

Supporting aviation recovery in the Middle East

AUTOMATION AS THE KEY DRIVER FOR A COST-EFFICIENT ATM POST-COVID

Is inefficient air traffic control costing your airport more? Josef Kutschi, Managing Director Frequentis Middle East, and Wolfgang Hatzack, CEO of ATRiCS, propose a solution for enhancing controller productivity and safety. Could it also reduce CO2 emissions?



The ATRiCS TowerPad allows increased safety and more efficient taxi, improving airport capacity as a result.

Air traffic in the Middle East, like the rest of the world, suffered immensely during the pandemic. With passenger traffic slumped the world over, and the entire aviation ecosystem impacted, airports, air navigation service providers and airlines have needed to rethink their working processes to remain safe as well as cost-effective. Middle Eastern economy is heavily supported by the aviation industry and Covid-19 caused an almost 50 per cent reduction in the regions aviation and related industry jobs in 2020. The International Air Transport Association (IATA) reported that income from the industry also fell by 39 per cent compared to 2019. As passenger traffic in the region

starts to recover there remain things to consider:

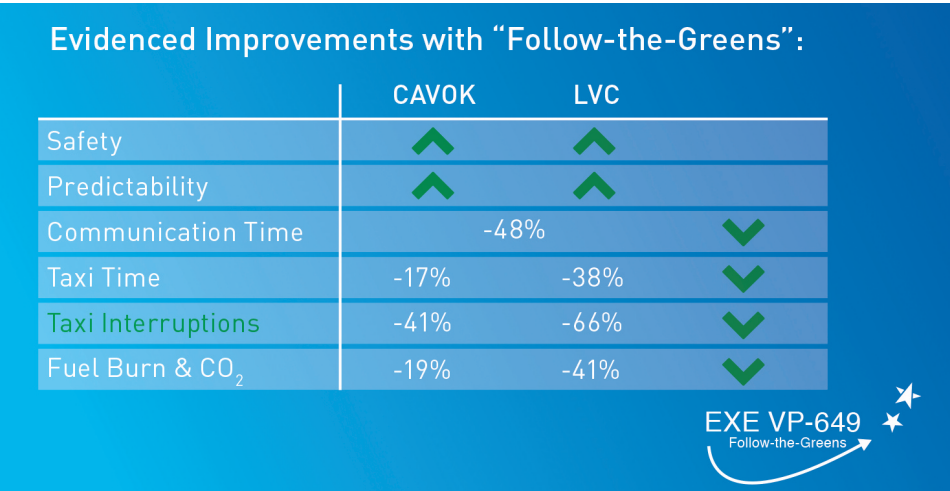
1. Increasing capacity to meet, difficult to predict, passenger demand
2. Reducing controller workload, and minimising controller error, while overcoming workforce fluctuations and a shortage of controllers
3. Improving resilience, especially in low visibility conditions, during the regions continued airport expansion projects

Starting with increasing capacity, we are reminded of the industry’s concerns pre-covid. The factors limiting aviation growth were, and still are, in the areas of airspace organisation and automation. At the same time air traffic controllers (ATCOs) are under increasing pressure to

manage larger volumes of traffic in increasingly more dynamic environments, raising the potential for human error. In addition, the variance of controller performance is broader in regions with a stronger cultural diversity making automation of controller support tools an even more interesting asset in the Middle East. Airport expansion in the Middle East includes developments in Bahrain, Dubai, Abu Dhabi and Saudi Arabia, among others, totalling some \$36 billion between 2018-2021. While undergoing significant expansions, procedures must be adjusted and areas closed and re-routed, adding to the complexity of the controller’s role.

INCREASING AUTOMATION

Remote digital towers and digital tower tools have come some way to offering a solution to the in-creasing controller workload by enhancing visibility and automating functions and workflows. From replacing paper strips with electronic ones as a first step, to fully digital tower solutions with auto-matic object detection, automated warnings, and tracking and data fusion, ATCOs are supported by technology in the tower. In March 2020, Frequentis acquired a 51 per cent share in ATM automation technology supplier ATRiCS. ATRiCS provides software products and services to airport operators and ANSPs to optimise arrival and departure times as well as supporting digital towers with automated functionality including routing. As Frequentis and ATRiCS work together we have the ability to integrate an advanced surface movement guidance and control system (A-SMGCS) and the ATRiCS TowerPad into the digital tower environment. This further enhances airport surveillance and controller functionality. The ATRiCS TowerPad intelligently unites information and the appropriate action into a single user interface, allowing



The solution reduces ground Co2 emissions thanks to its “Follow the Greens” guidance system aimed at reducing taxi time on the runway.

increased safety and more efficient taxi, improving airport capacity as a result. The TowerPad, similar to the glass cockpit onboard the aircraft, equips the controller with an advanced touchscreen, allowing them to fully focus on their planning and traffic coordination tasks. Data from the TowerPad module can also exchange data with other tower modules in real-time, further enhancing controllers’ workflow. The controller now has a modern topographical view of the whole airport surface and sees required information, recommendations, and alerts at the right time. Workload is reduced, situational awareness improved and the danger of making error is lowered. The TowerPad generates safe routes for aircraft and provides guidance using the installed lighting system. A controller with less to look at can see and manage more.

AND THERE’S MORE...

The TowerPad is in active and mature service, operational at several major airports since 2008, using artificial intelligence to provide advanced human centered automation services for aerodrome controllers. The system has proven to reduce costs for airlines, airports and ANSPs, improves safety, reduces taxi times and consequently the environmental impact of airport traffic. The solution reduces ground Co2 emissions thanks to its “Follow the Greens” guidance system aimed at reducing taxi time on the runway. It also offers controllers a solution that significantly reduces mental workload while increasing situational awareness. The new system further improves movement rate in low visibility by using only the centreline lights for automatic separation and thus maintaining maximum ground capacity. Instead of remembering lengthy taxi instructions at an unfamiliar airport green centreline lights illuminate in front of the aircraft and extinguish behind it, guiding the pilot safely and efficiently to its destination, considering other traffic and the individual constraints of the airplane. If required to stop, the green lights will be replaced with a red stop bar. In 2017 the SESAR (Single European Sky ATM Research) validation exercise, VP-649 and VP-759, was already able to show the potential for significant financial benefits up to €30 million annually thanks



Using the installed lighting system, the ATRiCS TowerPad generates safe aircraft routes and provides guidance to pilots, reducing mental workload.

to fuel savings from “Follow the Greens” at large aerodromes. The TowerPad has been operational in the Middle East since April 2012, at Dubai International Airport, and is the only system worldwide able to double airport capacity in low visibility through the automatic separation of aircraft by stop bars.

Josef Kutschi,
Managing Director
Frequentis Middle East
Josef has worked in the Middle East for the last 10 years, in various management positions for satellite communication and ATM industries. Josef joined the Frequentis Group in 2019 as ATM Sales Director, Frequentis Middle East, and was appointed Managing Director for the region in January 2020.

Wolfgang Hatzack,
CEO ATRiCS
Wolfgang founded ATRiCS in 2001 and is the visionary behind the company’s innovations, designing the world’s first fully automated routing and guidance system. Under his leadership and AI-based automation background, ATRiCS pioneered the field of integrated controller working positions and is known for the TowerPad system in the ATM industry.



Frequentis safety-critical communication and information solutions leverage more than 70-years of experience worldwide and has been serving clients throughout the entire Middle East region with tailor-made solutions for over 20 years. Frequentis Middle East offers the full range of solutions developed within the Frequentis group based on expertise in mission critical voice and data communications, information management, networking technologies, surveillance, AIM and message handling. The company provides voice communications for over 50 airport systems in the Middle East and 17 air bases and control reporting centres. Its philosophy focuses on practical usability, providing user-centric systems that conceal the underlying complexity to support rapid, effective, and cost-efficient control center operations.

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