THE CONTROLLER

FEBRUARY 2021

JOURNAL OF AIR TRAFFIC CONTROL

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THE CONTROLLER

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Cover photo: This cover features a photo of the tower at Saarbrucken Airport (EDDR). Since December 2018, air traffic control at EDDR has been done remotely from Leipzig Airport (EDDP). For this issue, IFATCA's Controller Magazine Senior Correspondent Philippe Domogala travelled to Saarbrucken and Leipzig to learn more.

IN THIS ISSUE

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IS THIS THE BEST WE CAN DO?

BY DUNCAN AULD, IFATCA PRESIDENT & CEO

Welcome to 2021 – the first post pandemic year, if we can call it that. We begin this year with enthusiasm, anticipation, a lot of hope, and a little caution. We are happy to put 2020 behind us. We have a few vaccines that are approved for use, and we expect our governments to coordinate a rapid, fair, and effective vaccination rollout.

As much as we may want to forget about 2020 and move on, we cannot, and we must not. There are lessons to be learned here. In the tradition of safety in aviation, we must take time to analyse what happened and how we can do better next time.

Safety in aviation is designed with resilience to failure in mind. Our critical equipment, operational procedures, and professional personnel are designed to be redundant, reliable, and failsafe. It has become painfully obvious during the past 12 months that this safety-based approach has not been extended to the financing of air navigation service providers. This is evidenced by air navigation service providers (ANSPs) in multiple regions taking extreme measures to remain solvent during the pandemic, all the while providing a necessary public service to their respective nation.

This will come back to bite us. The general public – yearning to break free from more than a year of confinement – will – when the conditions are right – swarm to the skies. And ANSPs will not be ready for it. Then, as usual, the operational staff will be criticised for lack of efficiency, and various programs will be trialled at great expense to improve capacity. These programs will deliver little, whereas some investment in personnel would have achieved greater results for less, if these organisations had not been so short sighted and trigger happy.

While not to the same extreme, we have seen this before. But the boom-bust cycle in ANSP funding and by extension ATM investment in infrastructure and personnel is not a statistical anomaly. If this were an ATM operation that repeated the same mistake, we would have changed long ago, but in many countries, we tolerate a substandard funding model with a single point of failure. Why? Do we really believe there is no other option? Some nations still operate as a government funded model, and some are hybrid systems. These funding models are not perfect either, but they are arguably more reliable than those where income is based only on aviation charges.

The industry needs to take a long hard look at the various ATM funding models and ask ourselves, "Is this the best we can do?" It might be time to admit that the utopia of completely 'commercialised' ATM was a fantasy and focus on a hybrid model based on the best of both worlds.

After all, throughout the pandemic, air traffic control and all the ANSPs have continued to provide their critical role as a public service to civil aviation, supporting the transport of cargo, medical supplies, and medical personnel, even when passenger traffic has ceased. Maybe it is time to recognise it for more than just a burden, but a means to provide the safety and security of the state. Is that not worth some investment?

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Credit: Ellen Jenni via unsplash.com

Photo: Grounded Swiss planes during COVID-19 at the military airport of Dübendorf

INFORMAL ONLINE IFATCA MEETING

BY PHILIP MARIEN, IFATCA COMMUNICATIONS COORDINATOR

On 17 November 2020, IFATCA held an online, informal meeting for its member associations using the Zoom platform.

The COVID-19 pandemic led our Federation's Executive Board to cancel our annual conference that had been planned for March 2020. A number of member associations requested a special conference towards the end of the year. However, that also proved impossible for the same reason. Therefore, the Executive Board decided on a virtual meeting to update the member associations on some of the issues that the Federation faces. The event was moderated by IFATCA's SESAR Coordinator, Marc Baumgartner.

IFATCA's President and CEO Duncan Auld presented on the state of the Federation. Auld said IFATCA remains robust, even though there is no denying that the COVID-19 presents formidable challenges for air traffic control, air traffic controllers, and the professional associations worldwide. Although it is too early to tell what the exact consequences will be, the pandemic undoubtedly will have a lasting impact on the Federation. It is therefore essential that we prepare the Federation for these effects. Like many other organisations, the Federation itself was unprepared for a crisis that amongst many other things, prevents face-to-face meetings. This fact highlights the Federation's need to make its decision-making process more dynamic. Such changes eventually will need to be reflected in the constitution and bylaws, but the Executive Board is working on an intermediate proposal to allow electronic voting in the absence of an annual conference where voting generally occurs.

Auld further elaborated on his intentions to make the Federation more responsive, to have a greater regional focus, and to develop a stronger technical and professional strategy. The latter should be more high level, with even stronger links to ICAO's global plan, technical panels, and IFATCA's own long term vision.

IFATCA's President and CEO also highlighted a number of significant changes that were made to the financial management of the Federation. As part of this meeting, IFATCA's EVP Finance Mark Taylor (supported by the Federation's accountant and auditor) gave an overview of the 2018-2019 financial year. Taylor also discussed the outlook for the fiscal year that ended on 31 May, 2020, which is being audited in preparation of the annual conference in 2021.

IFATCA's Deputy President Helena Sjöström gave a presentation about her activities, including managing the 100 Year ATC and the Equality, Diversity, and Ethics task

Screen grab by Philip Marien (IFATCA)

Photo: Participants of the online IFATCA meeting included (left to right, top to bottom) Duncan Auld (President and CEO), Mark Taylor (EVP Finance), Helena Sjöström (Deputy President), Ignacio Baca (EVP Technical), Peter Van Rooyen (EVP Professional), Marc Baumgartner (IFATCA SESAR Coordinator) and Jean-François Lepage (IFATCA Liaison Officer to the ICAO Air Navigation Commission).

INFORMAL ONLINE IFATCA MEETING (CONT.)

forces. She also stated how she looks forward to the annual conference, planned in May 2021 in Jamaica. Given the uncertainty on how the global pandemic will evolve, the Executive Board committed to deciding by the end of January 2021 on whether the event could go ahead. Sjöström introduced the changes made to the conference organisation requirements. These are mainly aimed at making attendance of the annual conference more inclusive and affordable. Lastly, she gave a quick overview of the highlights of the IFATCA website, including the newly introduced wikifatca.org, which makes it easy to retrieve IFATCA technical and professional policies.

This was followed by presentations by EVP Professional Peter van Rooyen and EVP Technical Ignacio Baca. In recent months, professional work has focused on COVID-19 and producing material to help controllers cope with the challenges the crisis presents. This includes guidance on how to cope with issues personally and also broader advice on how to cope with the initial impact and the eventual recovery. On the technical side, work continues on a number of work items: guidance and provisional policy on drones and unmanned traffic management were developed, as was a refresher on volcanic ash and its impact on air traffic services.

IFATCA's Liaison to the ICAO ANC Jean-François Lepage updated the members on the activities within ICAO, which unsurprisingly were also greatly affected by the COVID pandemic. He also urged member associations to submit their updates to the Information Handbook (IHB).

The proposal for electronic voting was briefly introduced by IFATCA's Communications Coordinator Philip Marien. From the initial discussion and feedback, it was clear that the proposal needs to be refined before it can be sent to member associations by mail for approval.

Some 54 member associations and nearly 120 individuals attended the meeting. There were some issues that the Executive Board will seek to improve for the attendees in future online meetings, which will likely be planned for the coming months. In the meantime, member associations can find video recordings of the different presentations on the IFATCA website. (Login is required.)

philip.marien@ifatca.org

Screen grab by Philip Marien (IFATCA)

Photo: Participants of the IFATCA Committee D virtual quiz

IFATCA COMMITTEE D VIRTUAL QUIZ

BY NICOLA NÍ RIADA, AIR TRAFFIC CONTROLLER, IRELAND

On 18 November 2020 at 4 p.m. Zulu Time, air traffic controller organizations from all over the globe joined the first international IFATCA virtual quiz. Why, you ask? Well, social distancing means we are all missing human interaction, so this was a good excuse for participants to have a glass of their favourite tipple and giggle a little in the company of ATC friends old and new. It also was a chance for players to win. Are we even controllers if we don't want to win?

The quiz was an Executive Board initiative and was created by EVP Asia Pacific Anthony Ang, who hereafter should be referred to as "the host with the most." I assisted Ang in hosting the quiz.

All the participants were randomly placed on teams through breakout rooms for the quiz. There were five rounds. The first round was an introduction/icebreaker, and each team had to nominate one person in the group to be the "responsible adult." This person took note of the group answers and tallied their scores after each round, came up with a group name, and found one interesting fact about each person.

There then were four rounds with 13 questions. The question topics included some general knowledge, IFATCA specific areas, and many that were aviation-based.

Examples of quiz questions are:

Decode the following METAR Codes:

- SHRAGS (Showers of Rain, Small hail/snow)
- BLDRSN (Blowing Low Drifting Snow)
- BCMIFGVC (Patches of Shallow Fog in the vicinity)

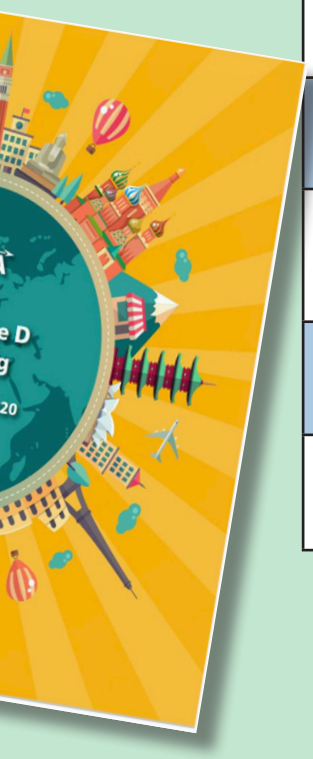
Document 4444 is the: Procedures for Air Navigation Services – Air Traffic Management. What are the document numbers for the following?

- Manual of Radiotelephony (Doc 9432)
- Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services (Doc 8585/193)
- Location Indicators (Doc 7910/177

Answers were read by members of the IFATCA Executive Board, including Anthony, Helena, Fred, and Duncan, as you have never seen them before!

Thanks to everyone who took part and we hope to see you all again very soon!

Team Name	"Responsible Adult"	Intro	Round 1	Round 2	Round 3	Round 4	Total
Disproportionate Wine Drinkers	Cristian Radu	3	13	12	15	12	55
Limbongo	Philippe Domogala	3	14	7	18	12	54
The NorEmPor Hunks	Robert Gjonnes	3	13	12	12	13	53
The Tequila Boys Before the Headache	Fred Deleau	3	12	14	9	8	46
Scandinavians Plus 2	Christoffer Edman	3	9	10	10	14	46
The Jets	Jonathan Cockburn	3	11	5	6	12	37



HOW AFM REGION CELEBRATES INTERNATIONAL DAY OF THE CONTROLLER

BY WICKEL YANICK ELIDJÉ, AFM REGION COMMUNICATIONS OFFICER

Like other air traffic controllers throughout the world, IFATCA member associations within the Africa and the Middle East Region never miss the opportunity to celebrate the International Day of the Controller each year on the 20 October.

Due to the COVID-19 restrictions, most of the member associations from IFATCA's Africa and Middle East Region had quite somber activities in 2020. But from Lebanon to South Africa, through Senegal, Ethiopia, and Madagascar, ATCOs happily joined the sweet melody of the theme for 2020: "Professional Essential."

APCATO (the Association Professionnelle des Contrôleurs Aériens du Togo), the Togolese member association, started their celebration a few days before by web socializing with each other. Their activities included an opportunity to win dedicated face masks, T-shirts, and a watch by providing the right answers to a group of questions. They also organised an excursion to various high schools to describe aviation jobs, including being an air traffic controller.

APCAN (Association Professionnelle des Contrôleurs Aériens du Niger), the member association of Niger, held a conference gathering around ATCOs, the CAA, the ANSP, the Ministry of Aviation, and the training school.

Tanzanians recognized the day by offering sewing machines to inmates.

Their Kenyan neighbours organised a team-building activity, including an outing to practise football or soccer.

wickelyannick.elidje@gmail.com

Photos: Wickel Yanick Elidjé

Photo: Ugandan ATCO ready for a sport game

Photo: ATCOs from Comoros Island

Photo: ATCOs playing chess...

Photo: Celebrating with cakes in Ethiopia

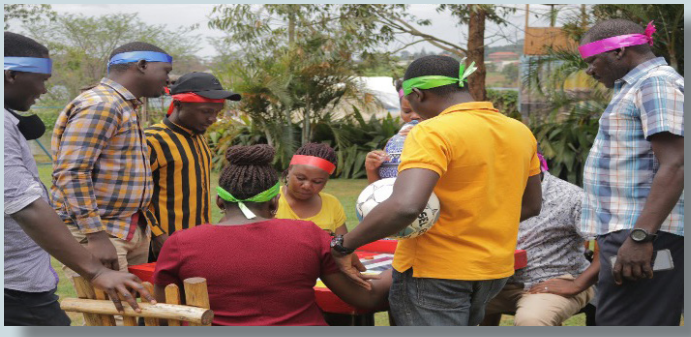


Photo: Competition between ATCOs

Photo: ATCOs are also good volleyball players

EGATS AND BURUNDI: THE STORY OF A NEW IFATCA FRIENDSHIP

BY ALESSANDRO MERCATI, PRESIDENT, EUROCONTROL GUILD OF AIR TRAFFIC SERVICES

Concerned by the number of possible suspensions in the run-up to the 2020 annual conference, the Eurocontrol Guild of Air Traffic Services (EGATS) reached out to a number of fellow associations to see whether they could help them continue as paid members of IFATCA. One of the first ones that responded was Burundi, and EGATS decided to help out their African colleagues. It was also an opportunity to learn more about this beautiful country in Africa's Great Rift Valley.

Alessandro Mercati, EGATS President: How many controllers work in Burundi? And where do they work?

Appolinaire Niyonzima, President of the Burundi Air Traffic Controllers' Association: We have 24 controllers in Burundi, for our position in the tower and the single approach position. We do not have radar or any other form of surveillance. All control is done procedurally.

Mercati: How are controllers selected? How long does the training take?

Niyonzima: Actually, our ANSP is working on a new selection regulation/procedure, which we are told will be implemented very soon. The basic aerodrome training currently takes 20 weeks, and the approach course lasts 12 weeks. Burundi has no training centre or college for aviation, so for any sort of training, we have to go abroad.

Mercati: How about your working conditions?

Niyonzima: We work almost every day in an afternoon, morning and night rotation. The night shift ends at 8:20 a.m. the next day, and the following day, a new rotation starts. Pay is low – just over US$100 per month – so to make ends meet, ATCOs look for other part-time jobs, which are quite sparse.

Mercati: Could you tell us what support your association gets from the management of your ASNP?

Niyonzima: The support we get is limited to the occasional sponsorship, but it largely depends on whether the people in charge understand aviation. Sometimes, it is quite difficult to get our points across. Other times, when operational people are appointed, it makes things easier.

Mercati: How did you get to know EGATS, and what did this mean for your member association?

Niyonzima: I got to know EGATS in 2019 when I participated in the IFATCA annual conference that took place in Costa Rica. Through the personal contacts with the EGATS delegation and its president, I learned that we share many of the same ideas and ideals.

Mercati: What kind of support from IFATCA could your association benefit from?

Niyonzima: Most of the African countries, and Burundi is no exception, have training problems. I believe IFATCA could play a role. IFATCA organizes courses and workshops in different regions and these are generally free of charge. But to travel to them and pay for lodging is financially impossible for many member associations. It would be most welcome, if IFATCA could support associations like mine by providing local training on different subjects, including safety management. We share one sky, which we are all called to protect and preserve for the betterment and for the name of our profession. We all play a role in bringing traffic from a portion of one airspace to another until destination. It means that we should have the same basic standard of training to allow us to maintain a uniformly high standard of safety.

Mercati: We couldn't agree more. Lastly, Burundi's tourism industry is not very well developed. Could you give us three reasons that make your country unique and worth visiting?

Niyonzima: In my opinion, there are three reasons that make my country unique and well worth visiting: We have very beautiful scenery with forested mountains, making for stunningly green surroundings. Secondly, our country borders on Lake Tanganyika, which is the second-largest lake in the world. It provides us with delicious fish like mukeke, kuhe, nonzi. And lastly, we have traditional drums called "ingoma."

ifatca@egats.org

Photo: Air Traffic Controllers from Burundi

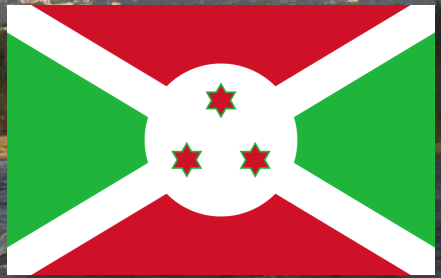


Illustration: Flag of Burundi

Photo: Fisheries of Lake Tanganyika in Burundi

Photos: EGATS

REINSTATEMENT OF DOMINICAN ATC WORKERS IS A MAJOR ACHIEVEMENT FOR PUBLIC SAFETY

BY GABRIEL MOCHO RODRIGUEZ, ITF CIVIL AVIATION AND TOURISM SERVICES SECTION SECRETARY

IFATCA's member association from the Dominican Republic (Asociación Dominicana de Controladores de Tránsito Aéreo, ADCA) has won a legal battle to reinstate workers who were unfairly dismissed for denouncing major safety failings in the air traffic control system in the Dominican Republic.

After seven years of legal proceedings, I'm delighted that justice has been served for the union, workers, and passengers. Air security is a matter of life and death. Workers should be applauded, not harassed, for highlighting serious risks to passengers and staff.

Since 2012, ADCA and the ITF have reported serious safety problems in air traffic control systems across airports in the Dominican Republic. This included a total communications failure in Punta Cana, where controllers had to coordinate flights via mobile phones. Other incidents included unserviceable navigational aids systems at the International Airport La Isabela, forcing pilots to complete all approaches visually, and the malfunctioning of distance measuring equipment and interruptions in communications at the main airports.

After workers from ADCA highlighted these egregious safety failings, the government began a retaliatory campaign, dismissing or intimidating staff. The ITF civil aviation section and ITF Americas supported the complaints internationally and were likewise harassed: A former ITF official in the country on a support mission was arrested hours before giving a press conference. They were later released without charge.

The ITF continued supporting the campaign to reinstate the air traffic controllers and underline the importance of air safety measures. A high-level court ruled in favour of the workers' reinstatement, but the government chose to ignore the ruling and remove the judges. The level of government corruption was so serious that ACDA took the case to the Inter-American Commission on Human Rights.

On 18 November 2020, the unfairly dismissed workers were finally reinstated.

"This victory is a formal recognition of the role workers play in keeping the public safe," said Edgar Díaz, ITF Latin America and the Caribbean Regional Secretary. He praised the international solidarity demonstrated by ITF affiliates from Colombia and Panama, who had picketed the embassies of the Dominican Republic.

Thanking the ITF family, ADCA President Arsenio Alberty said: "Without all your support, our existence as a workers' ATC union would not have been possible."

The International Transport Workers' Federation includes nearly 700 affiliated trade unions from 150 countries representing 20 million working men and women across the world. Learn more about them at https://www.itfglobal.org.

Mocho_Gabriel@itf.org.uk

Photo: ITF Blog

Photo: ATCOs from the Dominican Republic

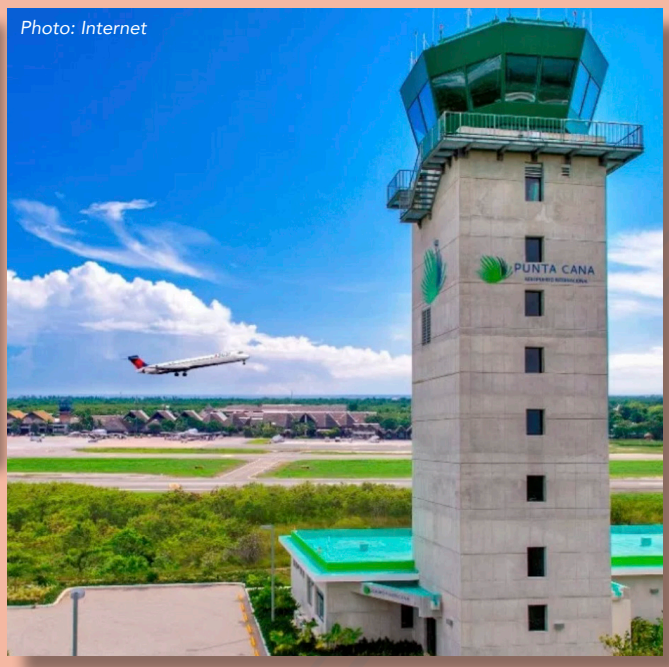


Photo: Internet

Photo: Tower at Punta Cana International Airport (PUJ/ MDPC) in the Domincan Republic

IFATCA THANKS JAMAICA 2021 CONFERENCE ORGANIZERS

BY THOM METZGER, NATCA, EDITOR OF THE CONTROLLER MAGAZINE

Once again, IFATCA's Executive Board has needed to make a difficult decision regarding its planned annual conference. In coordination with the Jamaican Organising Committee (OC), the IFATCA Executive Board has reviewed whether the conference could be held in May, as planned.

That review determined – despite the great news of COVID-19 vaccines starting to be administered around the world – that leading global health authorities have not relaxed, social distancing and masking requirements, quarantine restrictions, etc. That reality means a lot of uncertainty. We all know from our professional lives, that the impact of COVID on international travel remains huge. The risks associated with holding a large international meeting with these circumstances would be too great for the Jamaican OC, IFATCA's Member Associations (MAs), and our Federation to commit significant financial and other resources at this time.

As a result, last week, the IFATCA Executive Board communicated with the Federation's MAs, explaining that the 2021 Annual Conference planned to be held in Jamaica cannot and will not take place.

In this letter to MAs, the Executive Board said it believes a virtual meeting is required, so the Federation can continue to function. A small working group – chaired by IFATCA's Deputy President Helena Sjöström – is currently working on a framework for such a meeting. The Executive Board tentatively anticipates that this event will be held in the same week that the physical meeting was planned (24-28 May). The IFATCA leadership will release further details regarding this virtual event as soon as possible.

In the aforementioned letter to MAs, IFATCA's leaders expressed their great thanks to the MA and OC in Jamaica. It said, "We would like to sincerely thank our Jamaican Member Association and its organizing committee for the enthusiasm, time, and effort they have invested in planning the event."

About this decision, Sjöström shared the feelings felt by others when she stated, "We are frustrated by this continuing pandemic and disappointed by this necessary decision. We have no doubt that the Jamaica OC and MA would have done a great job welcoming all IFATCA MAs to their beautiful country. We all look forward to meeting face-to-face, as soon as it will be safe to do so. Let us hope that the crisis will be largely mitigated by the second half of 2021 and that we will be able to meet each other once again during the regional meetings."

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Photo: Thom Metzger (NATCA/IFATCA)

Photos: (left) The IFATCA Member Association from Jamaica made their presentation about the 2021 Annual Conference at last fact-to-face annual conference in May 2019. (right) Event poster for the cancelled conference.

NEWS FROM IFATCA ASIA PACIFIC REGION VIRTUAL 2020 MEETING

BY ANTHONY ANG, EVP ASIA PACIFIC REGION, YEN-CHUN CHERYL CHEN, RVP NORTH ASIA REGION, RUDY S. BOCTOT JR., RVP SOUTH-EAST ASIA REGION, NIRANJAN DALLAKOTI, RVP SOUTH-WEST ASIA REGION, AND GREG OKEROA, RVP PACIFIC REGION

IFATCA's member association from Singapore (the Air Traffic Controllers' Association) hosted a virtual meeting for the Federation's Asia Pacific Region from 21 to 23 Oct. 2020 via ZOOM Webinar. The theme for this meeting was "We are the Future," and the event was well attended by 17 member associations.

As we move into the digital world, IFATCA's EVP for the Asia Pacific Region Anthony Ang reminded everyone that, in times like this, when we are travelling much more in this virtual world and attending more teleconference meetings, we have to slow down and make more time to reconnect with our families, friends, and with reality.

DAY ONE

In 2019, during the Asia Pacific Regional Meeting (APRM), participants adopted a new format for future meetings.

Day one featured presentations by invited international organisations in a symposium format.

- Ang presented "ATC Potential Challenges During Restart."
- ICAO's Asia Pacific Regional Officer for Air Traffic Management and Aeronautical Information Management Shane Sumner presented "ICAO APAC COVID-19 – Related ATM Operations and Contingency Coordination."
- CANSO's Asia Pacific Affairs Director Chiang Hai Eng presented "Towards a New Normal in ATM."
- IATA's Asia-Pacific Regional Director of Safety and Flight Operations Blair Cowles presented "Update on the IATA economic data in the region."

The Speakers and participants then engaged in a relaxed and robust question and answer session.

DAY TWO

During day two, participating member associations gave activity reports. As it's more engaging to see pictures or presentations than to hear someone reading a report, the member associations were encouraged to present their activity reports using PowerPoint presentations.
Prior to COVID-19, most of the member associations were busy organising events and engaging their members actively. Since the pandemic, they reported how planned events have been cancelled. Some member associations changed their activities creatively and have been coping really well and continuing to engage their members. From volunteering for charity work to an online video game tournament, it was encouraging to hear how they have embraced the esprit de corps of the time.

Generally, member associations described how they have implemented hygiene practises and social distancing measures at their workplace. However, some member associations detailed how they have had to go into another lockdown in order to stop the spread of the pandemic in the community.

Some member associations shared concerns about reduced membership, training for OJT, refresher training for ATCO to handle the recovery, and the mental health of ATCOs during this prolonged pandemic.

Some member associations have embarked on FIR route restructure, user-preferred route, path monitoring tool, ADS-B for ATFM planning, Aireon space-based ADS-B, approach spacing tool, additional runway, and new ATMS.

With green lanes and travel bubbles slowly emerging, IFATCA's Asia Pacific Region is in a slow and coordinated recovery mode.

Photo: IFATCA

DAY THREE

During day three, directors from the Asia Pacific Region received an update and held an informal discussion about IFATCA's Asia Pacific Region's Speak English Program (SEP). It is a trial program to provide an open platform for member associations in the Asia Pacific Region to think, speak, and practice English with fellow air traffic controllers and aviation professionals.

The working group consists of:

- the EVP ASP;
- the RVP North Asia;
- the RVP South East Asia;
- the RVP South West Asia;
- the RVP Pacific Region;

and representatives from:

- the Civil Air Operations Officers' from the Association of Australia,
- the Hong Kong Air Traffic Control Association,
- the Air Traffic Controllers' Association of the Islamic Republic of Iran,
- the Malaysia Air Traffic Controllers' Association,
- the Mongolian Air Traffic Controllers' Association,
- the Nepal Air Traffic Controllers' Association,
- the Pakistan Air Traffic Controllers' Guild (PATCG),
- the Philippine Air Traffic Controllers' Association,
- the Air Traffic Controllers' Association (Singapore),
- the Air Traffic Controllers' Association of Sri Lanka, and
- the Republic of China Air Traffic Controllers' Association (Taiwan).

This program is not a training program, but a friendly virtual environment where participants can speak English as they want. It is not a test, but an opportunity where you can communicate and engage with other Air Traffic Controllers from the same region and help everyone to improve their English. Phase one of the SEP trial has been completed with excellent results. Currently, Nainaa from Mongolia and Tom from Australia are doing phase 2 trials to fine-tune the program before its official launch.

We hope the directors will encourage additional members from Federation Asia Pacific Region member associations to participate in the trial and help us in making the program a success. If SEP continues to be successful, the program will be introduced to the other three IFATCA regions.

The directors from the Asia Pacific Region then had an informal discussion with EVP for ASP Ang.

The member associations welcomed conducting future regional meetings online and possibly hybrid Asia Pacific Regional Meetings in the future. Those, who can travel, can travel, and those who can't travel, can attend online.

In conclusion, IFATCA would like to take this opportunity to thank the Air Traffic Controllers' Association (Singapore) for hosting this virtual APRM and the participants for joining in this event. ➤

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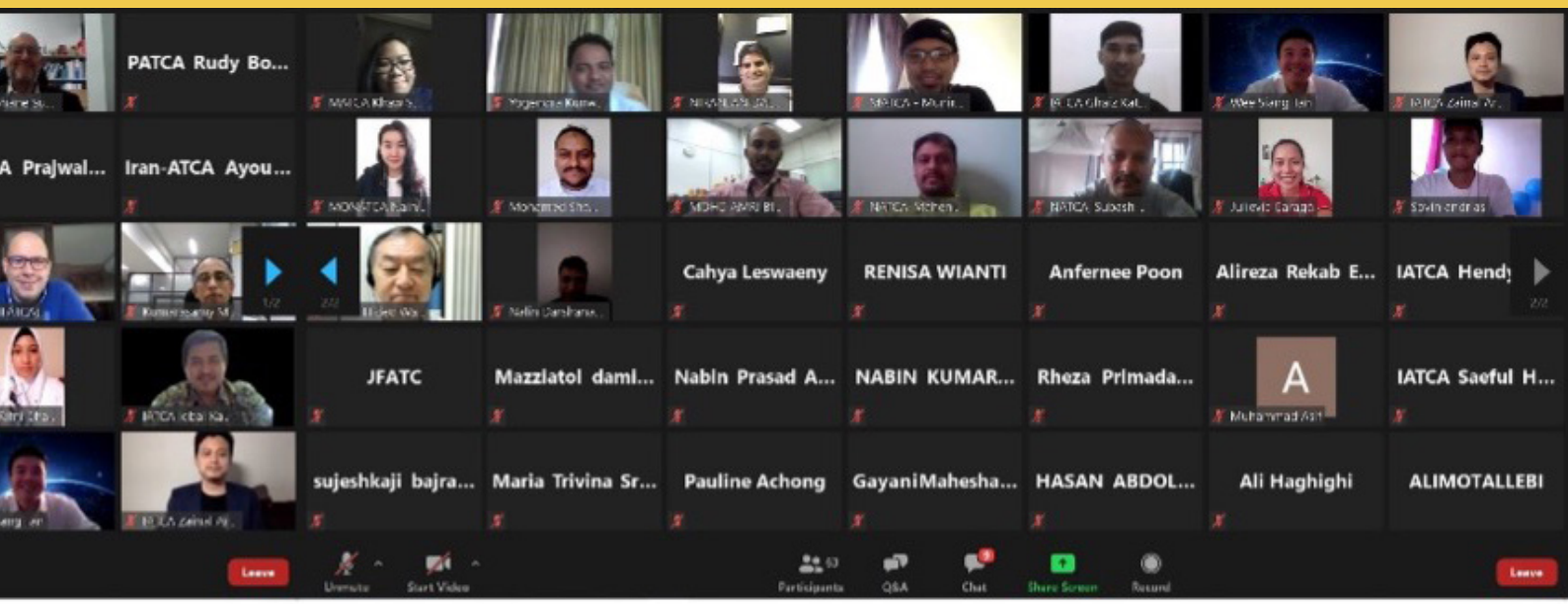

ectronic - Asia Pacific Regional Meeting 2020
to 23 October 2020 Day 1 Group photo

➤ **Photo:** Participants of IFATCA's APR virtual 2020 meeting

LIFE OF AN AIR TRAFFIC CONTROLLER IN THE PHILIPPINES

BY RENZ MARIONE BULSECO, AIR TRAFFIC CONTROLLER, DAVAO APPROACH CONTROL (RPMD)

It all started in Kitty Hawk, North Carolina, United States of America. The cool breeze of December was felt by the people living on this quaint town of the eastern seaboard. Folks from different walks of life were busy preparing for Christmas. But for Wilbur and Orville, they were about to make history.

The world had changed since the Wright Brothers proved to humankind that we can fly. In this day and age, flying is the fastest and still the safest way to get around from one point to the other, all thanks to the current technologies installed in modern aircraft, the skilled pilots who control that technology, and to the air traffic controllers, the guiding voices of the sky.

Every time you ask a child what he wants to be when he grows up, it usually is a doctor, an engineer, a scientist, a pilot, a businessman, a teacher, or a nurse. But, you will rarely hear a child wanting to become an air traffic controller. When I meet new acquaintances and they ask what I do for a living, they either get amused or confused. It doesn't make any sense to them. Even some of my friends who aren't into aviation still don't get what I do for a living.

The road to becoming a licensed air traffic controller in the Philippines was not that easy. The training lasted for a year and had a high failure rate. We started 81, but only 52 completed the training. We often experienced information overload and countless sleepless nights. The only time that I could rest was during weekends when I either slept the entire day to compensate for the lack of sleep I got from the past week or just unwound. I almost cried during the training not because of homesickness, but because it came to a point that I pushed myself beyond my limits and could no longer process all of the things we needed to memorize. Every day in our training, our instructors would remind us to think 10 steps ahead while we're controlling traffic. Every day in our duty, we are expected to perform 110% to ensure the safe, orderly, and expeditious flow of air traffic. Unlike other jobs, we don't receive compliments or praise from our seniors whenever we had an excellent performance or work output. It simply is a requirement. Mediocrity in our profession is a crime, as it could kill people and destroy property. So is complacency.

There were times when I started to question myself, whether I made the right decision or if I got too ambitious to take this road. I have always dreamed of becoming one of the air traffic controllers in the country, but I never thought that the road would be that hard to tread.

One of the skills that I learned from our training is quick thinking and decisiveness. We always deal with last-minute decisions when giving clearances and instructions to pilots. There are scheduled flights, but we don't expect them to come at their scheduled time of arrivals. Sometimes, there are delays, and sometimes they arrive earlier than their published schedule. Also, the weather plays a vital role in air traffic control. Usually, the pilot requests to deviate from their assigned airway to avoid it. As much as possible, air traffic controllers shall quickly address these requests since it greatly affects the performance of an aircraft. There are some instances when planes can't land because the pilot has lost visual with the runway, prompting the flight crew to execute a go-around or missed approach procedure. I have experienced handling missed approaches several times, and I have also experienced handling emergency flights (e.g., medical emergency, general emergency, etc.). Things like these make our job very crucial, especially in the process of decision making. Despite these crucial moments of our shift, we were trained to maintain our composure.

A lot might think that we always consider the number of passengers or the cost of an aircraft while we're in control. No, we just think of it as one aircraft. No more, no less. We separate them as if they were just a huge flying piece of metal in our sector. When incidents occur (God forbid), it will slowly dawn on us that this aircraft was carrying almost 200 souls on board and costs hundreds of millions of dollars. But, at the end of our shift, everything is worth it, knowing that we have protected thousands of lives. It's part of our job. It's not about the prestige of being one, but it is how I give back to my country – public service. We may not be allowed to take a break during Christmas and New Year, and other important holidays, but knowing that we brought everyone to their homes and reunited them with their loved ones is priceless. Of all the places an aeroplane can take us, perhaps the most meaningful is home.

And the best part after our duty? We don't bring our job home.

In the realm of air traffic control, every day is a new day.

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Photo: View of the Tower at Davao International Airport (RPMD)

IMPACT OF COVID-19 ON PHILIPPINE AIR TRAFFIC MANAGEMENT

BY RENZ MARIONE BULSECO, AIR TRAFFIC CONTROLLER, DAVAO APPROACH CONTROL (RPMD)

The Air Traffic Service of the Civil Aviation Authority of the Philippines (CAAP) officially inaugurated the Philippine Air Traffic Management Center (ATMC) in August 2019. The new ATMC is part of an effort to integrate systems of the approach control and en route facilities of the country. The new integrated system addresses the increasing demand for air travel in the country.

On 12 March 2020, Philippine President Rodrigo Duterte halted domestic land, sea, and air travel to and from Manila beginning on 15 March 2020. The national capital region of the Philippines and the greater Manila area were under an extensive community quarantine to curb the spread of COVID-19. International flights to key cities in the country had followed as well. While the government has advised everyone to stay at home, it was an entirely different story for air traffic controllers, albeit with the new safety procedures and health protocols mandated by the Department of Health.

When all domestic flights and most international flights were halted, air traffic volumes were reduced by more than 90%. Due to the low volume of air traffic across the country, the Air Traffic Service of CAAP reformulated the new working schedule to ensure that there would be fewer ATCs reporting for duty on a given day. Pre-COVID, air traffic controllers in the Philippines worked 40 hrs a week with two days off. During the pandemic, we have been required to work 24 hours straight, and the remaining days of the week will be either a day off or a work-from-home setup to meet the required 40-hour workweek. ATCs on duty are required to wear face masks and to observe social distancing and frequent hand washing to minimize the spread of the virus.

Photo: Shutterstock

Since there is a surplus of air traffic controllers, CAAP has announced that it will suspend the recruitment of new air traffic controllers. We are currently in a situation where we encounter a surplus of air traffic controllers to cope with the limited demand, and it is still unclear how the demand for air travel will recover. Aviation experts estimate that it could take at least 12-18 months before we get back to at least 80% of the peaks we saw in 2019. Therefore, there could be less demand for air traffic controllers in the country for a few years to come.

The COVID-19 pandemic is 'The Big One' that we never anticipated. It caught us off guard. Nevertheless, the Air Traffic Service has crafted new procedures to handle situations like this global pandemic. These procedures ensure the safety of our aircraft as we mitigate the spread of COVID-19. The air traffic service has never ceased to provide air traffic service to help flights safely carry stranded locals and Overseas Filipinos (OFWs) and essential goods.

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IFATCA EUROPEAN REGION VIRTUAL 2020 MEETING

BY PHILIPPE DOMOGALA, SENIOR CORRESPONDENT, IFATCA

As all the planned regional meetings were cancelled due to the COVID-19 crisis, IFATCA's (Acting) EVP for the European Region Frédéric Deleau convened the second European informal virtual meeting via Zoom on 21 Oct. 2020. The meeting was attended by some 35 participants representing most of IFATCA's European Region member associations.

After a brief welcome, Deleau introduced the EUROCONTROL Network Manager (NM) director Iacopo Prissinotti, who was invited to make a presentation showing how the COVID-19 crisis drastically affected the traffic and revenue for ANSPs since March 2020. Prissinotti predicted a slow return to normality. He said the return will be volatile and complex. After some encouraging increases during the summer months, aviation traffic is up to about 55% of 2019 traffic. Actual figures show traffic stagnating at around 40% of 2019 traffic. What is worrying is that load factors only are 45% of what they were in 2019. A significant improvement is not expected before next spring and will depend on a lot of factors. One of the most important factors that will impact the recovery will be additional travel restrictions that various countries may impose.

In addition to the COVID crisis, Prissinotti discussed the recent opening of the Israel airspace to overflights. This change is expected to initially move around 100 aircraft in both detections above new areas. These traffic flow shifts will have both workload and revenue consequences for various European member associations.

Images by IFATCA

Deleau then began the portion of the meeting where member associations exchanged internal information.

IFATCA's liaison to the European Union Paul Neering described how the European Commission has responded to the crisis. Neering briefly explained the consequences of the boycott by professional staff organisations to the various working groups with which the Federation previously participated.

On the SESAR front, there is a new contract between IFATCA and SESAR, but for specific tasks only.

EASA has been busy addressing rulemaking issues such as remote towers, UAVs, and ATCO licencing.

IFATCA is represented on those working groups. With EUROCAE, we also are represented on issues relating to TCAS X and Virtual centres among other things.

The rest of the time was dedicated to current developments of the member associations, including how they coped with and consequences from the COVID-19 crisis. A general trend that was shared by participants was that a change of duty rosters was the norm in most countries, as ANSPs tried to mitigate the effects of controllers eventual contamination. As a result, some planned projects, like the new centre planned in Belarus, were delayed until further notice.

Many ANSPs are in financial difficulties and need financial support either from their states or from bank loans. In some countries the loans were subject to conditions, like in Switzerland, to "reduce the perks" of air traffic controllers, while at the same time, extending ATCOs retirement age. As a result, many controllers have experienced pay cuts. While some countries were able to allow controllers to keep 100% of their wages, according to the member associations sharing information, controllers in many countries saw their pay cut between 5% and as much as 60%. In most places, the On-the-job-training (OJT) was stopped, and some trainees – even those very close to qualification – have been terminated.

One effect of the current crisis is that while the daily traffic is very low, the peaks are still there, and traffic is unevenly distributed, not over 18 hours as before, but now around four hours. Another non-negligible issue with such low traffic is how to keep controllers competent and validated and how training can be achieved with such low traffic. Innovative solutions are being discussed, like in Germany where they are looking at possibly checking people out on virtual high traffic generated on a simulator.

Finally, Deleau asked for support on a new project that aims to complement and update the "Single European Sky Mission possible IFATCA document" which currently misses a few pillars to address the new developments of the SES2+ package. He asked for a group of volunteers to create a task force to review and further develop that document giving attention to proposals for new ways of financing essential services and recommendations for a more efficient institutional organisation to deliver ATC over cross-border conditions.

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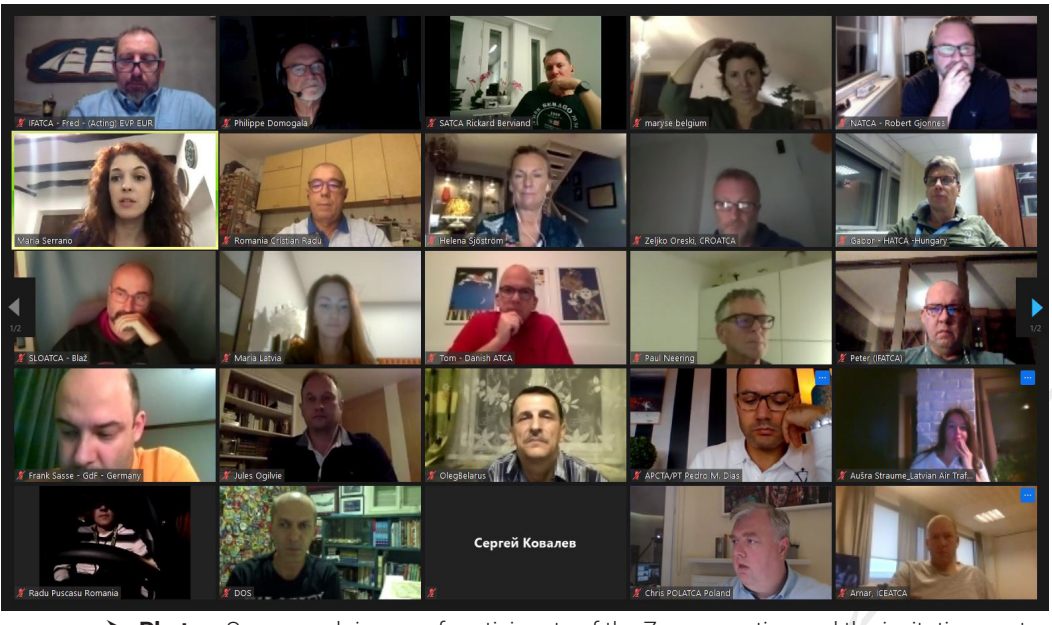

Photos: Screen grab image of participants of the Zoom meeting and the invitation poster.

Photos: (left) The author in Saarbrucken **(right)** Inside RTC Leipzig .


Photo by DP

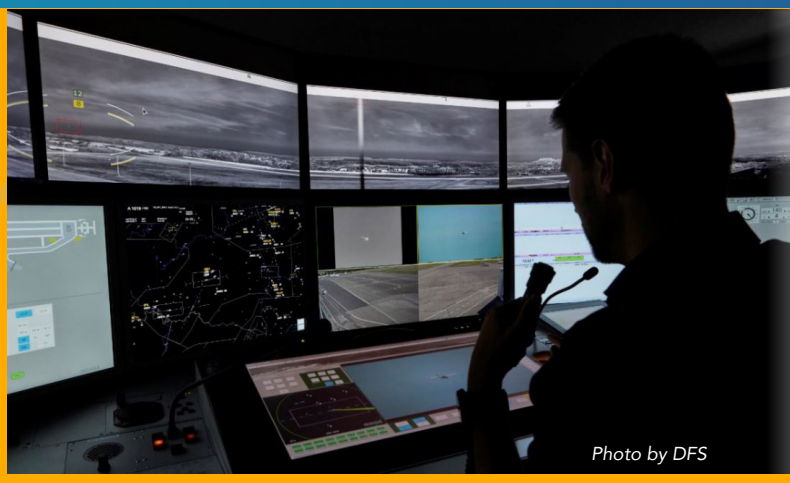
Photo by DFS

THE GERMAN REMOTE TOWER CONTROL CONCEPT: CONTROLLING AN AIRPORT FROM 500 KM AWAY

BY PHILIPPE DOMOGALA, SENIOR CORRESPONDENT, IFATCA

Since December 2018, the aerodrome control of Saarbrucken airport (EDDR) has been done remotely nearly 500 km away from Leipzig (EDDP). Does it work well? I flew VFR into Leipzig/Halle Airport last August to see for myself.

First, let me give some context for this remote tower. Saarbrucken is a small regional airport that before COVID-19 had 15,000 movements per year or around 40 per day. The old control tower needed replacement, which would have meant a major investment. Instead, DFS, the German air navigation service provider, decided to introduce a remote tower control concept. In a bidding process, Frequentis offered a suitable remote tower control (RTC) technology solution, and the European Commission agreed to co-finance the project. The development started in 2010. It took a few years to find a suitable technology and validate it.

RTC LEIPZIG

I met RTC supervisor Andreas Willmann at the tower in Leipzig. He has been involved since the initial development and described the challenges and his experiences with the remote tower control.

Willmann first talked about challenges related to selecting the screens. "We immediately disregarded the 360-degree vision," he said. "While the cameras were able to depict such a view, why should the controller move around the room? Then, we tried two huge 65-inch screens, but the separation of the two screens, the bar right in the middle of the field of vision, was extremely disturbing. It became obvious that we needed an odd number of screens. The next set up was three big screens, but the view didn't seem real. It was like sitting on the front row of the cinema. We finally decided on five smaller screens, and that was universally accepted."

He continued, "The top screens give a large 215-degree panorama vision. The view can be turned into any direction and even moved to a complete 360-degree view using a mouse device. The lower screens are used for the directional cameras called pan-tilt-zoom cameras (PTZ), which act as electronic binoculars with zoom possibilities from 2x to 24x. We also have two fixed cameras to monitor the apron."

Willmann next described challenges related to the interface. "The next. We first would all have preferred only one mouse and one keyboard, but it soon became impracticable as there were too many functions, so that we now have three mouse devices and two keyboards per position."

He then described the challenges related to selecting the options of the display. "The system can show a lot of information on the screens – such as wind information or labels about the aircraft," he said. "But if it is all displayed, you would lose the picture. So it was decided for a more basic set up because too much information is confusing."

In talking further with Willmann, he made an interesting point: "You cannot replace the human eye with a camera. And a remote tower is not ATC with a camera. It is a different concept.

He then discussed plans to implement it at additional airports. "We started with Saarbrucken, because it was a relatively small airport where the old tower needed to be replaced," he said. "We are located here at Leipzig Airport because there was a large room available at the base of the control tower. The next airport to be added to the RTC Centre will be Erfurt (EDDE). We planned to do it this year, but it is now planned for 2021. After Erfurt, we plan to add Dresden airport (EDDC). Saarbrucken and Erfurt are roughly the same size; however, Dresden is much larger (roughly 100 movements per day) and will need a different configuration of the system."

Dresden will be the final airport to be added as part of this initial project. When completed, the RTC Centre will contain three sectors – one for each airport. Each will be staffed by a single controller. In the room, there will be a fourth position – the clearance delivery – staffed by a single controller, who will do this task for the three sectors.

Ground movement control is done by DFS at the airports on tower frequency in coordination with Apron Control. In Saarbrucken, Apron Control does not use a dedicated frequency. When the aircraft has landed, it remains on the TWR frequency. When the aircraft is on the apron area, it is taken over by a marshaller.

Staff wise, the concept offers savings. Each of the three local airport towers is manned by two controllers, one active and one clearance delivery/ground control. This means that six controllers are needed for the three airports. With RTC, you will still have three controllers but a single clearance delivery, which means

THE GERMAN REMOTE TOWER CONTROL CONCEPT: CONTROLLING AN AIRPORT FROM 500 KM AWAY (CONT.)

that four people are on duty at the same time instead of six. In addition, the concept allows for more flexibility in staff planning. It is planned to have the controllers cross-trained for the three airports, However, with this project, the concept is clear: It is one controller per airport, not one controller controlling multiple airports at the same time, as some other ANSPs are considering.

Supervisor Andreas said, "It is the same operations, same rules, same communications and same procedures. Nothing changes, we also do visual separation as before. The R/T call sign is still 'Saarbrucken Tower' and it is transparent to the pilot. We do not tell every aircraft coming in where we are located."

Photo by DP


Photo by DP


Photo by DFS

➤ **Photos: (top)** Saarbrucken remote TWR **(center)** ALDIS Red light and **(bottom)** One of the zoom PTZ remote cameras

Willmann highlighted some advantages of the RTC system: "There is a nice feature," he said. " If you lock the electronic binoculars (PTZ) on a target, it follows it automatically. Even if, for instance, an obstacle, like a lamp post appears between a PTZ camera and the aircraft that it is following. The system compensates for the temporary loss of the visual contact and continues tracking the object."

He continued, "We also have an infrared (IR) camera, which is very good at night. Unfortunately, it is not working well when there is fog or clouds. The high humidity of the air disturbs it. But at night it is perfect, you can see an aircraft like in daylight. Without it, you can only see the navigation lights."

Another advantage of the system is that it detects targets on its own. Willmann continued, "Any certain number of pixels that start to move will create a red box on the screen and direct your attention to it. You may switch off that function, if there is something unimportant, like a flock of birds, which would create a huge number of boxes on the screen. It is an excellent feature to detect vehicles moving without clearance or a drone entering the aerodrome vicinity, for instance."

The system also has shortcut buttons like predefined hot spots. Willmann said, "The camera then moves rapidly to these hot spots. You can temporarily define two of them yourself, for example, during work in progress, grass mowing, tug movements, etc."

He then stated, "There is also an Aldis lamp feature mounted on the cameras and some pre-set buttons like 'clear to land.'"

The camera will paint the aircraft and issue powerful green flashes to the aircraft on final. That is a nice feature that, as a pilot, I intend to verify myself when flying there next time!

HOW IT WORKS

The out-of-the-window-view is made of 12 HD cameras stitched together for a 360-degree panorama vision. It has overlay possibilities to show areas, taxiways, etc. "It has another very interesting feature which allows visual tracking based on radar tracks. It is basically a touch screen where you can follow aircraft tracks on radar. You just touch the track, and a camera will automatically lock on it, and you can track it visually. It is very useful to track an aircraft on the circuit pattern, for instance."

TRAINING ASPECTS

About the training, Willmann stated, "Out of the 12 TWR controllers of the old tower of Saarbrucken, 10 accepted to move to Leipzig. (One retired, and one went to the Academy.) We did shadow training that lasted 4-8 months with staff at an RTC-working position in Saarbrücken, and the remaining training was completed in the old tower. We also used our simulator, where we are able to simulate very high levels of traffic, far beyond what it actually will be, to determine the personal limitations for each controller. We also recruited two new trainees. We currently have 10 controllers, working shifts from 06:00 to 22:00 local.

DOES IT WORK WELL?

For Willmann the answer is yes. He stated, "It is a paradigm shift, a new concept, a completely new technology, and it has got its bugs."

He says that it isn't a question of whether it is better than a real-life control tower. Rather, does it perform the job safely? For him, again the answer is yes.

When asked if he thinks this technology is the future. He stated, "Oh, yes! You bet it is. Iit is only a question of time." One has to note that in this concept, DFS chose to keep the principle of one controller, one airport, and not a single controller controlling multiple airports.

Regarding regulatory oversight, Willmann stated, "On the regulatory side, our remote tower concept has been approved by our regulator. It is just a new endorsement on your existing licence saying 'remote.'"

It looks like the business case here is made by combining the clearance delivery positions, having a standard equipment and procedures for all towers, and allowing staff to swap around towers easily. Not having to rent space, build, and maintain various buildings and facilities in airports is also a contributing factor.

Photo by DP


Photo by DP

➤ **Photos: (top left)** Extract aerodrome chart showing the responsibilities line, **(bottom left)** Old and new tower in Saarbrucken airport, and. **(right)** Approach to Saarbrucken airport.

WHAT IT LOOKS LIKE FROM THE PILOTS' SIDE?

I made a trip to Saarbrucken last September VFR. It was a CAVOK day. On the first call entering the CTR, the contact with TWR was normal and of good quality. I was given a clearance to join downwind like any airport. Base. Finals. I did a low approach overflight first, simulating a go-around, then re-joined the circuit for a full stop landing. All R/T exchanges were standard and normal with the controller, you do not notice at all that he was physically 500 km away. I did ask to see the light signals, replacing the ADIS lamp. The green light is very visible, the red less so, and you really have to know where to look to see them (i.e., at the top of the remote tower mast). The first reflex is to look at the old tower for such signals, like in any other airport, even more so here since the rotating light beacon is still located on top of the old tower. But these are details that might be improved in the future. After landing, I vacated the runway and entered the "apron control area" as mentioned on the aerodrome chart. In fact, one remains on the TWR frequency and a follow-me car comes to get you and bring you to your parking spot. They have a few follow-me cars available, and this works well. Although apron control does have a dedicated frequency, it is not used. It is not even advertised on the charts.

On departure, the ATIS is automated, with a computer voice with an American English accent. It is clearly readable. Startup clearance, taxi instructions, and take off clearance are obtained like at a traditional airport. After departure, I got traffic info with a helicopter passing below. It was a good standard service for VFR operations.

For the IFR commercial operations, Luxair – the Luxembourg-based airline – is flying twice a day to Saarbrucken with a Dash-8. I asked one of their pilots who I know what their experience was with the remote operations there flying IFR. He said, "There is no real difference. We were warned of the change, but frankly, it is the same as before. The only noticeable difference is when you first call in. It looks like they are looking for you for a second or two before replying. Other than that it is the same service."

MY PERSONAL CONCLUSION

There seems to be no noticeable difference between this particular remote tower airport and a traditional one. I stress this particular airport, as we know there are many different remote tower systems and different ways to use the remote tower concept. This one has been developed with DFS procedures and technology by Frequentis.

We all know remote towers are being pushed by many ANSPs around the world. This development will bring its own series of human and legal problems to be solved, but from a technical and operational point of view, this particular system in Saarbrucken looks like it is working well. ➤

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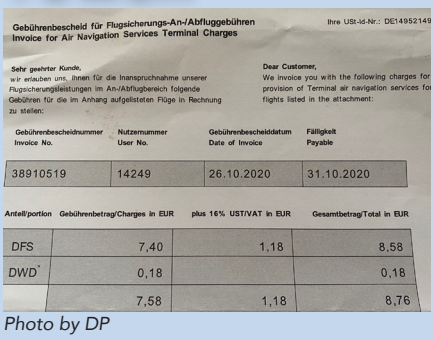
COSTS OF FLYING WITH A REMOTE TOWER

BY PHILIPPE DOMOGALA, SENIOR CORRESPONDENT, IFATCA

Besides the normal landing and parking fees (around €40 or US$45) payable to the airport company, a few weeks later you will receive a bill from the DFS for "terminal air navigation services." For my VFR flight with my Robin DR400 with a MTOW of 950 Kg, the cost amounted to 8.58 Euros, or around US$10. In addition, there is an 18 cents charge for the weather service. I guess it is for getting the wind on finals.

I am sure the cost will be much higher for an IFR commercial flight operated by an airliner, but as you can see remote control is not free, even for VFR. ➤



Gebührenbescheid für Flugsicherungs-An-/Abfluggebühren
Invoice for Air Navigation Services Terminal Charges

Ihre USt-Id-Nr.: DE14952149

Sehr geehrter Kunde,
wir erlauben uns, Ihnen für die Inanspruchnahme unserer Flugsicherungsleistungen im An-/Abflugbereich folgende Gebühren für die im Anhang aufgelisteten Flüge in Rechnung zu stellen:

Dear Customer,
We invoice you with the following charges for provision of Terminal air navigation services for flights listed in the attachment:

Gebührenbescheidnummer Invoice No.	Nutzernummer User No.	Gebührenbescheiddatum Date of Invoice	Fälligkeit Payable
38910519	14249	26.10.2020	31.10.2020

Anteil/portion	Gebührenbetrag/Charges in EUR	plus 16% UST/VAT in EUR	Gesamtbetrag/Total in EUR
DFS	7,40	1,18	8,58
DWD*	0,18		0,18
	7,58	1,18	8,76

Photo by DP

TAKING ADVANTAGE OF THE AIR TRANSPORT CRISIS TO REFORM ATC IN EUROPE

BY MARC BAUMGARTNER, IFATCA SESAR/EASA COORDINATOR, WITH PIERRE ANDRIBET AND JEAN-MARC GAROT, BOTH FORMER DIRECTORS OF THE EUROCONTROL EXPERIMENTAL CENTRE

While Air Traffic Control (ATC) in Europe fulfils its role overall from a safety standpoint, it is suffering structural inefficiencies that have become unbearable with the current COVID-19 crisis. An ambitious vision needs to be developed by the European decision makers at the state and pan-European level (including the European Union).

Using the current crisis as a starting point, we could significantly improve the efficiency of ATC in Europe – both in operational and financial terms in the interest of the airspace users and passengers. Users and staff of this industry would support such an effort.

Air traffic is unlikely to recover in the coming months, and the Air Navigation Services Providers (ANSPs) providing air navigation services in Europe are facing a "financing wall." With fixed costs and less traffic, either the European states subsidise the ANSPs, or the user charges per flight will need to increase significantly. Such increases undoubtedly would trigger strong reactions from airlines already severely hit by the crisis.

The primary reason for the aforementioned structural weaknesses is the fragmentation of the air traffic system in Europe. For more than 50 years, this fragmentation has been recognised as a problem. That was the main rationale for the creation of EUROCONTROL and for the initiatives of the European Commission (EC) in this area. However, because international law (ICAO, International Civil Aviation Organisation) recognizes that every European state retains complete and exclusive sovereignty over the airspace above their territory, previous initiatives to unify these systems have not succeeded. As such, the history of EUROCONTROL is an example of the ups and downs of European integration.

As underlined by the European Court of Auditors, the legislative attempt of the European Commission to reform ATC in Europe, with the successive packages of the Single European Sky (SES) has resulted in incremental improvements in the performance and modernisation of the European Air Traffic Management (ATM) system. But it has not generated the expected paradigm change and has not sufficiently reduced its fragmentation. The resulting gridlock is detrimental to European air transport.

While recognising the value of the recent EC legislative proposal, the authors of this article propose a more ambitious approach, based upon the Wise Persons Group Report: a transition towards a pan-European ATC, including reinventing EUROCONTROL.

The idea is to address fragmentation from the operational and technical standpoints. For the latter, if nothing else is accomplished, Europe could at least choose common procurement with preferred, "standardised" technology for communication, navigation and surveillance (CNS) infrastructure and common development/procurement of air traffic management (ATM) systems.

Photo: Shutterstock

Photo: Eurocontrol offices in Brussels

A more ambitious option would be for Europe to consider CNS infrastructure as a service and no longer as an investment. This would allow the total virtualisation of ATM systems. With an "infrastructure manager" using EU funds, spending a fraction of the money spent in the SES technology pillar, SESAR, and deployment, this could be the second real European-wide infrastructure after the Galileo Project. Centrally funded, it would remove significant financial risk from the operational units, unbundling operational and financial systems.

In regards to reducing operational fragmentation, as far as airspace management is concerned, Europe could implement a top-down design to group air traffic control centres (ACC), independent from national borders. This idea was the initial objective of the Functional Airspace Blocks (FAB). This could foster the harmonisation – even more – the modernisation of operational procedures, which are all out of date. A more ambitious option could be a single service provider for Europe, reinventing the vision of the founders of EUROCONTROL.

With either option, taking the existing delegation of control in Maastricht, Zurich and Geneva as examples, it could easily be argued that this does not jeopardise the European states' sovereignty or air defences.

With both options, with a stronger political decision maker, the European Union Aviation Safety Agency (EASA) will retain its role as safety manager, but there needs to be a more powerful network manager.

A single service provider for Europe – paid by European funds – would provide for robust financing and relieve the European states from subsidising their ANSPs. Also, user charges would no longer need to pay the costs for these services. Nevertheless, they could continue to be collected by the Central Route Charges Office (CRCO) of EUROCONTROL.

Interested in reading more? You may find a longer, more detailed version of this article **here**.

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SPANISH WORKSHOP: ETHICS & SAFETY

BY MERCEDES VARONA PÉREZ, ATCO & OJTI AT BARCELONA APPROACH, SECRETARY GENERAL OF APROCTA (THE SPANISH PROFESSIONAL CONTROLLERS' ASSOCIATION)

The 4th Spanish Just Culture workshop was held on the 1-2 Oct. 2020. During two half-day webinars, more than 120 professionals from the aviation and judiciary sector shared presentations, experiences and interactions. This year, the topic was Ethics and Safety and has proven a complex and challenging one.

The Spanish Just Culture workshop was a unique opportunity for air traffic controllers, pilots, judges, prosecutors, safety managers and professors to meet during two half days to learn from each other through presentations, accident case discussions and round tables. Debate and interactions are intense and this workshop is considered as the annual meeting "not to be missed" for the judiciary and the air transport sector.

The workshop was co-organised by **APROCTA** (the Spanish Professional Controllers' Association), **EUROCONTROL**, the Spanish Air traffic services provider (**ENAIRE**), and the Spanish Pilots Association (**COPAC**). The Spanish Administration of Justice (**CGPJ**), the Spanish Safety Agency (**AESA**), the International Federation of Air Traffic Controllers' Associations (**IFATCA**) and the Universitat de les Illes Balears (**UIB**, the University of the Balearic Islands) in Mallorca also participate every year in these events. The workshop is the result of the efforts that APROCTA has been making in safety for the last 10 years.

Graphic: APROCTA

In 2016, the Spanish Association created the "**Judiciary prosecutor experts list**" specialised in air traffic control. The association sent the list to the Administration of Justice to provide them with independent controllers with technical expertise to be consulted in case of judiciary processes. Since then, the Judiciary prosecutor expert list is updated every year with air traffic controllers with knowledge in different required fields.

In 2017, the first Just Culture workshop took place, with the support from Eurocontrol, as a training course for the prosecutor experts. It has evolved to a forum for the aviation and judiciary. The core issue is always Just Culture, defined as the culture where "operators, whether they are front-line or not, cannot be punished for actions, omissions or decisions which are commensurate with their experience and training." According to Eurocontrol, "Just Culture is about finding the right balance between the aviation, judicial and political authorities."

In 2020, we held the fourth Spanish Just Culture workshop. Initially planned in Zaragoza, it was turned into two online webinars because of the COVID-19 pandemic. It was an opportunity to reflect during two days about ethics, morals, good practices in the organisations and their implications to safety. The webinars kept a good balance between legal and aviation concepts.

DAY ONE

Toni Licu, Head of Safety in Eurocontrol, presented the topic of "**Ethics: Where does safety end and ethics begin?**" He gave a definition of ethics at work and gave different examples of how ethics affects decisions in our daily work. "Ethics is what you do when no one else is watching. Safety and Just Culture is also how we behave when nobody is watching." Licu presented the work of Kohlberg's Theory of Moral Development and the different levels of decision-making based on ethics. The moral decision-making process looks at the intention, the motive and circumstances of the professionals in their working environment. It is also important that the culture of the organisation is based on honest behaviours that can back individuals in difficult decisions.

Marc Baumgartner, IFATCA SESAR Co-ordinator, followed with a presentation on "**Ethics in Air Traffic Control,**" offering some reflections about ethics throughout the history and societies. In aviation, ethics are present in the working conditions, regulations, recommendations, guidance material by the European Union Legislation of Air Traffic Control and norms and recommendations by ICAO, EASA, and IFATCA. "It is all about control, trust, and accountability," he said. "The institutions will do anything so the public keeps the trust in the public service and, thus, will bind a lot of resources in accountability management."

Milagrosa González, a judge from Badajoz, presented "**Ethics and good practices in the Judiciary processes**." She introduced her presentation with a quote from Hungarian writer Sandor Maray: "Justice and facts are different things," meaning that facts are transformed in the legal process. She explained the rights and duties of the judiciary according to the Spanish Legislation. Judges have to be independent of external parties and have the duty to write a judgement according to law. Judges are bound by the "judiciary ethics." Their reasoning must be only based on legal content and they must always explain the rationality behind their conclusions.

Juan Carlos Lozano, pilot & safety investigation expert presented a case study based in the **accident of Aeroméxico at Durango airport** in 2018. It is a case related to good practices between pilots in the airplane cabin.

SPANISH WORKSHOP: ETHICS & SAFETY (CONT.)

The case was presented with a systemic analysis methodology looking at human factors, meteorological conditions, and other relevant issues in the accident. The case was discussed in small groups where operational controllers and pilots explained the technical aspects of the accident to the judiciary. On the other side, the judges and prosecutors decided on what facts and information would be needed to proceed with the legal process according to Spanish procedural law.

DAY TWO

There were two more presentations on ethics and a roundtable to end the webinar.

Irene Nadal, a Professor from UIB, talked about the "**Ethics and good practices in accident investigations and judicial proceedings. A meeting point?**" She said that accident investigations and judicial proceedings are independent and benefit from coordination. Both processes work on the same realities from different points of view. Whereas criminal processes search for the legal truth, safety investigations look for the technical truth. The outcome of the criminal process is the punishment. The outcome of the safety investigations consists of safety recommendations. The result of a lack of coordination is a poor outcome for both processes. Good practices are necessary for the safekeeping of the information and in the relations with the victims and the press. Professor Nadal also argued for the need of "restorative Just Culture" and mediation as ways to implement good practices in the investigation processes.

Emilio Martínez, Professor in Ethics, Universidad de Murcia, spoke about "**Ethics & deontology in commercial aviation**." He defined an ethic code (deontology) as a set of duties for a specific group or profession. Professional ethics are a set of values shared by individuals doing the same job. "Excellence in the execution of a job implies technical competence and ethical behaviour," he said. He said that in the air transport sector, pilots and air traffic controllers offer a public service to society. Their job affects directly on the right of individuals: to fly safely and to arrive on time to their destination. He also described the right way to write an ethics code. As an example, he described his recent experience with Spanish pilots to renew their ethics code, a job of months of work and debate with pilots.

I (**Mercedes Varona from APROCTA**) was the facilitator of the panel "**Good Practices & Safety in the organisations**" and introduced different speakers.

David Oliveros, the Safety Culture Manager from ENAIRE, talked about the shared responsibilities between the organisations and employees regarding safety. He also referred to the recent swift to a systemic approach in safety investigations.

Patricia Pérez de Juan, AESA, detailed the elements required for the implementation of a Just Culture System within an organisation and how AESA has recently applied a Just Culture System.

Carlos Salas, COPAC, described the concept of airmanship, as a set of ethical principles for the pilots.

Celia Pulgar, APROCTA, spoke about the duty of care for air traffic controllers and the need to maintain high standards in training. She also highlighted the importance of a physical and emotional balance to perform the job.

In the first Just Culture workshop, back in 2017, Professor Irene Nadal described a tale of the two cities: "the city of Justice and the city of Safety." She described how the city of Justice is represented by the administration of justice, works with legal proceedings, and the base is the Rule of Law. The city of Safety works with safety information that integrates the safety management system and the base is the safety culture. These two cities could build a bridge based on the Just Culture.

APROCTA believes that Just Culture workshops help to bridge the gap between safety and justice. The association will continue organising these meetings for the judiciary, aviation, safety and legal professionals, so we can all continue learning from each other.

We hope to see you next year at the 5th Just Culture Workshop: Aviation and the Judiciary. Hopefully, it will be held in Zaragoza at the beginning of October 2021.

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Photo: APROCTA


Photo: APROCTA

Photos (top and bottom) A presenter and participants from an earlier Just Culture Workshop that was held in person at the University of the Balearic Islands.

ETHICS IN AIR TRAFFIC CONTROL

BY MARC BAUMGARTNER, IFATCA SESAR/EASA COORDINATOR

The Spanish Professional Controllers' Association (APROCTA) together with the Spanish Justice Administration and Eurocontrol continue to organize an annual event where judges, prosecutors, academics meet professionals from air traffic control and pilots. This workshop was a wonderful opportunity to continue to bridge the gaps between air traffic control, aviation, and justice. The common denominator is Just Culture, which is a concept well known in aviation and by now institutionalized by ICAO and the European Commission, but hardly known or integrated into the national legal systems around the globe. This article was adapted from a presentation given at this event.

The fourth workshop was planned to be held in Zaragoza but had to be changed to a virtual event. Over 150 persons worldwide attended the seminar which was held by zoom. This topic is a challenging one, in particular for air traffic controllers. IFATCA has no policy on the topic; although, many of the policies in particular related to safety and human factors do implicitly refer to ethics, morality, and trust in the system.

The focus on ethics that is being included in this issue of IFATCA's Controller magazine, is a fabulous opportunity to discuss an important but challenging topic ethics in air traffic control. It's challenging, because controllers are professionals who believe they hold a high professional ethic. We are professionals that on a 24 hour, seven-day basis, provide safety and efficiency to the crew and the passengers of aircraft. This article will not provide any answers, nor will it provide a complete explanation of the topic. It offers a few thoughts. It is a very subjective and personal approach to the topic and maybe an invitation to continue to debate about this challenging topic of ethics.

COMPLEX TOPIC

Ethics, or moral philosophy, is defined by the Encyclopedia Britannica as: "Ethics, also called moral philosophy, the discipline concerned with what is morally good and bad and morally right and wrong. The term is also applied to any system or theory of moral values or principles."

Although the seminar was about Just Culture, here a few theoretical and explanatory slides which show that any part of our life is governed by ethics and morals. There are several subdivisions such as normative ethics, which is the systematic/philosophical justification of moral intuitions. Normative ethics are composed of theology, deontology, and virtue. Non-normative ethics are composed of descriptivism and meta-ethics.

New fields of ethics such as bioethics and information technology ethics also have been introduced.

Basically, one could hypothesize that there are three general questions. What is good? What is the nature of goodness? And what does good mean? Without going too much into detail, there are major subdivisions of ethical theory as follows:

- **Normative ethics** are a systematic and philosophical justification of moral intuitions that are declined in "rightness" as the consequences of an action (teleological) or as an intrinsic feature of some actions (deontological) or by the individual's character (virtue).
- **Non-normative ethics** are defined as the systematic evaluation of moral theory and language. Descriptivism as the character or nature of moral values like objectivism (moral values are universal) or relativism (moral values are relative).
- **Meta-ethics** are about the nature of the moral language subdivided in cognitivism (where moral language is meaningful) or non-cognitivism (where moral language is not meaningful).

When talking about Ethics the basic terminologies that are used include:

- **'Ethics'** is the systematic philosophical study of morality.
- **'Morality'** is the code of accepted/prohibited behaviour within a group.Four related, but distinct, types of normative social systems exist and they are: etiquette, religion, law, and morality.

Moral Designators - terms used to label actions in an ethical system

- **'Right'** is any action which is justified by and consistent with a moral framework; always implies an obligation on anyone within the moral system.
- **'Wrong'** is any action which fails to be justified by or is inconsistent with a moral framework; an action is forbidden to anyone within the moral system.
- '**Permissible'** is any action, which is justified by and consistent with a moral framework but which does not imply an obligation.
- **'Neutral actions'** are actions, which have no moral implications (i.e., neither 'right' nor 'wrong').
- **'Supererogatory'** are actions, which are deemed good but which carry no obligations (i.e., altruistic actions, Samaritanism, etc.).
- **Moral Principles** are the foundational thesis of a moral code.

All societies have been built on ethics and morality

Most people probably think ethics and morality were transmitted orally at the dawn of civilization. From the first tablet of Sumerian time, the papyrus of Egypt, the code of Hammurabi, the fragments of the Torah, through Christian, Indian, Chinese, and Greek cultures, societal life has been about establishing ethics and morals. Ethics shapes all human activity and is a fundamental pillar of human mankind, in modern times as well. This will find its way into custom, rules, regulations, standards, and recommended practices, but also in societal movements such as 'Black Lives Matter' currently in the United States. The foundations of our society are built on the ethics elaborated by religious leaders, philosophers, and activists. Just to illustrate, people who are paid to think are busy with defining ethics every day, thus my presentation will be a very timid trial to highlight what ethics could be in ATM.

ETHICS IN AIR TRAFFIC CONTROL (CONT.)

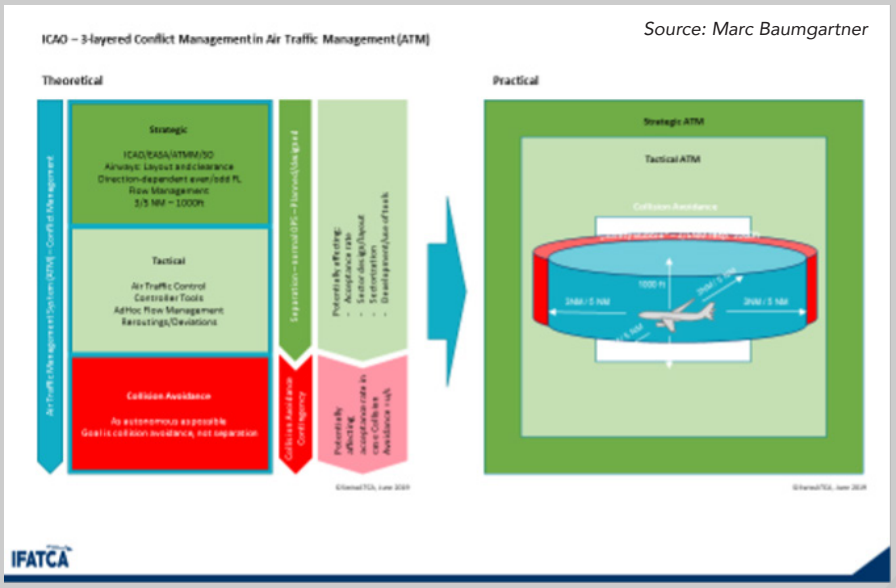
WHAT DOES IT MEAN FOR ETHICS IN AVIATION OR IN PARTICULAR IN AIR TRAFFIC CONTROL?

The topic is also complex in air traffic control and is multifaceted. Safety issues and horrible accidents like the Ueberlingen (2002) and the GOL midair collision (2006) are high profile accidents where ethics in air traffic control are exposed. But there are other elements of our professional environment which are subject to the ethical scrutiny of the public. These may include noise abatement issues and of course social unrest issues.

The article only addresses safety and not about the prosecution against air traffic controllers in the Brussels airport control tower for following noise abatement procedure, nor the strike of the U.S. controllers following their union, PATCO, resulting in the firing of 11,000 air traffic controllers, or the Spanish solution to the working conditions of air traffic controllers in 2010.

HOW ARE ETHICS CONSTRUCTED IN ATM?

Aviation is highly regulated. Some may say it's over-regulated. What we are doing in air traffic control can be conceptually explained with the three-layer approach of ICAO .



Source: Marc Baumgartner

- The **strategic level** is reached through airspace organization and management, demand and capacity, balancing and traffic synchronization. In the following, "strategic" means being in front of the "tactical." The measures in strategic conflict management are aimed at making the second «tactical» level unnecessary.
- The **tactical level** or separation minimal level ensures the use of minimal separation procedures that the aircraft do not endanger themselves. This layer is only used when strategic conflict management (i.e. airspace organization and management, demand and capacity balancing and traffic synchronization) cannot be used efficiently. The "agent" responsible for resolving a conflict can either be the airspace user or an air navigation service provider.
- **Collision avoidance:** The third level of conflict management is activated when the separation minima have been compromised/fallen below. Collision avoidance is not part of the «tactical» separation below minima. The provision (ground or air, e.g. STCA or TCAS) of a collision avoidance system is not included in the determination of the calculated safety level (safety cases). iFor example, when determining the safety case, the collision avoidance systems are not taken into account. However, collision avoidance systems are considered part of ATM (Safety Management System) security.

One of the fundamentals in understanding ethics in air traffic control is the overview Steve Shorrock has provided in his approach to the reality of daily work and life. If one takes the three ICAO conflict layers, then work as imagined is based on operational concepts which will be elaborated ahead of any new procedure, system change, and or new licensing requirement. In order to ensure that everybody in the safety chain is doing the same thing, standards, recommended practices, rules, and regulations are put in place and could be best depicted as work as described. Then we work. If one has to describe what happened during the work to family or friends, the description is different than what is done. If one has to describe what happened during the work after an incident or accident, then it is also described differently than what is being done. Shocking – some of you might say. Let me explain why it is normal.

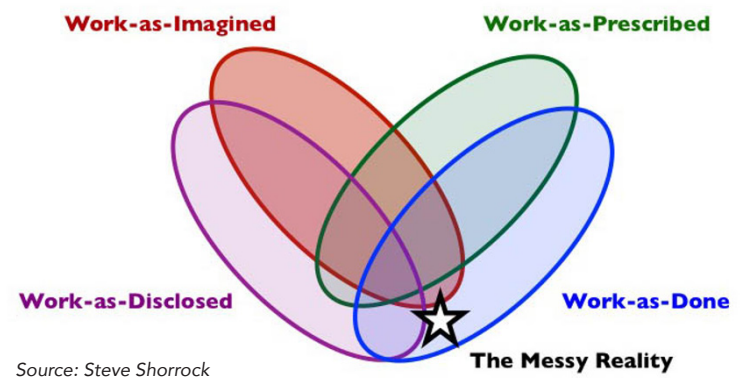
The tradeoffs between the imagination, prescription, and reality are part of any professional air traffic controller's life. The outcome of the daily work varies. The slides from Erik Hollnagel show that it is a constant battle between what has been designed or prescribed and what is the reality. Changing the performance variability of the system, the humans, and the procedures, force the air traffic controller to have to adjust in every action they carry out. Nowadays the complexity of the socio-technological system the decision of an individual cannot be assessed in a simplistic way anymore. The same actions do lead to success but also to failure.

In order to give practical examples of what ethics could mean, I have turned to some modern time philosophers who have looked at the relationship between work, society and their interaction with ethics. The Reid Lecture of Onora O'Neill from 2000 and Michel Foucault's work "the subject and power." Let me propose three main illustrative topics of ethics in air traffic control: trust, control, and accountability.

Ethics are established through rules, regulations, recommendations, and guidance material. A few examples here:

- European Union legislation on air traffic control is now about 1,000 pages long.
- If piled up, ICAO standards and recommended practices would create a tower of about 10 meters high.
- Guidance material from EASA on only the air traffic controller license is 472 pages long.
- IFATCA as a professional association publishes only policy where it does not agree with ICAO. There are so many

ETHICS IN AIR TRAFFIC CONTROL (CONT.)



Source: Steve Shorrock

pages by now that IFATCA has set up a wiki in the form of an encyclopedia for air traffic control.

- And because air traffic control is a craft, a lot of ethics are established through local working culture which will include forms of initiation rituals.

Control is applied from the top of government and institution towards the individual. The institution will do everything in order to public trust in the service and thus will bind a lot of resources in accountability management. Setting performance targets, making the people report (mandatory) on everything happening and stressing, that – if something goes wrong – it is the individual (the bad apple) who has to be held accountable.

Allow me to illustrate what ethics can do in my everyday life using three examples.

Air traffic controllers are a selected few. I am one of 800 candidates who entered the selection process, many others were eliminated during the selection or training. After training where the failure rate is still between 40 and 60 percent, I am allowed to do my job. However, in order to prove (the control, trust, and accountability mechanism) I have to successfully complete five checks a year. From medical, language, practical competency, to emergency situations to live operational sessions. Should I fail any one of these five checks, I would not correspond any longer to the ethical standards of the profession and either lose my license or have to retrain to gain the acceptable ethical standard of the system. As mentioned before, the European Agency for Aviation Safety has guidance material on this process, which is a nearly 500-page long book.

On safety, I have the obligation by European legislation to report up to 80 different cases. These reports are then assessed, analyzed, scrutinized, and sometimes end up in court, because my professional ethics may be judged with their compliance with the established rules and guidelines. As a result, I may not inform the system anymore with substantive information, but merely report technical features which will protect me. Professor Bourrier, et al. (2017), called it "Trapping Safety into Regulation." Ethics do not serve the essence of the public service called air traffic control anymore here. But as indicated this could be a full one-day discussion.

Where I work we have about 40 changes a year to the system. It can be anything to do with technology, procedures, standards, etc. Nearly every week, we change the nature of our system. This fundamentally changes the ethics – or as Shorrock would say, the work as described. The ethics therefore cannot be debated and have to be adjusted. Workarounds, deviation from established procedures, and drift into failure are the consequences. Nancy Berlinger describes the workarounds as:

1. Part of normal work (getting the job done), and also
2. Violations of rules and official expectations for how work should proceed, and also
3. Adaptations to ever-changing work conditions and also
4. Ethically problematic because they can sometimes lead to the normalization of deviance and to harm and also
5. Hard to talk about openly because they are violations, because they are normal and because they are secret.

IN CONCLUSION

This is a complex topic. To ensure understanding, any discussion should be offered in the form of a three-day seminar. I was able only to scratch the surface. It is about trust, control and accountability.

Ethics will become more important with the continued emergence of new technology. Some are calling for a special legal environment for robots. Nowadays, we are being told that programmers no longer know what deep neural networks are delivering as results. The result is no longer explainable.

Congratulations to APROCTA for this workshop as it is part of the "future" ethics in aviation. It launches the debate between two fields of society (safety and judiciary) who will set new ethics for the future.

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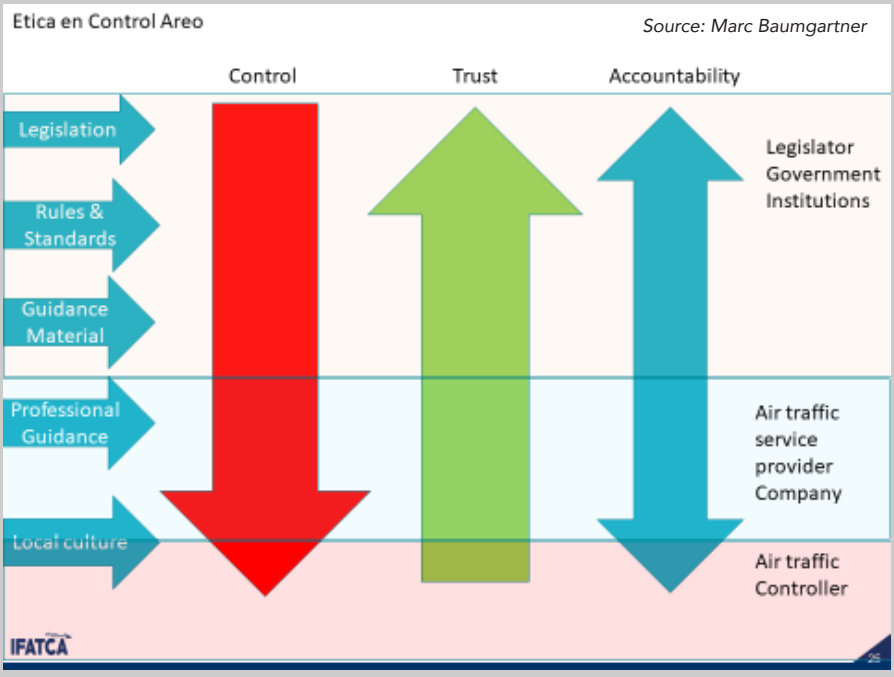


Source: Marc Baumgartner

ETHICS AND GOOD PRACTICES IN AIR ACCIDENT INVESTIGATION AND JUDICIAL PROCEEDINGS: A MEETING POINT?

BY PROF. IRENE NADAL GÓMEZ, PH. D, PROFESSOR OF LAW AT THE UNIVERSITAT DE LES ILLES BALEARS (UNIVERSITY OF THE BALEARIC ISLANDS)

Air accident investigations and judicial proceedings take place and unfold differently. They belong to different cities, two different territories ruled by contending principles and goals. Accident investigations are, as a matter of fact, citizens of "Safety City," whereas judicial proceedings are natives of "Justice City." However, we can agree that trying to coordinate or, at least, connect these two cities is important towards achieving both safety and justice. I will explain the importance in making this connection and the challenges that this connection. I will focus on a different and, maybe, less conventional manner to interconnect safety investigations and the world of justice.

It is easy to spot the differences when comparing safety investigations with judicial proceedings, especially criminal ones, as they display different goals and tools.

The sole aim of accident investigation is to prevent future accidents and, consequently, avoid the apportion of blame or accountability. In contrast, the criminal process is part of the government's response to a crime, part of a mechanism by which the state applies substantive criminal law to citizens (Ashworth, Redmayne, 2010). Therefore, to determine blame and accountability will be essential for the criminal process. The latter has a secondary aim similar in purpose to that of the accident investigation: prevent future accidents through deterrence. However, it is unanimously agreed that the true effectiveness of this effect is indeed limited (Lawrenson, Braithwite, 2018).

Technical investigations gather and analyse information. They determine the causes or contributing factors and, where appropriate, make consistent safety recommendations (Annex 13, investigation definition). In turn, the criminal process collects pieces of evidence and determines facts to indict and convict a culprit.

Considering the existing differences, each procedure must be performed independent of any other procedure or authority; otherwise, intended goals are put at risk and will not be achieved. In this sense, independence is absolute and foundational to each and every function. Standard 3.2 of Annex 13 at the OACI Convention stipulates that states "shall establish an accident investigation authority **that is independent** from state aviation authorities and other entities that could interfere with the conduct or objectivity of an investigation." Article 117.1 of the Spanish Constitution states that "Justice emanates from the people and is administered on behalf of the King by Judges and Magistrates who are members of the judiciary, **independent**, irremovable, responsible, and **subject only to the rule of law**."

Therefore, the questions at this stage are whether these two procedures should or should not coordinate and why. The need for both investigations to be coordinated is unanimously accepted by all parties involved. Despite their separate goals, both investigations look into the same reality, scenario, and facts through different lenses bringing about thoroughly different outcomes. They are, thus, doomed to share findings and cooperate for the sake of their respective objectives. Building trust in each other and in the ongoing performance of inquiries are therefore a must for both authorities.

The loss of mutual trust has negative consequences for technical and judicial investigations alike. This destructive effect works both ways, as it can be observed in the following examples.

First example: The deletion of the last seconds of the recording from the Airbus A320-111 cockpit voice recorder after the crash at Habsheim, near Mulhouse, on 26 June 1988, while it was under the BEA control and before it was delivered to the judicial authority, ended up ruining the reputation and trustworthiness of the technical authority. As a result, this was the last time that a technical investigation took precedence over a judicial investigation in France (TRÖGELER, 2014). On a related note, during the past two years, safety investigation reports have been used as **evidence** to convict in criminal proceedings conducted in Switzerland. Both can critically hinder future disposal of safety information (SHAHIDI, 2019).

It seems clear that it is in the interest of the parties in both types of investigations to cooperate and establish an adequate framework to coordinate. Nevertheless, it is still unclear how to best proceed with such coordination. I like thinking about it as if it were a 3D puzzle where we need to assemble a variety of pieces of different shapes and forms. Ethics and best practices are relevant to the final construction, which accommodates parts of the technical and the judicial investigations.

Ethics and best practices aligns with Just Culture. Only when positive norm regulation is enacted, and the concept becomes statute does Just Culture get interwoven into their very fabric. Thus, building this 3D puzzle requires ethics, Just culture, and best practices. Each one possesses their own context, so that it is possible for them to expand their horizons and become successfully connected.

Just Culture and ethics contribute to the definition of substantive criminal law. It is up to a society, through their institutions, to decide what conduct is unacceptable and deserving punishment. Criminal procedure rules should provide that the accused is gua-

ranteed a fair trial; whereas, safety investigation should implement good practices for the management of safety information and the protection of sources. Best practices should also prevent the use of information for purposes other than safety. This would create confidence in each procedure and facilitate the subsequent coordination of investigations, so that the puzzle is successfully assembled.

By respecting the principles and aims of each investigation, with mutual trust, progress can be made in two significant areas of the coordination of both processes. Initially, it will be necessary to coordinate access to the accident site, which may also include access to the collection of evidence and materials, conducting tests or ongoing analyses. Secondly, management of information also requires coordination. More precisely, it affects reports, drafts, notes, statements. Access to information for victims, relatives, and the media must also be part of these coordinated endeavors.

Ethics, Just Culture principles, and best practices can be introduced and implemented through an array of instruments.

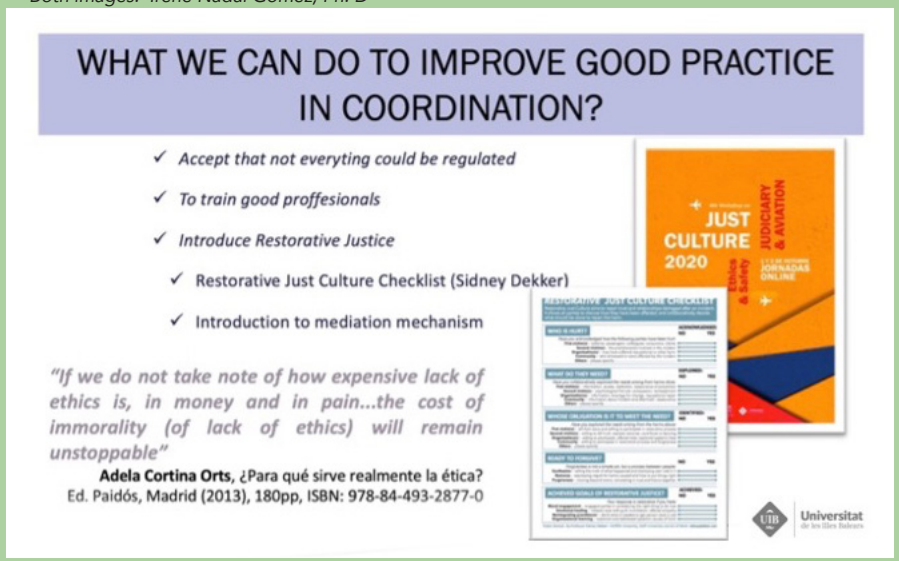
Legislation is vital to coordination. Norms are binding, despite their limitations, and, in that sense, they help in the effective implementation of best practices and Just Culture. Similarly, effectively implementing Memorandums of Understanding between technical and judicial authorities can advance such best practices and ensure successful coordination. Such MOUs have been developed between the accident investigation branches in the United Kingdom and the Crown Prosecution Service, the Dutch Safety Board and the Dutch Public Prosecution Service (OM), and the CIAIAC and the Ministry of Justice and the Judiciary Council in Spain. These agreements contain procedures and best practices that go further than regulating the specific instances of coordination during the investigation. Finally, education and training, as is the case of the seminars regularly conducted by APROCTA and EUROCONTROL, are essential to gain an understanding of ethics and best practices in safety so that they can be implemented.

In conclusion, I would like to highlight the importance of confidence and trust. We know the difference between the two types of inquiries. Although, it can be agreed that safety and judicial investigations share a common goal: confidence in the findings of the investigation. As a matter of fact, for those participating in the two processes, the purpose of coordinating ethics and best practices is to help ensure that they will provide protection, a sense of safety, and, eventually, the true facts related to the incident. If one of the procedures fails in achieving these goals, the coordination will subsequently fail too.

Summing up, if we are to attain the goals above explained, three different lines of action must be followed:

1. Assume that not everything can be regulated. That would stop the regulatory frenzy we live in and truly foster safety.
2. Make sure that professionals are properly trained, so that we can assess the strength involved in the education of professionals in excellence.
3. Introduce Just culture in two areas: restorative Just Culture checklist (Sidney Dekker) and mediation processes in criminal proceedings.

Both images: Irene Nadal Gómez, Ph. D



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Photos (top and bottom) Slides from Irene Nadal Gómez's presentation at the 2020 Just Culture Workshop

ETHICS AND GOOD PRACTICES IN AIR ACCIDENT INVESTIGATION AND JUDICIAL PROCEEDINGS: A MEETING POINT? (CONT.)

Source: Sidney Dekker

RESTORATIVE JUST CULTURE CHECKLIST

Restorative Just Culture aims to repair trust and relationships damaged after an incident. It allows all parties to discuss how they have been affected, and collaboratively decide what should be done to repair the harm.

WHO IS HURT?

ACKNOWLEDGED: NO YES

Have you acknowledged how the following parties have been hurt:

- **First victim(s)** – patients, passengers, colleagues, consumers, clients
- **Second victim(s)** – the practitioner(s) involved in the incident
- **Organization(s)** – may have suffered reputational or other harm
- **Community** – who witnessed or were affected by the incident
- **Others** – please specify:.....

WHAT DO THEY NEED?

EXPLORED: NO YES

Have you collaboratively explored the needs arising from harms done:

- **First victim(s)** – information, access, restitution, reassurance of prevention
- **Second victim(s)** – psychological first aid, compassion, reinstatement
- **Organization(s)** – information, leverage for change, reputational repair
- **Community** – information about incident and aftermath, reassurance
- **Others** – please specify:.....

WHOSE OBLIGATION IS IT TO MEET THE NEED?

IDENTIFIED: NO YES

Have you explored the needs arising from the harms above:

- **First victim(s)** – tell their story and willing to participate in restorative process
- **Second victim(s)** – willing to tell truth, express remorse, contribute to learning
- **Organization(s)** – willing to participate, offered help, explored systemic fixes
- **Community** – willing to participate in restorative process and forgiveness
- **Others** – please specify:.....

READY TO FORGIVE?

NO YES

Forgiveness is not a simple act, but a process between people:

- **Confession** – telling the truth of what happened and disclosing own role in it
- **Remorse** – expressing regret for harms caused and how to put things right
- **Forgiveness** – moving beyond event, reinvesting in trust and future together

ACHIEVED GOALS OF RESTORATIVE JUSTICE?

ACHIEVED: NO YES

Your response is restorative if you have:

- **Moral engagement** – engaged parties in considering the right thing to do now
- **Emotional healing** – helped cope with guilt, humiliation; offered empathy
- **Reintegrating practitioner** – done what is needed to get person back in job
- **Organizational learning** – explored and addressed systemic causes of harm

➤ **Image:** Irene Nadal Gómez shared this handout during her presentation at the 2020 Just Culture Workshop. You can download a high-res PDF of this checklist **here**.

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AIR TRAFFIC CONTROL
100
IFATCA

100 YEARS OF ATC: AN UPDATE

BY PHILIPPE DOMOGALA, CHAIRMAN IFATCA 100 YEARS ATC TASK FORCE

The preparations for the celebrations of the 100 years of ATC in 2022 continue, but they may need to be revised due to the ongoing COVID-19 crisis.

Unfortunately, we have had to revisit our plans for celebrating during IFATCA's 2022 Annual Conference in light of the global pandemic. We will review what is possible, depending on how our industry is recovering by then and on what sponsorship options become available.

But other activities are ongoing, including a commemorative book that we have started compiling. We are coordinating with aviation museums worldwide, to plan for an ATC exhibition in 2022. And we are looking at a website with dedicated stories and podcasts, videos, etc. We are also trying to convince the postal authorities in a few countries to issue commemorative stamps in 2022 to celebrate ATC. Unfortunately, Australia, which has a long-standing tradition of publishing beautiful stamps for collections has just commemorated the 100 years of Australia Civil Aviation with two stamps this year. Since the 2022 event is not strongly connected to the national history of Australia, they declined our request.

The postal services in Switzerland and Singapore are still looking at our suggestion, but if you think your country's post could be interested, please let us know.

For the IFATCA commemorative book, if you have photos and documents on how ATC started in your country, please contact us. We are still looking for documents and photos. The book will detail how ATC began, with all the major milestones from the 1920s, up to how the future may look like. There will also be lots of small stories and anecdotes that make our job so interesting. To give you a teaser, see the box on the fist strip machine in the USA in 1936. We plan to finish the book this year, and publication will be in early 2022, well before the 2022 Annual Conference where it will be distributed.

Our website is still under construction. but will evolve in the months to come, you can visit it at:
https://www.atc100years.org.

To contact us, use following email for the chairman of the IFATCA 100 years task force email:
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Photo: The Australian 100 years civil aviation stamp.

ON THE ORIGIN OF STRIPS

BY PHILIPPE DOMOGALA, CHAIRMAN IFATCA 100 YEARS ATC TASK FORCE

Around 1936, the early air traffic control centres in the United States (called 'stations' at the time) had no standardised way of displaying a flight's progress to the controllers. Initially, the aircraft positions were displayed by moving pieces of paper – colloquially called "shrimp boats" – on a large, horizontal map. The positions were updated every 15 minutes when new position reports were received by radio. The information on each flight was written on a big blackboard using chalk: flight number, type of aircraft, departure, destination, estimated times, etc. of each flight. It is partially visible on the background of the photo with the two controllers. As the traffic increased, both methods became cumbersome and the Bureau of Air Commerce (the predecessor of the U.S. Federal Aviation Administration [FAA] and the fist employer of the controllers) asked its controllers to use their ingenuity to help improve the equipment.

The first attempt to replace the blackboard and the "shrimp boats" was done by Lee Warren, one of the 15 original federal corps of airway controllers in the U.S., who worked in Washington, D.C. He designed a "sequencing Board," which consisted of 20 interchangeable metal slates, one for each aircraft. When filled, this mimicked a blackboard but the slates could be swapped around, allowing the flights to be sequenced vertically. Each (relatively heavy) metal slate was fixed onto the board with a rod. To change the position, one had to press a pedal with a pulley to lift the whole thing. "Anyone who could work a full shift without getting a bruised finger or a skinned shin bone got a free drink after hours," joked Warren.

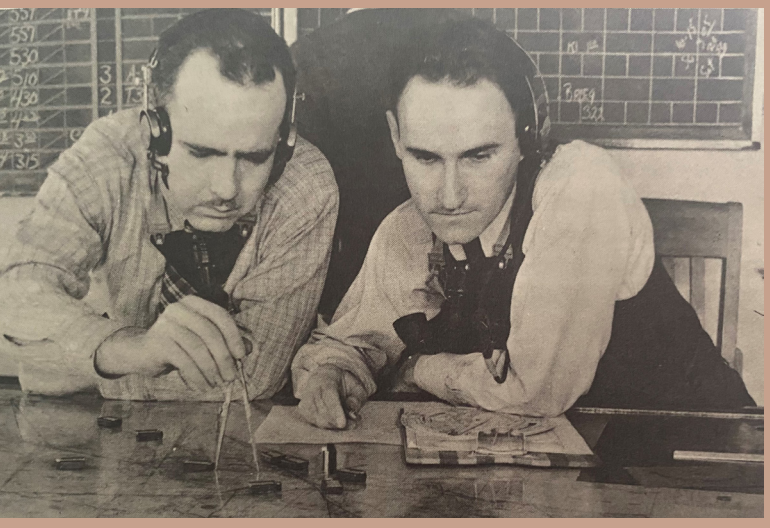
This cumbersome device was soon abandoned when John Huber, another U.S. controller, this time from Newark, designed the first "flight progress board" in 1936. This used paper strips with small, light metal holders. This system proved popular among controllers. Despite this full standardisation of his stripboard across all U.S. centres did not happen until 1938, following the establishment of the Civil Aeronautical Authority (another forerunner of the FAA). After World War II, it would become a standard as it was introduced in nearly every ATC unit worldwide.

More than 80 years later, the same principal design remains widely in use in many parts of the world. Even in some 'paperless' systems, the strips are emulated on electronic displays.

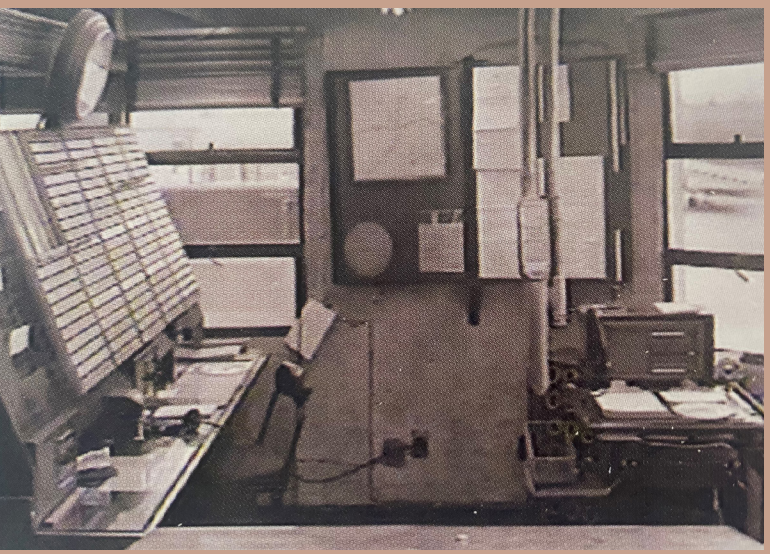
Source and credits:

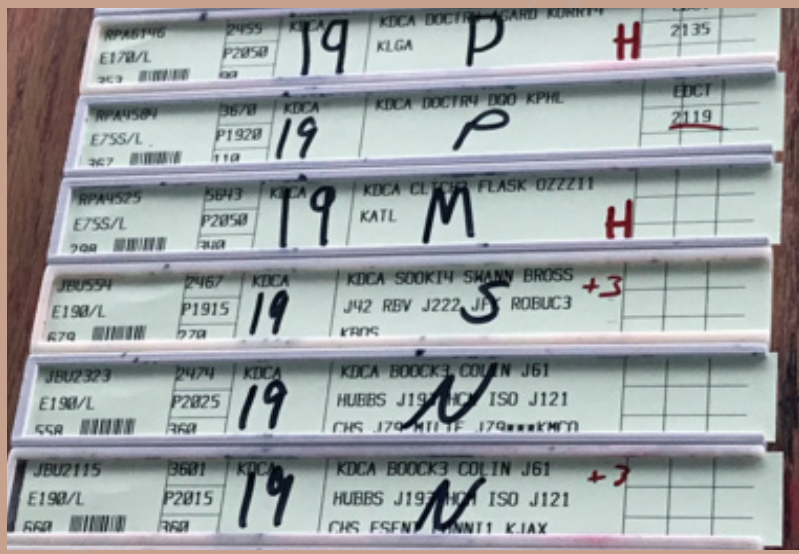
"Bonfires to Beacons," Nick Komons, published by the FAA, 1978.

To contact us, use following email for the chairman of the IFATCA 100 years task force email: philippe.domogala@ifatca.org



Photos from FAA





Photos: (top left) Controllers plotting aircraft positions using "shrimp." The blackboard with flight details is in the background. **(bottom left)** The Salt lake City Centre ops room in 1939. **(right)** An actual U.S. strip board still used today.

EXPERIENCED CONTROLLERS, AGE AND AUTOMATION

BY ANTHONY ANG, IFATCA EVP ASIA PACIFIC REGION

At work, in our homes, and in public, modern technology has transformed to be an integral part of our daily lives. Unmanned vehicles and artificial intelligence that assist in ATM systems are examples of what we can expect more of in the future. Technology will only get more sophisticated, as the demand for more functions increases and more often than not, results in higher complexity. For the younger generations, this has integrated into their life as they grew up. But how do the other generations cope with this advancement of technology? Automation can bring success or failure, depending on whether it suits the controller. Experience in the introduction of automation into cockpits has shown that, if human factors are not properly considered, accidents may be the end result (e.g., the B737 MAX crashes).

HUMAN FACTORS IN AUTOMATION

Let's explore some of the human factors in automation.

TRUST: The use of automated tools will depend on the controllers' trust. Trust is a result of many factors such as the reliability of the system and transparency of the functions. Neither mistrust nor complacency is desirable.

SITUATION AWARENESS (SA): Automation is likely to have an impact on controllers' SA. There is a need to develop a method to measure SA in order to ensure that new systems do not distract controllers too much from their SA of traffic.

TEAMS: Team tasks and performance will change when automated technologies are introduced (team structure and composition change, team roles are redefined, interaction and communication patterns are altered).

SKILLSET REQUIREMENTS: Automation can lead to both skill degradation and the need for new skills. To identify new training needs, obsolete skills, and potential for skill degradation, successful transition training and design support are vital.

RECOVERY FROM SYSTEM FAILURE: There is a need to consider how the controller will ensure safe recovery should system failures occur within an automated system.

WORKLOAD: With automation, human performance shifts from physical activity to more cognitive and perceptual activity. There is a need to develop a measure for mental workload, in order to define whether the induced workload exceeds the overall workload that a controller can successfully handle.

AGEING: The age of controllers is likely to be a factor affecting the successful implementation of automation.

Regarding trust in automation, little is known about the attitude of experienced controllers. They generally have a higher reluctance to change and therefore might be also less prepared to trust a new system.

At least for some controllers, it seems to cause discomfort to have to rely on the computerised system. Many experienced controllers are very familiar with the systems they were trained to use. They know all of the possible bugs, all kinds of shortcomings, or unexpected system behaviours.

Experienced controllers have collected years and years of know-how in interpreting an unusual system state. Also, they know the appropriate strategies to deal with a deviation or failure of the system. A new system may appear frightening to them, because they have to start this process of gathering experience from scratch.

This situation is compounded by the fact that modern systems require a huge amount of background information to be able to diagnose a system failure or deviation. The acquisition of this theoretical information is more demanding for experienced controllers and might take longer for them.

FACTORS FOR CONSIDERATION

Work that has been conducted in the area of ageing and ATM is enlightening. Both scientific research and information from interviews with operational controllers contributed to the formulation of these factors for consideration.

CONTEXT FACTORS: The processes related to ageing do not happen in isolation. They are embedded in the overall working environment. In some situations, the negative impacts of ageing can be felt more strongly, while, under other conditions, it is easier to cope with them. The factors likely to have an interaction with age are Kind of ATC Service, Part-time Work, Current Position (example, radar/executive position or planning position), and many others.

COGNITIVE AGEING VERSUS GAINS DUE TO EXPERIENCE: We have to assume that a number of cognitive declines are unavoidable with increasing age. Vision, hearing and overall attention get worse, tasks that are highly demanding of working memory become more difficult, and declines can be also found in spatial reasoning and some aspects of problem-solving. However, research concerning job performance does not confirm a general decline of job performance with age. Possibly the compensating power of experience helps to keep up performance. The characteristics of expertise are structured, principled knowledge, proceduralized knowledge, skilled memory, automaticity, effective problem representation, and strong self-regulatory skills.

JOB DEMAND AND STRAIN: Physiological studies on health, stress, and job demand and strain confirm a close link between these factors. From many areas of research, it is also a well-known fact that health problems increase with age. Interactions between age, health, and stress/strain have already been proven for some aspects of professional life already, for example for shift work.

AGEING & TECHNOLOGICAL CHANGE: The sophisticated computerisation of ATC equipment implies a challenge for most controllers of all age groups. In addition, technological change always bears the danger of outdating expertise. For this reason, it has to be assumed that older controllers will be hard hit by radical technological change as they might have to rely on their experience to compensate for ageing impairments.

Many human factors issues associated with the introduction of new technology are to be addressed for all age groups. A first critical aspect of computerisation is the shift of incoming information to the visual channel. The information displayed on the screen replaces more and more other sources of data (e.g., auditory information via a telephone). The introduction of datalink into the aviation world is another example, where Radiotelephony (R/T) communication got replaced by visual information. For employees of any age, this trend bears the risk of causing visual overload.

For air traffic controllers, this loss of other sensual modalities for information intake may also decrease the possibility of multitasking. No research is available to confirm this concept; however, from a theoretical point of view, it appears to be a reasonable assumption that one cannot split visual attention over several sources at the same time.

A controller being occupied with solving a conflict in one corner of his or her screen might not see a flashing label in another corner. However, if the information in this flashing label would be transferred to him or her via R/T, he or she might still be able to take this information in.

Another challenge provided by new technology is the possible increase in mental workload associated with it. Already the training for new equipment places a high mental demand on the trainee, even more if he or she is over 40 years of age.

The time immediately after the training, when new skills and knowledge are to be applied in the normal work setting, is critical for all employees. When they are faced with the new equipment on their own shortfalls in training and deviations from theoretical concepts become apparent. This is the time when mistakes occur and the chance of getting discouraged is very high.

During this period, a substantial amount of attention has to be allocated to handling the equipment. Therefore, less capacity is available for doing the tasks of the job. In air traffic control, this would mean that less capacity is available to effectively deal with the traffic.

For many new automation devices in ATC, the impact on controllers' mental workload is still unclear. Features of display design (e.g., font size, contrast, amount of information displayed, etc.) are equally important as the organisation of tasks and task sharing between human and machine.

We can assume however, that workload problems associated with new technology will be more pronounced for the experienced controllers. Here the rule also applies that good design will support all controllers; however, older controllers generally will benefit more.

A general concern for experienced controllers with regard to technological change is the danger of becoming outdated. Expertise gathered over years might become obsolete because of new developments. Not only where professional knowledge is concerned, but also work procedures may change drastically when new equipment is introduced.

Some aspects of expertise appear to be useful to experienced controllers to compensate for ageing declines. For exactly this reason, technological change provides a challenge for ageing individuals.

Due to changed working procedures, they might no longer be able to use compensating strategies. For example, those aspects of tasks, which were mentally automated in the old system (e.g., marking a flight progress strip) may require attentional capacity in the new system (e.g., making an input with the mouse on electronic flight progress strips), because they are unfamiliar to the operator.

A possibly dangerous aspect of this process is falling back on old habits when operating a new system. Especially under high workload, it can be true that an old procedure is retrieved from memory and executed because attention is absorbed by other tasks. In ATC, such a mechanism potentially could cause dangerous situations.

There could also be positive aspects to this. System design can take into account the expertise of system operators. Involving experienced controllers early in the design process could benefit the result of the design process. It could facilitate the transition of expert knowledge from an old to a new system, helping operators of all age groups to handle the new system.

WORKPLACE DESIGN

Well-developed technological equipment is one of the most powerful ways to defeat the downsides of ageing. Generally, new technological tools should provide support for working memory, as this is a very vulnerable area.

The five declining cognitive skills are closely linked to working memory, that is they require a lot of resources from working memory. Simple little helpers like acoustic or visual reminders would contribute to this requirement as equally as more sophisticated characteristics of new systems, like the automation of complex mental processes.

A broader view is taken by research focusing on design for ageing controllers in more general terms. How should a display look, if somebody with decreased eyesight is supposed to use it with ease? How should the buttons look and feel, if the potential user suffers from decreases in the tactile sense? The specific needs of older people have to be addressed also on a functional level. How many modes can a device have before it gets confusing or over-complicated?

Furthermore, it is desirable that the equipment supports the planning process and limits the number of unexpected events. As these events are unavoidable in ATC, it would be helpful to develop support tools for active problems solving and situation diagnosis.

Another way to support the aging controller would be to develop equipment in a way that it helps to compensate for the decrease in speed. This would include that all input features are as simple and timesaving as possible (e.g., drop-down menus on the screen should be intelligent and simple).

Regarding input tools, the use of the mouse has to be questioned. Both speed and precision of input are more difficult to achieve for older controllers when they have to make these using a mouse (e.g., avoid double-clicking functions).

Human-Machine Interface (HMI) issues should be carefully considered: font size, the use of colour screens and contrasts on the screen are crucial features in the context of aging. Other HMI issues like usability are also important.

In general, it would be an advantage to involve a representative sample of older controllers in the design phase of new equipment. This should be done not only to achieve the commitment of this group for the final product but also, and mainly, for the sake of improving the product.

The input of experienced controllers can be of great value. It may also help to capture the positive side of aging (i.e., gains due to experience). A smart approach to system design would build this experience into the system.

Summary

Ageing offers a challenge for ATM. This challenge cannot be ignored. Older employees are the most valuable resource of a company. It would be extremely short-sighted to force these employees out of the ops room.

If older controllers stopped passing their experience onto their younger colleagues, the overall level of performance in an ops room would suffer. On the other hand, each controller has to be aware of his or her own limits. The objective is to create a cooperative climate in the ops rooms, in which it is possible to admit one's own limits.

The younger controllers of today will be the older controllers of tomorrow. In a few years' time, the service providers will have to face the same aging-linked problems. Acting and optimising the situation of older controllers now is the best investment in the future.

The human factors problems associated with the introduction of new equipment can be expected to be even more pronounced for older users. Interface issues and workload impacts should be carefully considered. Technological change bears the danger of outdating expertise. The design of new systems should facilitate the transfer of expertise from the old to the new system.

This article is extracted from two articles: 1.) "Age, Experience and Automation in European Air Traffic Control, EUROCONTROL" and 2.) "Age, Experience and Automation in European Air Traffic Control - Survey in the ECAC Area, EUROCONTROL."

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COMMUNICATION THREATS FOR AIR TRAFFIC CONTROLLERS

BY UMI MUTHIAH SYAHIRAH, A.MD., S.I.KOM, ACC FROM MAKASSAR AIR TRAFFIC SERVICE CENTRE, AIRNAV INDONESIA AIR TRAFFIC CONTROLLER ASSOCIATION (IATCA)

Did you ever experience an error response after transmitting an instruction or information? Not only does an error response to ATC transmissions increase the workload on the controller, but it may lead them to directly and indirectly make a threat.

WHAT IS A THREAT?

Threats are known as incidents or mistakes that occur outside the reach of the air traffic controller's influence, increase operational complexity, and must be controlled to maintain safety margins. To handle traffic, air traffic controllers have to take into account different contextual nuances during typical ATC operations.

WHAT ARE THE COMMON SOURCES OF COMMUNICATION THREATS?

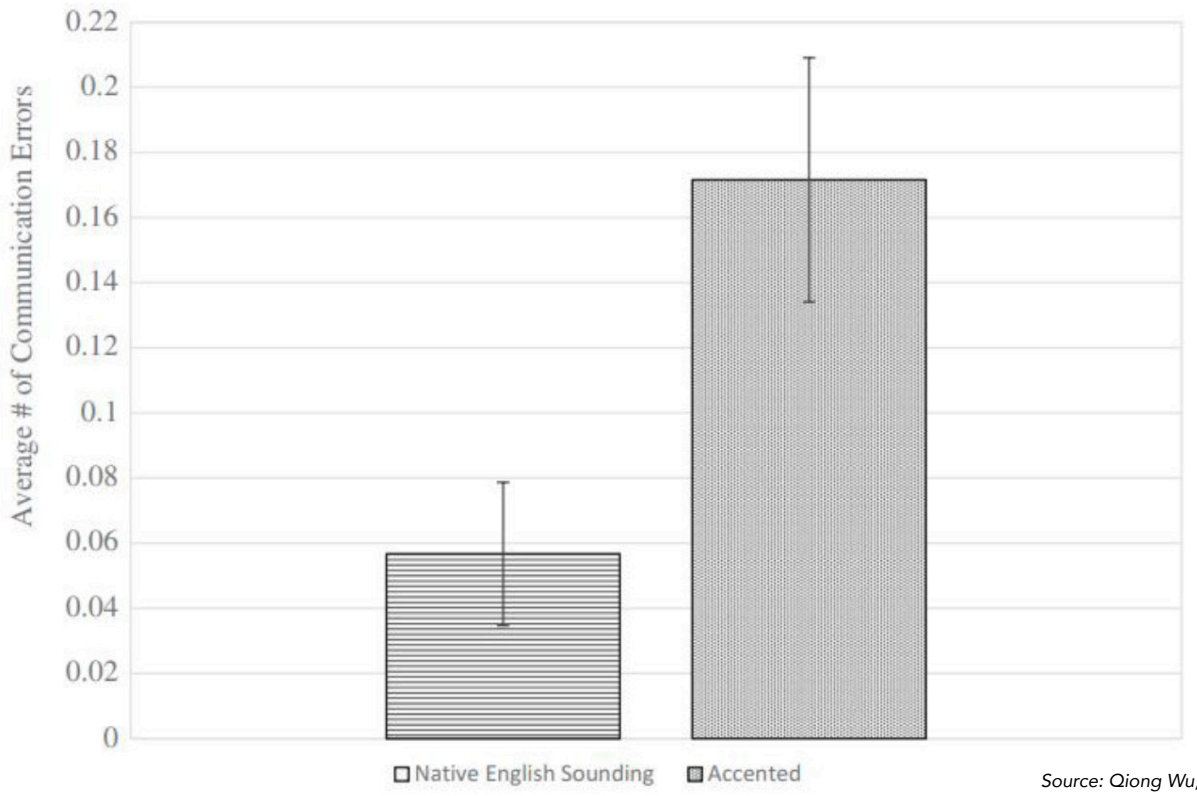
Because of time pressure and airspace constraints, the effect of increased traffic is likely to be most noticeable in the airspace surrounding major metropolitan areas (Zingale, Truitt & McAnulty, 2008). The phases of flight that take place near airports (i.e., departures and arrivals) will be those with the most time pressure and the highest workload for pilots and controllers. These phases can also have the highest potential for multiple viewpoints and contradictory priorities. For instance, ATC will need to concentrate on efficiency and operating speed for all aircraft, while pilots may be focused on navigating their own aircraft safely through congested traffic. These different viewpoints may, in turn, lead to operational disputes and various ideas for the physical positioning of a given aircraft.

DIFFERENT INFORMATION: In current operations, flight crews collect information mainly from on-board radar, automated data messages such as the Automatic Terminal Information Service (ATIS), and ground communications. ATC highly depends on ground-based information sources, radar displays, and communications with flight crews. Each of these sources has a view of its own viewpoint and a rate of update.

COGNITIVE FACTORS AND RISK ASSESSMENT: Although when pilots and ATC share this very same knowledge, cognitive conflict can occur if it is not translated in the same way. For example, different interpretations of instructions or information on winds, storms, wake vortex behaviour, and so on can recommend a variety of courses of action. Flight crews may also differ from ATC in their assessment of the value or danger of clearance or action; As if they were asked to expedite the takeoff or to reduce the space behind another aircraft.

"NATIVE ENGLISH SOUNDING" AND "ACCENTED ENGLISH": The fact that both parties make errors in their transmissions illustrates the continuing difficulty of good communication in the aviation field. In the case of native English speakers, provided that they have committed omissions rather than errors, the difficulties tend to be to

Image: Average number (and standard error) of communication errors committed per transmission by native English sounding pilots and accented pilots



Source: Qiong Wu, 2019

remember (or understand and recall) what elements need to be read back or stick to the protocol.

CONCLUSION

In conclusion, communication threats are established when flight crews and ATC base their aircraft plans on various viewpoints, goals, sources, versions of information, or perceive circumstances differently. The ASRS reports examined in this study indicate that the final phases of the flight are especially conducive to communication breakdowns, partly as a result of modifications or renegotiation of flight paths to the ground. Meanwhile, Estival and Molesworth (2016) have found a correlation between workload and communication errors in general aviation. Likely, the variations in the workload between the two phases of flight in the current study were not sufficient to cause errors.

In particular, various interpretations of information (e.g., weather and traffic) from different sources on the consequences for secure and efficient operations will continue to emerge. Teamwork partnerships between aircrews and ATC would be necessary to prevent such threats and errors. The data also indicate that the status of the operator affects contact and coordination between the flight crews and the ATC.

The explanation for such omissions remains unclear but may include: workload, time constraint, or indifference to the protocol. In the case of omissions and errors, the difficulties seem to include both remembering which things need to be read back and ensuring a correct read-back. Whether the explanations for these errors are identical for both parties is a field for future research.

Although the findings of the present study confirm earlier studies showing that Native English pilots are not immune from communication errors (Alderson, 2009; Nevile & Walker, 2005), they also indicate that as indicated in those studies, accented speakers appear to be more challenged by Aviation English. The results of this study show that they make more overall transmission errors than native English sounding pilots, but also that the type of error they make is different. The accented pilots made mistakes, while the native English sounding pilots made only omissions, and the accented pilots made more word errors than the native English sounding pilots, while the two classes made equal numbers of numerical errors. The flight phase and the recorded higher levels of workload during the approach and landing phase did not result in a higher number of errors compared to the departure phase. These are both recent findings that can help to enhance communication in commercial aviation.

An error-free communication in aviation remains, after all, an elusive target.

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COEXISTENCE OF HUMANS & TECHNOLOGY IN AIR TRAFFIC CONTROL

BY YEN-CHUN CHERYL CHEN, ROCATCA, TAIWAN

When I was still a student at the aviation training institute in Taiwan (which was only about five years ago), I remember using paper flight plan strips to indicate the movement of the flights. The instructor was particularly strict on those basic moves, which have to follow the given clearance. For example, when you approve traffic to push back, you have to move the paper flight plan strip of the traffic to the left. If the traffic asks for push-back, but has to standby due to traffic, you move the paper strip to the right to remind yourself of the waiting traffic. When the runway is occupied either by the ground controller or by the tower controller, there will be a reminder strip put on the stripboard as a way for alarming the occupancy of the runway.

Soon after we left the training institute and were assigned to control towers for OJT, we realised the electronic flight plan system is used in the real tower operation, and we have to build up a new set of control habits. The advanced-surface movement guidance and control systems (ASGCM-S), which are called ASDE in the tower where I work (RCTP, the Taipei Tower), are used to provide better surveillance to the operational area. Although the surface radar can already provide warnings to controllers when objects are detected on the runways or to alert the controllers that the two traffics are potentially getting close to each other, it still requires the controllers to use their eyes to double-check the intruding objects and to use their experience to judge whether the two traffics will eventually get too close to lose the required separation.

After the old control tower of RCTP provided air traffic management services for nearly five decades, we moved to a newly built control tower right next to the old one. During the move, we also upgraded our control system to an advanced tower automation system (TAS). Similar systems have been installed in many modern control towers. The concept behind the system is based on the fact that the flight strips move in a flow that follows the journey of the flight from clearance at the delivery, to start-up and push-back with the ground controller, and to departure from the tower. When you finish one action, for instance, giving clearance, you press the bottom stating 'CLR', the electronic flight strip will be automatically transferred to the ground position. Similarly, when the ground controller clears the traffic to be pushed back, he or she will click the button stating "push-back," the strip will then move to "taxi section" to wait for the taxi clearance. One of the advantages of this automation system is its ability to be integrated with ASGCM-S and to provide better detection of possible runway incursion caused by human errors.

How does it work? When traffic is cleared to line up, the runway will be identified as occupied; therefore, the action button "cleared to land" for the landing traffic and the action button "line up and wait" for the traffic waiting at the runway head will all be blocked. Likewise, when traffic is already cleared to land, the action button for "line up and wait" will be blocked automatically. When the traffic is holding in position but has not been given take-off clearance, and the landing traffic is approaching, the system will warn you with the awaited departure clearance.

On the visit to the Singapore Aviation Academy, the staff showed their tower and radar simulators. The simulators include a voice recognition function to identify voice clearance given by the controller and response to it. Although the success rate of the voice recognition is not yet 100% due to an insufficient voice database, the technology opens up the opportunity for future development in ASGCM-S. Imagine, when the ASGCM-S is able to recognise the taxi instruction given by controllers, it will be able to help detect whether the aircraft is on the right path and avoid potential traffic conflicts on the taxiway. Nevertheless, all these advanced techniques will only equip air traffic controllers with better situational awareness. They are not designed to replace humans as the main role in doing the controlling job.

Research has been carried out on how artificial intelligence (AI) can assist air traffic controllers in handling increasing traffic. Whether the computer can totally replace human brains in managing air traffic – similar to the discussion of whether there will be non-piloted passenger flights in the near future – have not yet had a promising prospect. As air traffic controllers, we all know that there are unexpected situations, and there are things, which can neither be quantified nor measured. These are exactly the moments where human experience and judgment have to intervene. At the ATC-Pilots Symposium in Singapore last year, Prof. Vu N. Duong proposed a hybrid human-AI system for air traffic control. This model stresses the cooperation between humans and AI that might provide an inevitable solution to increasing traffic volume in the foreseeable future.

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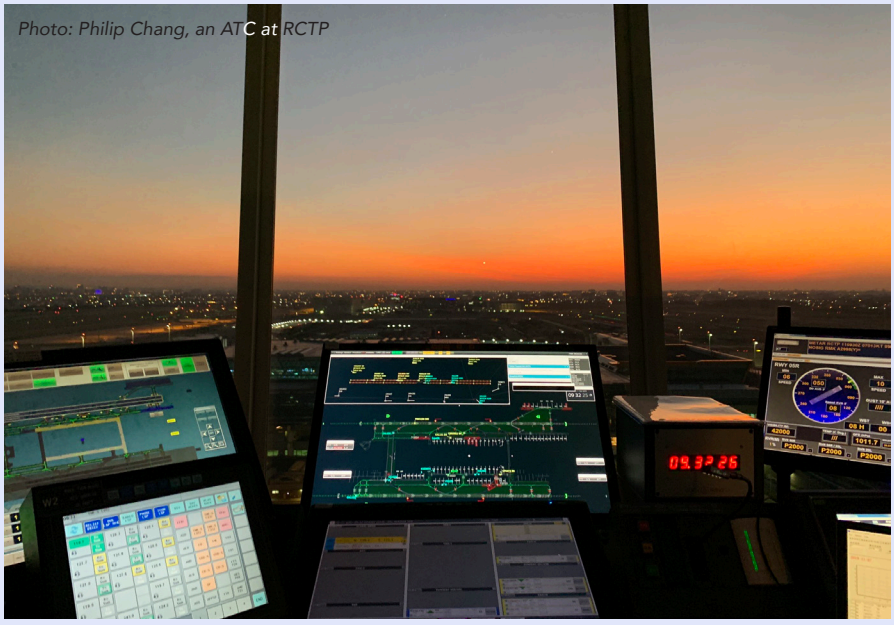

Photo: Philip Chang, an ATC at RCTP

Photo: Inside tower cab at Taiwan Taoyuan International Airport (RCTP)

CHARLIE'S COLUMN

BY CHARLIE@THE-CONTROLLER.NET

CAMPING IN STYLE

Ah, to go camping. The joy of getting away from the hectic sound of the city to enjoy the silence, the chirping of birds, the buzz of the insects, the sound of the wind in your ears and... helicopter rotors spinning up?! It's not uncommon in the U.S. to see campervans drag a small car behind them to get around while leaving the camper on-site. But this freedom-loving outdoorsman (Let us assume it is indeed a man) has taken his freedom to the next level! Finding a suitable parking space seems a little more cumbersome, but it's probably a small price to pay for so much freedom! We can only hope he sets up his helipad far enough away from the people in tents.

Photo: Internet

BLACKBIRD BLOCK

Many have heard SR-71 pilot Major Brian Shul tell his legendary story about pilots requesting ATC to readout their groundspeed. It ends with a cocky F18 pilot being shown his place by Brian as his SR-71 is doing Mach 3 or so high overhead. If you've not heard it, you can find it on YouTube. Less well known is the story of one of Brian's colleagues, who caused a traffic jam with his supposedly hyper-fast aircraft. As is often the case, we just have the picture and have to speculate on what is going on here. Was he caught speeding, and did the police seize his vehicle to tow it away? Or did the local petrol station run out of JP-7 fuel? In any case, in the list of believable excuses for arriving late to work, "I got stuck in a traffic jam behind an SR-71" probably scores pretty low – right above "A polar bear stole my aircraft."


Photo: Internet

POLAR PILOTS

With the arctic ice disappearing at an alarming rate due to climate change, polar bears are losing their habitat. Where they are used to trekking across vast stretches of ice, they now have to swim through miles and miles of ice-cold water ... or hijack a small aircraft to get to their favourite feeding ground. It is probably a lot easier to spot seals from the air, though he might want to pick a model with floaters to avoid having to land on the uneven, recently thawed Alaskan tundra.


Photo: Internet

STUPID DIVERSIONS #341

It's an older story, but in 2013, an American Airlines flight from Los Angeles to New York was forced to divert to Kansas City due to an unruly passenger. Unfortunately, that isn't too unusual, but the nature of the "unruliness" is interesting, to say the least: one of the passengers would not stop singing Whitney Houston's version of "I Will Always Love You." Her repeated rendition of the 1992 classic song drove her fellow passengers to despair, and a federal air marshal who was on board eventually subdued the woman and put her in handcuffs. Declaring an emergency, the pilot allegedly informed ATC by stating: "Houston, we have a problem. I mean we have a problem with Houston," but Charlie was unable to verify this part of the story.