ICAO
STUDY GUIDE

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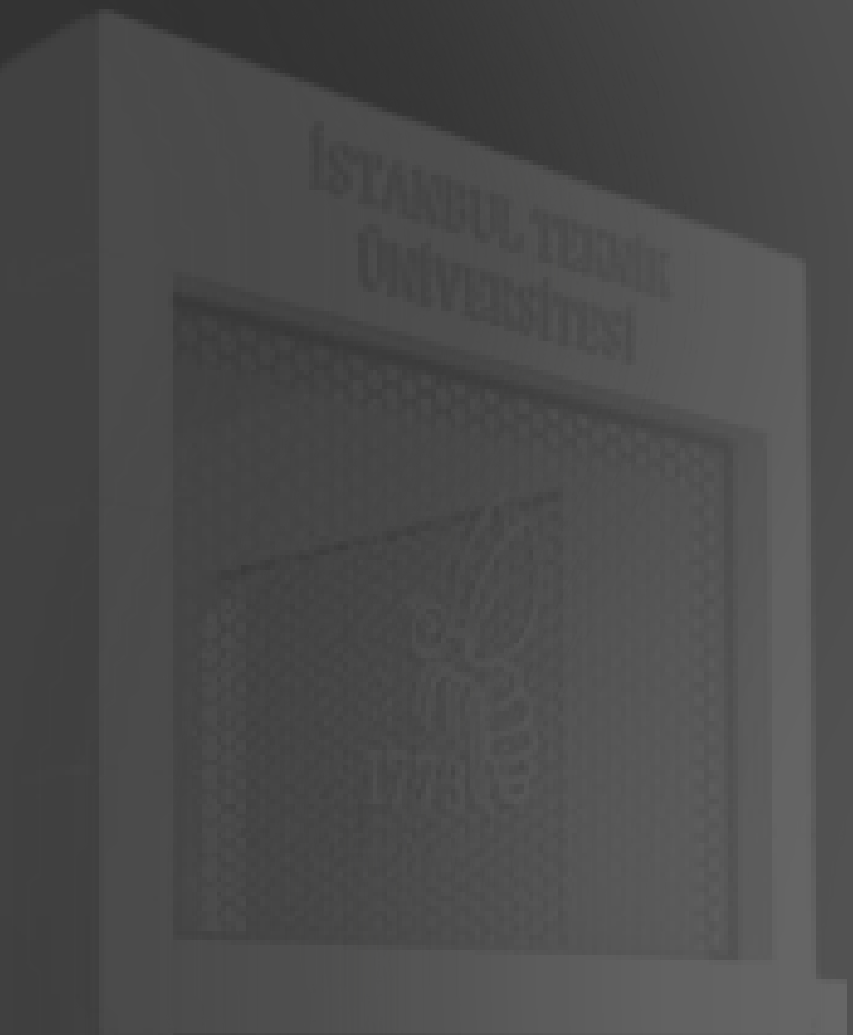

ITU MUN

Letter from the Secretary General

Dear Delegates,

It is with great pleasure that I welcome you to ITUMUN 2026.

By choosing to take part in this conference, you have already done something meaningful: you have chosen dialogue over indifference, understanding over assumption, and engagement over silence. In a world increasingly shaped by division, conflict, and uncertainty, such choices matter.

Today's international landscape is marked by ongoing conflicts, humanitarian crises, and profound global challenges that demand more than rhetoric. They demand informed, open-minded, and principled individuals, particularly from the younger generation, who are willing to listen, to question, and to act responsibly. MUNs offers precisely this space: one where ideas are tested, diplomacy is practised, and perspectives are broadened.

As delegates, you are not merely representing states or institutions; you are actually engaging in the art of negotiation, the discipline of research, and the responsibility of decision-making. Approach this experience with curiosity, respect, and intellectual courage. Learn not only from debate, but from one another.

On behalf of the Secretariat, I sincerely hope that ITUMUN 2026 will challenge you, inspire you, and leave you better equipped to contribute to a more peaceful and cooperative world.

I wish you a rewarding conference and every success in your deliberations.

Yours sincerely,
Abdullah Kikati
Secretary-General

Letter from the Board

On behalf of us, we extend our warmest welcome to the International Civil Aviation Organization (ICAO) committee. It is an honour to serve as your chairs for this ITUMUN 2026 conference, and we are excited to embark on this journey of diplomacy with all of you.

Meet Rana Demirel, one of our Board Members. She is in her second year studying Environmental Engineering at Yıldız Technical University. On top of that, she is also a member of the Executive Board for the Yıldız Technical University MUN Society. After participating as a delegate at the ITUMUN conference several times before, she can't wait to team up with you and the rest of the board members to lead this committee together.

Then, our next member is Erdem Yusuf Altıntuna. He is a junior student of Electrical Engineering at Yıldız Technical University. He is also a part of Yıldız Technical University MUN Society. He is thrilled to spend his days during the conference with the committee.

Then our Academic assistant, Nefin Özbek. She just finished her preparation semester and she is starting studying Industrial Engineering at Istanbul Technical University. This will be her first time being an academic assistant and she is looking forward to meeting you all in ITUMUN'26!

And finally, our last member, who unfortunately will not be able to join the conference in person, is Yekta Can Tursun. He studied Computer Engineering at ITU and then followed his education at the Technical University of Munich (TUM) for a master's. He completed his master's education and currently resides in Munich. He is a member of ITUMUN and TUM's MUN club.

And it comes to you, delegates. Your perspectives and ideas will play a crucial role in shaping meaningful solutions. As your chairs, we are dedicated to fostering an environment of mutual respect, collaboration, and impactful debate throughout our sessions.

We look forward to an engaging and productive debate with all of you!

With lovely diplomatic regards,
Your ICAO Chairs
Rana Demiral & Erdem Yusuf & Nefin Özbek & Yekta Can Tursun

Table of Content

Introduction to the Committee

The International Civil Aviation Organization (ICAO) is a United Nations (UN) agency which helps 193 countries to cooperate together and share their skies to their mutual benefit. Since it was established in 1944, ICAO's support and coordination has helped countries to diplomatically and technically realize a uniquely rapid and dependable network of global air mobility, connecting families, cultures, and businesses all over the world, and promoting sustainable growth and socio-economic prosperity wherever aircraft fly.

As it enters a new era of digitization, and of incredible new flight and propulsion innovations, air transport is relying more than ever on ICAO's expert support and technical and diplomatic guidance to help chart a new and exciting future for international flight. ICAO is innovating itself to answer this call, and expanding its partnerships among UN and technical stakeholders to deliver a strategic global vision and effective, sustainable solutions.

The Convention on International Civil Aviation (Chicago Convention)

The Convention on International Civil Aviation, drafted in 1944 by 54 nations, was established to promote cooperation and "create and preserve friendship and understanding among the nations and peoples of the world.". Known more commonly today as the 'Chicago Convention', this landmark agreement established the core principles permitting international transport by air, and led to the creation of the specialized agency which has overseen it ever since.

Mission and Vision of ICAO

ICAO has a mission to develop international civil aviation in a "Safe and Orderly manner." This mandate is executed through five Strategic Objectives:

- Safety
- Air Navigation Capacity and Efficiency
- Security & Facilitation
- Economic Development of Air Transport
- Environmental Protection

ICAO does not run airlines or airports; its mission is setting the rules of the aviation that make their operation possible.

Mission 1: Safety

Enhancing global civil aviation safety. This objective is focused primarily on the State's regulatory oversight capabilities. The Global Aviation Safety Plan (GASP) outlines the key activities for the triennium.

Mission 2: Air Navigation Capacity and Efficiency:

Increasing the capacity and improving the efficiency of the global civil aviation system. This goal is primarily to upgrade the air navigation and aerodrome infrastructure. The Global Air Navigation Capacity and Efficiency Plan (Global Plan) outlines the key activities for the triennium.

Mission 3: Security & Facilitation:

Advancing global civil aviation security and facilitation. The objective reflects the need for ICAO's leadership in aviation security, facilitation and related border security matters.

Mission 4: Economic Development of Air Transport:

Foster the development of a sound and economically-viable civil aviation system. This Strategic Objective reflects the need for ICAO's leadership in harmonizing the air transport framework focused on economic policies and supporting activities.

Mission 5: Environmental Protection

Minimizing the adverse environmental effects of civil aviation activities. This Strategic Objective fosters ICAO's leadership in all aviation-related environmental activities and is consistent with the ICAO and UN system environmental protection policies and practices.

The Necessity of Global Governance in Civil Aviation

The need of an organization such as ICAO came out as a result of absence of unity in civil aviation rules. Among many sovereign states, and many companies in order to provide safety every airport and plane needs to be secured. ICAO provides the global standards for each country to follow. underpinned by the principle that a chain is only as strong as its weakest link.

The Sovereignty Impasse: Every country has complete authority over its own airspace. Without a neutral body to define rules, a pilot flying from London to Tokyo would need to know several rules and procedures according to each state’s laws and regulations.

Standardization: ICAO ensures that a piloting license issued in Brazil is recognized by the state of France; an Air Traffic Controller in Dubai follows and uses the same phraseology as one in New York. This interoperability sets the integrity of global trade and tourism.

Historical Background

1944 – 1960s: The Chicago Convention formalized the expectation that a specialized International Civil Aviation Organization (ICAO) would be established, in order to organize and support the intensive international co-operation which the fledgling global air transport network would require. The following establishments of "Annexes" have increased in number and evolved such that they now include more than 12,000 international standards and

recommended practices (SARPs), all of which have been agreed by consensus by ICAO's now 193 Member States.

2002: Subsequent to 9/11 attacks, ICAO shifted their approach from reactive policies to proactive monitoring by launching the Universal Security Audit Programme (USAP). The objective of the USAP-CMA is to promote global aviation security through auditing and continuous monitoring of Member States' aviation security performance, in order to enhance their aviation security compliance and oversight capabilities. https://www.icao.int/USAP

2016: ICAO adopted The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Which is the first global market-based scheme that applies to a sector. It complements other aviation in-sector emissions reductions efforts such as technological innovations, operational improvements and sustainable aviation fuels to meet the ICAO aspirational goal of carbon neutral growth.

2020: Establishment of The Council Aviation Recovery Task Force (CART). The council was aimed at providing practical, aligned guidance to governments and industry operators in order to restart the international air transport sector and recover from the impacts of COVID-19 on a coordinated global basis. The CART recommendations and guidelines are being continuously reviewed and updated based on the latest medical and operational advice, and are intended to harmonize and not replace the COVID-19 recovery roadmaps currently established by States, Regions, or industry groups.

2025 & Beyond: Current evolution of the organization focuses on integrating Remotely Piloted Aircraft Systems (RPAS) into civilian airspace. Previous RPAS Symposiums and the Annex 6 Part IV did create current regulations for RPAS. ICAO is constantly developing Space Traffic Management concepts and presented its comprehensive Strategic Plan for 2026-2050. With air traffic projected to reach 12.4 billion passengers by 2050, this plan guides the aviation sector toward a more safe, secure, economically viable, efficient, and environmentally sustainable future. This plan also includes the goal of Net-Zero Emissions by 2050.

ICAO and Local Bodies

In this part, ICAO and its relationship to other bodies are mentioned. These are important aspects to consider during debate and resolution writing. ICAO can collaborate with the mentioned institutions to achieve its objectives and mission, as outlined in the previous sections.

ICAO-ILO

With the International Labour Organisation (ILO), this partnership ensures that aviation policies integrate social and human dimensions alongside technical standards, as evidenced

by joint initiatives like the "Global Dialogue Forum on the Effects of the Global Economic Crisis on the Civil Aviation Industry."

ICAO-UNFCCC

ICAO aligns its strategies with the UN Framework Convention on Climate Change and the Paris Agreement to address environmental sustainability and emission management. A key mechanism in this effort is the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which serves as the primary tool for achieving carbon-neutral growth and long-term temperature goals within the sector.

ICAO-ECOSOC

ICAO coordinates with the Economic and Social Council to optimize aviation's role in global development and participates in the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) to manage public health crises in coordination with regional health authorities.

ICAO and European Aviation Safety Agency (EASA)

EASA and ICAO are two leading aviation organizations that collaborate to enhance sustainability. Their collaboration involves coordinating common positions with the European Commission and EASA member states, supporting the implementation of ICAO standards, and exchanging safety information. They have established a working arrangement to synchronize auditing activities, allowing EASA to gather evidence for ICAO during inspections of member states, which helps in addressing ICAO’s findings and compliance assessments.

Introduction to the Agenda Item

As of 2026, the International Civil Aviation Organization (ICAO) is in charge of an aviation landscape confined by high intensity conflicts. International and Internal conflicts have always been within the mandate of ICAO. However recently major conflicts between states are affecting non-participating parties and civilians more than ever. The Russia-Ukraine war and the escalating Israel-Iran conflict have dismantled the assumption of safe civil passage that has been established in the post-Cold War era. The industry of aviation has entered a phase of "permanent crisis management," state.The “Super-connector” carrier companies such as Turkish Airlines, Emirates, Qatar Airways, must navigate in a shrinking map of viable airspace between Europe and Asia.

Conflicts and wars between countries have always been a part of human history, however with the huge contribution of ICAO safe travel and transportation was mostly achievable in

the last decades.active and passive forms of interference that are being taken by countries frequently putting civilian lives in danger and affecting many economic activities. interference with GNSS (GPS) systems or the threat of organized missile attacks in major global transit hubs, such as Doha, can be shown as passive and active actions that are affecting aviation. This situation is the primary concern of ICAO and outweighs any other matter including environmental sustainability and commercial growth.

Despite geopolitical instability, air travel demand remains robust, up 5.7% globally in late 2025, with the Middle East (+9.6%) and Asia-Pacific (+9.3%) leading growth. This increase in demand creates a major aviation governance dilemma: Air traffic volume is surging exactly where airspace capacity is collapsing. Major hubs in Istanbul, Dubai, and Doha are encircled by volatile zones and forcing carriers to funnel operations through narrow, congested corridors.

Due to the war between Ukraine and Russia, airspace among Belarus, Moldova, Ukraine and Western Russia closed. The rising threat of high-altitude missiles and drones has pivoted global air traffic to the Middle Corridor (Turkey-Georgia-Azerbaijan-Central Asia). Global civil aviation companies such as Turkish Airlines developed the strategy of leveraging Istanbul's location; the carrier has expanded Central Asian operations to bypass Russia. On the other hand, the Azerbaijan airspace (AZANS) faces saturation. The fragility of this route was underscored by the November 2025 crash of a Turkish C-130 in Georgia , highlighting the risks of commingling heavy civil traffic with military transports in mountainous, congested airspace.

The June 2025 escalation between Israel and Iran altered regional connectivity. After the Russian and Ukrainian airspaces were removed from global air traffic routes. Iran airspace surged as an alternative by being one of the few remaining paths for Europe-to-Asia travel. Following Israeli airstrikes and Iranian ballistic retaliation, the European Union Aviation Safety Agency (EASA) and other regulators effectively blocked the Iran-Iraq corridor. As a result, air traffic shifted instantly to the "Saudi Bridge." Overflights of Saudi Arabia doubled from almost 700 to 1,400 daily. That intensity not only affected the airlines but also strained the Air Traffic Management capacity of the region.
Qatar Airways and UAE carriers were forced to execute costly diversions, adding flight time and fuel burn while skirting conflict zones in Yemen and the Levant region. Beyond airspace closure, the primary threat remains misidentification by air defense systems on high alert and ballistic missiles traversing cruise altitudes.

Key Terms

Fog of War: Confusion that soldiers or leaders experience during a battle because of the lack of information and short decision-making time.

Kamikaze Suicide Mission: An attack where the pilot intends to crash their aircraft into a target, sacrificing their life to destroy the enemy.
Scenario Fulfillment: A phenomenon where people's brains force new information to fit a pre-existing expectation or "scenario," leading them to ignore evidence that contradicts their belief.
Ransomware Attack: A type of attack where a harmful software locks your computer or hides your files and demands a ransom (a large amount of money) to unlock your information.
Dwell Time: The total duration that an attacker remains undetected within a target's network where they can steal data or cause damage.

Case Studies

Korean Air Lines Flight 007

On September 1, 1983, a Korean Air Lines (KAL) Boeing 747 on a regularly scheduled flight from Anchorage, Alaska, to Seoul, Republic of Korea, was shot down by a Soviet fighter. The plane was a Boeing 747 aircraft, flying at night with 240 passengers and 29 crew aboard. All 269 people aboard the airliner were killed in this shoot-down.
That day the KAL Boeing 747 was on a designated route called “Red 20,” which allows aircraft to pass within 50 miles of the Soviet Union (USSR). However, at some point of the route, the plane diverged west of its assigned route and entered Soviet airspace. The pilot left the airspace but reentered it. While the plane was only several miles from leaving Soviet airspace once again, at least one air-to-air missile from a Soviet fighter shot down the plane. This “incident” happened two and a half hours after first entering Soviet airspace. The aircraft's voice and flight recorders were never recovered; however, the Japanese and US governments sent the recordings of the radio conversations between Soviet pilots and their ground control stations for the consideration of the investigation.
The USSR claimed that the plane approached from an area where an American RC-135 reconnaissance plane was operating, flew without air navigation lights, persisted in flying through highly sensitive airspace plainly marked on all navigation maps as restricted, and did not respond to radio signals from Soviet air traffic control services. Considering the cloudy weather on that day, the USSR implied that this plane could have been easily mistaken for a reconnaissance plane.
On the other hand, the United States was the primary voice for the proposition that the shooting was unjustified. Several other states, notably South Korea and Japan, joined in this proposition, stating a Boeing 747 is clearly distinguishable from an RC-135 even at night, and reasonable attempts to identify the aircraft would have revealed the difference. The Soviet pilot twice reported the plane’s strobe light was working and once reported the air navigation lights were on. None of the Soviet pilots attempted to contact the airliner by using radio, by flashing lights, or by rocking their wings—which are the steps a country can take before shutting a plane down. The USA further pointed out that the fighter pilot of the USSR had observed the plane from two kilometers away for 20 minutes before firing the missiles, and even this wasn’t enough to identify the plane; he could have moved closer.

The Soviet Union proclaimed its “right to shoot down” any invading aircraft as a “sovereign right,” arguing that no one had the right to violate their borders. Highlighted “Law on the USSR State Border,” which authorizes the Soviet Air Defense Forces to use armed force against violators of the USSR state border, whether they threaten violence or not. In the end, they never apologized for the shooting, admitted any fault, or offered compensation to the families of the victims.

Figure 1: Korean Air Lines Boeing 747

Figure 2: American RC-135 reconnaissance plane

Iran Air Flight 655

On 3 July 1988 the U.S.S. VINCENNES shot-down an unarmed civilian airliner, Iran Air Flight 655, with two surface-to-air missiles. The 290 passengers and crew onboard the airbus were killed. Following the incident, major investigations taken by the United States Navy and the ICAO, revealed the aircraft was proceeding in regularly scheduled flight when the crew of the American warship responded with deadly force.

After the shoot-down USA hastily reported from the Pentagon that the Iranian airliner was outside its prescribed air corridor, descending toward VINCENNES at increased speed in an attack profile and ignoring repeated verbal warnings.
Various theories were suggested to explain this event: the possibility an Iranian F-14 was using the civilian airliner as cover, plane was planning a sneak attack on the cruiser or "conducting a kamikaze suicide mission”.
In the meantime the ongoing U.S. Navy investigation concluded that the U.S.S. VINCENNES did not purposely attack a civilian airliner and that in light of the circumstances the Commanding Officer of VINCENNES acted prudently. (Department of Defense, 1988)
USA also claimed this action was taken under the “fog of war* which caused “scenario fulfillment”.

Taking these into consideration, ICAO decided that the downing of Iranian Flight 655 is a “reasonable mistake”. Numerous recommendations were implemented to reduce the potential risks for similar incidents but no sanctions were imposed on the USA or the naval personnel involved, nor was the use of force assessed to be illegal under international law. (McCarthy, 1991)

After ICAO's decision, the U.S. offered voluntary payments to the families of victims. Every country except Iran accepted this offer. Iran refused because they wanted the U.S. to formally admit that the attack was an illegal act and that payments were a legal requirement, not a favor nor gift. When the U.S. refused these conditions, Iran stopped all official discussions and took the case to the International Court of Justice (ICJ) to seek a legal judgment arguing material facts had been intentionally misrepresented by ICAO and the United States. Furthermore, requesting ICJ to condemn the United States and direct the payment of compensation.

In IJC, the Vice President of the USA again stated that the event was an accident and it happened largely because Iran failed to move a civilian plane away from an active war zone. Finally, on 20 July 1988, the Council agreed on a decision considering all the information about the shootdown. In this decision, they expressed deep regret over the incident; however, they did not assign blame to the USA or any country, nor require the payment of compensation to Iran.

Malaysia Airlines Flight 17

On 17 July 2014, Malaysia Airlines Flight MH17 took off from Amsterdam, Netherlands, to Kuala Lumpur, Malaysia. The flight was smooth, and everything was usual. When the plane entered eastern Ukraine, where armed conflict was taking place between Ukrainian forces and Russian-backed separatists, it was shut down. Unfortunately. All passengers and all flight crew on board, totaling 298, lost their lives (Dutch Safety Board, 2015). According to a Dutch investigation, a surface-to-air missile was fired from territory controlled by separatist forces.

The most important aspect of this case is that MH17 was not flying to or from the conflict zone. Moreover, Malaysia or its national airline, Malaysia Airlines, was not involved in the conflict in any way. From the passengers' perspective, they were mostly European passengers or Malaysians who did not have any involvement in the conflict. The aircraft was simply following an internationally approved air route. Therefore, this incident demonstrates that civilian planes can be affected even if they are only passing near a conflict area.

After the aftermath of MH17, it became a turning point for international aviation safety. One of the questions being raised is who is responsible for closing airspace. Should countries decide for themselves? For instance, in this case, should the Malaysian government ban the use of eastern Ukraine airspace, or should airlines independently assess risks on their own? Another question that can be asked is whether the origin or destination country has the right to dictate the use of airspace. In MH17, the majority of the passengers were Dutch citizens. Since the plane originated from the Netherlands, should the Netherlands government have the right to dictate which airspace is being used?

Ukraine International Airlines Flight 752

Iran shut down the Ukraine International Airlines by accident during the high-stakes conflict with the US in 2020. This incident happened on 8 January 2020. Shortly after takeoff, Iranian air defence forces mistakenly identified the aircraft as an enemy target and fired missiles. Unfortunately, a plane crashed near Tehran. In total, 176 people lost their lives. Eventually, Iran admitted the mistake, stating they were expecting a possible US attack.

When this case is studied, it demonstrates how high-stress military conflicts can demand quick action. Military staff were on high alert, and when they saw a threat on their radar, it was not certain what this threat might be. Due to these circumstances, it creates the chance of human and technological errors. The ICAO analysis also shows that even if a plane departs from a country's own capital airport, civilian planes can still be at risk if military systems are active and ready to engage. Furthermore, this case underlines the need for coordination between civil entities, such as airlines and military personnel (ICAO, 2021).

Azerbaijan Airlines Flight 8243

Unfortunately, despite the efforts and lessons learned from the previous case, a similar incident also happened in Russia. Azerbaijan Airlines flight 8243 was an Embraer E190 flying from Baku, Azerbaijan, to Grozny, Russia, on 25 December 2024. On that day, Ukraine was performing a series of drone attacks on Russia, and Russian airspace defence units were on high alert.

Investigation is still ongoing to understand the reason, but the plane is shut down over Grozny, Russia. The aircraft survived initial missile shots and stayed in the air for more than 2 hours. However, due to missile particles creating damage to the hydraulic systems, pilots lose abilities to control planes. Despite all the pilots' efforts to perform a safe landing, the plane crashed in Kazakhstan. 67 people on board, 38 people lost their lives, including the pilots. There is no doubt that the pilot's action saved 29 people, and it could have been much worse.

This incident is important because it is the most recent example of a civilian aircraft being affected by a conflict. Despite the investigation still ongoing, it is possible to see a similar pattern in the Ukraine International crash that happened in 2020.

Current Situations

Economic effects

In our current world, giving the takeoff order requires many conditions, making it harder than ever before. Previously, airline companies only checked for weather. Right now they should think complicatedly about political tensions, carefully design the flight route and choose the best pilots for flights. Finding completely safe airspace is challenging and any tension risking the flight can cause delays or even flight cancellations. Flight paths are often determined through risk analysis, choosing the best one. Since the airspace over conflict zones is closed and restricted, most of the flight routes need to be extended to ensure a safe journey. This led airline companies to spend more money on fuel and repairing, causing higher ticket prices and lower profit margin.

GPS Spoofing

Technical developments opened new fronts each day. With the start of the cold war era the threats of war have evolved from kinetic to electronic. This new front has become and will remain as a part of modern warfare. “GNSS Spoofing” is one of the critical techniques that is in use. These Systems can have different effects depending on usage and region. While “Jamming” does drown the satellite signals, “Spoofing” deceives aircraft’s systems and feeds them with false information. This situation does not actively damages the aircrafts or aviation systems, however it prevents usage of critical systems such as Traffic Collision Avoidance System (TCAS) or Enhanced Ground Proximity Warning System (EGPWS)

Traffic Collision Avoidance System (TCAS) is used to help pilots in the visual acquisition of the intruder aircraft, and to alert them to be ready for a potential resolution advisory in order to prevent any mid-air collision. This system is not essential in order to perform a flight, even so it's an important Navigation Aids (NAVAID) system. This system uses Automatic Dependent Surveillance - Broadcast (ADS-B) and GNSS data in order to determine possible intersections during the flight. The word “dependent” in the name is coming from the dependency of GNSS data to define position of the aircrafts. In case of any spoofing systems may show non-existing “phantom aircrafts” or alarm a fake Resolution Advisory (RA) and cause pilots to make non necessary maneuvers.

Enhanced Ground Proximity Warning System (EGPWS) is a type of terrain awareness warning system designed to alert pilots if their aircraft is in immediate danger of flying into the ground or an obstacle. The system has the mapping of global terrain and landscapes and uses those by cross checking aircrafts GNSS data and altitude values and informs pilots with Navigation Display. Under snooping systems can get triggered and give “TERRAIN, PULL UP” warnings even if the aircraft is in open space.

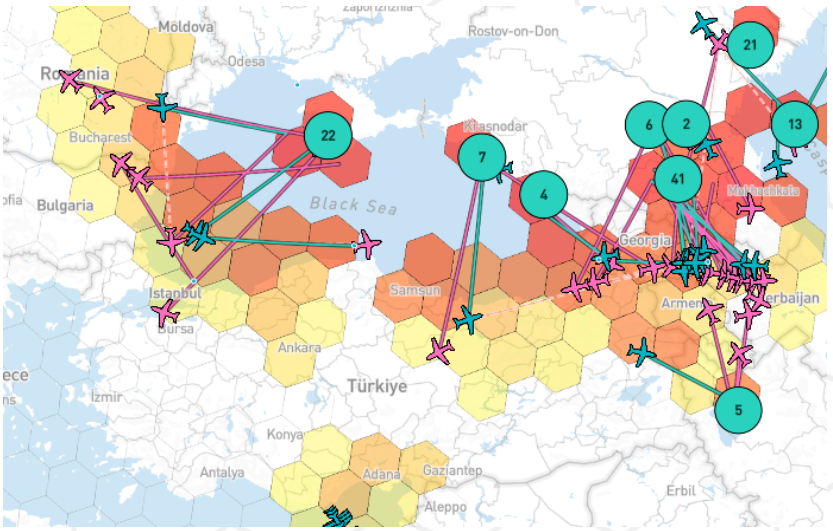

Figure 3: GPS spoofing happening over Black Sea region on 6th January 2026.

Those malfunctions due to GNSS Snooping causes pilots to turn off those NAVAIDs and perform their flights without aid. Although many pilots may perform safely without usage of those systems, aircrafts are being under risk due to human-factor and being more open to potential accidents in critical flight zones.

Turkiye, specifically Black Sea region, is one of the biggest examples of this situation. The spoofing that's been done by Russia in order to prevent Ukrainian drone usage does affect civil aviation in Turkiye despite them not being a part of the conflict. Black Sea region is known for both extreme weather conditions and challenging landscape.

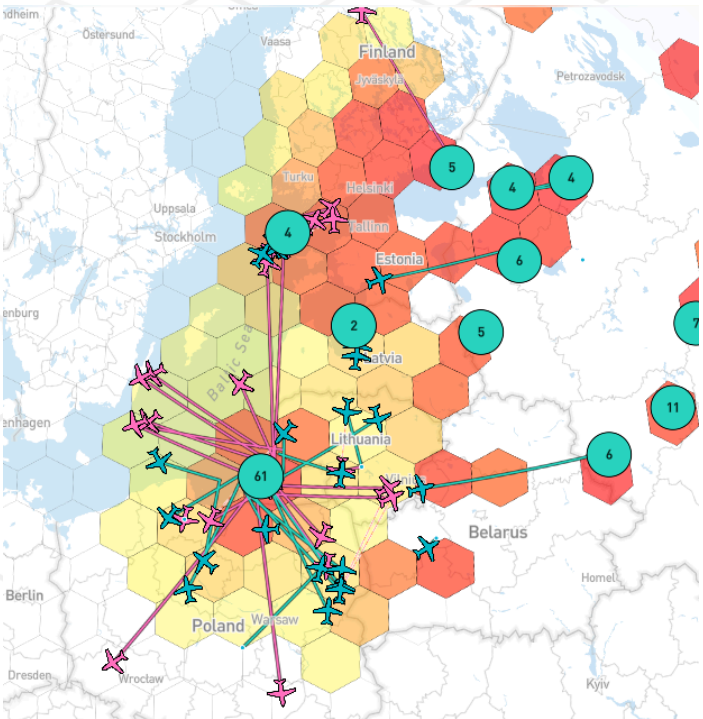

Figure 4: GPS spoofing on Baltic region collected on 6th January 2026.

Those factors are creating an additional need for usage of NAVAID systems. In those regions pilots are performing with their experience and regional knowledge. The Black Sea region is not the only region that's being affected by GNSS snooping caused by the Russia - Ukraine war. The Baltic region is also majorly affected by those actions. Finland is one of the most affected counties in the Baltic region. The snooping is not only limited to the Ukraine and Black Sea, the Belarus airzone is also an active part of Russia - Ukraine war.

Air travel bottleneck issue

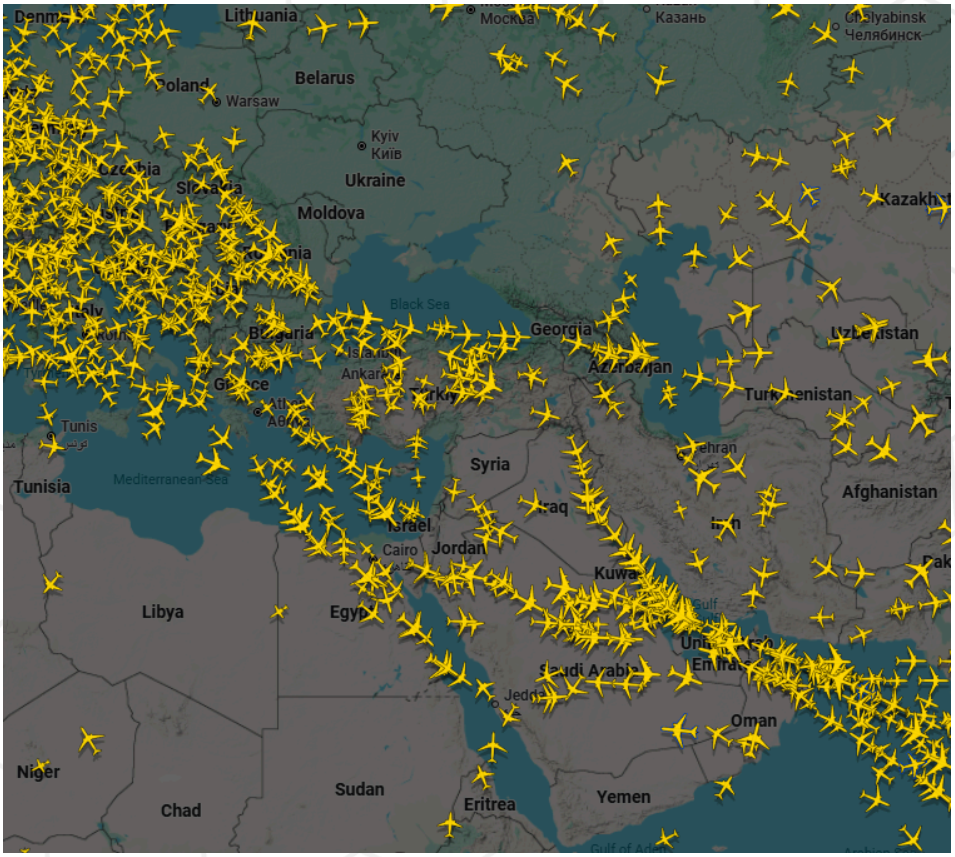

Figure 5: Live flight snapshot collected on 11th January 2026. It can be seen that lots of planes fly over Turkiye, Iraq, and Egypt. Most of these planes cannot use Russian/Ukrainian airspace with Syrian Airspace. Note that many flights also go to the UAE and Qatar due to increased global airlines such as Emirates Airlines, Etihad Airlines, and Qatar Airlines.

Another issue is the bottleneck. There are many flights between Europe and Asia, and most of the flights cannot use Syrian airspace due to the airspace restrictions with Ukraine and Russia. This creates bottlenecks in some countries such as Türkiye, Iraq, and Egypt. Moreover, there are now a great number of flights going to Gulf states such as Qatar and the United Arab Emirates. These flights need to go over specific corridors, which makes bottleneck points more crowded. This increase in traffic also creates many issues for safety.

Due to conflicts, situations can change drastically. On 14th January 2026, due to ongoing Iranian protests, Iran closed its airspace. With already closed other airspaces in the region, this adds further stress and potential safety issues.

Figure 6: 15th January 2026, live map of the flights in the sky. This is after Iran closed its airspace which makes the bottleneck situation even worse. Turkish airspace handling requires more traffic than ever. Note that in Figure 3, it is demonstrated that GPS spoofing happens in the Black Sea region. This coupled with the rising traffic in the region poses great threat to air travel safety.

This is another demonstration of two different conflicts, Ukraine-Russia and now Iran can combine and create a safety threat of the flight operations.

Cybersecurity Aspects

Cybersecurity systems are vital in conflict zones. The development, use and monitoring of these systems will remain crucial through 2026. In today's conflicts, the integration of digital and physical warfare means that data packets have become a form of weapon alongside traditional missiles.

The primary threats that countries face are GPS spoofing and jamming. These activities can unintentionally lead civilian aircraft into restricted airspace or over military installations, creating serious risks. Strong cyber defense measures are crucial to ensure that aircraft can accurately determine their location.

In today's world, wars are no longer fought solely through traditional means. For instance, even if an airport is not physically attacked, a conflict zone's operations can be brought to a halt through cyberattacks. We have seen this happen before, and as technology and artificial intelligence continue to advance, we can expect this trend to persist. Thus, it is essential to bolster cybersecurity measures and create a wide range of protective infrastructures to safeguard against these evolving threats.

Also, AI-driven defense systems should function not just as barriers like traditional firewalls but rather as intelligent entities that oversee the network's immune system. A highly effective strategy in this regard involves employing algorithms to quickly analyze flight data, network traffic, and user behavior all within milliseconds to create a baseline operating profile.

NotPetya and Kiev Boryspil Cyber Attack (2017)

The 2017 NotPetya cyberattack stands out as a critical case study for the aviation industry and ICAO's cybersecurity framework, representing one of the most significant events in the history of cyber warfare. Although the malware originated in Ukraine, its impact extended beyond civil aviation, it crippled major international logistics companies and affected the global supply chains that the aviation sector relies on. In other words, NotPetya serves as a primary example of the state's power-play on the internet that is caused by the lack of regulations.

This attack was also an outcome of the Russia-Ukraine war and simply showed that Russia wanted more power by targeting the electricity and banking sectors. This operation showed the cyber threats in air traffic management and airport operations, proving that cybersecurity is now a vital part of aviation security and regional stability. As a result, NotPetya underscored the need for the aviation industry to treat cyberspace as a strategic domain, where state power dynamics can disrupt global flight operations.

Atlanta Hartsfield-Jackson SamSam Attack (2018)

The SamSam ransomware attack on the City of Atlanta is a definitive case study about the impact of cyberattacks on cities. Hackers find weak passwords and vulnerabilities in Remote Desktop Protocol (RDP) servers and gain unauthorized access to the city's network. Instead of a simple virus, they manually scanned the network and locked the important files. This

brought the city to a standstill where the police, the local courts, and even the water department couldn't function for weeks.

The hackers asked for nearly 51000$ in Bitcoin as a ransom. The city followed the advice of the government and refused to pay. However, they had to spend over $17 million to repair their damaged systems and improve their security. This proved that fixing a cyberattack is much more expensive than the original ransom.
As a result, this attack taught cities to use better security measures to protect themselves from hackers, such as stronger passwords and updated software.

Collins Aerospace Data Breach (2025)

Collins Aerospace is a company that works in military and civil aviation, possessing critical information. So the cyberattack on Collins Aerospace highlighted critical and persistent problems in corporate cybersecurity, namely the failure of basic security and incident response protocols.

The attack began with attackers using compromised old credentials and continued with the use of “old passwords” to gain unauthorized access to high-security critical networks. Although the company's monitoring systems initially detected suspicious activity, a significant delay in internal response allowed the attackers to remain on the network for the necessary amount of time. This opportunity enabled the leakage of sensitive data before an emergency shutdown was finally implemented.

From an organizational perspective, this incident demonstrates that technical detection tools are ineffective without a rapid response strategy. In the context of the aerospace and defense industry, such delays carry higher risks due to the sensitivity of military and commercial aviation data.

The Collins Aerospace case serves as an important reminder for multinational companies to prioritize identity lifecycle management and reduce the time an attacker remains undetected “dwell time” through more efficient Security Operations Center (SOC) workflows. In conclusion, this breach showed that even the most advanced defense contractors are vulnerable when they neglect basic practices such as password rotation and timely warning mitigation.

The European Union Agency for Cybersecurity (ENISA)

The European Union Agency for Cybersecurity (ENISA) is the main institutional framework for European Union's cybersecurity regulations. This agency’s goal is achieving a safe, protected internet and a high level of cybersecurity. In order to harmonize security requirements for ICT products and services ENISA took some actions such as;

NIS2 Directive: A directive forces companies working in essential supplies like energy,water,banking etc. to have strict security.
EU Cybersecurity Certification: A seal of approval from EU that assures the software has been tested and safe to use with an ENISA-backed certificate.

Major Parties Involved

United States of America

The US role is a blend of diplomatic leadership and technical authority. The United States maintains a permanent and high-level presence within ICAO to ensure global standards align with US interests and safety levels.

Safer Skies is an example of the United States's global dominance in the world. This initiative was launched in 2020 to enhance the safety of civilian flights over conflict zones, following the tragic downing of Iran Air Flight PS752 by a military missile. Established under Canada's leadership, this platform primarily aims to overcome the reluctance of states to share risks in their own airspace and to protect civil aviation in areas of intense military activity. Thanks to this initiative, new technical standards for risk assessment have been developed within the ICAO, and intelligence sharing between states has been accelerated.

The United States has been one of the most dominant powers in this process, both technically and operationally. The US Federal Aviation Administration (FAA), possessing the world's most advanced global monitoring and intelligence network, shares data with ICAO on which regions are dangerous, helping other countries determine safe routes. Today, this initiative has expanded to cover not only traditional missile threats but also modern threats such as GPS spoofing and drone attacks that disrupt the navigation systems of civilian aircraft, making it one of the most critical mechanisms for global flight safety.

In the aviation world, "New Entrances" refers to the shared use of the skies not only by traditional passenger aircraft but also by unmanned aerial vehicles (UAVs/drones) and commercial spacecraft. The United States is not only a technology producer in this field but also a key "rule-setter" actor within ICAO, setting global standards. The US strategy advocates for these new vehicles to operate not in a separate arena from traditional air traffic but fully integrated into the existing civil aviation system. In this context, the Federal Aviation Administration (FAA) has implemented the world's first "2026-2036 National Advanced Air Mobility (AAM) Strategy," providing a global model for safely commercializing urban air mobility and autonomous cargo flights.

Signal jamming and signal spoofing attacks targeting Global Satellite Navigation Systems (GNSS) have become one of the most pressing technical problems threatening civil aviation safety in regions such as the Middle East and Eastern Europe. As the operator of the GPS, the US is leading the "Resilient Navigation" strategy within ICAO to counter these threats. Operational data collected by the FAA is presented to the ICAO Air Navigation Commission (ANC) in technical reports, detailing how spoofed signals manipulate aircraft navigation

systems and can unknowingly lead aircraft into hazardous airspace. The United States's fundamental approach is to advocate for aircraft not to be solely dependent on satellite signals but instead to utilize a hybrid minimum operational network.

Russia

Russia's standing within ICAO shifted due to its occupation of Ukraine in 2022. Once a significant player in the aviation industry, Russia now faces technical violations and political isolation.

In 2022, at the beginning of the Ukraine-Russia conflict, Western leasing companies demanded the return of more than 500 aircraft. Russia seized these aircraft, initiating an unprecedented "dual registration" crisis in the history of civil aviation. ICAO considered this a serious violation of the Chicago Convention. According to the Chicago Convention (Article 18), which forms the basis of ICAO, an aircraft cannot be registered in two countries simultaneously. Russia's action created serious uncertainty regarding which country's safety inspection the aircraft were under and undermined global safety standards.

Russia’s removal from the ICAO Council in 2022 was not only a technical vote but also one of the biggest political events in the global aviation system. At the 41st ICAO Assembly held in Montreal, a vote was held to reselect Category 1 members. Russia received only 80 votes. This showed that Russia was no longer seen as one of the most important countries in aviation and that it was diplomatically punished by the international community. Russia objected to this situation, calling it a “completely political decision,” and asked for the vote to be repeated, but this request was rejected. This event marked the beginning of Russia becoming an “isolated” country in aviation.

Due to the significance of Russia's airspace as a major transit hub globally, "data" has become a strategic asset. Following Russia's decision to prohibit EU and US aircraft from its airspace, Western airlines must now utilize the Arctic or southern routes (through Türkiye) for flights to Asia. This results in an added fuel expense ranging from $30,000 to $50,000 per flight and causes delays of 2 to 3 hours for Western operators. Additionally, Russia has partially stepped back from ICAO's open data-sharing agreements. It has ceased to provide its flight data and accident reports to ICAO with full transparency, complicating global safety assessments.

In the end, even if Russia seeks to regain Category 1 status in 2026, accomplishing this appears unattainable as long as the conflict in Ukraine persists and issues regarding aircraft ownership are unresolved.

Ukraine

Ukrainian airspace has been completely closed to civilian flights since February 24, 2022. Ukraine describes this situation as a "right to self-defense" and a "security necessity." The US has been one of Ukraine's biggest supporters during the war. The EU (EASA) provides

financial support to bring Ukrainian aviation regulations into line with European standards. The Ukrainian delegation argues that civil aviation should be protected not only against accidents but also against state terrorism and missile attacks and requests that ICAO adopt a more "sanctioning" structure. According to Ukraine, removing Russia from the Council is not enough; they argue that countries violating property rights in the aviation system should be systemically isolated.

Israel

Israel's position within the ICAO and the global aviation system is one of the most complex examples of geopolitical conflict intertwined with technical security issues. A significant technical challenge is the prevalence of electronic warfare activities in Israel airspace. Israel engages in extensive GPS spoofing within its airspace and in neighboring regions as a countermeasure against threats from Hezbollah and Iran. Although this practice disrupts the navigation systems of civilian aircraft, Israel regards it as a "vital security measure" to deflect missiles.

In the current wartime scenario, Israel utilizes aviation both for survival and as a demonstration of its technological advancements. Due to ongoing tensions between Israel and Iran, as well as between Israel and Palestine, many air corridors over the Middle East have been designated as high-risk. Consequently, airlines such as Turkish Airlines, Delta, and Lufthansa often opt for longer but safer routes that pass through Egypt or Saudi Arabia.

The United States is Israel's largest partner in aviation. The multi-billion-dollar F-15IA contract and collaborations with Boeing have integrated the aviation industries of both countries. At the ICAO level, the US plays a significant role in vetoing or softening resolutions that condemn Israel. The Palestinian-Israel conflict is one of the most severe challenges to the principle of "neutrality" in civil aviation. While Palestine seeks international recognition from ICAO for its airspace sovereignty and the reconstruction of its damaged infrastructure, Israel manipulates existing regulations to its advantage by employing GPS jamming and prioritizing military air traffic in the name of "state survival." Flight safety in the region now relies not only on the technical condition of aircraft but also on the coordination of real-time missile defense systems and the extent of cyber warfare.

China

The Chinese delegation argues that current aviation regulations are largely driven by the interests of advanced Western nations. They advocate for a new Global Security Initiative that addresses the production capabilities and local needs of developing countries. China has emerged as a leader in sending experts to the ICAO technical panels, where they help set standards for unmanned aerial vehicles and digital air traffic management.
For China, ICAO is not merely a security organization; it serves as a vital diplomatic platform to challenge Western dominance in the aviation sector. By excluding Taiwan from ICAO, China aims to bolster its sovereignty on the global stage while striving to impose its own regulations in the future hubs of aviation growth.

From the perspective of 2026, China positions itself as a superpower, proposing an alternative aviation ecosystem that rivals the West. This ecosystem encompasses aircraft manufacturing, navigation systems, and airport management. In response to United States pressure over Taiwan, China is harnessing its economic and technical influence to strengthen its ties with developing countries.

Iran

Iran faces a significant legal and reputational challenge with the International Civil Aviation Organization due to the tragic downing of a civilian passenger plane (PS752) by a military missile in 2020. Ukraine, Canada, the UK, and Sweden have accused Iran of breaching Article 84 of the ICAO Treaty, bringing the issue to the International Court of Justice. Iran contends that the incident was a "human error" and seeks to stave off stricter sanctions from ICAO.

Furthermore, Iran leverages its airspace as a bargaining chip in diplomacy, given its strategic position in the Middle East. With alterations in flight paths stemming from the Russia-Ukraine conflict, Iranian airspace has become crucial for certain Asia and Europe flights, allowing Iran to earn substantial overflight fees. Amid rising tensions with Israel and Gulf states, Iran has engaged in GPS jamming and signal disruption activities within its territory, subjects that are often addressed during ICAO security sessions.

Türkiye

Türkiye occupies a unique position within ICAO and the global aviation landscape, acting as a vital strategic bridge. Its geographical location, coupled with the prominence of Turkish Airlines (THY), places Türkiye among the influential nations in ICAO. Following the closure of European airspace amid the Russia-Ukraine conflict, Türkiye emerged as the primary corridor for East-West air traffic. As the only NATO member that chose not to impose sanctions on Russia, it serves as a crucial gateway managing civil air traffic between the Western world and the East.

Additionally, during the GPS spoofing incidents and military activities related to the Israel-Palestinian conflict, the flight zones of Istanbul and Ankara became a "safe haven" for international flights. Türkiye also adopts a balancing approach in its international relations, acting as a stabilizing force within ICAO. This enables it to ensure adherence to regulations while functioning as a technical mediator between opposing blocs.

United Arab Emirates

The United Arab Emirates is poised to enter a remarkable phase in the global aviation landscape by 2026, establishing itself as a technological leader. The country has achieved a significant milestone by being elected to the ICAO Council for the seventh consecutive term

for the 2026-2028 period. This achievement further cements the UAE's position among the key players in global policymaking.

Throughout the ongoing conflict, the UAE has kept its airspace open to Russia, with airlines like Emirates, Etihad, and flydubai maintaining uninterrupted flights. At the same time, the UAE has enhanced its reputation as a trustworthy mediator by facilitating prisoner exchanges between Ukraine and Russia. Notably, the resumption of flights to Damascus by Etihad highlights the UAE's pivotal role in breaking the aviation isolation in the region.

Moreover, the UAE has developed its own GPA free technology to tackle spoofing, a challenge faced by countries worldwide. This innovative technology ensures complete protection against signal jamming attacks in both civilian and military aviation, reinforcing the UAE's commitment to security and innovation in the aviation sector.

Qatar

Qatar faced significant challenges during the "Qatar Diplomatic Crisis" from 2017 to 2021 when its neighboring countries (Saudi Arabia, the UAE, Egypt, and Bahrain) shut their airspace. Fortunately, by 2021, Qatari aircraft were once again allowed to access Saudi and Egyptian airspace, enabling them to take the most direct routes to Africa and Europe.

As Qatar plays a pivotal role in mediating between Hamas and Israel, Doha has positioned itself at the heart of diplomatic negotiations. Despite the challenges posed by GPS spoofing incidents in the region, Qatari aircraft have managed to maintain their operations thanks to their cutting-edge avionics systems. Additionally, Qatar has remained one of the few countries not to impose restrictions on its airspace for Russia, allowing Qatar Airways to provide one of the limited luxury travel options connecting Russia with the rest of the world and reaping economic benefits from this unique situation.

However, we also see that Qatar's relations with the United States are at a good level. Qatar hosts Al-Udeid, one of the largest US military bases in the region. This demonstrates that the US Federal Aviation Administration (FAA) and Qatar's Civil Aviation Authority (QCAA) collaborate at the highest level regarding aviation security.

Republic of Korea

The Republic of Korea is making significant strides in the aviation industry in Asia, thanks to its technological innovations and major airline mergers. Seoul is now the go-to link between the West and the East, outshining places like Singapore and Hong Kong. By 2026, Korean Air is making some serious moves to become not just South Korea's main airline but also one of Asia's top mega-carriers. One of the major tasks on their agenda lately has been merging with Asiana Airlines.

Baltic Countries

The Baltic states are leading the way in addressing legal and technical challenges against Russia in global aviation. These countries have actively lobbied within the International Civil Aviation Organization (ICAO) against Russia's invasion of Ukraine and its misuse of civil aviation. Their efforts helped achieve a significant diplomatic win that resulted in Russia being removed from the ICAO Council. However, this stance has led to ongoing GPS jamming and spoofing attacks aimed at them, primarily coming from Kaliningrad and mainland Russia. The Baltic authorities view this as a form of hybrid terrorism that threatens the safety of civil flights. In response, they have introduced new safety protocols that require pilots to rely on traditional ground stations instead of satellite signals.

The Baltic states have lost their competitiveness in Asian air routes because Russian and Belarusian airspace is completely closed. AirBaltic has focused on European routes, launching over 30 new flights from Riga and Tallinn. The airline has also partnered with Türkiye to help fill the gap left by the Russian market. These strong ties with Türkiye boost tourism in the region.

The Baltic states can currently resist technological sabotage, isolate Russia from other countries, and fully join with the West in aviation.

Resolution should Answer

This study guide considers these questions as guidance for you. To prepare your research more thoroughly and estimate which direction chairs would like to go. Please keep these questions in mind when you write your resolution at the conference.

- How can the ICAO enforce standards for “signal inviolability” to protect civilian flights in conflict zones from GPS sabotage?
- How can ICAO create faster sanction procedures for serious offenses (like shooting down civilian planes) without waiting for court decisions?
- Who should be responsible for allowing safe operations over conflict zones, national governments of flight originate from ? Or airlines itselves ?
- How to prevent accidental shutdowns from happening again under ICAO mandate?
- What does ICAO do about the bottleneck issue that some countries are experiencing ?
- Should there be guidelines for airlines regarding how to decide to fly over a conflict zone or not ?

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