. More than 50% of air traffic volume in Kazakhstan is transit flights in upper airspace.

One of the most promising areas for increasing transit flights is the development of a network of non-stop flights from the Gulf countries, India and Pakistan to the US and Canada using cross-polar routes.

The work is being done in conjunction with Russian colleagues, and serves airlines like Emirates, Air India and Pakistan Airlines connecting Dubai, Delhi and Islamabad to Los Angeles, San Francisco, Seattle, Toronto and more.

Improvement in the skies is also helping home airline, Air Astana. The airline will have a fleet of 64 aircraft by 2026 and plans to expand its network to link the Kazakh capital, Astana, with major financial centres, including Dubai, Hong Kong, Tokyo, Singapore and New York.
"The key point is that there are no constraints on the constant growth of traffic for all airlines, including Air Astana," says Bekturov. "The available airspace capacity is much higher than the actual volume of air traffic served.

"Airlines will have more flexibility for flights on more direct routes, which will improve the efficiency of flights by reducing route length and approach paths. Furthermore, there is a flexible tariff policy that gives airlines with individual tariff exemptions when opening new regular routes."

The drive to increase transit flights is part of a national programme of infrastructure development ‘Nurly Zhol’, running 2015-2019. Following a meeting in early 2017, further actions were identified. These actions comprise airport development, the provision of jet fuel at competitive prices and at the required amount, and the provision of a joint package of discounts for airlines. All work is being carried out in conjunction with the relevant airport partners.

Kazaeronavigatsia is also working with the Ministry of Defence on the effective use of restricted airspace, and with the Ministry of Foreign Affairs on reorienting foreign airline flights passing through territory of the Republic of Kazakhstan.

Neighbourhood watch

The enhancement of transit flights naturally brings Kazaeronavigatsia into close contact with its neighbours.

Kazakhstan borders Russia, China, Kyrgyz Republic, Uzbekistan, Turkmenistan and Azerbaijan. Some 73 air corridors go across borders with neighbouring countries, mostly Russia (30 routes) and the Republic of Uzbekistan (30 routes).

Thoughts on the future

Bekturov says remote tower technology will feature heavily in Kazaeronavigatsia’s development plan. “I recently attended the launch of a remote tower in Budapest, and was impressed with what I saw,” he reveals. Implementation will begin with a pilot in Almaty.

“This system will reduce the cost of constructing control towers and maintaining air traffic controllers at small aerodromes, and improve the efficiency of ATM,” believes Bekturov.

Changing the traditional model of managing sovereign airspace is not on the agenda, however. Bekturov describes the existing system as “effective”.

He says airspace, like land and natural resources, is part of the wealth of a country. And the sovereignty of airspace is also an important aspect of national security.

“At the same time, airspace efficiency requires harmonised development with ANSPs regionally and globally,” he adds. “All technologies that are being introduced are proving effective. Of course, the scope is conservative because of the main priority, which is ensuring flight safety.”

“We all work in one region, Eurasia,” says Bekturov. “We have a common structure in air traffic flow, which means we need to coordinate. The effectiveness of air traffic is largely determined by the interaction of ANSPs; the harmonisation of rules and procedures for planning and servicing air traffic; and the technical support for flights.”

Key to cooperation is the Eurasia Coordination Council, which was established in 1999 to increase airspace efficiency. Additionally, a regional group of ANSPs has been established in Central Asia, comprising ANSPs from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan.

“And the Eurasian Economic Commission is considering a common air transportation market between the Eurasian Economic Union (EAEU) countries (Russia, Kazakhstan, Kyrgyzstan, Armenia, Belarus), specifically the application of non-discriminatory tariff conditions, and the definition of entry/exit points,” informs Bekturov.

Greater agility

The main tasks on a regional level are harmonising the rules for the use of airspace, reducing bureaucratic barriers, and implementing new technologies. To that end, work has been going on for several years on establishing the Vostok international air navigation system.

Vostok enables greater agility for all participants by simplifying the reception and processing of flight plans. At the 33rd Eurasia Coordination Council in 2017 in Sochi, members agreed the establishment of Vostok. The functioning and structure of the management organisation has been proposed and sent to the respective governments for the signing procedure.

“The air traffic management system needs constant development, and the introduction of new technologies that will allow airlines to fly with even greater safety and efficiency,” concludes Bekturov. “Our company is working in this direction, and is striving to become the most effective ANSP in the Eurasian region.”

Kazakhstan borders Russia, China, Kyrgyz Republic, Uzbekistan, Turkmenistan and Azerbaijan. Some 73 air corridors go across borders with neighbouring countries, mostly Russia (30 routes) and the Republic of Uzbekistan (30 routes).