EUROCONTROL

Airport Operations Centres Performance Study

Performance Review Commission

March 2025

Background

This report has been produced by the Performance Review Commission (PRC). The PRC was established by the Permanent Commission of EUROCONTROL in accordance with the ECAC Institutional Strategy 1997. One objective of this strategy is "to introduce a strong, transparent and independent performance review and target setting system to facilitate more effective management of the European ATM system, encourage mutual accountability for system performance…"

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1 Introduction

The Performance Review Commission (PRC) provides objective information and independent advice to EUROCONTROL's governing bodies on European air traffic management (ATM) performance, based on extensive research, data analysis and consultation with stakeholders.

Recognising that transformation is critical for achieving future performance goals, the PRC encourages the adoption of innovative technologies and the development of new operational concepts and procedures. These initiatives often require collaboration among various stakeholders, including air navigation service providers (ANSPs), airspace users, airports, regulators, and other relevant parties.

To support and promote successful transformation initiatives, the PRC has developed a Transformation Support Strategy (TSS). This strategy facilitates the analysis of how emerging technologies and concepts contribute to the future performance of the ATM system. As part of this effort, the PRC identifies flagship projects, monitors their progress over time, and helps stakeholders understand both the challenges of implementing transformational projects and the resulting benefits. By doing so, the PRC aims to stimulate and encourage improvements across ATM.

The Airport Operations Centre (APOC) concept was selected as one of these flagship projects.

The APOC serves as a collaborative platform that brings together key airport stakeholders, enabling communication and coordination based on shared knowledge. By replacing fragmented and potentially conflicting decision-making processes with a unified and coordinated approach, the APOC improves information and operational flows at airports. This is achieved by aligning resources and facilities with changes in demand or schedules, supported by advanced technologies and processes that balance the priorities of all stakeholders.

Besides digital transformation, the implementation of the APOC involves a cultural shift. It requires collaboration among diverse actors—airlines, airport operators, ground handlers, ANSPs and others—who must work together and align their strategies. Close cooperation with the European Network Manager is also essential, as well as efficient data management and exchange.

This document provides:

1. A high-level overview of the APOC concept.
2. A catalogue of possible performance indicators for APOC monitoring activities.
3. A summary of reported benefits and key recommendations.
4. An inventory of APOC implementations across Europe.

By detailing these elements, the document aims to offer a comprehensive understanding of the APOC concept and current implementations together with the potential performance improvements from the ATM perspective.

The information regarding the APOC implementations and their benefits as described in this document is derived from the responses to a survey conducted by the PRC between June 23 and December 24.

2 The APOC concept

An AirPort Operations Centre (APOC) is a platform or operational structure which proactively manages the performance of present and short-term airport operations. It provides relevant airport stakeholders a common operational overview of the airport, enabling them to communicate, coordinate and collaboratively decide and manage flight & terminal operations.

Stakeholders might include the airport operator, ATC, airlines, ground handlers, customs, and police. These collaborate for the effective establishment and execution of an agreed operational plan, following a structured approach with agreed processes, either through physical or virtual interaction or a combination thereof.

There are variations in the implementation of the APOC concept across European airports in terms of stakeholder involvement, the use of an AOP (Airport Operations Plan), and approaches to DCB (demand capacity balancing) and performance monitoring activities.

Ultimately the APOC makes airports more resilient to disruptions by enhancing the common situational awareness of ATM stakeholders through real-time information exchange and continuous performance monitoring. The APOC concept aims as well to integrate airports more efficiently into the European network, serving as the prime interface between the airport and the Network Manager Operations Centre (NMOC).

More information on the reported benefits can be found in chapter 4.

APOC in context

Many different names are used to describe a very similar concept: APOC (AirPort Operations Centre); AOCC (Airport Operations Control Centre), GC (Ground Coordinator), AMC (Airport Management Centre), etc... These names essentially refer to the same type of facility, they are just alternative naming conventions used under different umbrellas.

Figure 2-1 illustrates how the APOC is involved in the operations of aircraft, passengers and even other flows like airport accesses (roads, trains, etc) and how the different elements fit with each other.

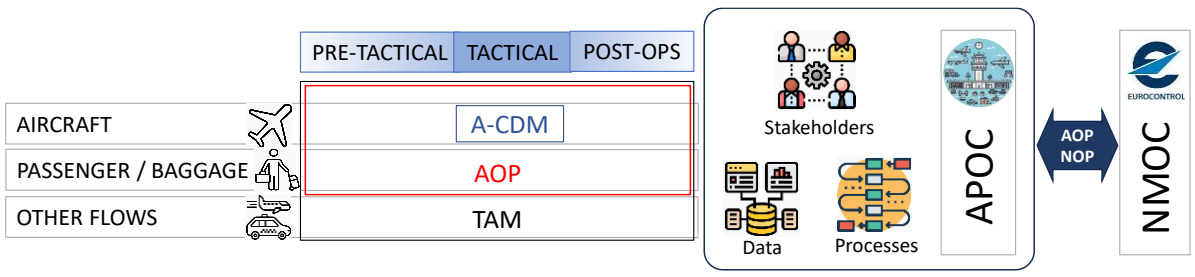


Figure 2-1: APOC in context

Airport Collaborative Decision Making (A-CDM) is a **process** primarily focuses on aircraft operations, with some consideration of the turnaround process through the establishment of a Target Off-Block Time (TOBT).

The Airport Operations Plan (AOP) is a **product, a plan** for both aircraft and terminal operations. AOP is not a requirement for an APOC. One can exist without the other and vice versa.

Nevertheless, when both exist, there is a close relation, where the AOP should be produced and managed via the APOC

Total Airport Management (TAM) is a step beyond A-CDM, incorporating a **holistic view on the entirety of the airport processes** including, airside, landside, and terminal.

The **APOC supports all of the above**, through a combination of stakeholders' participation, data sharing and systems integration, and established processes for the management of the airport operations.

The APOC acts as well as the **interface** between the Network Manager Operations Centre (NMOC) and the airport, sharing data through the AOP-NOP integration.

A concept open to interpretation

There is abundant literature around the APOC concept. Nevertheless, there are no established requirements or specifications. It remains a broad concept that each organisation interprets differently, leading to significant variation in its implementation across airports.

The document "Airport Operations Centres: A Guidebook" [1] recently published by ACI EUROPE (November 2024) also highlights the lack of harmonisation. The document nevertheless provides guidelines on how to set up an APOC. Without establishing hard requirements, it lists the key functions that can be found in an APOC and differentiates 3 APOC coordination levels. These levels respond to different needs and stages of the APOC implementation, involving more or less stakeholders.

The Annex II of this document intends to provide an inventory with a description of the different elements (stakeholders, processes, and performance reviews) found in APOCs across the EUROCONTROL area.

3 APOC performance monitoring

The initial aim of this PRC study was to evaluate the impact of APOC implementations across Europe by comparing airport performance before and after. However, it is difficult to establish a clear "before" and "after" when assessing performance in APOC implementations. APOCs are dynamic, constantly evolving with new stakeholders, systems, data, and procedures. Furthermore, other factors and changes are taking place simultaneously, making it impossible to isolate the impact.

What gets measured, gets managed

Despite this challenge, there is a strong need for comprehensive performance monitoring including defined thresholds for action at APOCs. This supports both operational decision-making and the evaluation of APOC implementation and evolution.

This section provides a catalogue of indicators, including their definitions, objectives, and links to available data. These indicators can be incorporated into APOC performance monitoring activities. Although some indicators are standard measures of airport performance and not specifically designed to assess APOC impact, APOC implementations can positively influence these metrics.

Most indicators focus on flight-related operations, but naturally APOCs also play a critical role in passenger flow management and terminal efficiency. To gain a holistic view of airport and APOC performance, additional indicators for terminal and passenger-related operations are necessary.

The indicators in this section are grouped into three categories:

- Airport performance indicators and metrics regularly monitored by the PRC and EUROCONTROL.
- Airport performance indicators and metrics not regularly monitored by the PRC or EUROCONTROL.
- Single process or stakeholder performance indicators and metrics not regularly monitored by the PRC or EUROCONTROL.

The first two categories focus on the performance resulting from combined processes and stakeholders, while the third focuses on individual processes or stakeholders.

For airports, operations revolve around the LTO (Landing Take-Off) cycle, which includes the taxi-in, turnaround, and taxi-out phases. The proposed indicators in this document primarily relate to this LTO cycle.

An important part of the performance monitoring is the data quality assurance. This requires a thorough assessment of the input data and also a filtering of the samples used for each indicator.

Additionally, results for any indicator should be analysed and presented following different aggregations, which would respond to different needs:

- High level view: Aggregation (average, median, etc) over a longer period of time, including the entire sample.
- Medium level views: Aggregation over established periods of time (daily, monthly, First Wave, hour, etc) and categorising results (per operator, per runway, per terminal,...)

- Specific views: Used to focus on specific periods or issues. This includes a combination of filtering and aggregation (for example the average for a specific operator in the first rotation only).
-

3.1 General airport performance indicators currently monitored by the PRC and EUROCONTROL.

This section outlines the performance metrics currently tracked by EUROCONTROL's Performance Review Unit that can support APOC's performance monitoring efforts, whether by supporting daily operations in real-time or through post-operations reviews to analyse and refine planning and processes.

Indicator	OTP15 (On Time Performance)
Flow	ARR / DEP
Unit	%
Description	OTP15 is the most commonly used punctuality indicator. It refers to the share of IFR flights that leave from or arrive at the stand with less than 16 min delay with respect to the scheduled arrival/departure time (airline schedules). It uses the Actual Off-Block Times (AOBT) and Actual In-Block Times (AIBT) and the comparison with the Scheduled Off-Block Times (SOBT) and Scheduled In-Block Times (SIBT). OTP15 is commonly used by airports and aircraft operators as the main performance metric. The punctuality reflects the outcome of a multifaceted and interconnected system involving numerous stakeholders and it is not designed to measure independent performance.
Relation to APOC	APOCs, with their integration of stakeholders and procedures, should help in identifying remedial operational measures and putting them in place in real time, resulting in an overall better punctuality, especially on departures. Most airports use OTP15 as the high level indicator of global performance
References	https://ansperformance.eu/traffic/punctuality/#state-view-1

Indicator	Operated schedules
Flow	ARR / DEP
Unit	%
Description	% of airline schedules that match to an operated flight (with ATC flight plan) compared to the total number of expected flights
Relation to APOC	An indication of the disruption level of the network and/or the airport, APOCs can use this information in post-ops analysis.
References	https://ansperformance.eu/definition/opschedules/

Indicator	Departure punctuality per grouping of delay
Flow	DEP
Unit	Number of departures per delay duration category/ % of flights per delay duration category
Description	Difference between the Actual Off-Block Times (AOBT) and Scheduled Off-Block Times (SOBT). This difference can be positive (delayed off-block) or negative (early off-block). Results should be aggregated in number (or share) of flights for different durations of the delay. Suggested groupings are: [>+60], [+31,+60], [+16,+30], [+5,+15], [-4,+4], [-5,-15], [-16,-30], [<-30]
Relation to APOC	OTP15 only gives a partial picture, it is either above or below 16 min delay, but not the magnitude of that delay. By measuring the actual difference, the APOC monitors how big is that deviation with respect to the schedule. It also allows to detect share of early departures, very late departures, etc.
References	https://ansperformance.eu/dashboard/stakeholder/airport/db/ (Punctuality tab for each airport).

Indicator	Reported Pre-departure delays per reason
Flow	DEP
Unit	min/dep
Description	Pre-departure delays are the delays in the departure (actual off-block time) with respect to the airline schedule. When the delay for a given flight is above 4 minutes, these delays are commonly reported by airlines, airports and ground handlers providing a reason for each minute of delay. Some aircraft operators use the IATA delay codes, and some use their own codes. In most cases there are translation matrixes that allow for the conversion to a common delay list. While there can be many delay codes, categories or groupings can be established to ease the analysis and visualisations. ANNEX II contains the categories proposed by CODA (Central Office for Delay Analysis) based on the IATA AHM730 delay codes.
Relation to APOC	The analysis of the delay per flight and per category of delay allows to understand the main drivers behind the delayed departures and the magnitude of the problem. These can be monitored at the APOCs in real time (for tactical remedial action) and in post-ops (for developing strategic solutions).
References	https://ansperformance.eu/dashboard/stakeholder/airport/db/ (Pre-Dep Delay tab for each airport).

Indicator	Take Off Time Calculation Quality (for A-CDM airports)
Flow	DEP
Unit	min/dep
Description	Target Take-Off Time (TTOT) calculation quality at A-CDM airports is the absolute difference between ATOT (Actual Take-Off Time) and TTOT at Initial Off-Block Time (IOBT)-30 minutes for non-regulated flights. The TTOT is defined as the "Earliest TTOT", or if not provided the "Turn-around TTOT", or else the ATC TTOT; the IOBT is the earliest EOBT (Estimated Off-Block Time).
Relation to APOC	This indicator allows to estimate the quality of the Take Off time prediction by measuring the adherence to it. It is mostly used at network level (more than at APOC level) to measure the predictability of the network operation based on timestamps in the Departure Planning Information (DPI) messages at CDM airports.
References	The metrics follows the latest AICH WG guidance.

Indicator	Additional taxi-out times
Flow	DEP
Unit	min/dep
Description	Additional taxi-out times are a proxy for the inefficiencies in the taxi-out phase from off block to take off. This would include the holding at the departure queue before entering the runway or any other point of the taxiway system, as well as delays in the pushback operation. This indicator is calculated as the difference between the actual taxi-out time and a reference taxi-out time estimated for each stand-runway combination.
Relation to APOC	In post-ops, the additional taxi-out times are valuable to evaluate performance of the taxi-out operation in terms of time, fuel burn, CO_2 emissions and noise. In real time, the analysis of inefficiencies in the additional taxi-out phase allows to have an idea of the departure queue and the congestion of the taxiway system.
References	https://ansperformance.eu/library/ATXOT_indicator_documentation_mar23.pdf https://ansperformance.eu/dashboard/stakeholder/airport/db/ (Taxi-Out Time tab for each airport).

Indicator	Additional taxi-in times
Flow	ARR
Unit	min/arr
Description	Additional taxi-in times are a proxy for the inefficiencies in the taxi-in phase from touchdown to in-block. That is, they provide an approximate measure of holding time during the taxi-in phase, due to taxiways, apron and stand congestion. This indicator is calculated as the difference between the actual taxi-in time and a reference taxi-in time estimated for each runway-stand combination.
Relation to APOC	In post-ops, the additional taxi-in times are valuable to evaluate performance of the taxi-in operation in terms of time, fuel burn, CO_2 emissions and noise. In real time, the analysis of inefficiencies in the additional taxi-out phase allows to observe the impact of the apron congestion and potential impact on arrival punctuality.
References	https://ansperformance.eu/library/ATXIT_indicator_documentation_mar23.pdf https://ansperformance.eu/dashboard/stakeholder/airport/db/ (Taxi-In Time tab for each airport).

Indicator	Arrival punctuality per grouping of delay
Flow	ARR
Unit	Number of arrivals per duration delay category/ % of flights per delay duration category
Description	Difference between the Actual In-Block Times (AIBT) and Scheduled In-Block Times (SIBT). This difference can be positive (delayed in-block) or negative (early in-block). Results should be aggregated in number (or share) of flights for different durations of the delay. Suggested groupings are: [>+60], [+31,+60], [+16,+30], [+5,+15], [-4,+4], [-5,-15], [-16,-30], [<-30]
Relation to APOC	OTP15 only gives a partial picture, it is either above or below 16 min delay, but not the magnitude of that delay. By measuring the actual difference, the APOC monitors how big is that deviation with respect to the schedule. It also allows to detect share of early arrivals, very late arrivals, etc. which can be very disturbing for the airport operation.
References	https://ansperformance.eu/dashboard/stakeholder/airport/db/ (punctuality tab for each airport).

Indicator	Actual versus scheduled turnaround times
Flow	Turnaround
Unit	min/flight
Description	Turnaround shows the time elapsed between an aircraft blocking in and blocking off for the next flight from the same parking stand on the same day. Scheduled turnaround times represent the planned duration during which an aircraft occupies a stand, as coordinated by both the airport and the aircraft operator. However, actual turnaround times often differ from the plan due to various factors. Monitoring these discrepancies is crucial to identifying inefficiencies in both scheduling and operational processes.
Relation to APOC	In real-time, tracking deviations from the plan enables the APOC to detect potential issues in the delivery of ground services. During post-operations, analysing the differences between actual and scheduled turnaround times helps uncover unrealistic planning assumptions in turnaround operations.
References	https://ansperformance.eu/definition/turnaround/ https://ansperformance.eu/dashboard/stakeholder/airport/db/ (Turnaround Times tab for each airport).

Indicator	DDI-G (Delay Difference Indicator – Group)
Flow	Turnaround
Unit	min/flight
Description	The Delay Difference Indicator - Group (DDI-G) is calculated as DDI−G=Actual Ground Time−Scheduled Ground Time. It provides an order of magnitude of the deviation between the scheduled turnaround time and the actual observed turnaround times. This indicator does not provide information over the average scheduled or actual turnaround times, only the difference.
Relation to APOC	In real-time, tracking deviations from the plan enables the APOC to detect potential issues in the delivery of ground services. During post-operations, analysing the differences between actual and scheduled turnaround times helps uncover unrealistic planning assumptions in turnaround operations.
References	https://ansperformance.eu/acronym/ddi-g/ https://ansperformance.eu/dashboard/stakeholder/airport/db/ (Turnaround Times tab for each airport).

Indicator	TDI (Turnaround Delay Indicator)
Flow	Turnaround
Unit	min/flight
Description	The Turnaround Delay Indicator (TDI) equals the DDI-G but neutralises early arrivals. The actual arrival time is set to the scheduled arrival in case of an early arrival. This allows to take out of the equation the extra time spent on the stand due to the arrival being early.
Relation to APOC	In real-time, tracking deviations from the plan enables the APOC to detect potential issues in the delivery of ground services. During post-operations, analysing the differences between actual and scheduled turnaround times helps uncover unrealistic planning assumptions in turnaround operations.
References	https://ansperformance.eu/acronym/tdi/ https://ansperformance.eu/dashboard/stakeholder/airport/db/ (Turnaround Times tab for each airport).

Indicator	GTO (Ground Time Overshoot)
Flow	Turnaround
Unit	%
Description	The Ground Time Overshoot (GTO) is the share of flights exceeding the scheduled ground time during a defined period. GTO=Ne/N×100[%] where Ne= Number of flights with an actual ground time exceeding the scheduled ground time (over period P) N= Number of flights (over period P.)
Relation to APOC	In real-time, tracking deviations from the plan enables the APOC to detect potential issues in the delivery of ground services. During post-operations, analysing the differences between actual and scheduled turnaround times helps uncover unrealistic planning assumptions in turnaround operations.
References	https://ansperformance.eu/acronym/gto/ https://ansperformance.eu/dashboard/stakeholder/airport/db/ (Turnaround Times tab for each airport).

3.2 Additional indicators not currently monitored by EUROCONTROL and the PRC.

Some of the following are not strictly performance indicators but rather metrics that can offer valuable insights into operational status and help identify issues or areas for improvement.

Indicator	Off-block Time Predictability (for A-CDM airports)
Flow	DEP
Unit	min/dep
Description	Target Off-block Time (TOBT) predictability is the average of the absolute difference between the Actual Ready Time (ARDT) (or Actual Start Up Request Time (ASRT) if ARDT not available) and the TOBT at Initial Off-Block Time (IOBT)-30 minutes for non-regulated flights.
Relation to APOC	This indicator estimates the quality of the Off-Block time prediction by measuring the adherence to it. It allows the APOC to evaluate the accuracy of the planning of stands based on timestamps in the Departure Planning Information (DPI) messages at CDM airports.
References	**Not currently analysed by EUROCONTROL.**

Indicator	ATFM Delay Impacting Departures
Flow	DEP
Unit	min/dep
Description	ATFM delay impacting departures, as the difference between Calculated Take Off Time (CTOT) and Estimated Off Block Time (EOTB) for all departures from the airport (for full details on the calculation check references)
Relation to APOC	This indicator allows to calculate the impact of network enroute or destination airport restrictions on the local departures. It allows the APOC to monitor both in real time and post-ops how the network restrictions are impacting the departure flow and potentially stand occupancy.
References	https://ansperformance.eu/library/NM_20_FB750_Delay_Calculation_improvements.pdf **Not currently analysed by EUROCONTROL.**

Indicator	ATFM Delay Impacting Arrivals
Flow	ARR
Unit	min/arr
Description	ATFM delay (due to enroute or airport related regulations) impacting arrivals to the airport, as the difference between Calculated Take Off Time (CTOT) and Estimated Off Block Time (EOTB) (as calculated on departure) for all arrivals at the airport (for full details on the calculation check references)
Relation to APOC	This indicator allows to calculate the impact of network enroute or destination airport restrictions on the local arrivals. It permits the APOC to monitor both in real time and post-ops how the network restrictions are impacting the arrival flow and arrival punctuality.
References	https://ansperformance.eu/library/NM_20_FB750_Delay_Calculation_improvements.pdf **Not currently analysed by EUROCONTROL.**

Indicator	Current, Peak and Average Apron Occupancy
Flow	-
Unit	%
Description	This metric monitors the share of occupied stands per category. **Current Apron Occupancy:** The ratio between the number of occupied parking positions at a given moment and number of total parking positions, per parking category. **Average Apron Occupancy**: Average over a period of time, (e.g. daily) of the current apron occupancy as calculated every 10 minutes. **Peak Apron Occupancy**: Maximum registered apron occupancy in the day. Any of these three versions of the metric can be shown either as percentage or as the number of occupied parking positions and number of total parking positions per parking category.
Relation to APOC	In real time, the Current Apron Occupancy allows to oversee the current situation regarding available parking positions The Daily Average Apron Occupancy and Peak Apron Occupancy allow for the monitoring of the daily apron utilisation and identification of parking needs for long term planning.
References	**Not currently analysed by EUROCONTROL.**

Indicator	Apron saturation
Flow	-
Unit	Minutes
Description	Total number of minutes in the day that all stands for a given category are occupied (that is, that Current Apron Occupancy is 100%) The metric can be provided as a breakdown per parking category. It can also be aggregated to obtain an *average daily apron saturation time* over a period of time.
Relation to APOC	A metric to monitor in post-ops, it allows to quantify the issue of lack of available parking for each category.
References	**Not currently analysed by EUROCONTROL.**

Indicator	Recovery from adverse conditions
Flow	-
Unit	Minutes
Description	This indicator should reflect how long it takes to go back to normal operations once the adverse condition has passed. It is to be developed based on measurable events and conditions.
Relation to APOC	The quality of the coordinated response to adverse conditions, thanks to the communication and the common operational overview facilitated through the APOC
References	**Not currently analysed by EUROCONTROL. Indicator to be developed**

3.3 Single process/stakeholder indicators (local level)

The metrics presented in the previous two sections reflect the combined performance of various processes and stakeholders (e.g. on time performance). These combined results can be broken down into the performance of the individual processes and sometimes stakeholders, which will support the **identification of remedial actions**.

Examples include:

- De-iced aircraft/ de-icing times
- Baggage delivery times
- Waiting times at security
- Waiting times at immigration
- Runway occupancy times
- Aircraft servicing (turnaround) times

Although EUROCONTROL lacks the necessary data to monitor most of these metrics and is more interested in the airport system wide results, many airports have integrated those additional indicators and measures in their APOC monitoring activities. Additionally, some airports are implementing advanced monitoring systems to collect detailed information, particularly on individual turnaround processes.

Monitoring these and other process-specific indicators is crucial to understanding the drivers behind the overall performance of the airport.

4 From Concept to Advantage: Added value of an APOC.

4.1 Reported benefits at local level.

The realisation of benefits at local level depends on the characteristics of the airport (and its operation) and the specific implementation of the APOC concept. This section summarises the main benefits (not quantified) as reported by stakeholders in the survey conducted by the PRC.

AREA	OBSERVED BENEFITS
Capacity and Resilience / Delay	Increased operational awareness among stakeholders, enabling better performance through collaboration.
	Clear understanding of airport status at flight, pier, and terminal levels.
	Better use of infrastructure and staff, reducing delays.
	Improved airport flow and processes.
	Efficient management of irregular operations with quick and collaborative decision-making.
	Faster recovery during adverse situations (e.g., weather incidents, pandemics, or disasters).
	Shift from reactive to proactive decision-making using real-time monitoring and adjustments.
	Enhanced coordination and resource allocation among stakeholders.
	Identification of major delay causes and plans to mitigate them.
	Increased predictability and punctuality.
	Better use of stands and gates, increasing capacity and reducing taxi times.
	Fewer queues at runways and less congestion on taxiways or aprons.
	Reduced downtime for critical equipment.
Flights Efficiency / Environment	Increased awareness of flight efficiency and environmental impacts.
	Reduced taxi times and waiting times, minimising noise and CO_2 emissions.
	Well-planned pushbacks to reduce taxi-out times and enhance resource planning.
	Shorter taxi-in times and less waiting for stands to clear.
	Improved runway occupancy times.
	Better use of Airport Operational Database (AODB) and local A-CDM for efficiency.
	Improved coordination of winter operations, de-icing processes, and push-and-hold procedures to optimise stand and gate availability.
Cost Efficiency	Lower costs from reduced delays and cancellations.
	Fewer resources needed through centralised roles and proactive coordination (e.g., one APOC serving multiple airports).
	Reduced fuel consumption due to shorter queues at the runway threshold.
	Optimised resource allocation based on expected performance.
	Lower costs from fewer cases of lost baggage.
	Cost savings through utility monitoring under Facility Management.
	Better use of existing capacity, reducing operating costs.
	Fewer separate control rooms, cutting operational and infrastructure expenses.
	Optimised infrastructure use, delaying the need for costly investments.

AREA	OBSERVED BENEFITS
Safety	Enhanced safety through a comprehensive view of operations and greater stakeholder awareness.
	Faster conflict resolution with shorter communication paths, enabling immediate actions to ensure safety.
	Improved monitoring of safety indicators.
	Promotion of a Just Culture with transparent safety reporting.
	Better risk and emergency management, minimising response times for involved parties.
	Increased ground and runway safety, especially during adverse conditions.
	More near-accident reports and fewer actual accidents.
Flexibility / Scalability	Increased ability to utilise resources in a more flexible way through an improved situational awareness.
	Better use of terminal capacity and areas without affecting performance.
	Gradual addition of specialised teams in the APOC for planning and development, with clear roles and system integration.
	All positions equipped to handle any APOC role effectively.
	Co-located key departments enhance collaboration and daily operations.
	Flexibility to take on new tasks within the APOC, reducing the need for additional hires in other departments.
	Stakeholder involvement in the APOC adapts to different situations.
Other	A single shared source of truth for all stakeholders.
	Everyone puts their energy into solving the problems identified in a cross-functional and coordinated way.
	Co-location of major partners proves highly effective during events.
	Improved handling of irregularities and crises.
	Reduced coordination and resolution times of all the ops issues raised.
	Every new operational process and function is meticulously designed in the planning process.
	Continuous improvement of APOC staff skills to communicate issues effectively to management. Improved managerial decision-making targeting the performance needs of the system as a whole.

4.2 Potential benefits of wider APOC implementation across Europe.

Airports indicated in their responses to the questionnaires that implementing APOCs across Europe could significantly improve network predictability and capacity by enabling real-time data sharing, especially with the Network Manager.

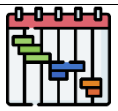
Enhanced coordination during adverse conditions and a shift toward a proactive approach were also highlighted as key benefits for optimising operations across the network. Additionally, implementing APOCs could help airports meet mandatory Airport Operations Plan (AOP) requirements, as outlined in Regulation (EU) 2021/116 [2], and improve passenger experience and service quality through more efficient resource and connection management.

Deploying an APOC is just an initial step towards optimising airport functionality within the broader network. New APOC team members need time to develop expertise and cross-functional understanding, allowing them to appreciate network-wide challenges. As their knowledge matures, staff can propose coordinated, data-driven solutions to address issues locally and more effectively. This gradual increase in understanding helps move away from decisions based on subjective judgment, enabling a more optimised system overall.

5 Challenges and lessons learned

Airports reported the following challenges during their APOC implementation and the derived lessons learned.

THE CHALLENGES	
 DATA	• Difficulty in obtaining relevant operational data. • Inadequate data quality. • The lack of comprehensive system-wide data prompted the creation of numerous tools, and new ones continue to be developed today.
 STAKEHOLDERS ENGAGEMENT	• Challenges in engaging stakeholders physically, particularly when justifying cost-benefit analysis and securing adequate staffing levels due to high labour costs. • Some actors lacked sufficient resources, sending focal points instead of decision-makers, which delayed decisions.
 HR and CHANGE MANAGEMENT	• The main implementation challenge was HR-related, where extensive change management efforts and mindset shifts are necessary to overcome resistance. • Reorganising staff and redesigning jobs to align with the roles and expectations of an APOC. • Merging and relocating teams, used to work in their individual spaces, requiring a significant mindset shift. • Resistance to change was prevalent, with some individuals struggling to adapt to shared spaces and new tools. • There might be a culture clash involved with establishing an APOC, that would be wise to address. Some of the relevant groups that are brought together in an APOC are not naturally "pair-able". For instance, the police and security may have existed as single groups, in solitude, for many years and are bound by elements that are secretive in nature and therefore may not be primed to share information.
 IT and SYSTEMS INTEGRATION	• Implementation of a new IT system required a new architecture, leading to a period of adaptation and stabilisation. • Connecting systems from different networks and communication systems was challenging for external parties. • Integration of multiple systems and software posed significant difficulties.
 STANDARD PROCEDURES	• Creating a mutually agreed Memorandum of Understanding (MoU) or a similar binding document took an extremely long time.

THE LESSONS LEARNED	
 **STAKEHOLDER ENGAGEMENT**	• APOC implementation required constant negotiation and fostering a culture of transparency based on shared operational data. Stakeholders are more eager to improve data quality when they see its benefits. • Coordination, communication, and transparency throughout the process are key. All stakeholders should be involved early in the project through: - Taskforces and workshops with staff from different teams on various topics. - Visits to the new location and presentation of new IT tools during construction. - One-to-one training for each staff member on new tools at launch and after.
 **HR and CHANGE MANAGEMENT**	• Guidance and assistance for people through change are vital; the human factor remains the most important. • The Human Resources Department must be part of the project from the beginning to: - Support staff reorganisation if needed. - Facilitate change management. - Involve teams in some project aspects to reduce fears and secure buy-in.
 **IT and SYSTEMS INTEGRATION**	• The IT aspect is critical and requires significant resources (both human and technical). • Secure enough time on IT needs analysis and data architecture. • The AODB must be ready for interfacing before implementation. • Internationally recognised minimum aviation performance standards (MASPs) for interoperability and integration are critical for technical solutions. • Setting up a lab environment (IT) to test all integration components is essential. • A shadow mode/trial period of a few weeks ensures familiarity with new systems and equipment.
 **STANDARD PROCEDURES**	• Integration of APOC in the ConOps or having a basic governance document helps ensure alignment. • Internationally recognised regulations outlining the minimum operational concept and stakeholder integration are beneficial for local regulation development.
 **WORKSPACE**	• When setting up a workspace for a large number of people using radios and telephones, prioritise creating a quiet environment for concentration.
 **PROJECT MANAGEMENT**	• The APOC development is a transverse project requiring coordination among multiple services. Having points of contact for key areas and a global coordinator is crucial.

6 Recommendations in support of further implementation

The airports offered several recommendations to speed up APOC implementation across Europe and support future implementations at other airports:

Knowledge sharing: They emphasised the importance of sharing knowledge and best practices (suggesting even an annual exchange), making existing guidance materials, lessons learned, and operational models from successful APOCs available to all.

Common standards: Although they cautioned against over-regulation, they advocated for a consistent standardised approach for procedures and services at APOCs, and improving data integration with the Network Manager (NM).

Guidance: Additionally, airports highlighted the need for more guidance materials to assist with project planning and operational cross-functionality training, which would help develop specialised staff capable of proactive problem-solving.

Funding: It was also noted that reducing the high costs of implementation—especially for the most expensive systems—could make APOCs more accessible, suggesting that funding support and interoperable systems would help overcome financial and technical barriers.

Change management: Encouraging change by building a supportive environment, promoting team-building among stakeholders, and clearly explaining the operational and financial impacts of network saturation to senior management were also recommended to build buy-in at all levels.

Close cooperation among both APOC and non-APOC airports can help future implementations. Experienced airports could share insights with those without an APOC to help them better understand the concept and benefits, potentially encouraging adoption.

Establishing a Memorandum of Understanding (MoU) to define clear APOC rules and responsibilities was also suggested, as was adapting organisational structures to support collaboration.

Airports noted that APOC implementation should focus on culture and information sharing rather than merely co-locating staff, with virtual setups being viable alternatives. They also recommended involving all operational areas early on to develop a unified dashboard.

For all full benefits to be realised, alignment across all European airports would be essential. This unified approach would strengthen network-wide resilience and efficiency, helping the industry meet its shared operational and environmental goals.

Finally, they suggested to have an integrated APOC at EUROCONTROL, which could include passenger data and anonymise sensitive commercial information, making it easier for airports to share insights and have a network view.

7 The PRC-ACI EUROPE APOC Exchange

In response to some of the recommendations and requests for more interaction between APOCs (existing and planned), the PRC, in collaboration with ACI EUROPE, organised the first APOC Exchange at EUROCONTROL premises on the 10th and 11th of March 2025.

The two-day event brought together 62 participants from 34 airports, providing a platform to exchange best practices and lessons learned through interactive round tables covering a variety of APOC-related topics.

The invite to the APOC Exchange targeted APOC managers from the airports included in this study, as well as duty managers and operations managers from airports currently implementing or planning to implement an APOC.

This was the first event to unite APOC and duty managers from airports all over Europe, fostering engaging discussions and receiving highly positive feedback.

Attendees benefited from insightful presentations by ACI and EUROCONTROL covering several key subjects, including this Airport Operations Centre Performance Study.

There were 7 round tables focused on different aspects of the APOC and its operation, in line as well with the sections of the APOC Factsheets in this study:

- Round table 1: APOC Procedures
- Round table 2: APOC Stakeholders
- Round table 3: APOC Systems
- Round table 4: AOP Preparation and AOP-NOP Data Exchange
- Round table 5: Performance Review
- Round table 6: Special Events
- Round table 7: Crisis Management

Participants appreciated the opportunity for knowledge exchange, networking, and discussions on the different topics. All of them expressed interest for future iterations of this meeting, highlighting the value of fostering a collaborative community among APOC professionals.

Concerning the support that EUROCONTROL and ACI EUROPE can provide in the future, participants suggested developing guidelines on minimum requirements and best practices for APOCs, particularly for airports in the early stages of planning or realization. Enhanced support for data exchange and operational information sharing between airports and EUROCONTROL was also emphasized. Many appreciated this study and the factsheets contained to facilitate comparisons and connections among APOCs. They encouraged continued stakeholder involvement and regular exchanges, including virtual meetings. Harmonization efforts and tools to promote efficient operations and strategy alignment were also highlighted as valuable contributions.

8 Conclusions

The APOC is a broad concept with **no standardised requirements**, adapting to diverse needs and leading to varied implementations across airports. This highlights the **need for sharing experiences** and insights on on processes, stakeholders, challenges, recommendations, and best practices.

Enhancing the integration of APOCs within the network, particularly through AOP and NMOC-APOC communication, could help mitigate cascading disruptions and strengthen network resilience.

No two airports are the same, so their APOCs will differ too. However, the collaboration and two-way communication between the airport and the network remain essential. While AOP-NOP integration provides the data layer, APOC-NMOC serves as the communication layer, which could eventually include direct APOC-to-APOC interaction.

Regardless of the implementation approach, **performance review** is key in the operation of the APOC, providing valuable support for planning, tactical decision-making, and post-operations assessments.

While individual APOCs and airports may develop their own performance indicators, it is **crucial to establish agreed-upon definitions and methodologies for a core set of indicators**. This ensures effective benchmarking and network-level evaluations.

Airports with APOCs consistently report significant benefits, including improved operational performance, enhanced passenger experience and cost savings. They also emphasise that APOCs are **continually evolving, with systems and data playing a central role**. However, the most significant challenge in APOC implementation is driving a **cultural shift**. Early involvement of all stakeholders, fostering transparency, and clearly defining roles and responsibilities are vital to the successful launch and operation of an APOC.

ANNEX I: Airport APOC Implementations and Factsheets

i. APOCs in the EUROCONTROL area

Since there are no standards nor requirements for APOC implementations, it is not always clear if the airport has one or not. Nevertheless, based on the findings of this study, we have established there are at least **26 airports in the EUROCONTROL area that have an APOC**.

Figure I-1 shows the evolution of the number of APOCs based on the year when these projects began developing at the airport.

Some of these airports have also been working in developing an iAOP (initial Airport Operations Plan) or eAOP (extended Airports Operations Plan) either to comply with the regulation (IR (EU) 2021/116) [2] or on their own initiative and interest.

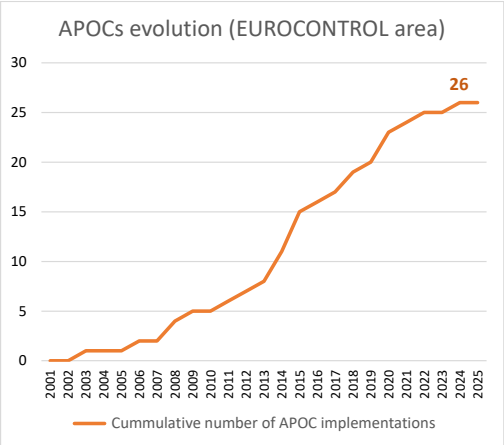


Figure I-1: APOCs evolution

Figure I-2 shows the map and implementation status of the airports in the EUROCONTROL area in terms of APOC, iAOP and eAOP.

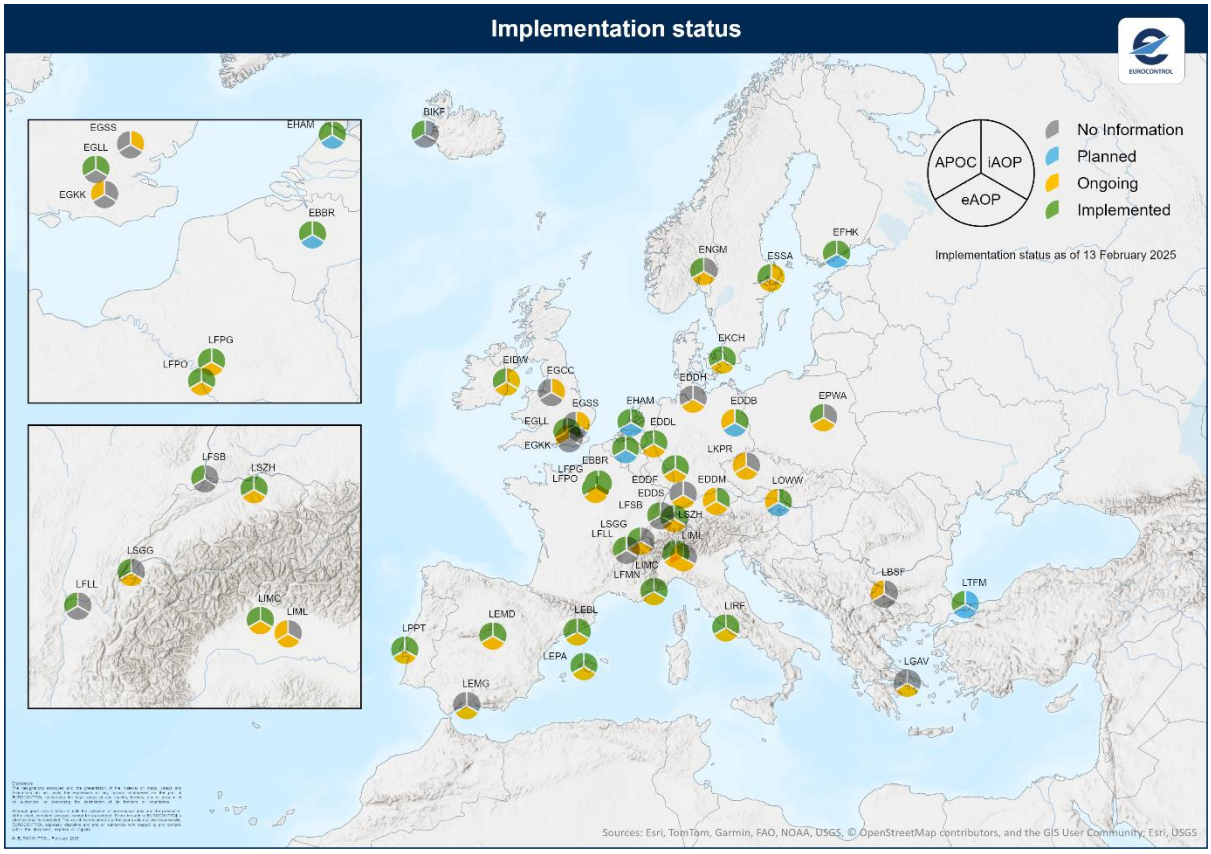


Figure I-2: APOC and AOP implementations in EUROCONTROL area

ii. Questionnaires: distribution and response

To collect the information needed for this study on individual APOC implementations across European airports, the PRC distributed a questionnaire focusing on the following key areas:

1. General description and implementation planning
2. Expected or actual benefits
3. Issues encountered and lessons learned
4. APOC implementation details: facilities, stakeholders, and working arrangements
5. Integration of AOP with NOP
6. Performance review
7. Future developments

The questionnaire was sent to 32 airports, and 26 provided responses. Some airports indicated that they are in the early stages of APOC implementation, making it too soon for them to complete the questionnaire in full.

iii. Airport APOC factsheets.

This section provides an overview of Airport Operations Centres (APOCs) across 26 airports within the EUROCONTROL area. It includes a **factsheet** for each airport, with the following structure:

- Side A (Front): This page presents generic airport data and an overview of the APOC implementation (at the time of publication of this document). It covers aspects such as key actors, agreements and performance review. The information is based on the responses to the questionnaire distributed by the PRC to selected airports. The goal is to provide a schematic summary rather than a detailed description of each APOC.
- Side B (Back): This side highlights performance indicators for the years 2019-2024. The indicators, selected based on standard PRC reporting, focus on areas where the APOC is likely to have the greatest impact on performance.

Many of the APOCs were implemented prior to 2019 (first year shown in the metrics on Side B), and their implementation has been gradual, often coinciding with other initiatives. As a result, this study cannot isolate the impact of the APOC on airport performance.

Additionally, please note that the axis scale has been adjusted for each airport to provide the most optimised view.

There is a "Factsheet Guide" to describe the content of these factsheets and clarify data sources.

Next page shows a summary of the main actors at the different APOCs, implementation dates, agreements and AOP. For more detail, please refer to the individual factsheets in the annex.

AIRPORT APOC		KEF BIKF	BRU EBBR	FRA EDDF	DUS EDDL	HEL EFHK	LHR EGLL	AMS EHAM	DUB EIDW	CPH EKCH	OSL ENGM	WAW EPWA	ARN ESSA	BCN LEBL	MAD LEMD	PMI LEPA	LYS LFLL	NCE LFMN	CDG LFPG	ORY LFPO	BSL LFSB	MXP LIMC	FCO LIRF	LIS LPPT	GVA LSGG	ZRH LSZH	IST LTFM
APOC implementation	Start implementation	2020	2014	2015		2013		2019	2021	2009	2020	2022	2015	2008		2011	2014		2018	2016	2017	2024	2018	2008	2015	2003	2015
	End implementation	2021	2015	2027	2012		2014	2022	2022		2021		2016	2009	2006	2014	2016	2020	2022	2019	2018	2025	2022	2012	2017	2003	2018
	Full realisation of benefits	~	2018	2027	2014	~	2015	2022	~	~	2023	2027		2015	2014			~	~	~	~		2022	2014		2008	2019
APOC stakeholders/actors/roles – Airside	Airport operator																										
	ANSP – ATC																										
	Slot coordinator																										
	De-icing																										
	Main AO/HA																										
	ANSP - FMP																										
	GH																										
	MET																										
	A-CDM																										
	Resource Management																										
APOC stakeholders/actors/roles – Landside	Baggage																										
	Apt security																										
	Fire brigade																										
	Airport access (train, metro, taxi…)																										
	Check in																										
	Police																										
	Immigration/border control																										
	Pax transfer																										
	PRM processes																										
	Dispatcher Airport Guides																										
	Airport Control – Incident monitoring																										
	Engineering – Water and power																										
	Information desk																										
	PAX services / Customer experience																										
	Catering																										
	Cleaning / Crew Bus																										
	Terminal management																										
	Passenger Bus transport																										
	ICT Helpdesk																										
	Trouble shooting service (Infrastructure)																										
Agree-ments	MoC/MoU or similar	✘	✓	✓	✓		✓	✘	✓CDM	✘	✘	✓	✘	✓CDM	✓CDM	✓CDM	✓	✘	✓CDM	✓	~	✘	✘	~	✓	✓	✓
AOP	AOP developed through the APOC?	✘	✓	✓	✓	✓	✓	✓	✓	✓	✓	✘	✓	~	~	~	~	✓	✓	✓	✘	✓	✓	✓	~	✓	~

Present physically at the APOC Present virtually at the APOC Planned physically at the APOC Planned virtually at the APOC ~ Ongoing

FACTSHEET GUIDE

Airport Name

Traffic (ATMs) 2024: ATM movements (rounded to thousands) in 2024 (source: NM) and ranking in ECTL area

Traffic (PAX) 2024: Passengers (rounded to millions) in 2024 (source: ACI) and ranking in Europe region

A-CDM: Yes/No

Airport layout (source: OpenStreetMaps) with runways and passenger terminals (in blue)

Airport Operator: **ANSP:** **Main Aircraft Operator:** Share of traffic of the main operator in 2024

Stakeholders at APOC

Physical

Stakeholders present and/or represented at the APOC (Source: APOC questionnaire)

Virtual

Stakeholders virtually present and/or represented at the APOC (Source: APOC questionnaire)

APOC location and operational phases (Source: APOC questionnaire)

Working arrangements

Agreements

Memorandum of cooperation, agreements, established processes, working arrangements... (Source: APOC questionnaire)

APOC team(s)

APOC teams in charge of specific duties (Source: APOC questionnaire)

AOP and integration with NOP

Does the airport have an Airport Operations Plan? Is it integrated with the NOP and is there information exchange with the NMOC? (Source: APOC questionnaire; NM)

Others

Performance monitoring

Performance Monitoring

Performance monitoring activities and tools in the APOC (Source: APOC questionnaire)

KPIs

Key Performance Indicators monitored at the APOC (Source: APOC questionnaire)

KPIs with associated targets

Key Performance Indicators monitored at the APOC with associated targets (Source: APOC questionnaire)

Data sources/missing data

What data is still missing that could help the APOC planning or monitoring? (Source: APOC questionnaire)

FACTSHEET GUIDE

Airport Name

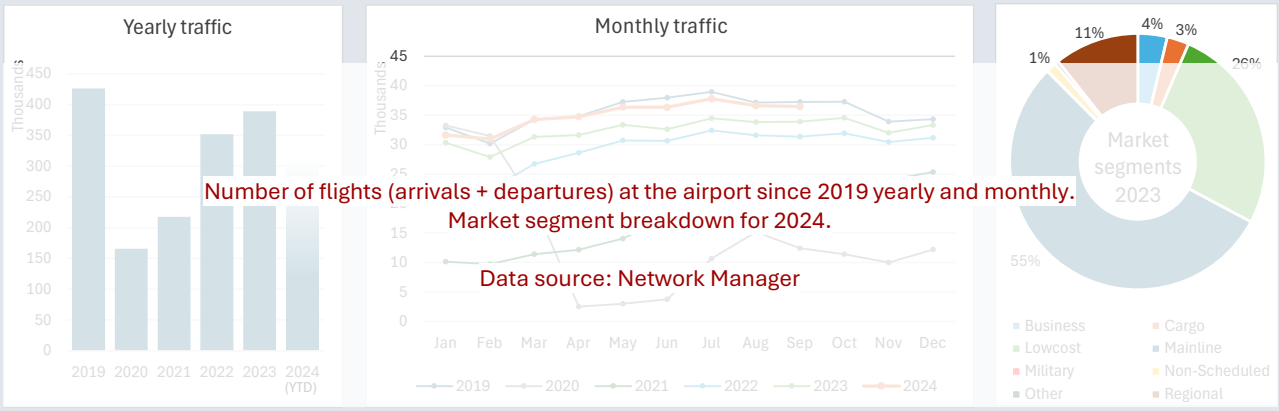
Traffic (ATMs) 2024:

Traffic (PAX) 2024:

A-CDM: Yes/No

Airport layout with runways and passenger terminals (in blue) (source: OpenStreetMaps)

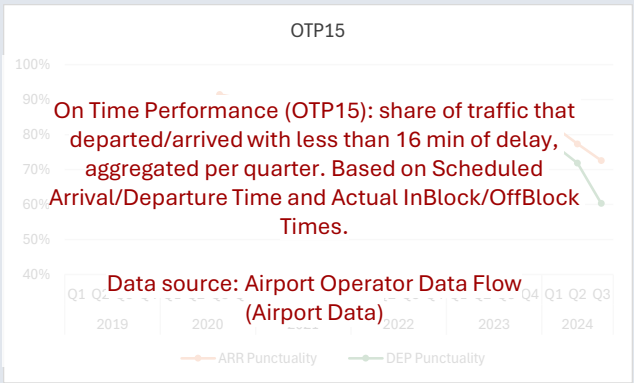
Traffic



Number of flights (arrivals + departures) at the airport since 2019 yearly and monthly.
Market segment breakdown for 2024.

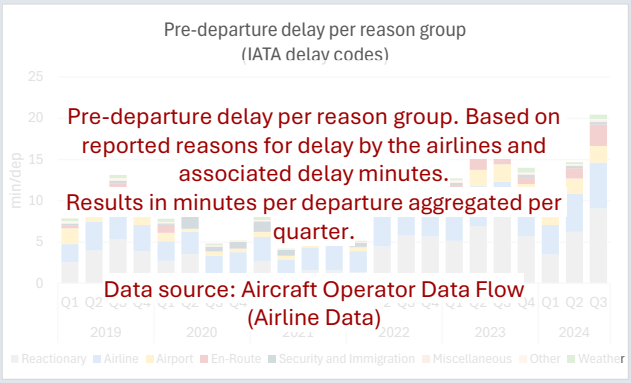
Data source: Network Manager

Punctuality



On Time Performance (OTP15): share of traffic that departed/arrived with less than 16 min of delay, aggregated per quarter. Based on Scheduled Arrival/Departure Time and Actual InBlock/OffBlock Times.

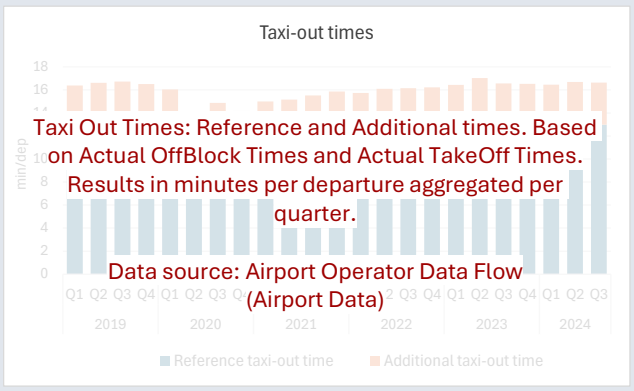
Data source: Airport Operator Data Flow (Airport Data)



Pre-departure delay per reason group. Based on reported reasons for delay by the airlines and associated delay minutes.
Results in minutes per departure aggregated per quarter.

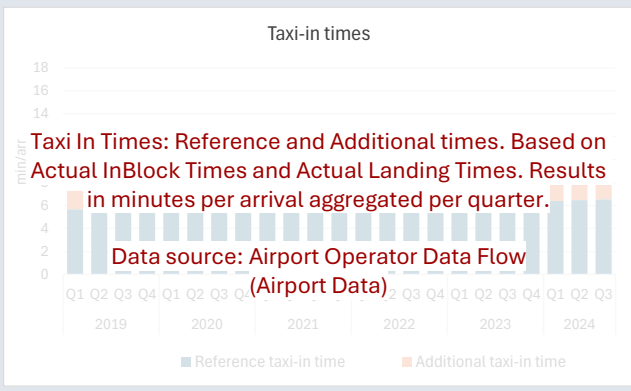
Data source: Aircraft Operator Data Flow (Airline Data)

Taxi times



Taxi Out Times: Reference and Additional times. Based on Actual OffBlock Times and Actual TakeOff Times.
Results in minutes per departure aggregated per quarter.

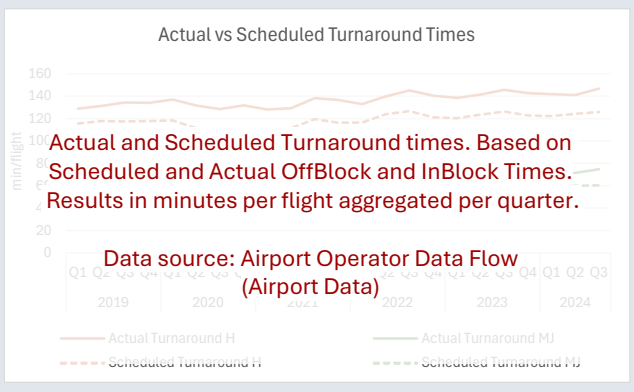
Data source: Airport Operator Data Flow (Airport Data)



Taxi In Times: Reference and Additional times. Based on Actual InBlock Times and Actual Landing Times. Results in minutes per arrival aggregated per quarter.

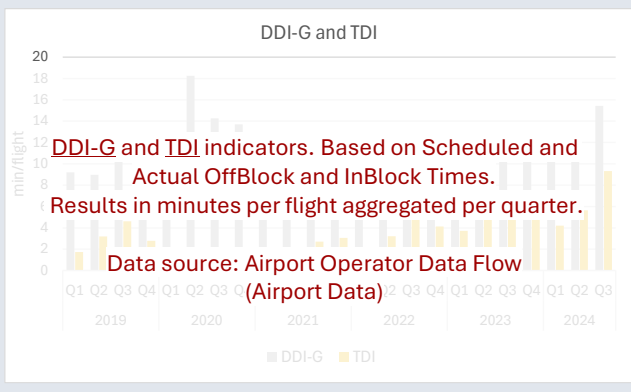
Data source: Airport Operator Data Flow (Airport Data)

Turnaround times



Actual and Scheduled Turnaround times. Based on Scheduled and Actual OffBlock and InBlock Times.
Results in minutes per flight aggregated per quarter.

Data source: Airport Operator Data Flow (Airport Data)



DDI-G and TDI indicators. Based on Scheduled and Actual OffBlock and InBlock Times.
Results in minutes per flight aggregated per quarter.

Data source: Airport Operator Data Flow (Airport Data)

Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

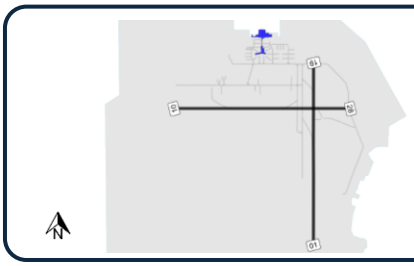
APOC KEF/BIKF

Keflavík Airport

Traffic (ATMs) 2024: 65K

Traffic (PAX) 2024: 8.3M (#75)

A-CDM: No



Airport Operator: Isavia KEF

ANSP: Isavia ANS

Main Aircraft Operator: Icelandair (49%)

Stakeholders at APOC

Physical

- Keflavík Airport
- Main AOs* (Planned)
- Ground handlers* (Planned)
- De-icing (Planned)
- Check-in
- Pax transfer/ Pax flow
- Baggage
- PRM
- Security Surveillance
- Apron control (Planned)
- Operational Planning *
- Technical/ ICT assistance* (Planned)

(*) Also virtual

Virtual

- KEF Tower (Planned)
- RFFS (Planned)

The APOC facility is situated in the terminal building on the western side.
The APOC looks at planning, pre-tactical, tactical and post-ops phases:

- Planning: Demand/capacity plan, daily briefings (2xday)
- Tactical: Monitoring and reaction
- Post-ops: Performance review

Working arrangements

Agreements

There is no Memorandum of Cooperation, but it is planned before 2026.
The A-CDM project started in Q4 2024 with the aim of implementing CDM in Q4 2025 or Q1 2026.
It plans to involve the airport operator, ATC, home carriers and ground handlers.

APOC team(s)

APOC operations specialists are responsible for DCB planning.
APOC operators are responsible for day-to-day ops planning, emergency/crisis coordination/management, facility management, allocation of resources (e.g. stand/gate, bussing), construction/maintenance coordination, passenger/AC flow.
Passenger service operator responsible for PRM and passenger service coordination.
Security surveillance responsible for security monitoring and coordination of airside/landside security.

AOP and integration with NOP

AOP? ⬭

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI ⬭ DPI ⬭ G-API ⬭

AOP project expected to commence in 2026/2027 with expected implementation in 2027/2028.

Others

Performance monitoring

Performance Monitoring

There is a performance review dashboard used by APOC and external stakeholders.
There is no specific team in charge of performance monitoring, but APOC operators are responsible for monitoring and reacting within the day.

Performance is reviewed post-ops but real time monitoring is expected in 2025-2026.

KPIs

- Expected movements
- OTP
- Border & security forecast
- Arrival baggage service

KPIs with associated targets

- Border & security forecast and performance
- First-bag last-bag metrics.

Data sources/missing data

Lack of data sharing between stakeholders has hindered effective collaboration. While a significant amount of data is available, critical data points and connections are missing, limiting the ability to form a comprehensive view of airport operations. Efforts are underway to identify and establish these connections, which will offer a more holistic and integrated perspective on airport performance.

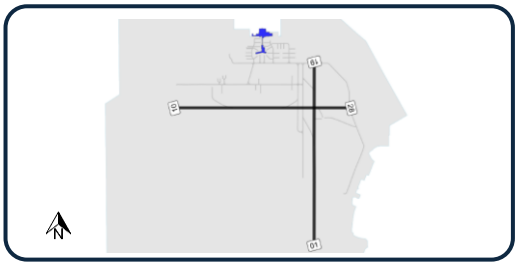
APOC KEF/BIKF

Keflavík Airport

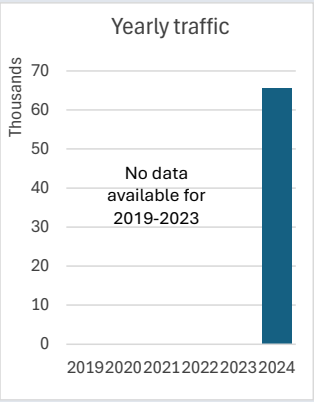
Traffic (ATMs) 2024: 65K (#77)

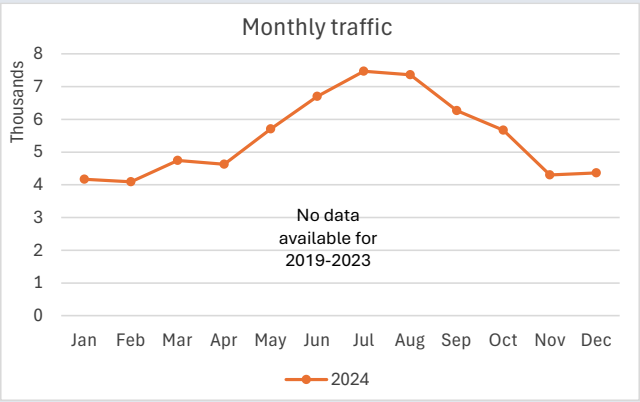
Traffic (PAX) 2024: 8.3M (#75)

A-CDM: No



Traffic





Data Not Available

Punctuality

Data Not Available

Taxi times

Data Not Available

Turnaround times

Data Not Available

Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

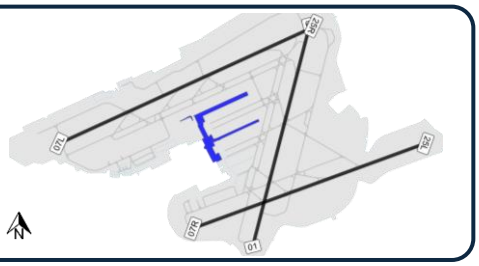
APOC BRU/EBBR

Brussels Airport

Traffic (ATMs) 2024: 194K (#25)

Traffic (PAX) 2024: 23.6M (#27)

A-CDM: Yes



Airport Operator: Brussels Airport

ANSP: SKEYES

Main Aircraft Operator: Brussels Airlines (32%)

Stakeholders at APOC

Physical

- Brussels Airport
- Brussels airlines
- Ground handlers
- De-icing
- RFFS
- Check-in
- Pax transfer
- PRM
- Baggage
- Airport Control
- Infrastructure & Facilities Helpdesk
- Customer Helpdesk
- Terminal Cleaning
- Customer experience
- Airport Guides

Virtual

- Security

The APOC facility is situated in the terminal building.
Key operational partners for the airport operations at Brussels have representation of at least 1 function physically in the APOC. A close coordination with partners which are not physically present through Teams, phone,...
The APOC looks at planning, pre-tactical, tactical and post-ops phases, but main focus is on pre-tactical and tactical phases.

Working arrangements

Agreements

There is a Memorandum of Cooperation signed by the main Aircraft Operator, the Ground Handlers and the Airport Operator.
There are established processes for the Collaboratively Decision Making, involving the ANSP, the Airport Operator (Stand & Gate Allocation, Data Control Team), Brussels Airlines, TUI, DHL and Ground Handlers.

APOC team(s)

The APOC Manager coordinates DCB issues with the relevant stakeholders (Airside DCB: with ANSP and aerodrome ops teams; Terminal DCB: with relevant process owners (Check-in, Screening, Immigration).

The APOC Manager monitors performance real-time and coordinates with relevant stakeholders when performance is below target.

AOP and integration with NOP

AOP? 

P-DPI  DPI  G-API 

The first AOP is established M-9 when making a capacity assessment and declaration for slot coordination. A capacity assessment for Terminal processes (Pax & Bag) and Airside processes (Stand, Gate, Taxiway, Runway capacity) is made and shared.

Others

Coordination with NMOC is focused on D0.
A daily report is produced at the end of each D0 and discussed with all process owners on D+1 to enable immediate continuous improvement.
A short feedback loop to the AOP development team exists and is used frequently.

Performance monitoring

Performance Monitoring

There is a real-time performance application for the AOP to which all operational stakeholders (internal & external) have access through a web app.
Performance is monitored during the day of operations and in post-ops.

KPIs

- Flight CDM milestones
- Delay
- Delay reasons
- Runway DCB,
- Waiting Times at pax and baggage processes

Also shown in the Performance Application:
Meteo
Briefing
Event calendar

KPIs with associated targets

Waiting Times at:
- Screening
- Border Control
- Airside Bussing
- Pick-up Taxi

Data sources/missing data

We have made a great start developing our AOP, supported by iAOP funding, through which many operational performance KPI's are already being reported. We have planned to expand this in the coming years (supported by eAOP), to cover availability of airside assets, end-to-end passenger and baggage journey, airport accessibility and others, to enable Total Airport Management.

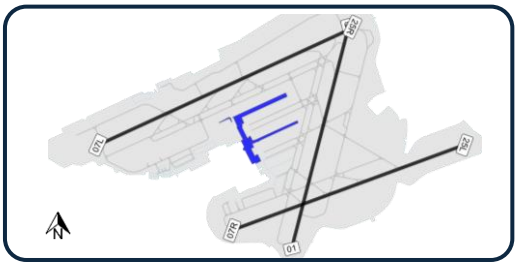
APOC BRU/EBBR

Brussels Airport

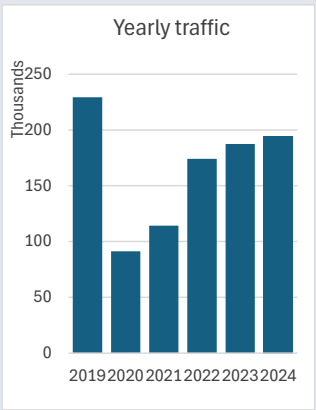
Traffic (ATMs) 2024: 194K (#25)

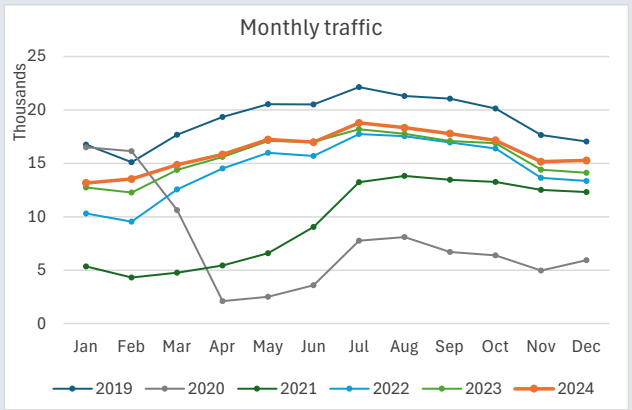
Traffic (PAX) 2024: 23.6M (#27)

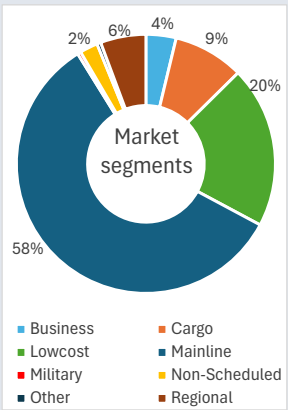
A-CDM: Yes



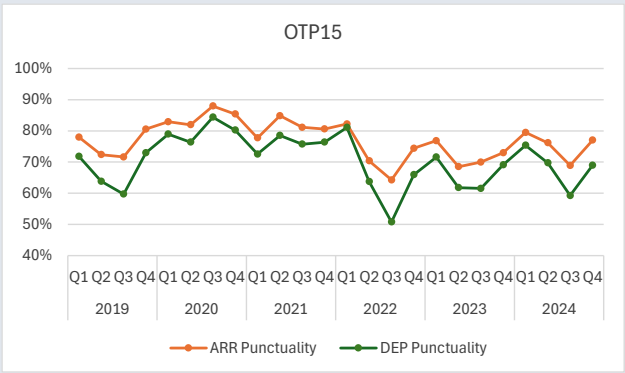
Traffic

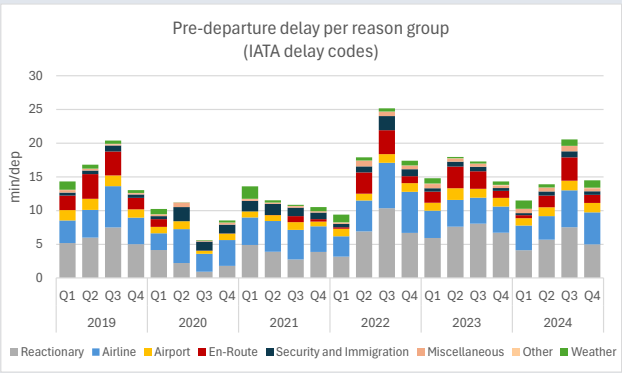




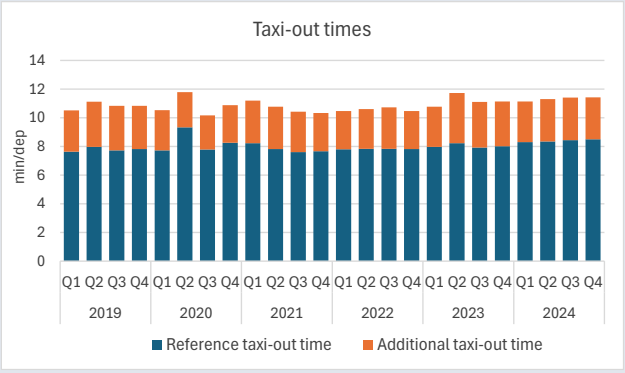


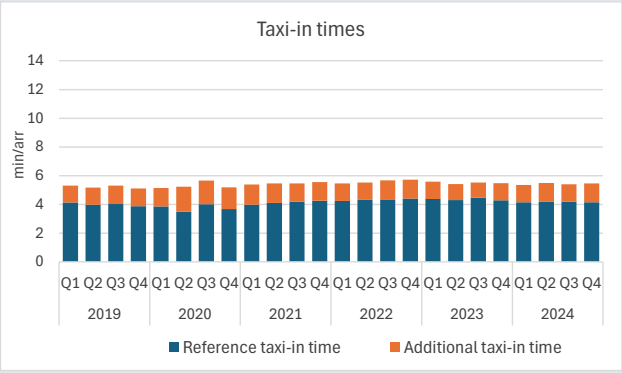
Punctuality



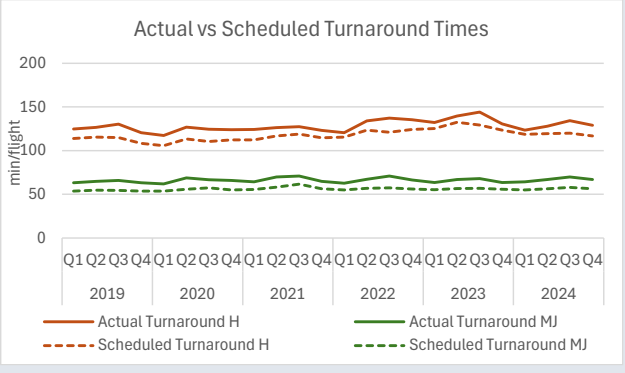


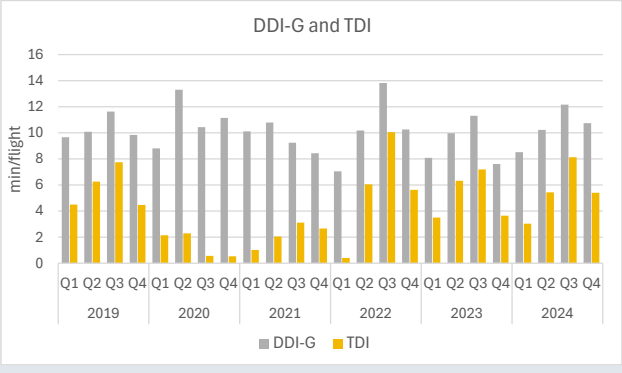
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

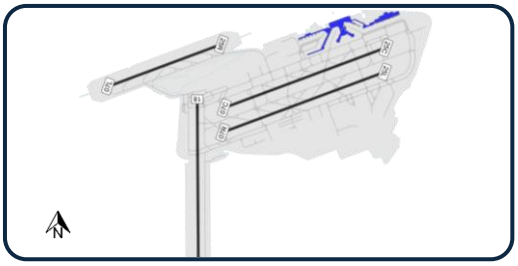
APOC FRA/EDDF

Frankfurt Airport

Traffic (ATMs) 2024: 441K (#5)

Traffic (PAX) 2024: 61.6M (#6)

A-CDM: Yes



Airport Operator: FRAPORT

ANSP: DFS

Main Aircraft Operator: Lufthansa (56%)

Stakeholders at APOC

Physical

Fraport

Virtual

Main AO's

DFS (planned)

Ground handlers

De-icing

MET service

Security

Pax transfer

Baggage (covered by GH)

Border control

Police

The APOC facility is situated in the terminal building, landside.

The APOC looks at pre-tactical and tactical phases. Post-ops analysis might be done outside of the APOC.

Working arrangements

Agreements

There is a Memorandum of Cooperation amongst local partners, signed by the airport operator (Fraport), the ANSP (DFS) and the main aircraft operator Lufthansa.

There are established processes for the Collaboratively Decision Making.

APOC team(s)

Tasks divided into "roles" instead of "teams":

- AOP-NOP manager role
- Turnaround-management role
- Moderator role
- Communicator role

- DCB role is foreseen, which might be combined with the performance monitoring during the day of operations.

AOP and integration with NOP

AOP?

P-DPI DPI G-API

The AOP-NOP manager role foreseen, covering all ATFCM phases and coordinating with NM.

The post-ops review to evaluate the quality of the AOP is not yet defined.

Others

Performance monitoring

Performance Monitoring

There are performance review dashboards and a subset of them are available to all operational staff.

Performance is monitored only during the day of operations.

KPIs

KPIs with associated targets

- Punctuality

Data sources/missing data

All data available except turnaround subprocesses data timestamps.

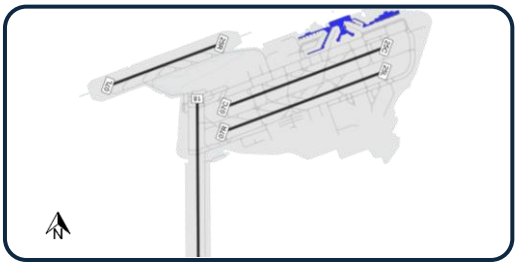
APOC FRA/EDDF

Frankfurt Airport

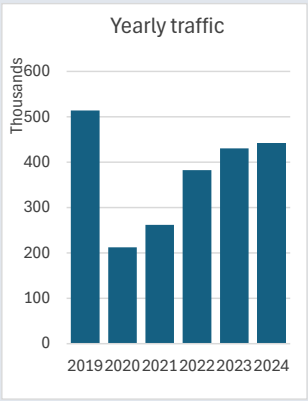
Traffic (ATMs) 2024: 441K (#5)

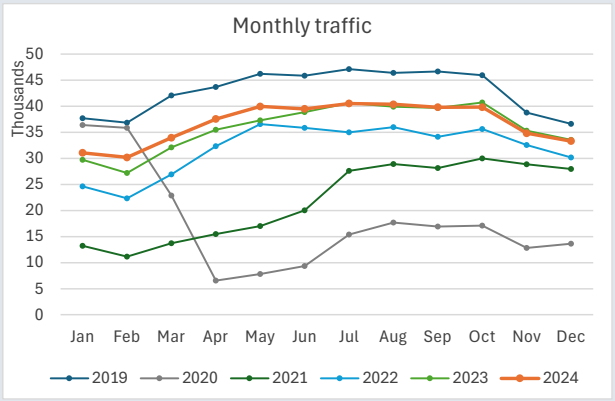
Traffic (PAX) 2024: 61.6M (#6)

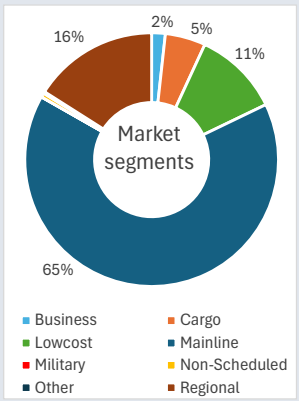
A-CDM: Yes



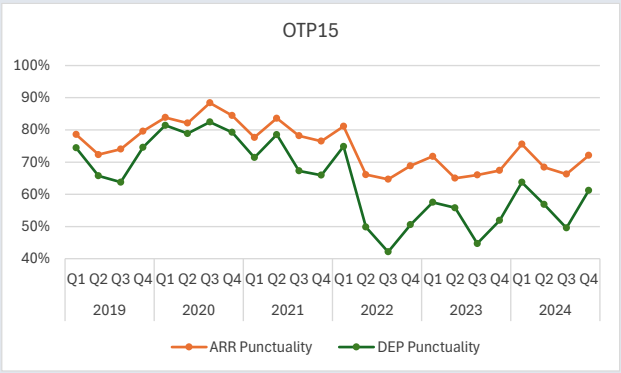
Traffic

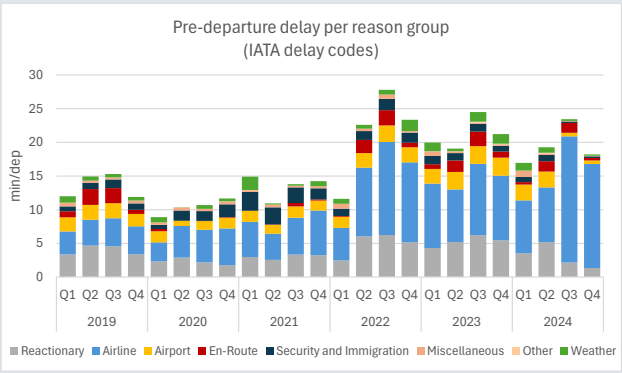




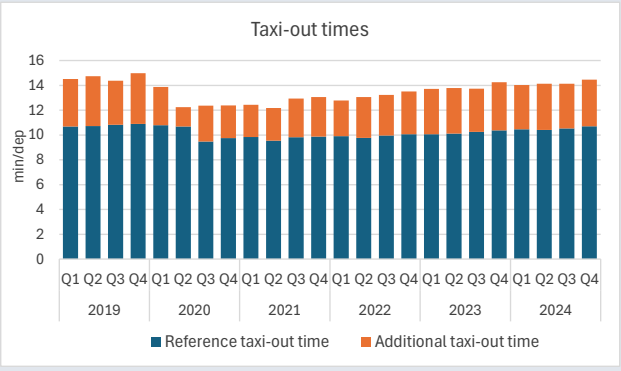


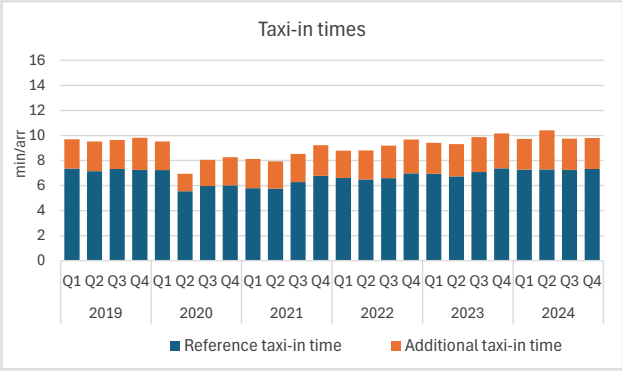
Punctuality



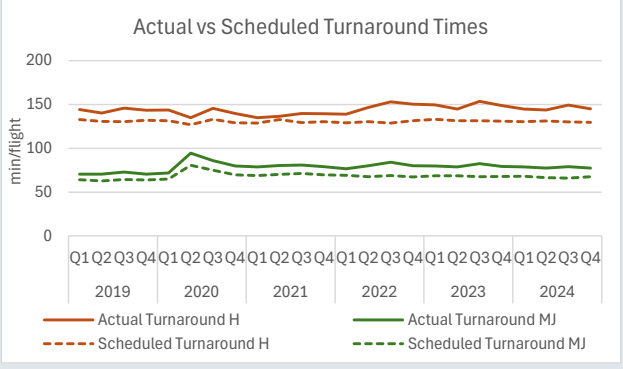


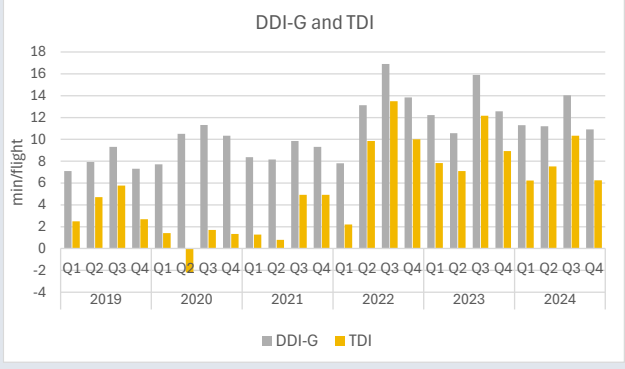
Taxi times





Turnaround times





Sources

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Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

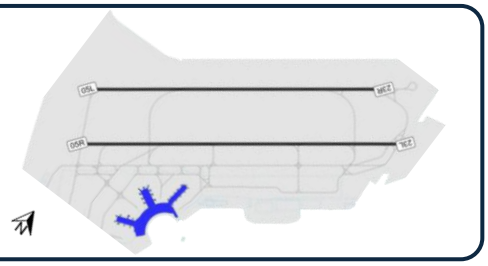
APOC DUS/EDDL

Düsseldorf Airport

Traffic (ATMs) 2024: 155K (#31)

Traffic (PAX) 2024: 20M (#30)

A-CDM: Yes



Airport Operator: Flughafen Düsseldorf

ANSP: DFS

Main Aircraft Operator: Eurowings (35%)

Stakeholders at APOC

Physical

- Düsseldorf Airport
- Main AO's
- Ground handlers
- De-icing
- Border control
- Security
- Check-in

Virtual

- DFS
- MET service
- RFFS
- FMP DFS
- Baggage
- PRM

The APOC facility is situated in the terminal building.

The operational unit of the APOC looks at pre-tactical (D-1) and tactical phases. Back Office looks at planning, pre-tactical and post-ops phases

Working arrangements

Agreements

There is a Memorandum of Cooperation signed by the local stakeholders and partners.
There are established processes for the Collaboratively Decision Making, following A-CDM manual and process definition, involving airport operator, ANSP, GH, and airlines/handling agents.

APOC team(s)

- The APOC Duty Manager is in charge of the performance monitoring during the day of operations.
- A team including representatives from the airport operator and airlines (AOC) is in charge of DCB.
- Other teams:
  - Delay clearing
  - A-CDM manager

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI DPI G-API

Post-ops D+1 review is used to evaluate the quality of the AOP, analyzing the root cause of deviations and the impact on operations.

Others

Coordination with the NMOC is done through the Airport Corner and direct communication on D-0.

Performance monitoring

Performance Monitoring

There are performance review dashboards used by the actors at the APOC.

The performance is reviewed in D+1.

KPIs

- Delays
- Waiting times
- Passenger throughput
- Runway Occupancy Times

KPIs with associated targets

- A-CDM KPIs

Data sources/missing data

All required data is available.

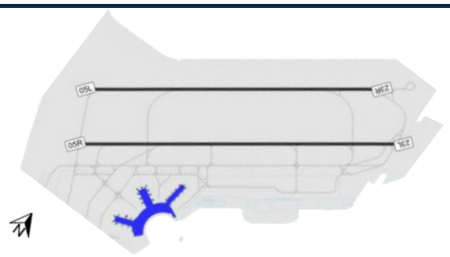
APOC DUS/EDDL

Düsseldorf Airport

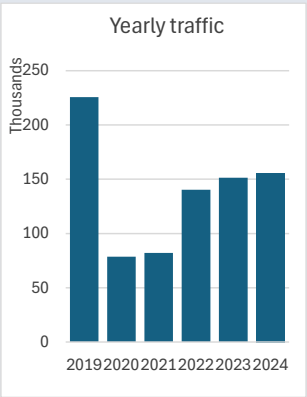
Traffic (ATMs) 2024: 155K (#31)

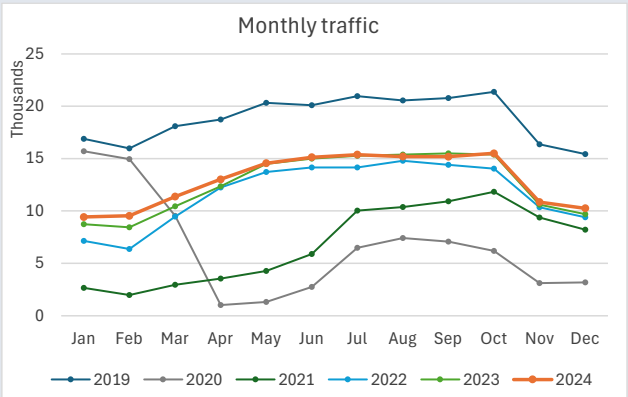
Traffic (PAX) 2024: 20M (#30)

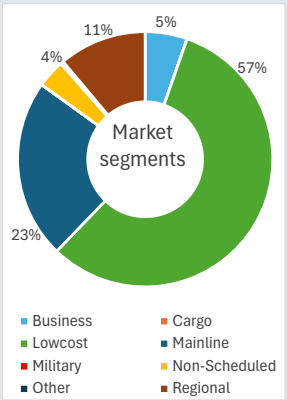
A-CDM: Yes



Traffic







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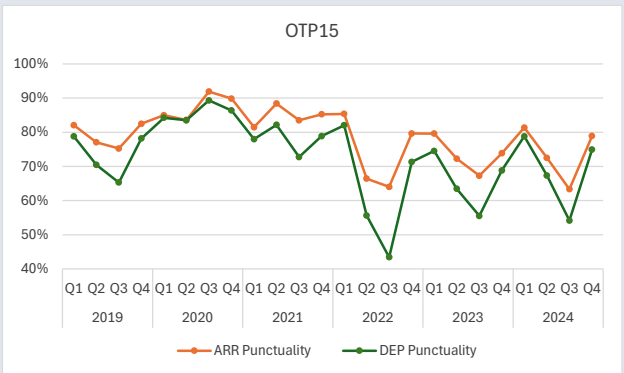
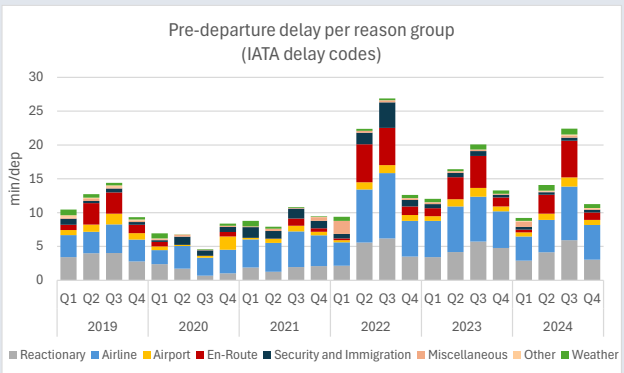
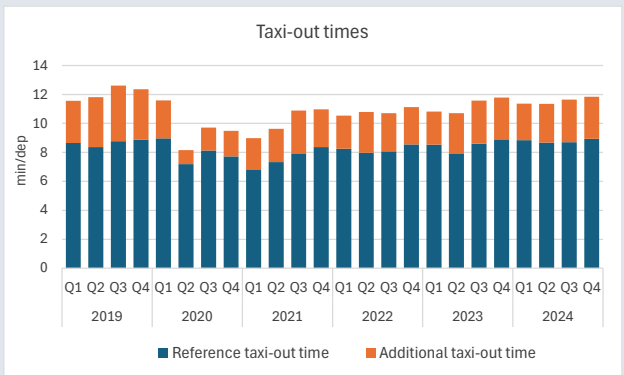
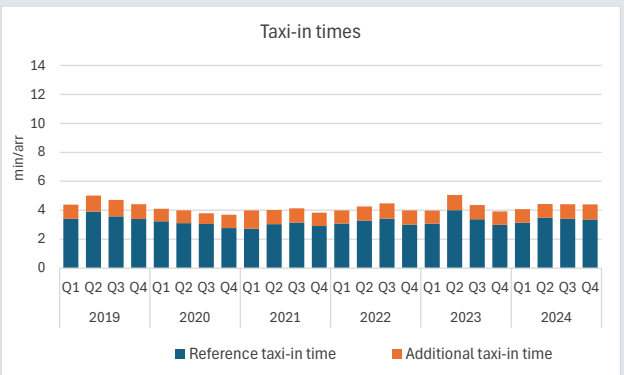


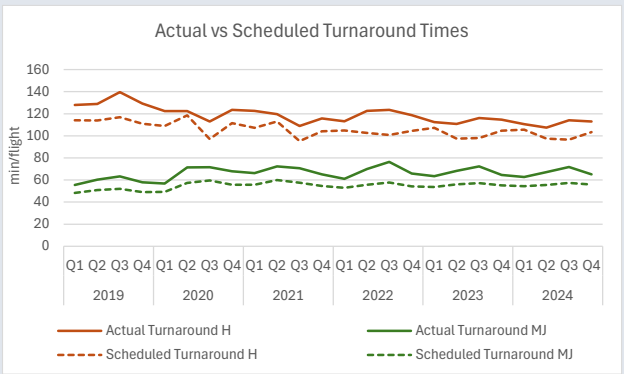


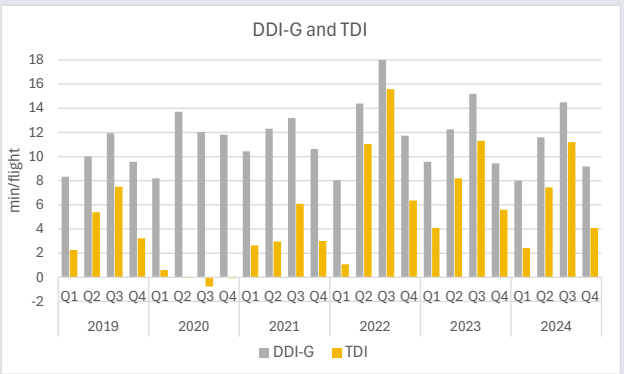
Taxi times





Turnaround times





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APOC HEL/EFHK

Helsinki Airport

Traffic (ATMs) 2024: 153K (#32)

Traffic (PAX) 2024: 16.1M (#37)

A-CDM: Yes

Airport Operator: Finavia

ANSP: Fintraffic

Main Aircraft Operator: Finnair (72%)

Stakeholders at APOC

Physical

- Helsinki Airport*

(*) Also virtual

Virtual

- Fintraffic
- Main AO's
- Ground handlers
- Slot coord.
- De-icing
- FMP Fintraffic
- MET service
- Baggage
- Airport access
- RFFS
- Pax transfer
- Security
- Check-in
- Border control
- Police
- PRM

The APOC facility is situated in the terminal building.

The APOC looks at pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

For the collaborative decision making, there are some established processes.

APOC team(s)

The APOC, Airport Duty Manager and the process responsible units are in charge of performance monitoring during the day of operations

Team in charge of DCB is formed by representatives from Slot-coordination, Apron Management, Terminal Operations and ATC.

AOP and integration with NOP

AOP? ON

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI OFF DPI ON G-API OFF

AOP is continuously updated.

The APOC, responsible units, airlines, GH, Air Traffic Control and MET are involved in the different stages of the AOP.

Others

Coordination with the NMOC is still done through the Airport Corner.

Performance monitoring

Performance Monitoring

There is a performance review dashboard that is used by all airport stakeholders.

Performance is monitored during the day of operations an in post-ops.

KPIs

- Passenger
- Baggage
- Airside ops processes

KPIs with associated targets

- Performance of forecasts
- Delays
- Number of night flights
- Waiting time at the security control
- Number of passengers transported by bus, etc.

Data sources/missing data

Detailed longer-term forecasts are missing.

APOC HEL/EFHK

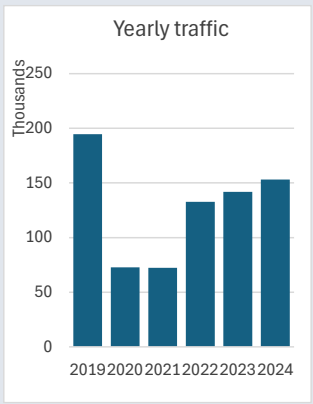
Helsinki Airport

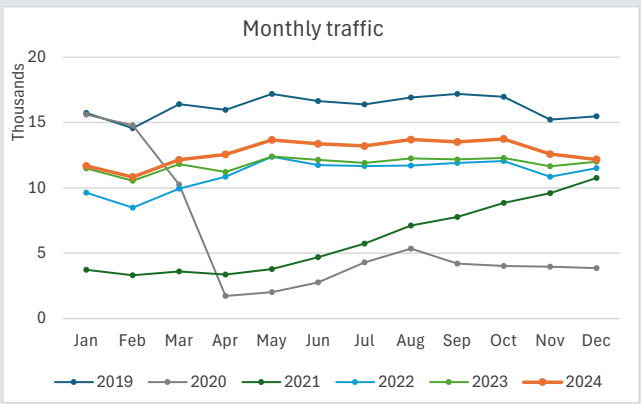
Traffic (ATMs) 2024: 153K (#32)

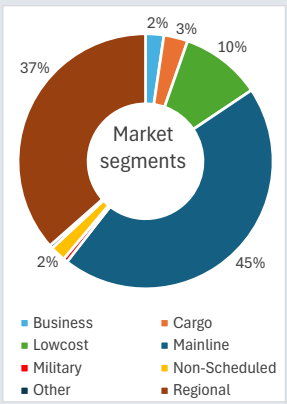
Traffic (PAX) 2024: 16.1M (#37)

A-CDM: Yes

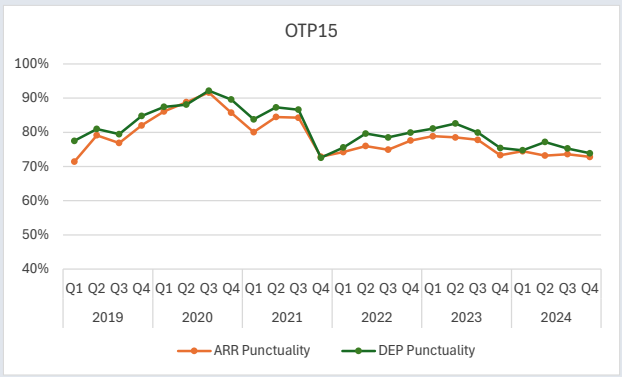
Traffic

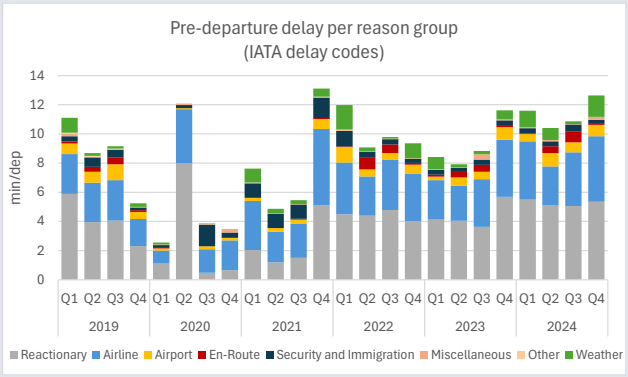






Punctuality





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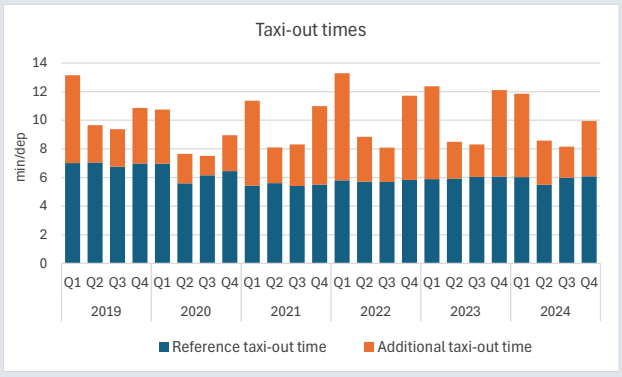
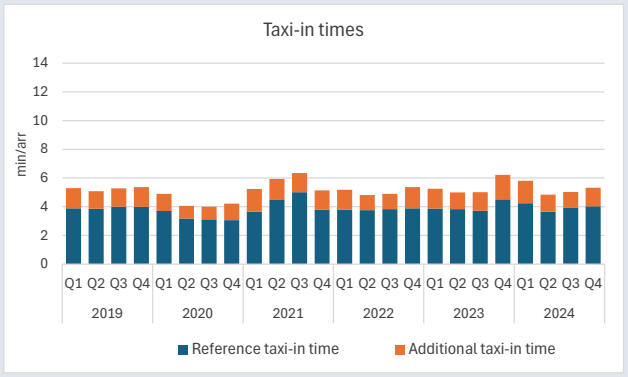
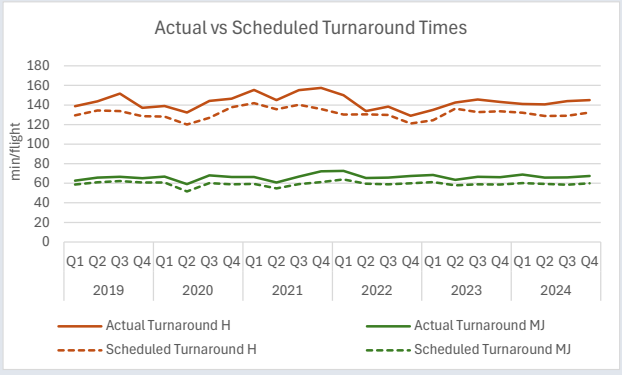
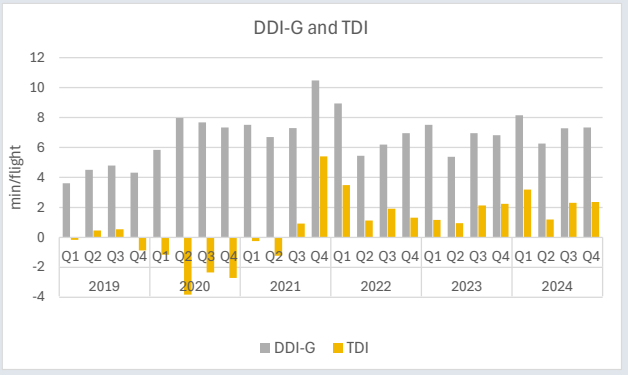




Turnaround times





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Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

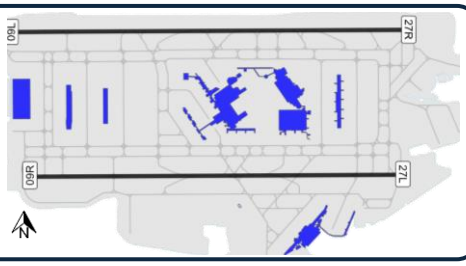
APOC LHR/EGLL

London Heathrow Airport

Traffic (ATMs) 2024: 476K (#3)

Traffic (PAX) 2024: 83.9M (#1)

A-CDM: Yes



Airport Operator: Heathrow Airport Ltd

ANSP: NATS

Main Aircraft Operator: British Airways (50%)

Stakeholders at APOC

Physical

- HAL
- NATS
- MET service
- Airport Control
- Border control
- Security
- Baggage
- Check-in
- Pax transfer
- PRM
- Engineering Water and Power
- Airport access

Virtual

- Slot coord.
- FMP NATS
- Main AO's
- De-icing
- Police
- RFFS

The APOC is located in the Compass Centre – Heathrow's main office base landside at the airport.

The APOC looks at pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

There is an APOC Charter for those based within the APOC facility signed by all senior managers representing the teams within APOC.
Decision making is led by the Airport Operations Manager utilising the Heathrow Decision Model.

APOC team(s)

- NATS together with the Aircraft Ops Team are in charge of the Demand Capacity Balancing.
- All colleagues within APOC are tasked with overseeing parts of the operation monitoring key performance metrics with the Airport Operations manager overseeing the overall operation.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 D-0 D+1

P-DPI DPI G-API

There are plans which are worked on 6-12 months out from D-0. This is dependent upon area.
Operational Planning, Operations Delivery, Services and Security teams are involved in different stages of the AOP.

Others

There is a planning team which sits within the APOC and takes learning from the D-0 and the D+1 review and builds that into the subsequent D-1 plans.

Performance monitoring

Performance Monitoring

For the performance monitoring there are several individual area dashboards available but not one single point of information.

KPIs

KPIs with associated targets

Data sources/missing data

APOC LHR/EGLL

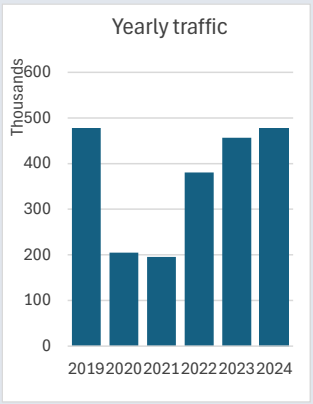
London Heathrow Airport

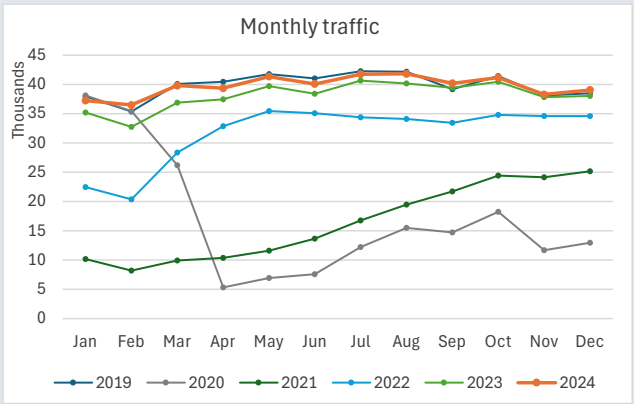
Traffic (ATMs) 2024: 476K (#3)

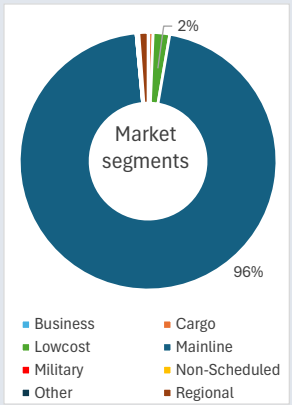
Traffic (PAX) 2024: 83.9M (#1)

A-CDM: Yes

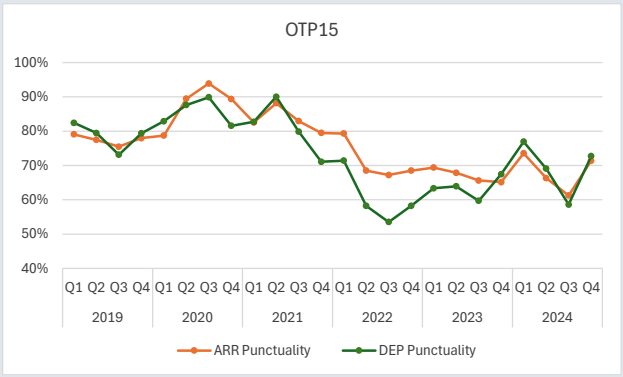
Traffic

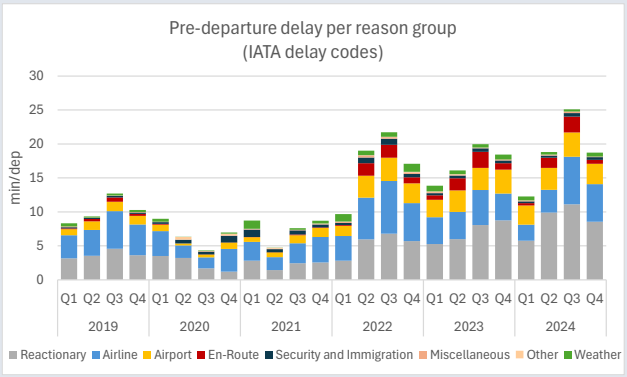




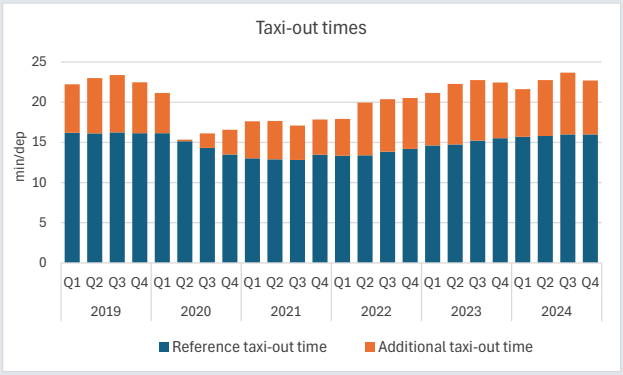


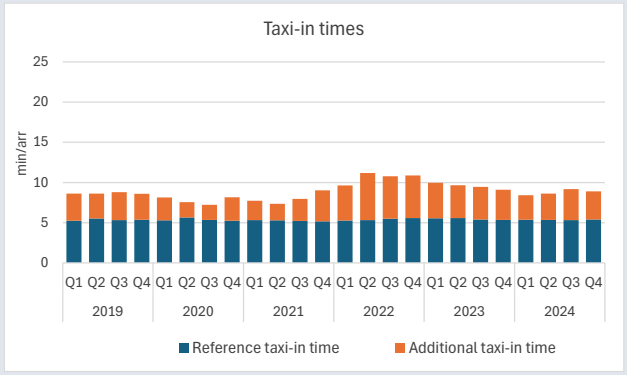
Punctuality



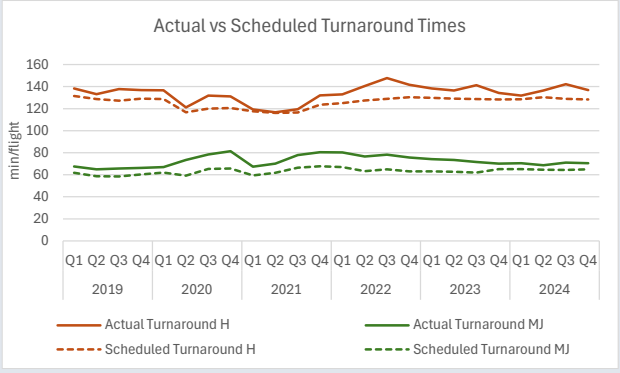


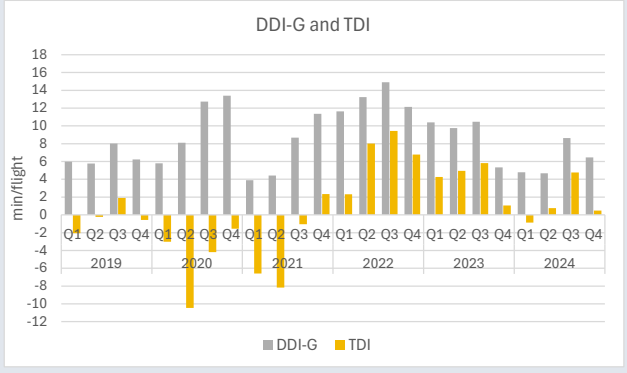
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

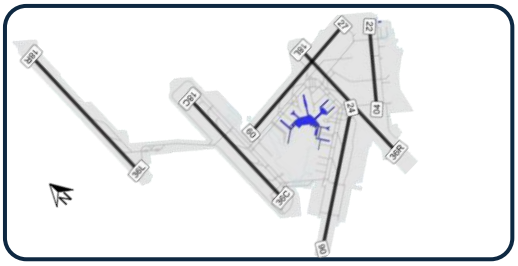
APOC AMS/EHAM

Amsterdam Schiphol Airport

Traffic (ATMs) 2024: 489K (#2)

Traffic (PAX) 2024: 66.8M (#4)

A-CDM: Yes



Airport Operator: Amsterdam Schiphol

ANSP: LVNL

Main Aircraft Operator: KLM group (58%)

Stakeholders at APOC

Physical

- Schiphol*
- Ground handlers*
- AO Duty managers*
- De-icing*
- MET service*
- Check-in*
- Border control*
- Police*
- Security*
- Slot coord. (planned)*
- Baggage*
- Pax transfer*
- PRM*
- Airport access*
- RFFS*

(*) Also virtual

Virtual

- LVNL
- FMP LVNL (Planned)

The APOC is situated in the WTC (World Trade Center) of Amsterdam Airport, close to the terminal building.

The APOC looks at planning, pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

There is no Memorandum of Cooperation amongst local partners, however all stakeholders interested in participating in the APOC can utilize the available infrastructure. Onboarding and guidance for participants will be facilitated.
A Collaborative Decision Making (CDM) Operations Manual is available to all stakeholders. It outlines the procedures that those responsible for updating CDM milestones should adhere to. The responsibility for updating CDM is held by airline operators. Ground handlers, to whom airlines often delegate this task, are also involved.

APOC team(s)

- APOC Performance Managers.
- APOC supervisors: end responsible for daily operations.
- Advisor DCB team: working closely with Security capacity managers and business analysts from our OPS forecasting team.
- Total Airport Delivery Management: digital development of the APOC together with IT and Data.
- Staff and Strategic teams: strategical topics, learning and development, communications and work environment.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 D-0 D+1

P-DPI DPI G-API

First AOP is published in D-7. Besides the AOP we publish an 8-week forecast (DCB) overview. Working towards releasing AOP at D-60, incorporating the DCB overview.
Daily call with NMOC: D-1 & D-0.
Post-ops review in D+1: used as D+1 but also a D+7 to improve AOP input.

Others

We are further developing the APOC and its ways of working continuously, onboarding stakeholders, strengthen collaboration.

From a Total Airport Management perspective, we focus on post-ops development. We also give priority at developing DCB tooling for all airport processes, so we are able to provide insights on airports system capacity and the effect when disruptions occur.

Performance monitoring

Performance Monitoring

Performance review dashboard (for internal APOC use at the moment).
The performance is monitored on D-0, and there is post-ops analysis in D+1 and D+7 to identify trends.

Post-ops review in D+1: briefing with stakeholders.

KPIs

- OTP
- Waiting times
- CDM performance

KPIs with associated targets

- OTP
- Waiting times

Data sources/missing data

Not all required data elements are available.
Check-in data missing.

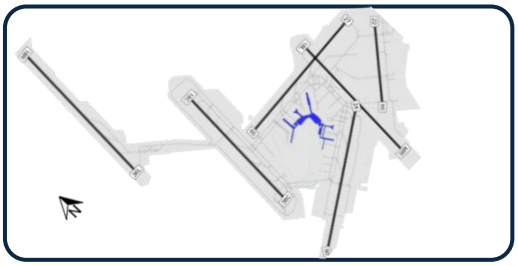
APOC AMS/EHAM

Amsterdam Schiphol Airport

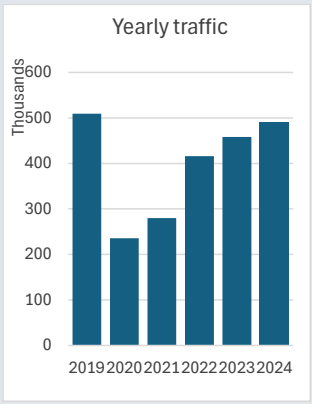
Traffic (ATMs) 2024: 489K (#2)

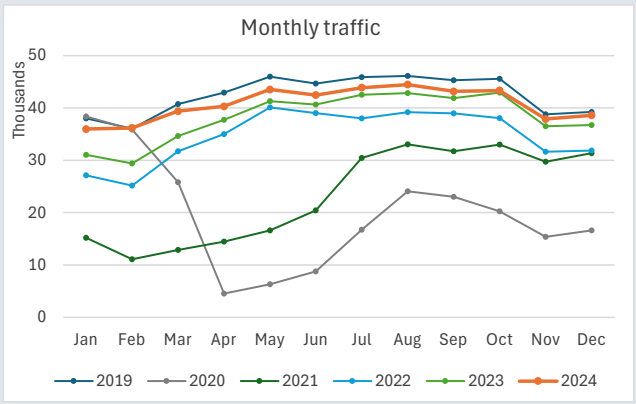
Traffic (PAX) 2024: 66.8M (#4)

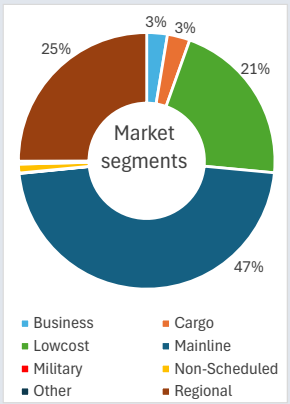
A-CDM: Yes



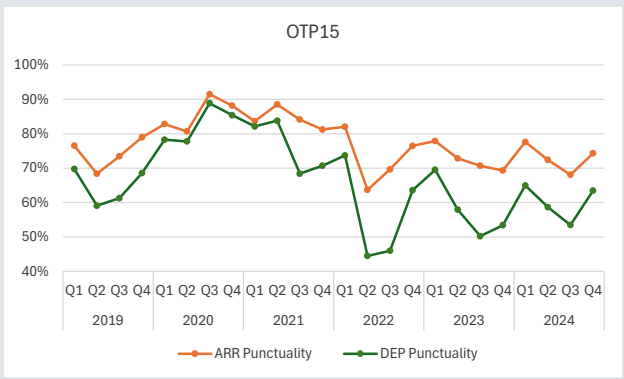
Traffic

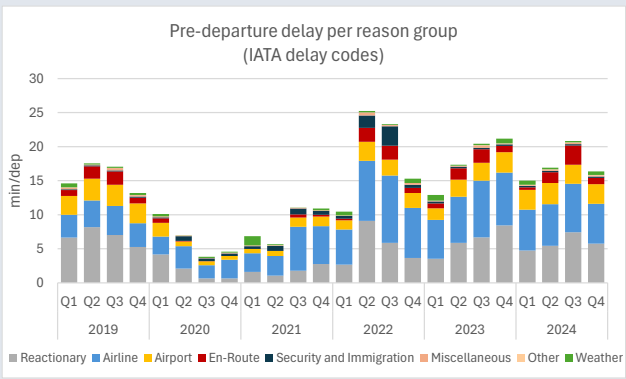




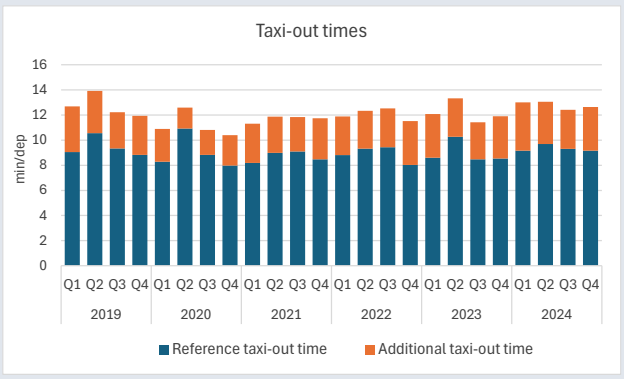


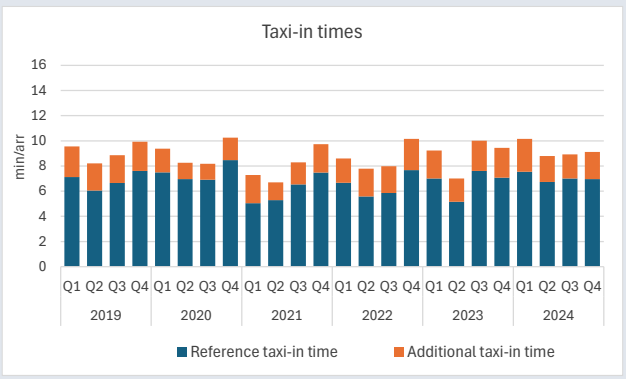
Punctuality



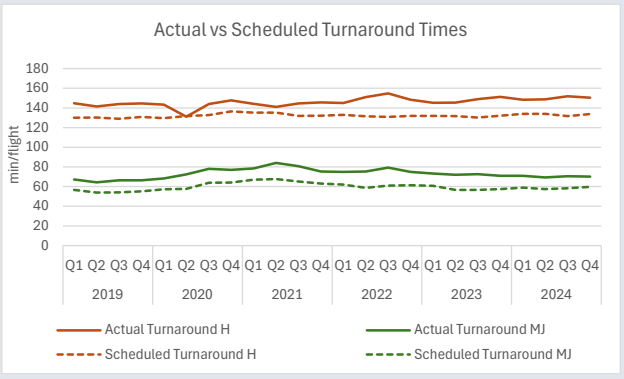


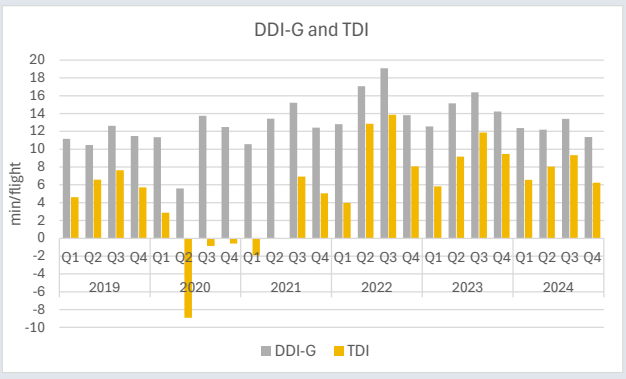
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

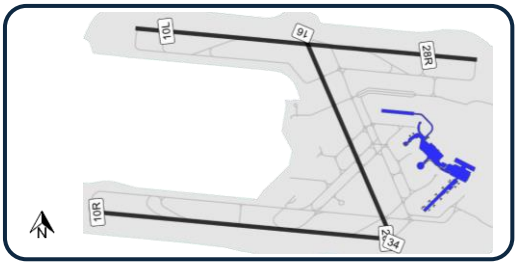
APOC DUB/EIDW

Dublin Airport

Traffic (ATMs) 2024: 244K (#14)

Traffic (PAX) 2024: 34.6M (#14)

A-CDM: No



Airport Operator: Dublin Airport

ANSP: Air Nav Ireland

Main Aircraft Operator: Ryanair (40%)

Stakeholders at APOC

Physical

- Dublin Airport
- Security
- Police
- Check-in
- Baggage
- A-CDM
- Main AOs (Planned)
- Ground handlers (Planned)
- De-icing (Planned)
- Pax transfer
- Maintenance infrastructure
- Airport Control
- ICT helpdesk
- Drone monitoring
- Stand allocation
- Resource Mgmt
- Airport access
- Car Park Mgmt
- USCBP

Virtual

- Air Nav Ireland
- Slot coordinator
- FMP Air Nav Ireland
- Airport bussing
- Border control
- MET service
- RFFS
- Engineering Water and Power
- Customer experience
- PRM (Planned)

The APOC is situated in the Landside Terminal1 building.

The Dublin APOC at the moment is mainly an internal airport department with data links and voice contact with airlines, handlers and the ANSP.

The APOC looks at pre-tactical (D-7 to D-1), tactical (D-0) and post-ops phases (D+1).

Working arrangements

Agreements

There is no Memorandum of Cooperation amongst local partners, but there are established procedures for the Collaborative Decision Making via ACDM, AOP and relationship management.

Actors involved:

- ANSP – Watch Duty Manager
- Aer Lingus – Operations Control / Station Control
- Ryanair – Operations Control / Station Control
- MET

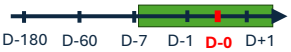
APOC team(s)

- APOC Team Lead: Managing the APOC team (Tactical) and in charge of performance monitoring during D-0.
- APOC Plan and Review (Pre-Tactical and Post Ops)
- Airport Duty Manager (Tactical)
- APOC Team – Operating stand

- There is no team in charge of strategic DCB at this point, but the planning meetings are ued to flag potential capacity restricting issues (e.g. Weather)

AOP and integration with NOP

AOP? 



P-DPI  DPI  G-API 

First real AOP is developed in D-7. It is circulated by the APOC twice daily with live updates via the Airport Community App – not connected to the NOP yet awaiting validation of ACDM.

Post-ops D+1 review is used to improve the AOP, using standard reporting to drive stakeholder conversations

Others

The initial AOP is enhanced and updated with following information between D-7 to D-0:

D-4: MET / WIP / Airport Resources / events / NM

D-1: ANSP/ MET / WIP / current events/resources/passengers / NM

The following teams are involved:

- APOC Planning team for D-14 to D-1
- APOC Planning team, Airport Duty Manager , ANSP, MET and base airlines for D-1
- APOC Live team in D-0

Performance monitoring

Performance Monitoring

There is a performance review dashboard which is currently only internal.

Performance is monitored during the day of operations and in post-ops.

KPIs

- OTP Arrival/Dep 3' & 15'
- Delayed flights ARR / DEP
- Cancellations Arr & Dep
- Security Screening Q times (T1 and T2)
- Border Immigration Control Q times (All areas)
- Taxi Landside Q times (T1 and T2)
- USCBP process progress and pax Q times
- Inbound Baggage – 1st bag / last bag

KPIs with associated targets

- Security Q times
- Border Immigration Q times
- USCBP passenger Q times
- Taxi management and Pax q times

- Road access issues (changing traffic light sequencing)
- Aircraft holding – Contact with Airport Desk

Data sources/missing data

We would like to include an API showing AFTM regulations from Dublin and the Network.

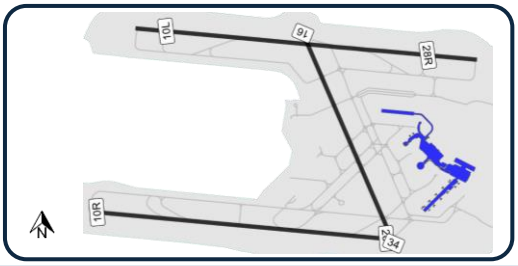
APOC DUB/EIDW

Dublin Airport

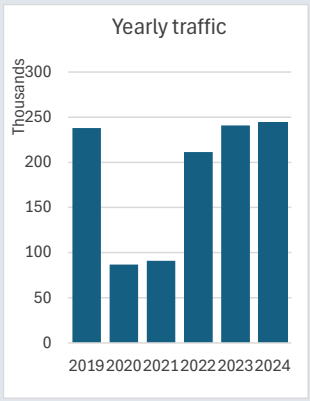
Traffic (ATMs) 2024: 244K (#14)

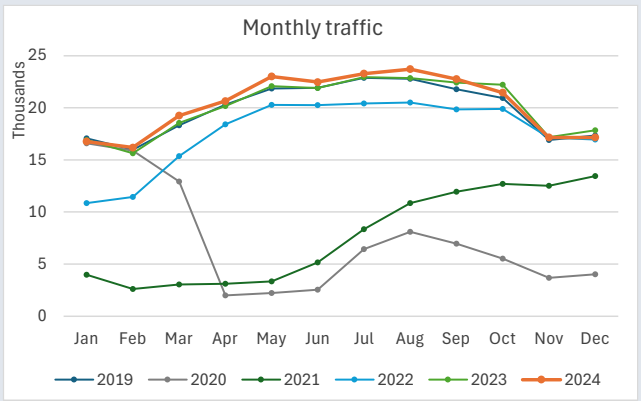
Traffic (PAX) 2024: 34.6M (#14)

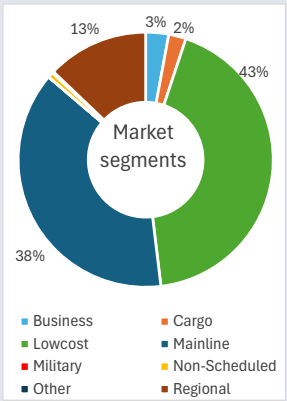
A-CDM: No



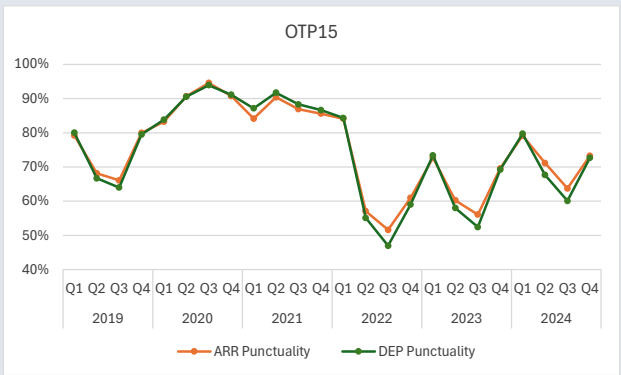
Traffic

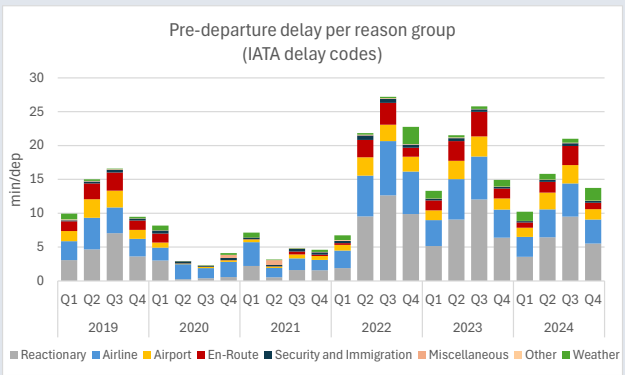




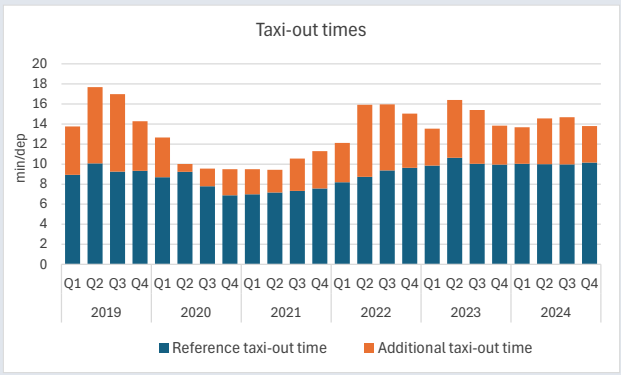


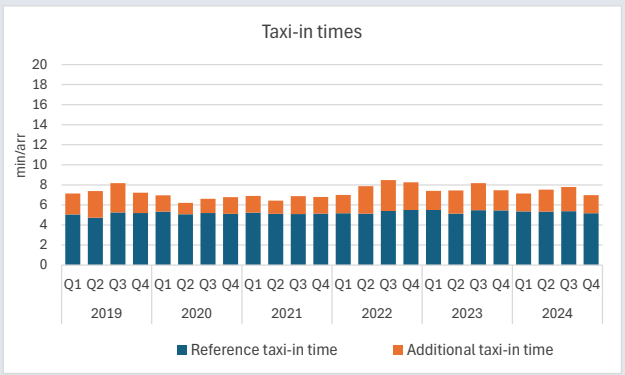
Punctuality



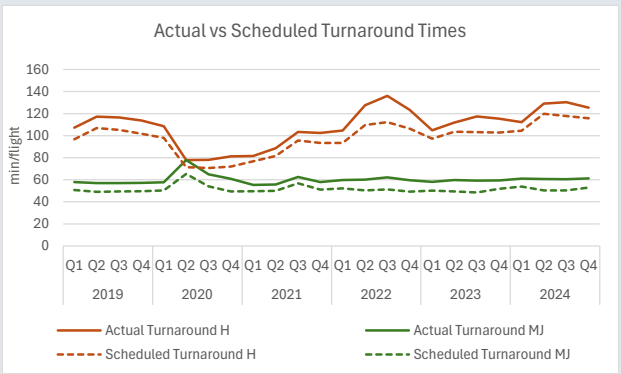


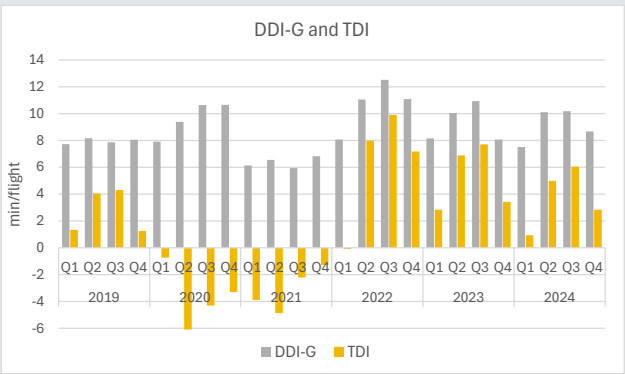
Taxi times





Turnaround times





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For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

APOC CPH/EKCH

Copenhagen Airport

Traffic (ATMs) 2024: 241K (#16)

Traffic (PAX) 2024: 29.9M (#21)

A-CDM: Yes

Airport Operator: Københavns Lufthavne

ANSP: NAVIAIR

Main Aircraft Operator: SAS (36%)

Stakeholders at APOC

Physical

- CPH
- Main AO's
- Ground handlers
- MET service
- Border control
- Security
- Police
- De-icing
- Baggage
- Check-in
- Airside/Landside infrastructure maintenance
- RFFS

Virtual

- Naviair
- FMP — Naviair

There is an Airside Coordination Center, home to the Ground Coordinator. This is located in the terminal building (airside), close to the ground handler offices.
The daily stand-up and the ad-hoc physical meetings are held at this Airside Coordination Center.

The APOC looks at all phases as required (planning, pre-tactical, tactical and post-ops)

Working arrangements

Agreements

There is no Memorandum of Cooperation amongst local partners, but there are established processes for the collaborative decision making.

There are daily stand-up meeting. Same attendees will join ad-hoc meetings for CDM.

APOC team(s)

There are no specific dedicated teams in the APOC but there are established processes for every domain, PAX+Landside, BAG, SEC, Airside within the respective departments. All is linked to form the AOP.

During the day of operations, the performance is monitored by:

- Ground Coordinator for airside processes.
- Security Operations Center for landside processes.

All report to the Airport Duty Manager.

AOP and integration with NOP

AOP? ON

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI OFF DPI ON G-API OFF

Post-ops D+1 review is used to evaluate the quality of the AOP, through a structured After Action Review & Lessons Learned.

Others

Coordination with the NMOC is done through the iAOP.

Performance monitoring

Performance Monitoring

Performance review dashboards are available, for internal and external actors.

The performance is monitored during the day of operations and in post-ops.

KPIs

- OTP
- TOBT quality
- Passenger waiting times
- BAG quality metrics
- Etc

KPIs with associated targets

Most of the KPIs are part of internal weekly follow-up meetings and/or monthly meetings with ground handlers.

Data sources/missing data

The NOP data, like the predicted CTOT or best available CTOT is not available.

APOC CPH/EKCH

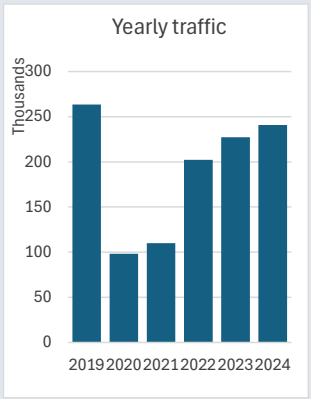
Copenhagen Airport

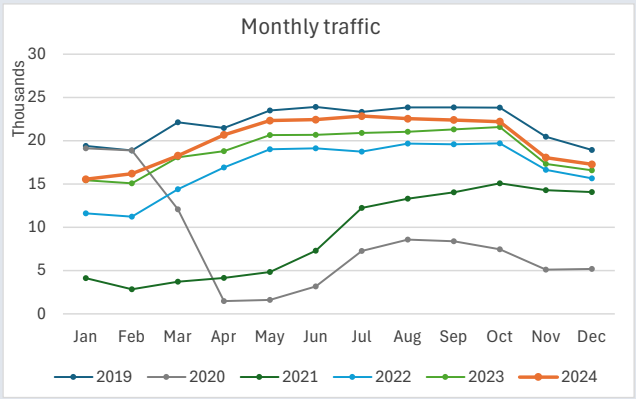
Traffic (ATMs) 2024: 241K (#16)

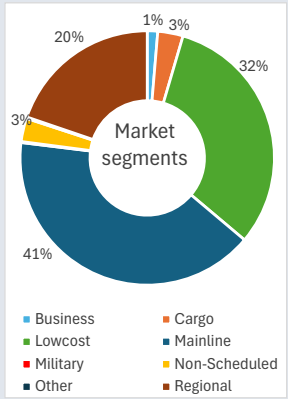
Traffic (PAX) 2024: 29.9M (#21)

A-CDM: Yes

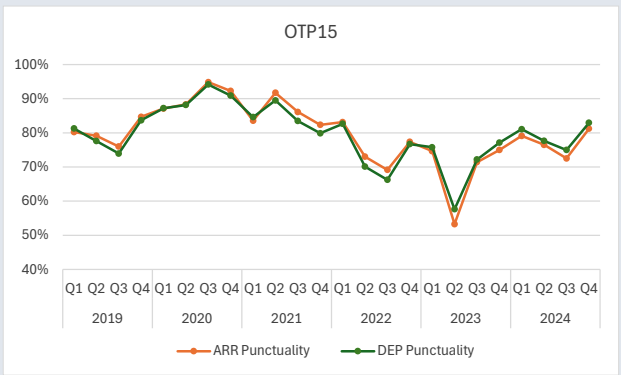
Traffic

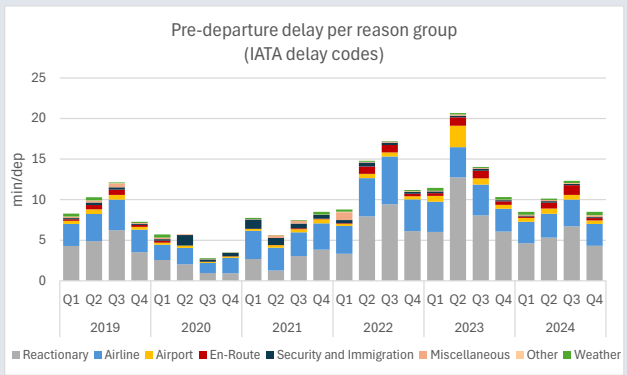




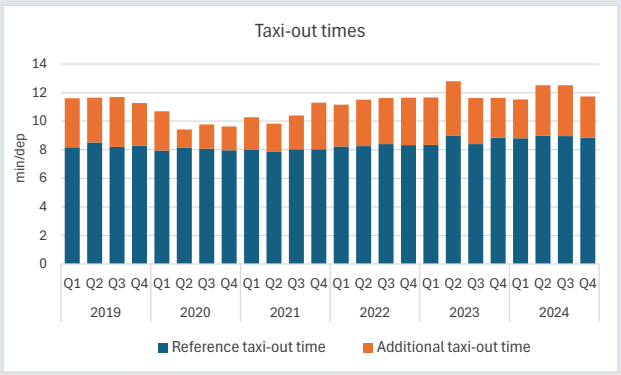


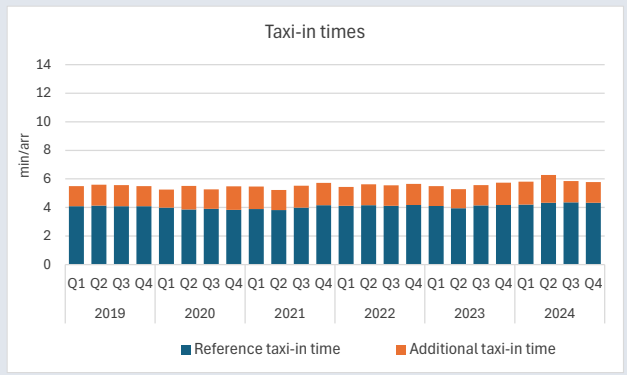
Punctuality



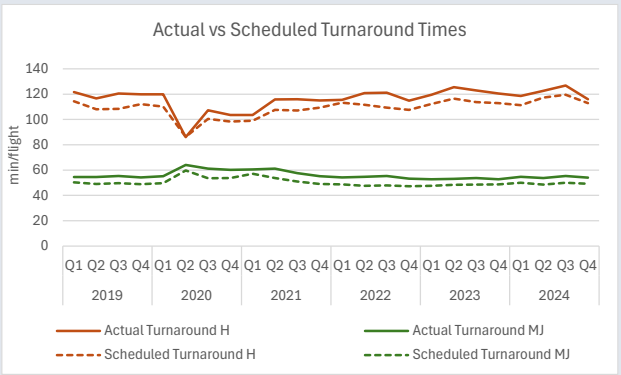


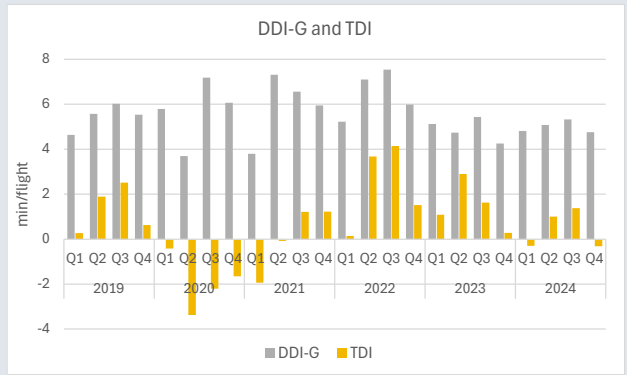
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

APOC OSL/ENGM

Oslo Gardermoen Airport

Traffic (ATMs) 2024: 219K (#20)

Traffic (PAX) 2024: 26.4M (#24)

A-CDM: Yes

Airport Operator: AVINOR

ANSP: AVINOR

Main Aircraft Operator: Norwegian (36%)

Stakeholders at APOC

Physical

- AVINOR
- Main AO's (Planned 2028)
- Ground handlers (Planned 2028)
- MET service
- RFFS
- A-CDM
- Security
- Police (Planned 2028)
- Airport access
- De-icing
- CUAS control
- Resource Mgmt
- Baggage
- Check-in
- Technical
- Pax transfer (Planned 2028)
- PRM (Planned 2028)
- Airport Control
- Customer experience
- Airport bussing

Virtual

- AVINOR
- Slot coordinator
- FMP ENAIRE
- Border control
- Catering

The APOC is located in the terminal building. It is mainly physical, with virtual "task-force" meetings

The APOC looks at all phases as required (planning, pre-tactical, tactical and post-ops). Twice a week there is a meeting with all stakeholders at the airport to look at planning and post-ops phases. For pre-tactical and tactical phases, there are "task-force" meetings.

Working arrangements

Agreements

There is no Memorandum of Cooperation amongst local partners, but there are established processes for the collaborative decision making.

"Task-force" meetings are organised before any foreseen discrepancy (heavy weather, strike, technical issues..) to discuss pre-tactical measures together with the main stakeholders.

APOC team(s)

APOC Airside- and Terminal Supervisor do the daily DCB planning, involving ATC, deicing company and Airside movement for Winter/Airside operations, and security, PRM, GH, and Tech for the terminal processes.

The total APOC team are responsible for the 24/7 operations, as one team.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 D-0 D+1

P-DPI DPI G-API

The AOP is developed involving the four biggest airports in the Avinor network together with ATC, Airside Maintenance, Terminal processes, Tech and ground handlers.

Others

"APOC 3.0" is just a development of APOC at Oslo Airport, to be able to handle the Norwegian network of airports, and a closer cooperation with stakeholders in the network

Performance monitoring

Performance Monitoring

APOC Airside- and Terminal Supervisor are monitoring the Airside and Terminal processes. All stakeholders are involved, depending on process flow and/or bottlenecks.

The performance is monitored during the day of operations and in post-ops.

KPIs

- Punctuality at airport and hub-carriers level
- Taxi-times (inbound and outbound)
- Recovered delay
- Flow-regulation
- Regularity
- Top delay codes
- Airport delay codes
- Queues in security-control
- Capacity AC movements
- Pax predictions
- Weather reports
- Baggage delivery times
- Domestic transfer
- Deicing-capacity

KPIs with associated targets

- Punctuality
- Deicing-capacity
- Taxi-times
- Waiting time security.

Data sources/missing data

We have lots of data and are working on presenting them with a KPI. We have just upgraded our AOS, to be able to gather and present more data – making sure we can use them more efficiently in the day to day operation. We have a new BHS system, and will integrate data from both BHS systems so that we can monitor and manage based on these datas.

APOC OSL/ENGM

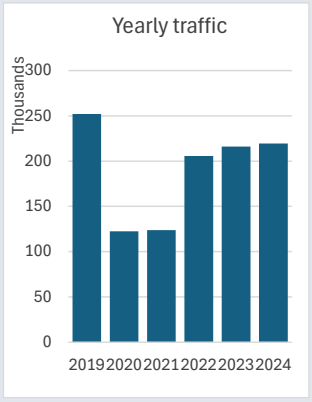
Oslo Gardermoen Airport

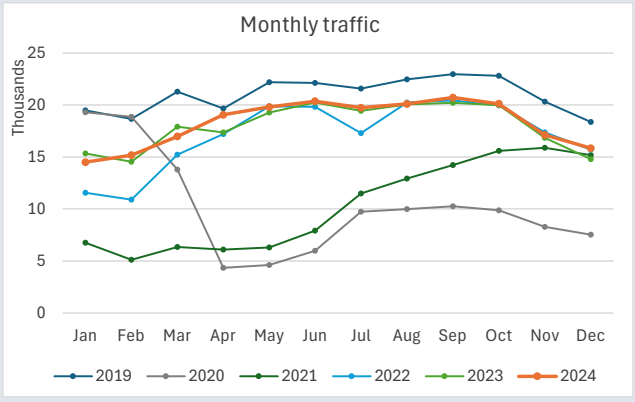
Traffic (ATMs) 2024: 219K (#20)

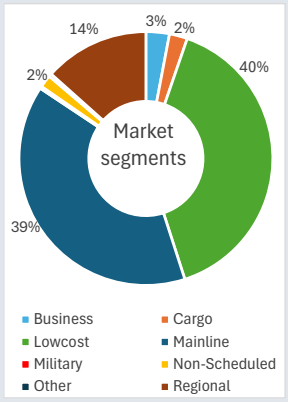
Traffic (PAX) 2024: 26.4M (#24)

A-CDM: Yes

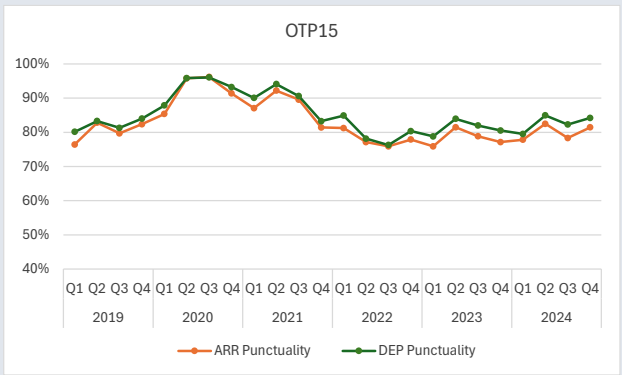
Traffic

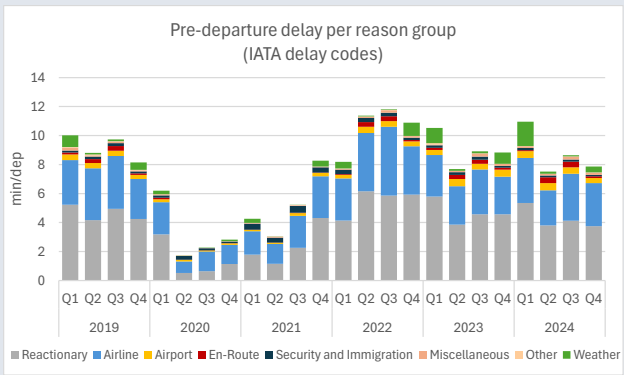




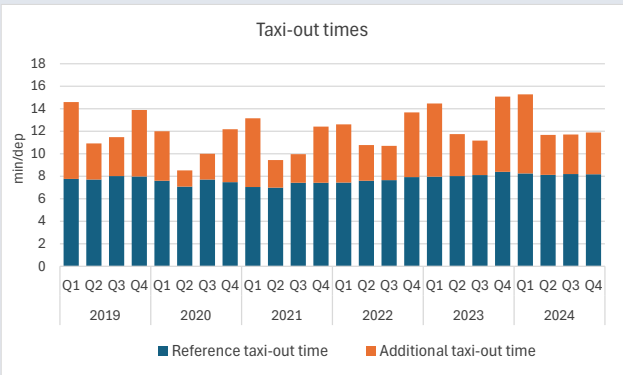


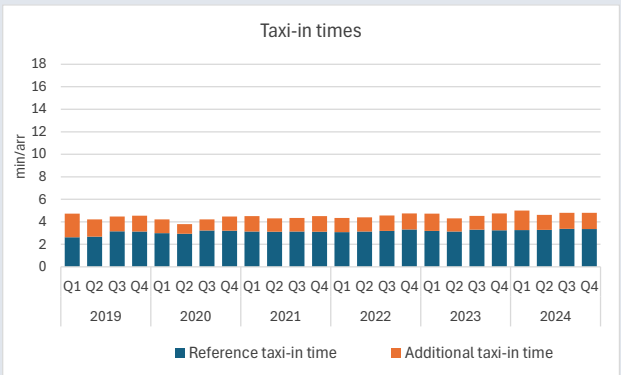
Punctuality



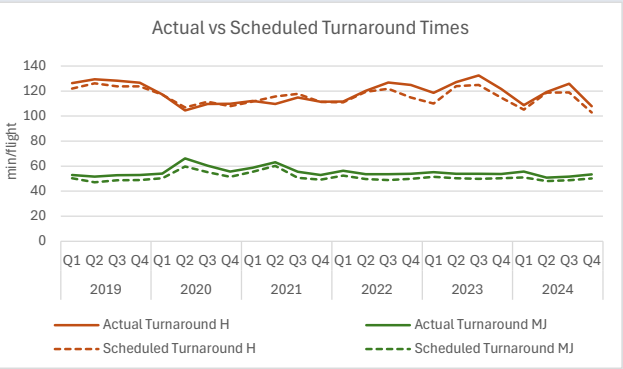


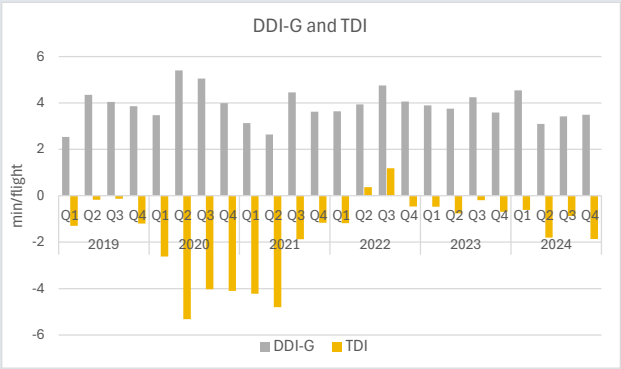
Taxi times





Turnaround times





Sources

Traffic: Network Manager
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Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

APOC WAW/EPWA

Warsaw Airport

Traffic (ATMs) 2024: 183K (#28)

Traffic (PAX) 2024: 21.3M (#29)

A-CDM: No

Airport Operator:
Polskie Porty Lotnicze

ANSP:
PANSA

Main Aircraft Operator:
LOT Polish Airlines (57%)

Stakeholders at APOC

Physical

- PPL
- Main AO's
- Ground handlers
- Security
- Check-in
- Terminal Duty Officer

Virtual

- PANSA
- Slot coord.
- MET service
- Border control
- Police
- RFFS
- Baggage
- Pax transfer
- PRM

The APOC facility is situated in the terminal building, operations tower.

The APOC looks at planning and pre-tactica phases.

Working arrangements

Agreements

There is a Memorandum of Cooperation amongst local partners, signed by the ground handlers.
The collaborative decision-making processes are detailed in the Operations Manual.

APOC team(s)

The coordination team is in charge of DCB.

There is a team in charge of performance monitoring, but these people do not sit in the APOC.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI DPI G-API

Others

Performance monitoring

Performance Monitoring

There is no specific performance review dashboard.

KPIs

KPIs with associated targets

Data sources/missing data

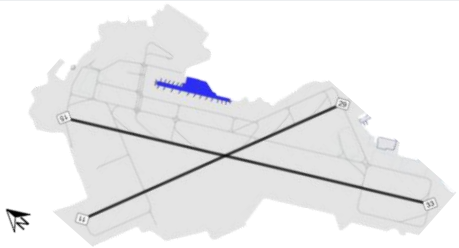
APOC WAW/EPWA

Warsaw Airport

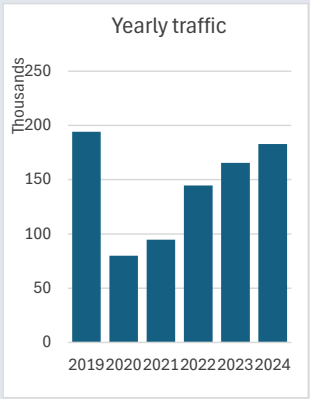
Traffic (ATMs) 2024: 183K (#28)

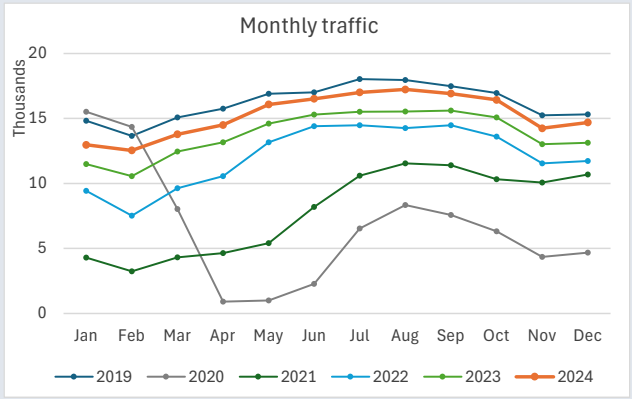
Traffic (PAX) 2024: 21.3M (#29)

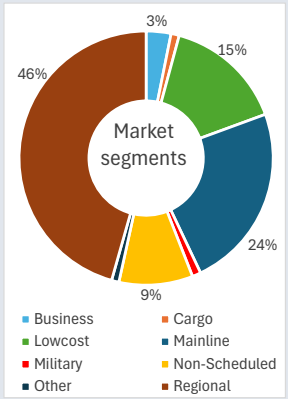
A-CDM: No



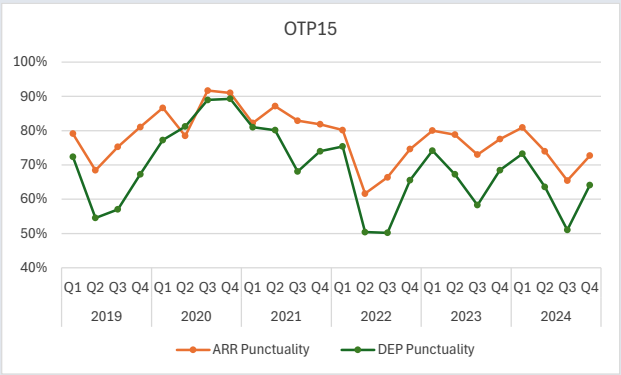
Traffic

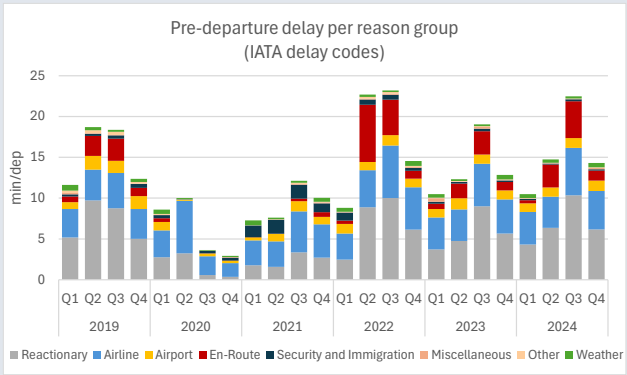




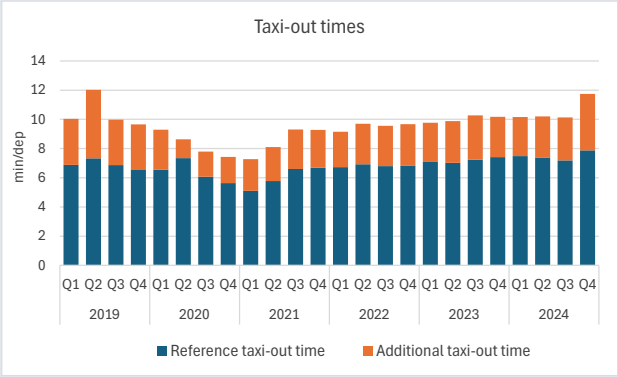


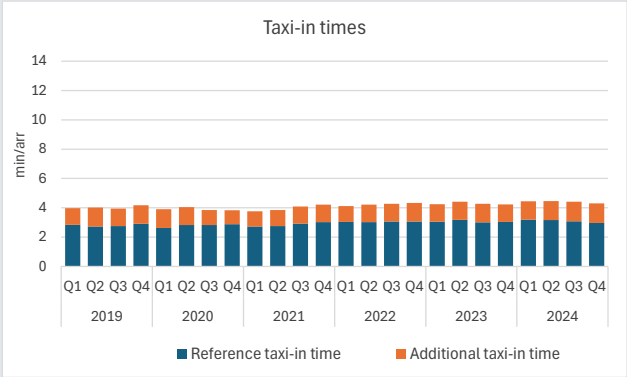
Punctuality



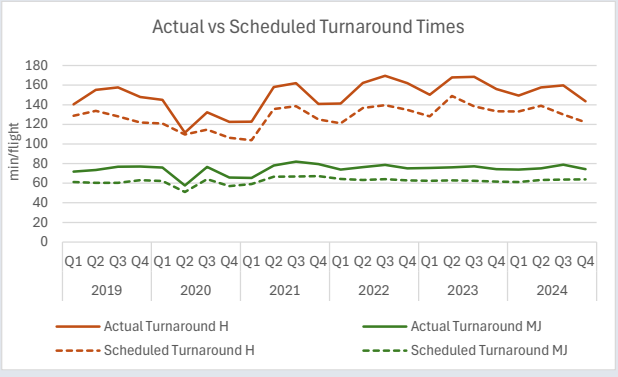


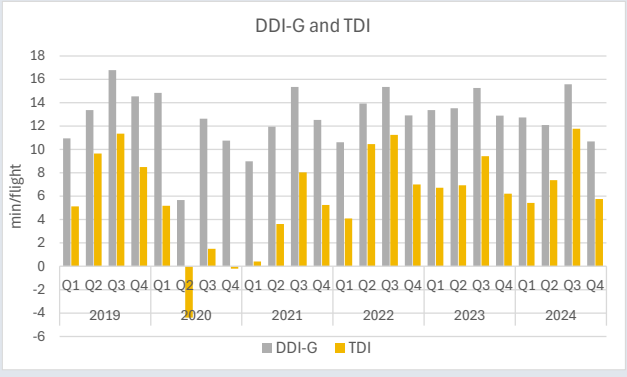
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

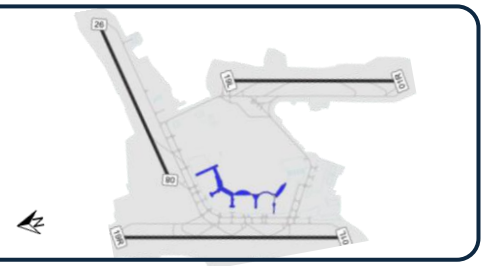
APOC ARN/ESSA

Stockholm Arlanda Airport

Traffic (ATMs) 2024: 191K (#26)

Traffic (PAX) 2024: 22.8M (#28)

A-CDM: No



Airport Operator: Swedavia

ANSP: LFV

Main Aircraft Operator: SAS (37%)

Stakeholders at APOC

Physical

Security

Baggage

Check-in

PRM

Virtual

Swedavia

LFV

The APOC facility is situated in the TWR building.
The APOC is lead by the APOC Supervisor who is mandated by the Airport Director to handle the day-to-day operation at the airport. The APOC supervisor only looks at tactical phase.
The pre-tactical team is situated in the APOC so they are in close collaboration with the APOC Supervisor.
The APOC is also surveilling multiple Swedavia airports.

Working arrangements

Agreements

There is no Memorandum of Cooperation amongst local partners.
When major imbalances are expected, the APOC invites key actors (Ground handlers, MET provider, ATC, Security, Airlines) to a pre-tactical coordination meeting to share the best-known insights and ask the other actors to share their insights. The outputs are then published to all actors at the airport.

APOC team(s)

There are no specific teams in the APOC in charge of determined duties.

The APOC is in charge of DCB and demand capacity planning on a very high level.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 D-0 D+1

P-DPI DPI G-API

First AOP is developed in D-30, with the involvement mainly of the Ground Coordinator and the Process and Resources Owners.
A monthly and weekly plan is shared with airport stakeholders

Others

There is at the moment no coordination with the NMOC or integration with the NOP.

Performance monitoring

Performance Monitoring

There is a performance monitoring dashboards used only by Swedavia.

Punctuality and waiting times are monitored during the day of operations and in post-ops

KPIs

- Punctuality
- Morning Readiness
- Delay Codes
- Waiting times
- First/last bag.

KPIs with associated targets

- The majority of the KPI:s have targets set by Swedavia.

Data sources/missing data

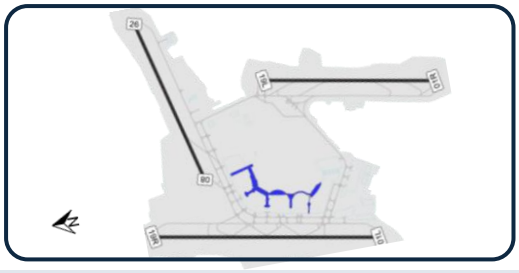
APOC ARN/ESSA

Stockholm Arlanda Airport

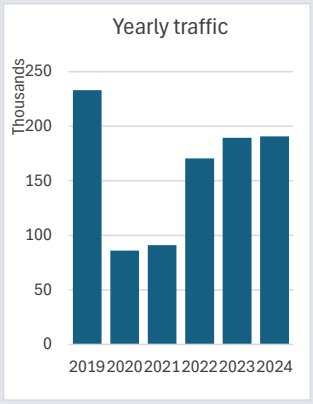
Traffic (ATMs) 2024: 191K (#26)

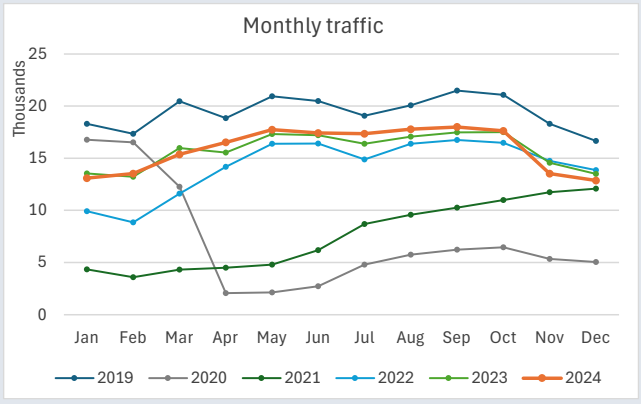
Traffic (PAX) 2024: 22.8M (#28)

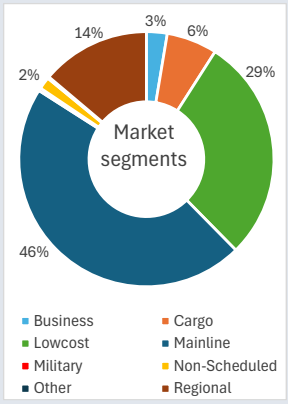
A-CDM: No



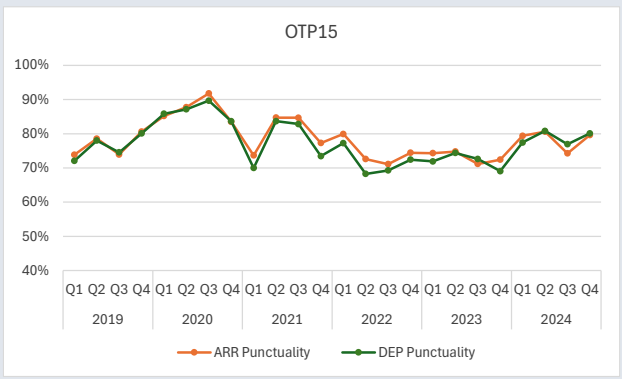
Traffic

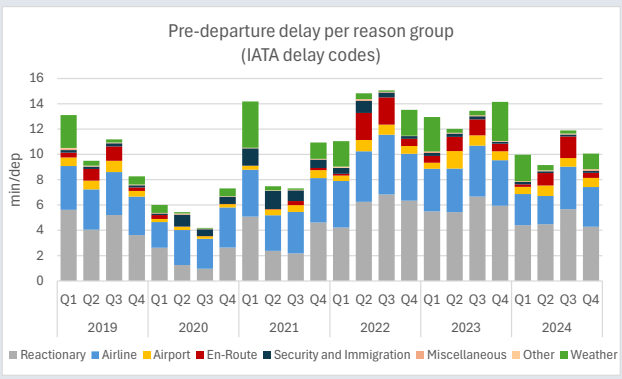




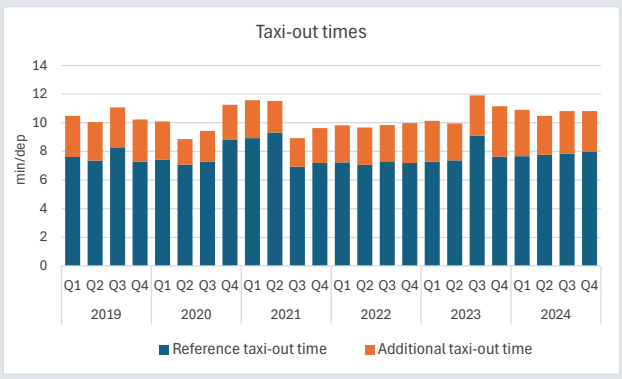


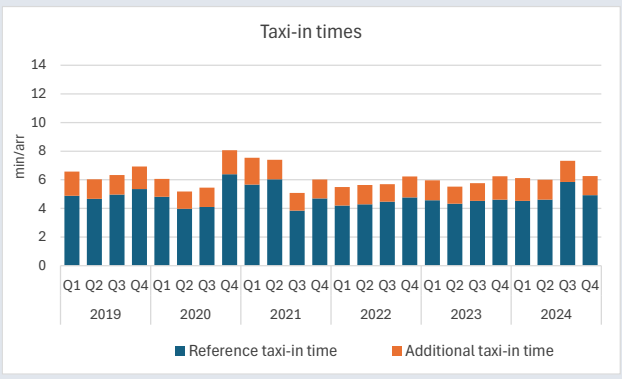
Punctuality



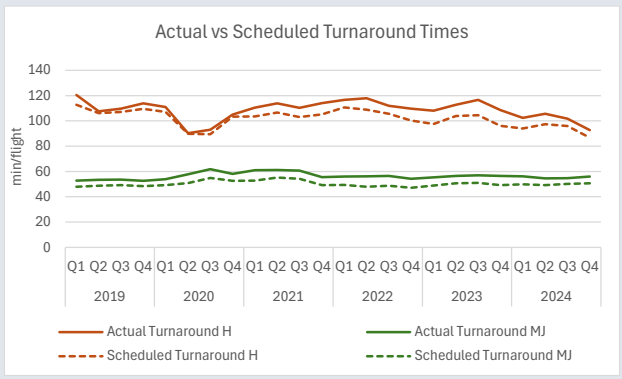


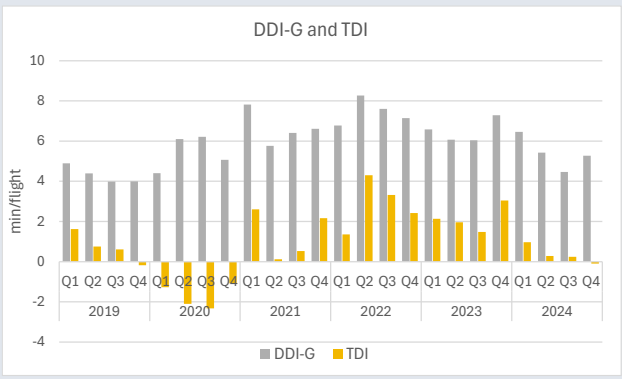
Taxi times





Turnaround times





Sources

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Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

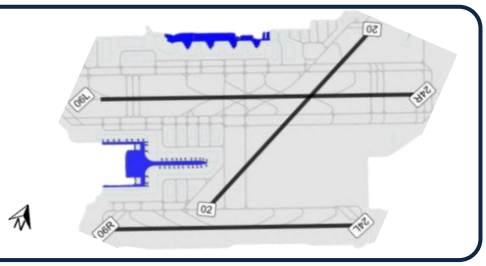
APOC BCN/LEBL

Josep Tarradellas Barcelona - El Prat Airport

Traffic (ATMs) 2024: 348K (#7)

Traffic (PAX) 2024: 55M (#7)

A-CDM: Yes



Airport Operator: AENA

ANSP: ENAIRE

Main Aircraft Operator: Vueling (38%)

Stakeholders at APOC

Physical

- AENA
- Slot coord.
- Border control
- Police
- Security
- Baggage*

(*) Also virtual

Virtual

- ENAIRE
- Main AO's
- Ground handlers
- RFFS
- FMP ENAIRE
- De-icing
- MET service
- Pax transfer
- Check-in
- PRM
- Airport access

The APOC (AMC= Airport Management Centre) is situated in the terminal building T1, with a back-up facility in terminal 2.

The APOC looks at pre-tactical, tactical and post-ops phases.

Strategic planning and Programmed actions through common schedule.
Post ops covered by the APOC through Briefings and reports.

Working arrangements

Agreements

For the CDM implementation, a Memorandum of Understanding was signed by airport operator, airlines, handling agents and ANSP. There are established procedures, briefings and reports.

APOC team(s)

- AMC (APOC team)
- Operations
- Security (incl national police)
- Services: pax experience and landside services coordination
- Maintenance (including BHS, building services,...)
- ICT (Information and Communication Technologies)

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI DPI G-API

Others

There are daily briefings and reports, to improve performance after post-ops analysis.

Performance monitoring

Performance Monitoring

There are daily briefings and reports, to improve performance after post-ops analysis.
These reports cover several KPIs and are transmitted to Service Suppliers.

Performance is monitored during the D day and in post-ops reports

KPIs

- Punctuality
- Cause of delays (delay codes)
- Regulations
- Apron occupation
- Security Control checkpoints queue time
- BHS baggage delivery
- Number of flighs

KPIs with associated targets

- Runway Visual Range
- Runway Conditions Report
- Waiting time in controls

Data sources/missing data

Current APOC KPIs fulfill properly the monitoring of the airport operation.
Nevertheless, there is an ongoing collaboration between APOC and the Operations division to improve the KPIs and monitoring.

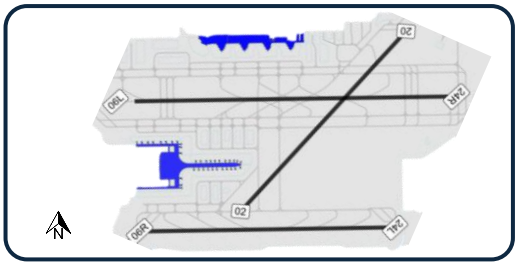
APOC BCN/LEBL

Josep Tarradellas Barcelona - El Prat Airport

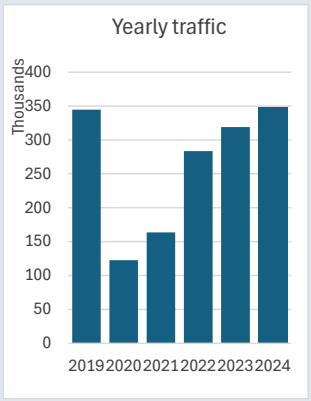
Traffic (ATMs) 2024: 348K (#7)

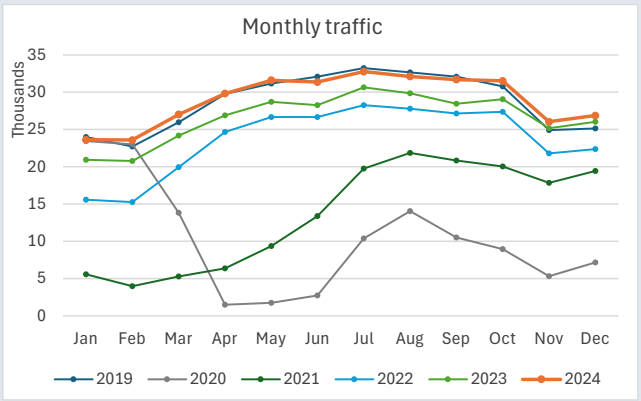
Traffic (PAX) 2024: 55M (#7)

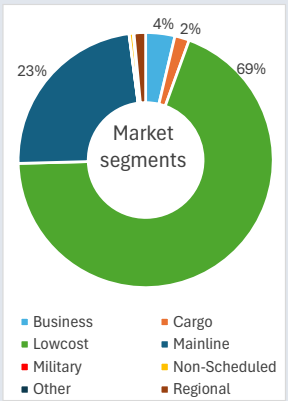
A-CDM: Yes



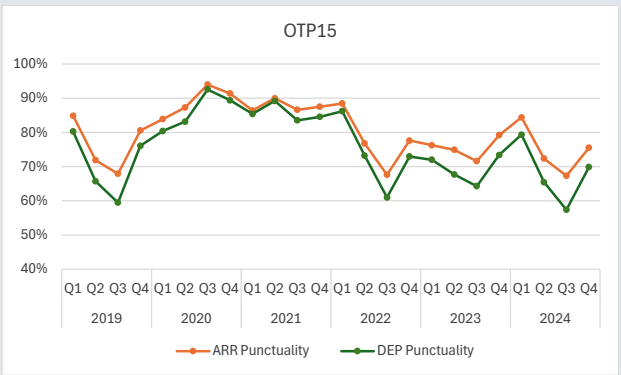
Traffic

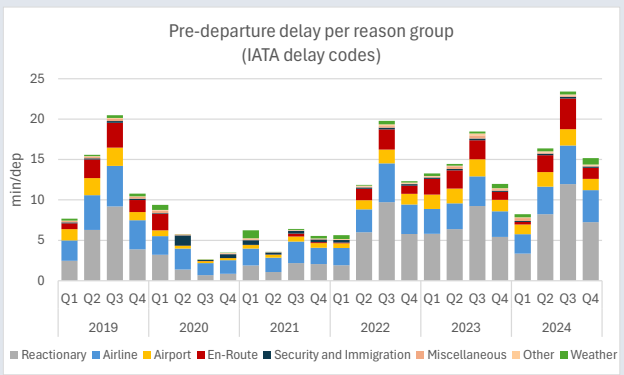




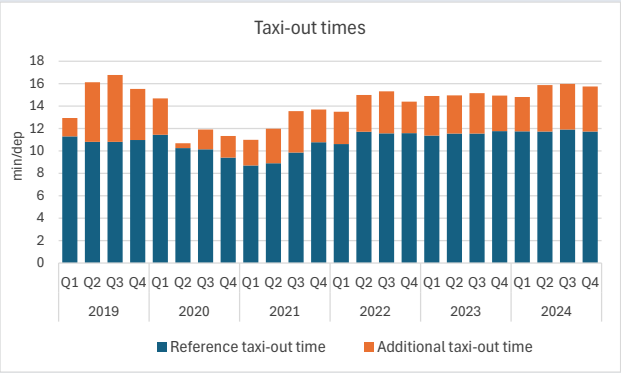


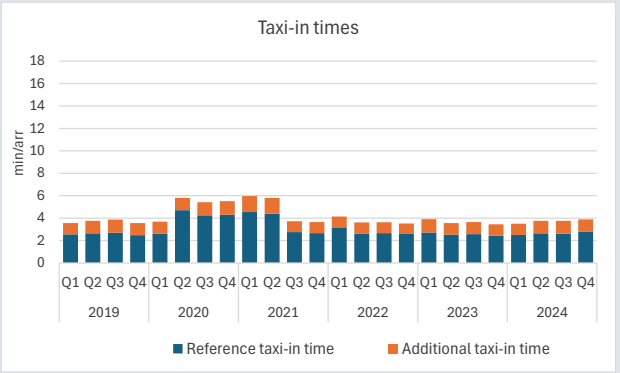
Punctuality



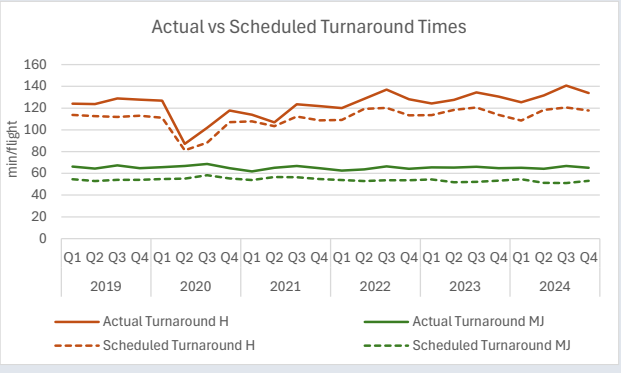


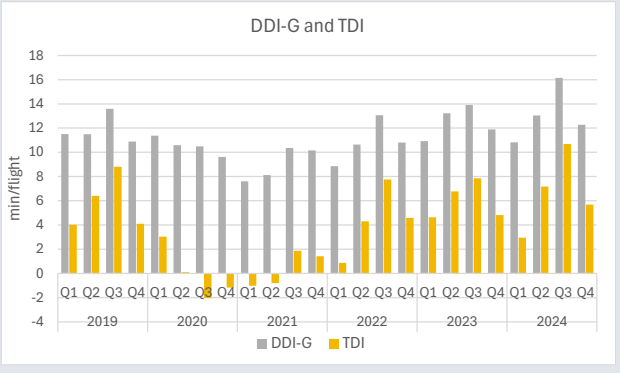
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

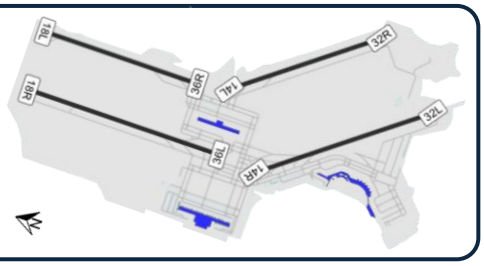
APOC MAD/LEMD

Adolfo Suárez Madrid-Barajas Airport

Traffic (ATMs) 2024: 420K (#6)

Traffic (PAX) 2024: 66.1M (#5)

A-CDM: Yes



Airport Operator: AENA

ANSP: ENAIRE

Main Aircraft Operator: Iberia Group (34%)

Stakeholders at APOC

Physical

- AENA
- Slot coord.
- A-CDM
- Border control
- Police
- Security
- Engineering Water and Power
- Resource Mgmt
- Baggage

Virtual

- ENAIRE
- Main AO's
- Ground handlers
- RFFS
- FMP ENAIRE
- De-icing
- MET service
- Healthcare
- ICT helpdesk
- Pax transfer
- Check-in
- PRM
- Airport access

The APOC (AMC= Airport Management Center) is situated in the terminal building T4. It is both physical and virtual.

The APOC looks at pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

For the CDM implementation, a Memorandum of Understanding was signed by airport operator, airlines, handling agents and ANSP. There are established procedures well documented.

APOC team(s)

- AMC (APOC team)
- Operations
- Security (incl national police)
- Services: pax experience and landside services coordination
- Maintenance (including BHS, building services, APM: Automated People Mover,...)

A multidisciplinary work group from all teams oversees DCB analysis.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI DPI G-API

Others

Performance monitoring

Performance Monitoring

Multiple dashboards for performance monitoring (some of them are used by GH and ATC TWR)

Every morning (D+1) in the management briefing the indicators are reviewed by the AMC team.

KPIs

- Punctuality
- Cause of delays
- Waiting time in security and immigration controls
- Apron occupation
- Automated People mover monitoring
- Airbridges performance monitoring
- Baggage handling system monitoring
- Quality levels

KPIs with associated targets

- Adverse weather conditions
- Waiting times in controls

Data sources/missing data

Missing passenger data

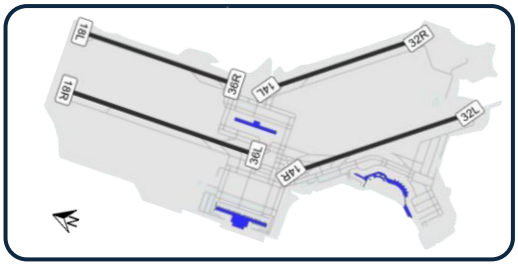
APOC MAD/LEMD

Adolfo Suárez Madrid-Barajas Airport

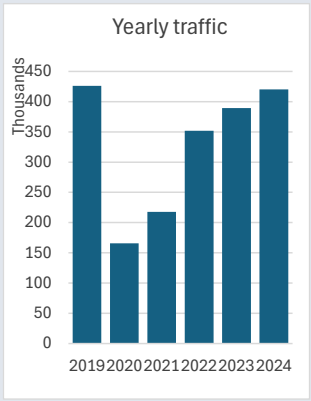
Traffic (ATMs) 2024: 420K (#6)

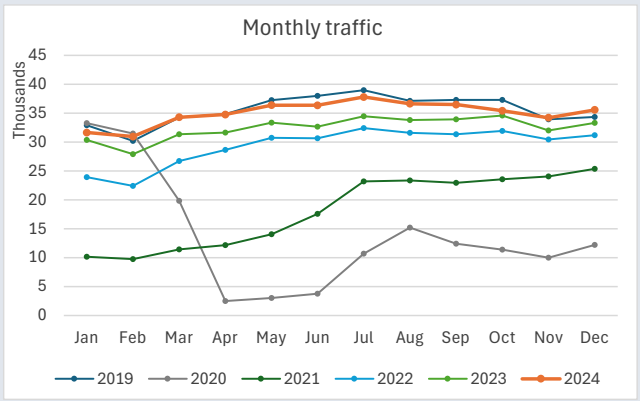
Traffic (PAX) 2024: 66.1M (#5)

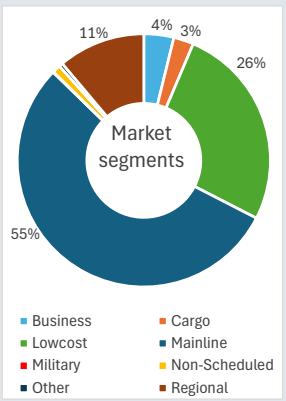
A-CDM: Yes



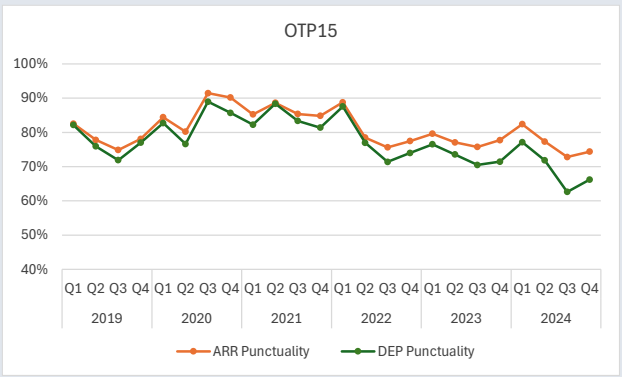
Traffic

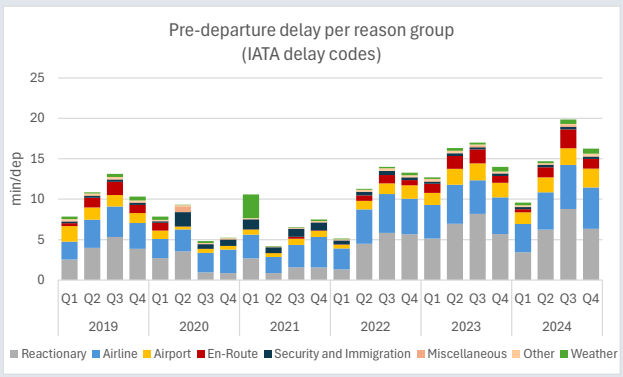




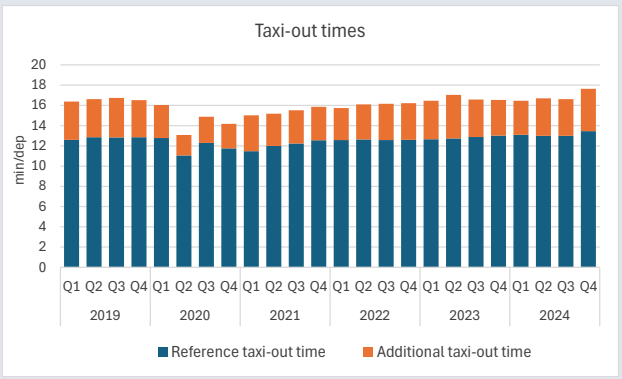


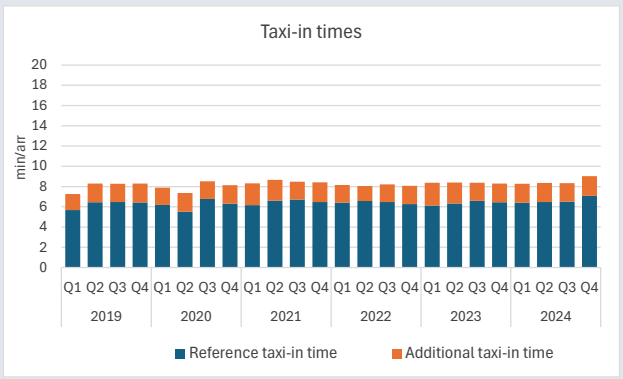
Punctuality



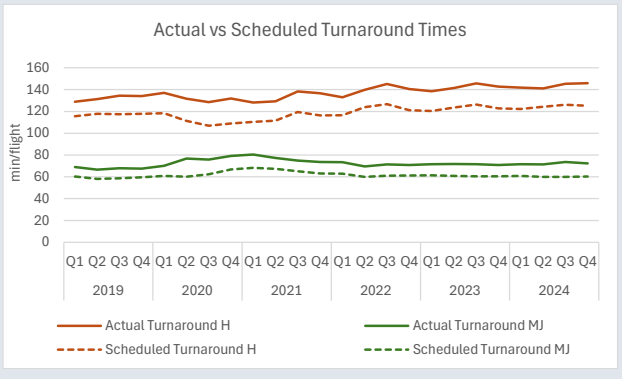


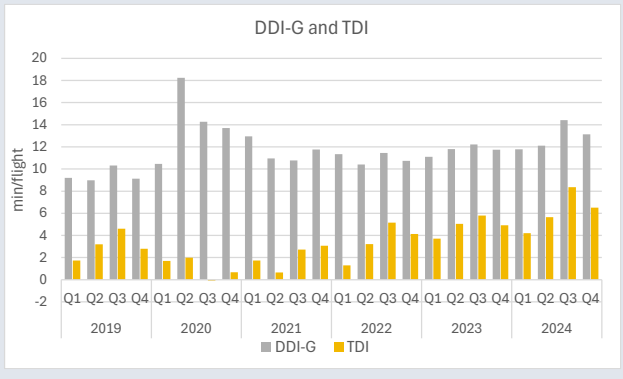
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

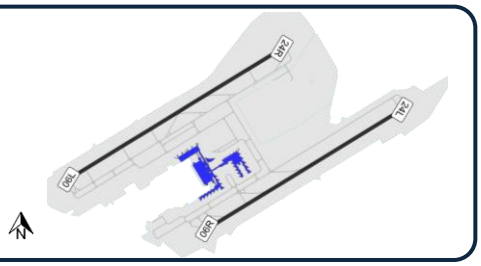
APOC PMI/LEPA

Palma de Mallorca Airport

Traffic (ATMs) 2024: 242K (#15)

Traffic (PAX) 2024: 33.3M (#15)

A-CDM: Yes



Airport Operator: AENA

ANSP: ENAIRE

Main Aircraft Operator: Ryanair (20%)

Stakeholders at APOC

Physical

- AENA
- Slot coord.

Virtual

- ENAIRE
- Main AO's
- Ground handlers
- De-icing
- MET service
- FMP ENAIRE
- Border control
- Police
- Security
- Baggage*
- Pax transfer
- Check-in
- PRM
- Airport access
- RFFS

The APOC (AMC= Airport Management Center) is situated in the terminal building.

APOC is mainly composed of the real time team including operations and incidences management. Besides the planning team, the crisis room and the duty executive are physically in the same space.

The APOC looks at pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

For the CDM implementation, a Memorandum of Understanding was signed by airport operator, airlines, handling agents and ANSP. There are established procedures for A-CDM: contingency and DPIs management.

APOC team(s)

- Security (incl national police)
- Passenger experience and coordination of landside services
- Maintenance and infrastructure.
- ICT (Information and Communication Technologies)

Performance monitoring is done by operations technicians together with process technicians, under the coordination of the Duty Executive.
There is no DCB team.

AOP and integration with NOP

AOP? ○

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI ○ DPI ● G-API ○

The AOP is under development.

Others

Other Tasks covered at the APOC:
Emergency Plan, Fire Stations, Winter Operation, Medical Service, PA Information, Pax transfer, PRM, Maintenance, Boarding Bridges monitoring, Facilities monitoring, Cleaning, Baggage Handling System operator, parking and general incidences in the whole airport area.

Performance monitoring

Performance Monitoring

There are daily briefings and reports, to improve performance after post-ops analysis.
These reports cover several KPIs and are transmitted to Service Suppliers.

Performance is monitored during the D day and in post-ops reports

KPIs

- Punctuality.
- Delay Codes.
- Regulations.
- Apron occupation
- Security Control checkpoints queue time
- BHS baggage delivery.
- Flight operations number
- Cancellations and diversions

KPIs with associated targets

- Runway Visual Range.
- Runway Conditions Report
- Waiting time in controls

Data sources/missing data

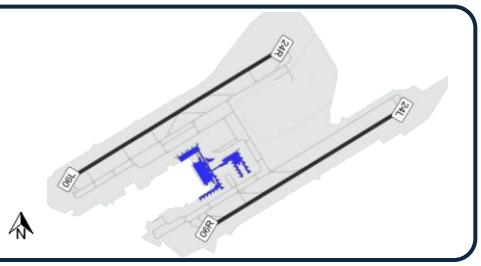
APOC PMI/LEPA

Palma de Mallorca Airport

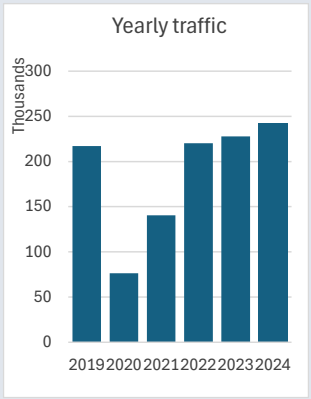
Traffic (ATMs) 2024: 242K (#15)

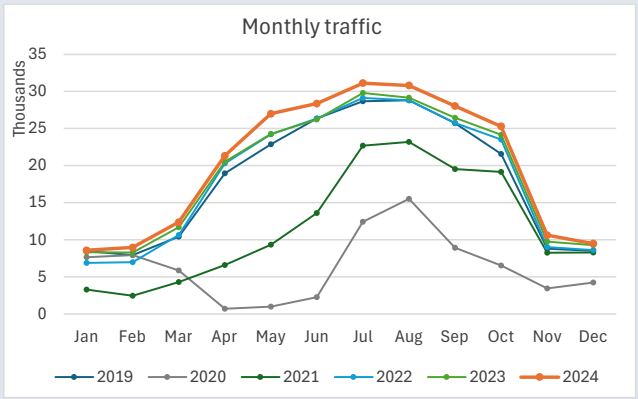
Traffic (PAX) 2024: 33.3M (#15)

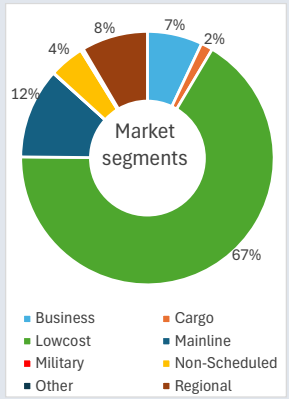
A-CDM: Yes



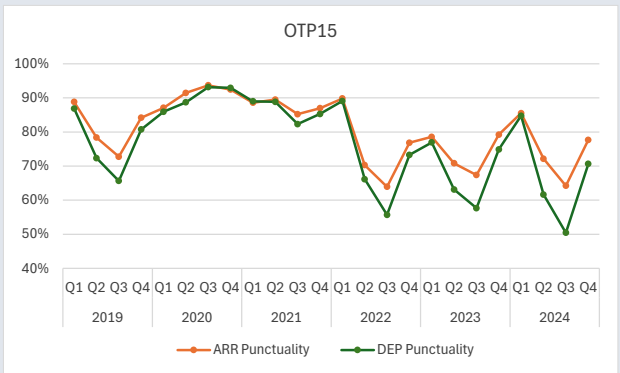
Traffic

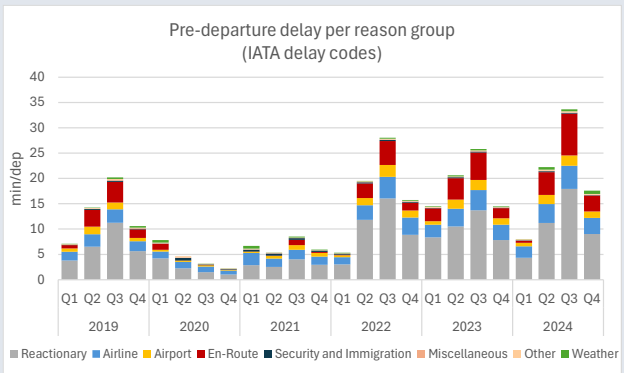




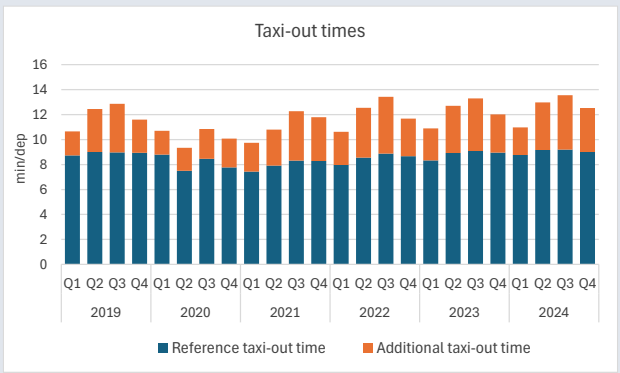


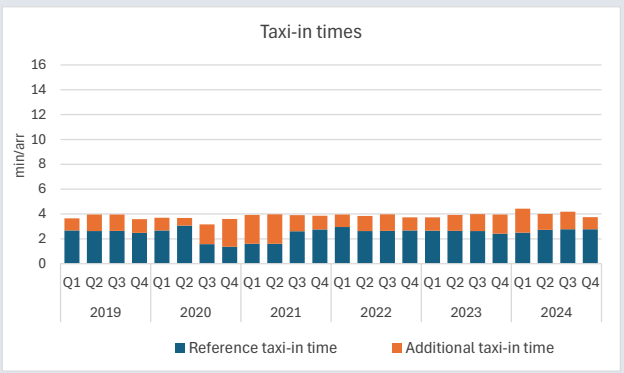
Punctuality



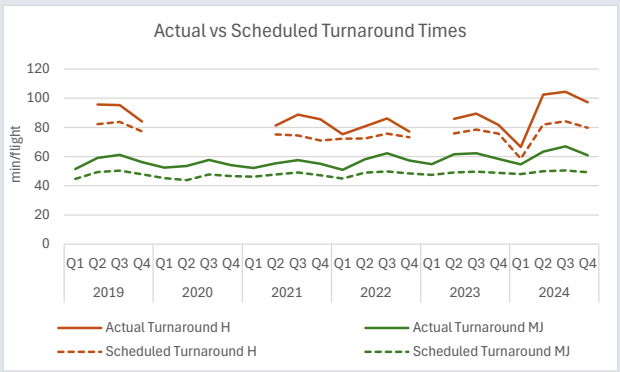


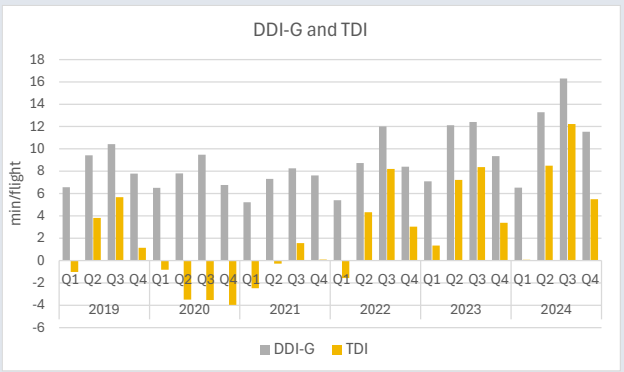
Taxi times





Turnaround times





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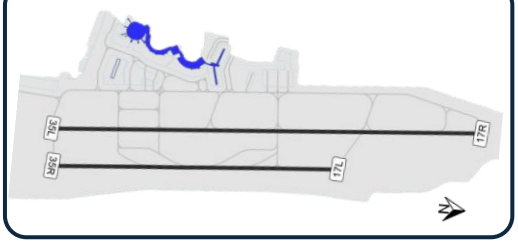
APOC LYS/LFLL

Lyon-Saint Exupéry Airport

Traffic (ATMs) 2024: 91K (#49)

Traffic (PAX) 2024: 10.5M (#62)

A-CDM: Yes



Airport Operator: Lyon Aéroport (Vinci group)

ANSP: DSNA

Main Aircraft Operator: Air France Group (26%)

Stakeholders at APOC

Physical

- Lyon Aéroport
- Main AOs *
- Ground handlers *
- MET service *
- Baggage
- Pax transfer
- PRM
- Airport access
- Police **
- Border control **
- Security*
- Car Park Mgmt

(*) Present before the pandemic – Work in progress

(**) For major events

Virtual

- De-icing (Planned 2024)

The APOC is situated in between Terminal 1 and 2.

The APOC looks at planning, pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

There is a Memorandum of Cooperation amongst local partners, signed by the actors working at the APOC.

APOC team(s)

- APOC Duty Manager and Terminal Manager.
- Traffic department: traffic, resource allocation, flight information displays, and CDM.
- Technical department and IT supervision.
- Parking and access department: car parks, bus station and taxis.
- Customer relations : communication and social media.
- DCB is handled by the planning department, not by the APOC in real time.

AOP and integration with NOP

AOP? ○

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI ○ DPI ● G-API ○

AOP implementation is in progress.

Others

Ground handlers and airlines, using airport-provided tools, apply CDM procedures on their flights, understanding the impacts.
APOC agents have procedures to follow when flights are not maintained in the CDM process by airlines.
They interact with NMOC messages and flights and manage degraded modes while keeping NMOC informed.
ATCOs have specific procedures to coordinate with APOC and NMOC.

Performance monitoring

Performance Monitoring

A shared performance dashboard is displayed at the APOC, offering a comprehensive view of operations to all on-duty personnel.

Performance is monitored during the day of operations by the APOC duty manager (24/7) and by the Terminal Manager (05:00-22:00)

Performance is monitored both during the day of operations and in post-ops.

KPIs

- On-time performance
- Security check point waiting times
- Border control waiting times
- Overall passenger satisfaction

KPIs with associated targets

- Security check point waiting times
- Border control waiting times
- Passenger satisfaction
- Baggage delivery indicators

Data sources/missing data

We have identified a lack of data related to baggage handling processes, both inbound and outbound, which is limiting our capacity to optimize operational efficiency

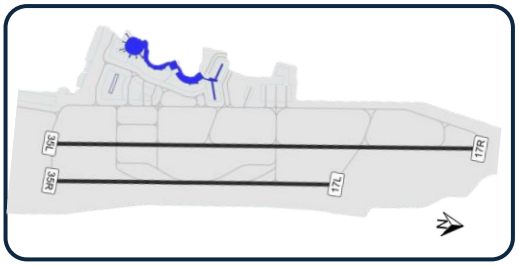
APOC LYS/LFLL

Lyon-Saint Exupéry Airport

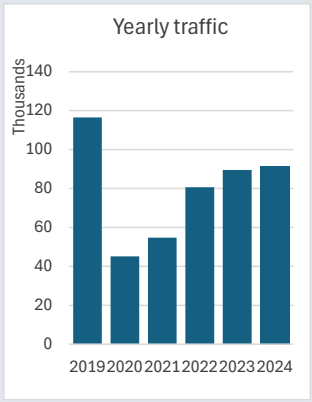
Traffic (ATMs) 2024: 91K (#49)

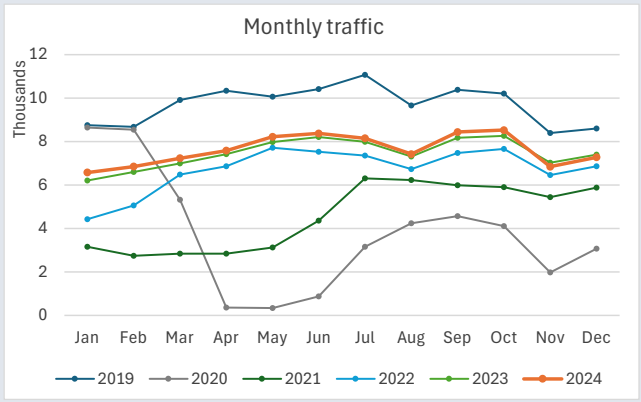
Traffic (PAX) 2024: 10.5M (#62)

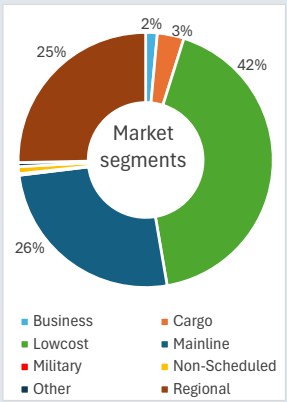
A-CDM: Yes



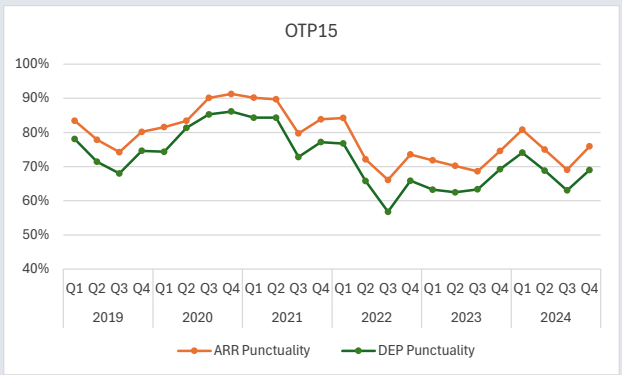
Traffic

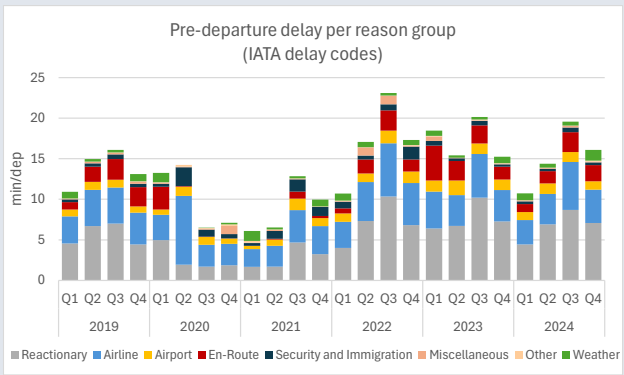




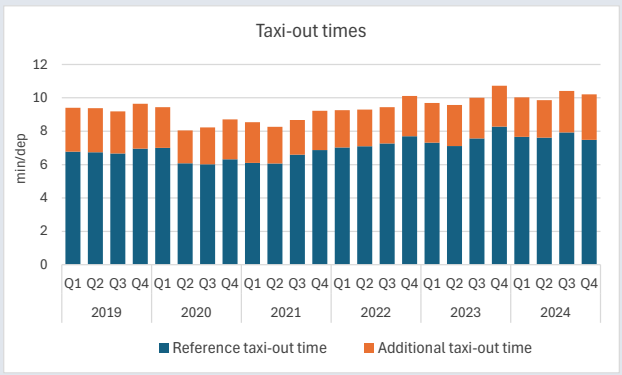


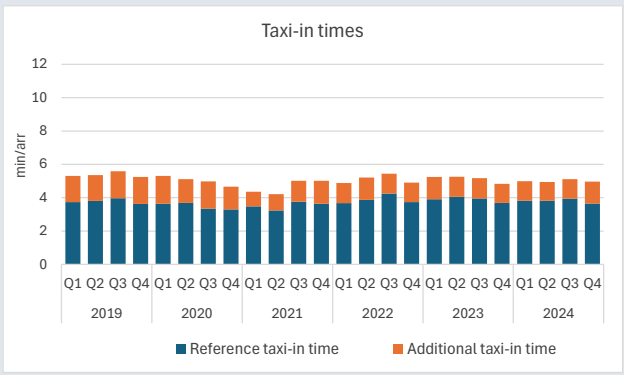
Punctuality



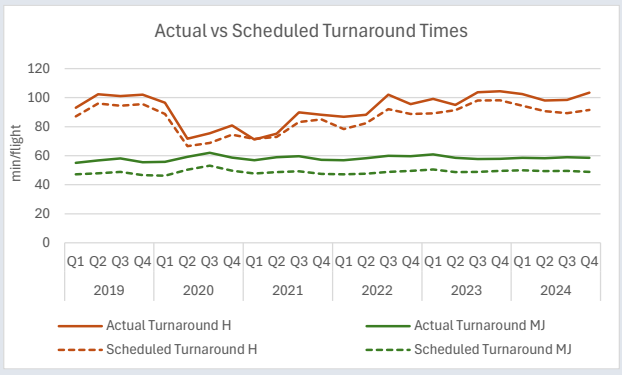


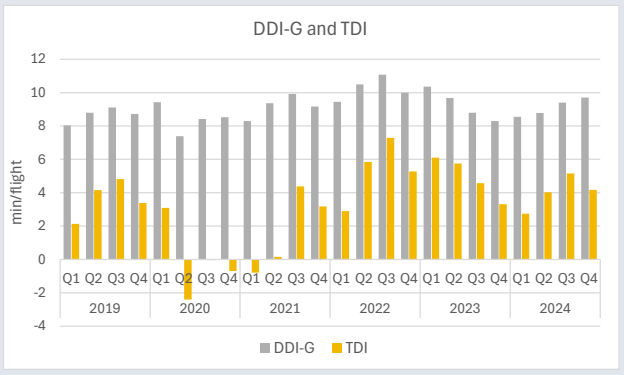
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

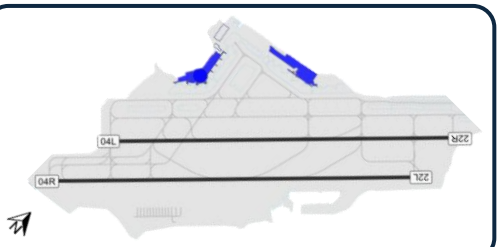
APOC NCE/LFMN

Nice Côte d'Azur Airport

Traffic (ATMs) 2024: 149K (#33)

Traffic (PAX) 2024: 14.8M (#44)

A-CDM: Yes



Airport Operator: Aéroports de la Côte d'Azur

ANSP: DSNA

Main Aircraft Operator: easyJet (20%)

Stakeholders at APOC

Physical

- ANCA
- RFFS
- Security
- Check-in
- Baggage
- Airport access
- Car Park Mgmt

Virtual

- DSNA*
- Main AO's*
- Ground handlers*
- Police*
- Border control*
- MET service

(*) Physical in case of operational event.

The APOC is located between the two terminals inside the technical building.

The APOC focuses on the short term pre-tactical phase (D-1) and the tactical phase

Working arrangements

Agreements

There is no Memorandum of Cooperation implemented but the notion of APOC was added in the contracts to GHA to visit the operational room during major operational events.

The APOC Duty Manager is the real-time decision-maker, working in collaboration with the operational teams present.

APOC team(s)

- PCE – Poste Contrôle Exploitation : real-time airport resource management
- PCRF – Poste Contrôle Ressources et Flux: supervision of baggage sorting and passenger flows
- PCT – Poste Contrôle Technique: Technical supervision (building resources maintenance)
- Safety & Security: Video surveillance system and contact with airport emergency services for terminals and on the movement area
- Mobilité et Stationnement: supervision of road access to the airport, roadways and telephone answering service for car parks users.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 D-0 D+1

P-DPI DPI G-API

i-AOP is implemented since end of 2023. e-AOP planned for the end of 2027.

Terminals & Airside Ops Department and the Operational Engineering Service are involved in the AOP.

Others

We work on a planning stage (M-6, M-1, ...) to adapt airport terminal and airside resources regarding the demand. This work is also done with local ATC, to adapt runway capacity to the demand.

Post Ops performance is not evaluated by the APOC, it will be done in the context of extended AOP by a dedicated team.

Performance monitoring

Performance Monitoring

Performance is monitored during the day of operations by the APOC Duty Managers. They are in charge of making sure that several KPIs are maintained to a predefined threshold.

Performance is reviewed though daily reports on some performance indicators and i-AOP indicators. As of today, these are for internal use only, but information is shared monthly with major airlines.

KPIs

- Punctuality,
- Contact stand rate
- DL87
- Number of flights and pax

i-AOP and CDM indicators :

- Turnaround time
- TSAT Adherence
- CTOT Adherence
- Taxi times
- TOBT update
- Resources occupancy rate

Some indicators are monitored both during the day of operations and in post-ops

KPIs with associated targets

- Contact stand rate
- DL87

Data sources/missing data

All required data is available for the performance and KPI monitoring.

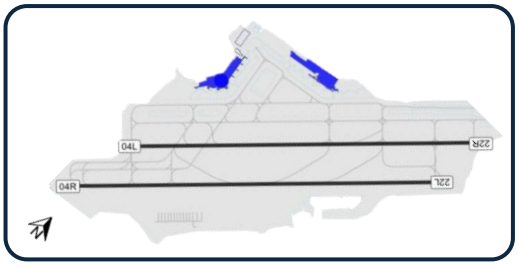
APOC NCE/LFMN

Nice Côte d'Azur Airport

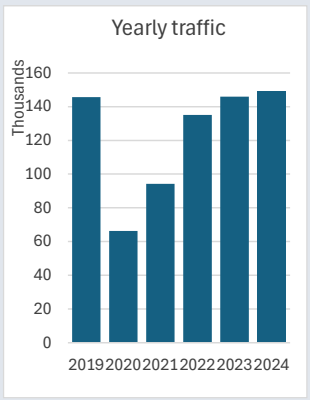
Traffic (ATMs) 2024: 149K (#33)

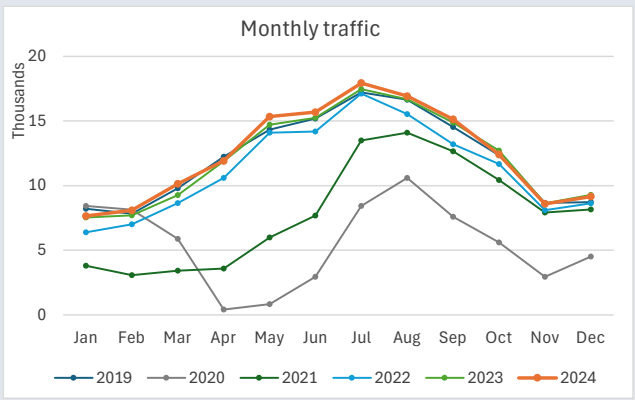
Traffic (PAX) 2024: 14.8M (#44)

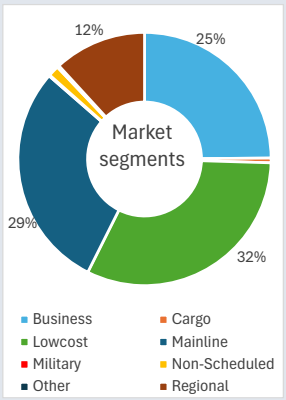
A-CDM: Yes



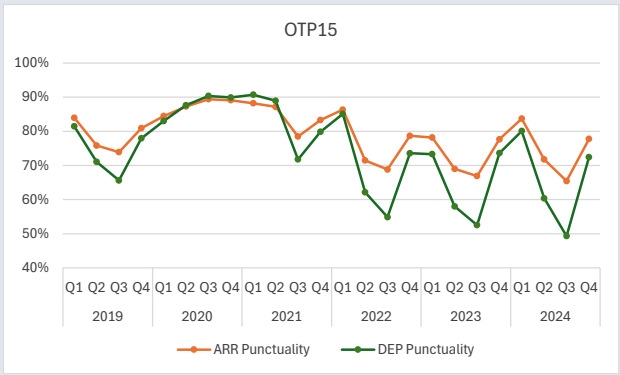
Traffic

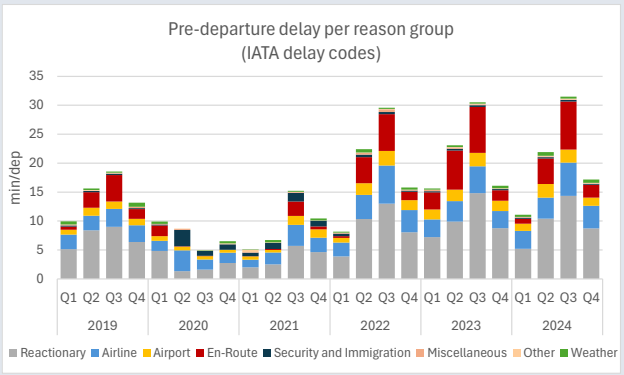




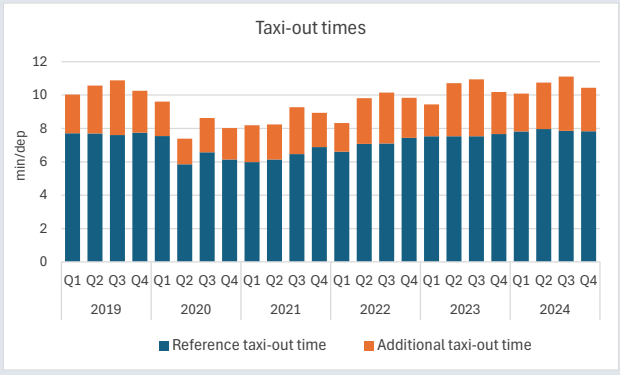


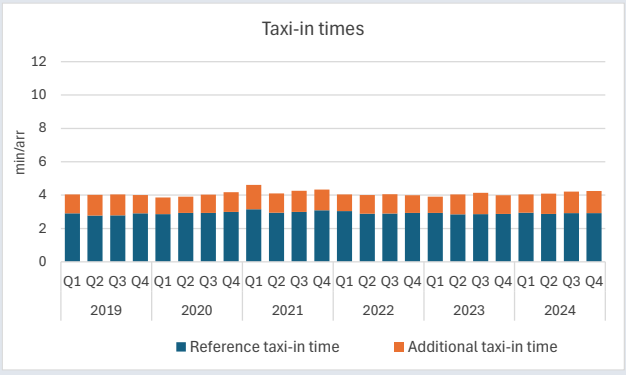
Punctuality



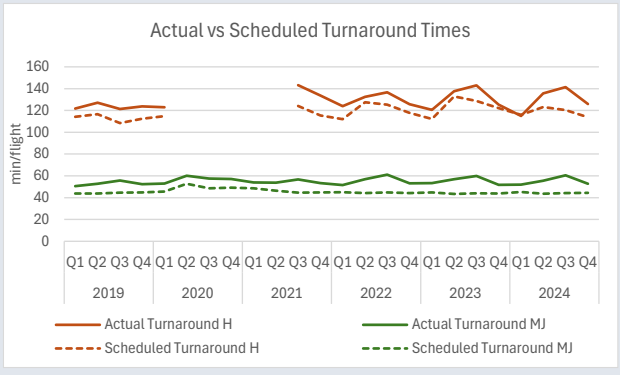


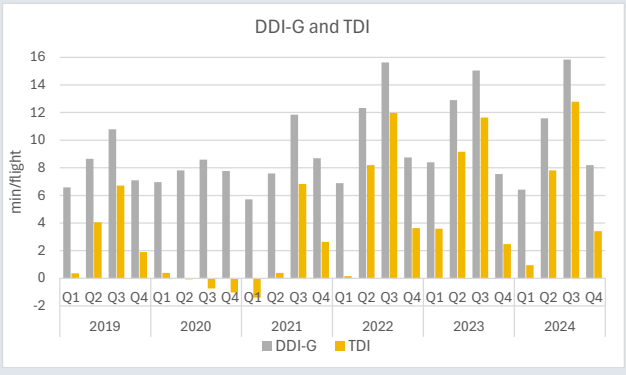
Taxi times





Turnaround times





Sources

Traffic: Network Manager
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Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

APOC CDG/LFPG

Paris Charles de Gaulle Airport

Traffic (ATMs) 2024: 467K (#4)

Traffic (PAX) 2024: 70.3M (#3)

A-CDM: Yes

Airport Operator: ADP

ANSP: DSNA

Main Aircraft Operator: Air France Group (51%)

Stakeholders at APOC

Physical

- ADP
- Ramp Mgmt
- Facility Mgmt
- Check-in
- Security
- Pax transfer
- Airport access
- Web COM

Virtual

- DSNA
- Main AO's
- De-icing
- Ground handlers
- RFFS
- MET service
- Police
- Border control
- Baggage
- PRM

APOC@CDG is currently structured in two parts:

- Landside Operations Centre (LOC) situated in an office building, in the middle of the airport.
- Airport Operations Centre (AOC) situated in airside area.

In Summer 2025, both centers will be reunited in one single building

The APOC looks at planning, pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

There is a Memorandum of Cooperation amongst local partners through CDM, signed by the CDG airport community (AO, GH, Authority).

There are established procedures for the Collaborative Decision Making. These include processes for disrupted operations. The organization of the Olympic and Paralympic games was the occasion to further develop the collaborative decision-making processes

APOC team(s)

- The Landside Operations Centre (LOC) : in charge of all processes concerning the passenger flows (access by road / public transport, check-in, security, immigration, boarding, baggage delivery, equipment) and supervision of general safety and security.
- The Airport Operations Centre (AOC) : in charge of all processes concerning airside operations (stand allocations, departure sequencing, capacities, etc.)

- There is also a DCB team

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 D-0 D+1

P-DPI DPI G-API

First AOP is developed in D-365. ADP, airlines, DSNA and NMOC are involved in the different stages of the AOP.

Post-ops D+1 review is used to improve the AOP, through a feedback loop towards the AOP developer.

Others

The operational centres (LOC and AOC) are in coordination with all the operational teams in the terminal buildings (in-airport, baggage supervision rooms ...)

The DCB team is configured in:

- Strategic view (staff dedicated)
- Pre-tactical view (APOC operational teams)
- Operational (APOC operational teams)

Performance monitoring

Performance Monitoring

Multiple persons are in charge of performance monitoring, but especially the Operational Duty Manager, who is physically in the APOC, constantly monitors the general performance of the airport.

There are multiple dashboards available for performance monitoring. Not all dashboards are shared externally.

Performance is monitored during the day and in post-ops.

KPIs

- OTP
- Waiting times
- Delays
- PDS indicators
- Environmental PI's
- Access times to the platform by car
- Baggage delivery times (arrivals)

KPIs with associated targets

- Waiting times at the security filters and immigration
- OTP : target at 65% (D15 departures)
- Security waiting times compliance rate : 95% (<10mn)
- Immigration waiting times compliance rate : 95% (<10mn)
- Baggage delivery times compliance rate (80%)
- Access times to the platform by car (95% between 6am and 9:30am)
- CO_2 emissions (-7% in 2025 vs 2019).

Data sources/missing data

In general, we have all the elements we need currently to execute our analyses, both during the day, as well as in post-ops.

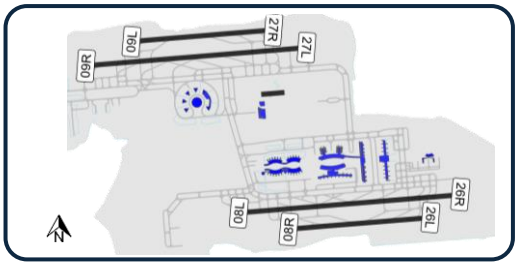
APOC CDG/LFPG

Paris Charles de Gaulle Airport

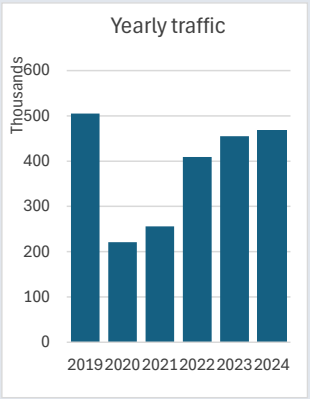
Traffic (ATMs) 2024: 467K (#4)

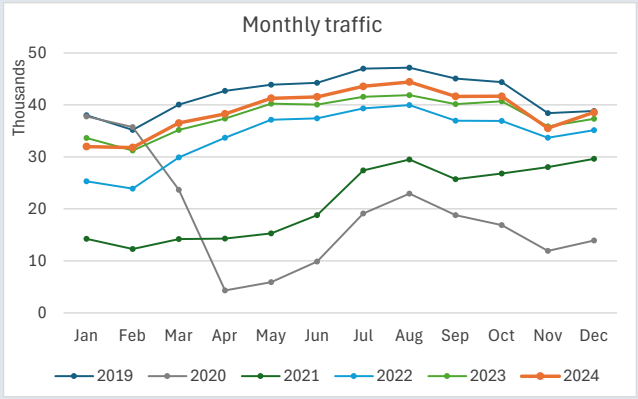
Traffic (PAX) 2024: 70.3M (#3)

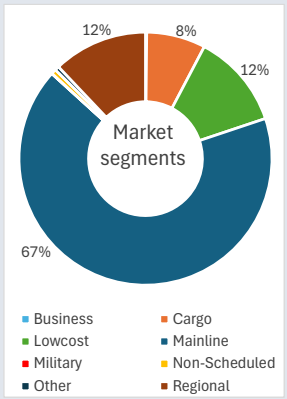
A-CDM: Yes



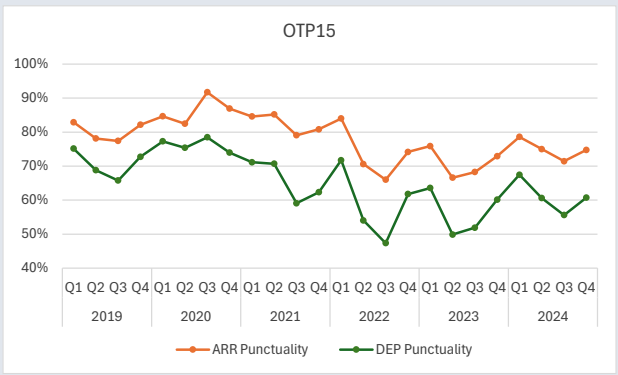
Traffic

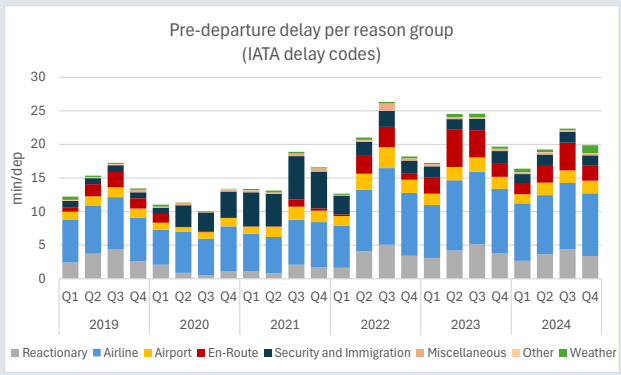




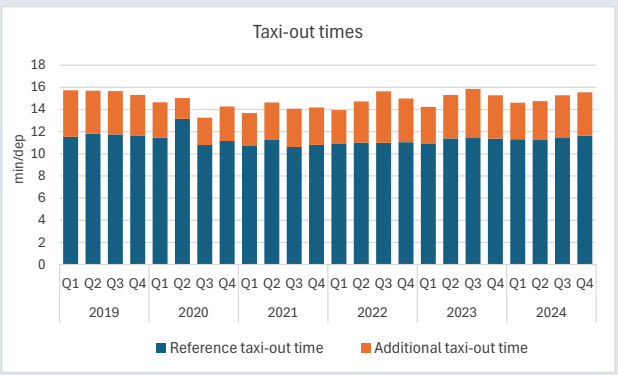


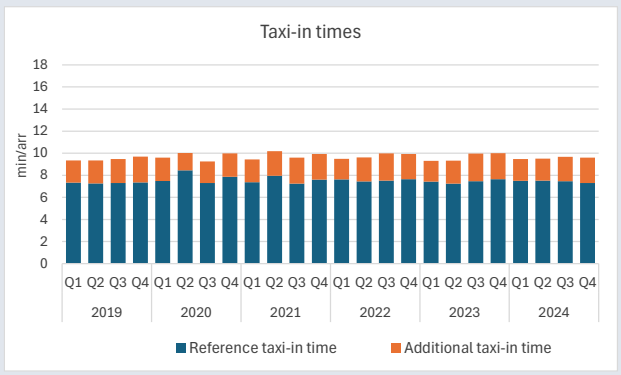
Punctuality



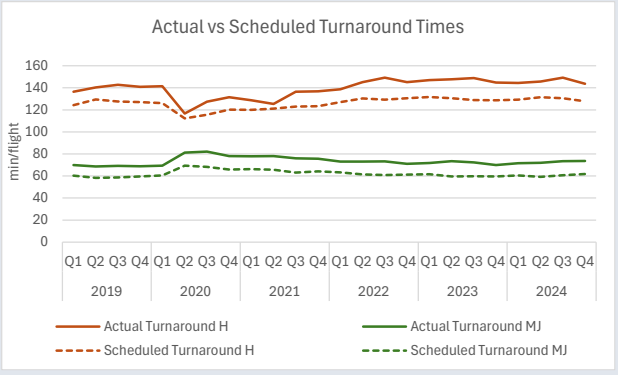


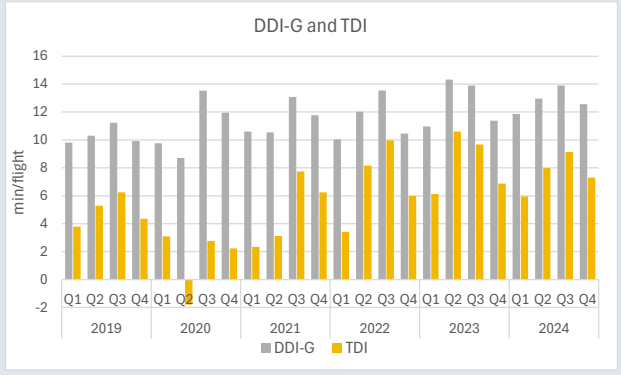
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

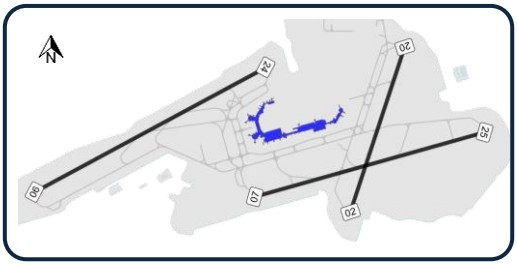
APOC ORY/LFPO

Paris-Orly Airport

Traffic (ATMs) 2024: 207K (#22)

Traffic (PAX) 2024: 33.1M (#16)

A-CDM: Yes



Airport Operator: ADP

ANSP: DSNA

Main Aircraft Operator: Air France Group (with Transavia) (46%)

Stakeholders at APOC

Physical

- ADP
- Ground handlers
- Border control
- Check-in
- Facility Mgmt
- Resource Mgmt
- Police
- Security
- Baggage
- Pax transfer
- PRM
- Customer experience
- Terminal Safety/Security
- Web COM
- Car Park Mgmt
- Airport access

Virtual

- DSNA
- Main AO's
- Slot coord.
- De-icing
- MET service
- FMP DSNA
- Engineering Water and Power
- ICT helpdesk
- RFFS
- Catering

The APOC is situated in the terminal building. 7 command centers were moved to an unique command center.

The APOC looks at planning, pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

There is a Memorandum of Cooperation amongst local partners, signed by the security agencies and the PRM agency.

There are established procedures for the Collaborative Decision Making.

APOC team(s)

- Passenger Team: monitors all processes concerning the passenger flow, general safety and security in/around terminal buildings.
- Airside Team: monitors all processes concerning airside operations.
- Baggage Team.
- Electrical Mechanical Team: monitors and manage all electrical mechanical equipment (elevators, escalators, etc.), and climate control.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI DPI G-API

First AOP is developed in D-179. ADP, airlines and NMOC are involved in the different stages of the AOP.

Post-ops D+1 review is used to improve the AOP, through a feedback loop to the AOP developer.

Others

Recently a person has been added to the team to be in charge of TAM. The goal is that we gradually integrate more and more external partners, both physically and virtually in our APOC. This should improve the cooperation between ADP and the different partners in the collaborative decision making and the sharing of information

Performance monitoring

Performance Monitoring

There are multiple dashboards available for performance monitoring. Not all dashboards are shared externally.

Performance is monitored during the day and in post-ops. During the day we try to anticipate as much as possible, based on the predicted passenger flows. In post-ops we analyze and try to identify the points where we can improve.

KPIs

- OTP
- Waiting times
- Delays
- PDS indicators
- Environmental PI's
- Baggage KPI's
- Technical facilities KPI's

KPIs with associated targets

- Waiting times at the security filters and immigration
- OTP : target at 65% (D15 departures)
- Security waiting times compliance rate
- Immigration waiting times compliance rate
- Baggage delivery (departures and arrivals)
- CO2 emissions

Data sources/missing data

In general, we have all the elements we need currently to execute our analyses, both during the day, as well as in post-ops.

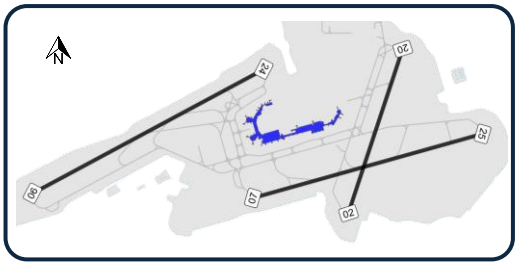
APOC ORY/LFPO

Paris-Orly Airport

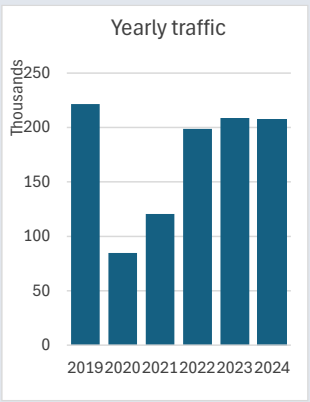
Traffic (ATMs) 2024: 207K (#22)

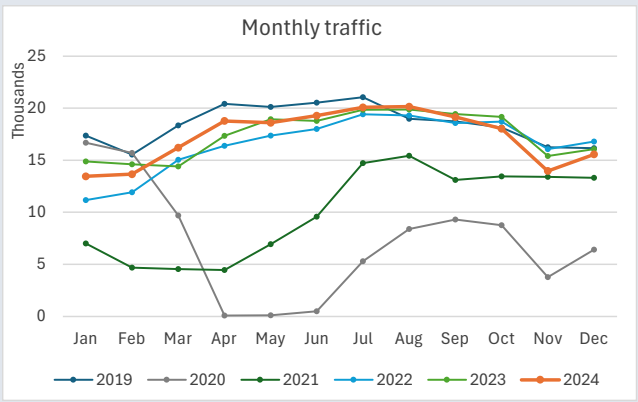
Traffic (PAX) 2024: 33.1M (#16)

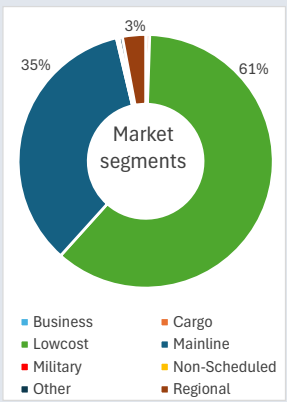
A-CDM: Yes



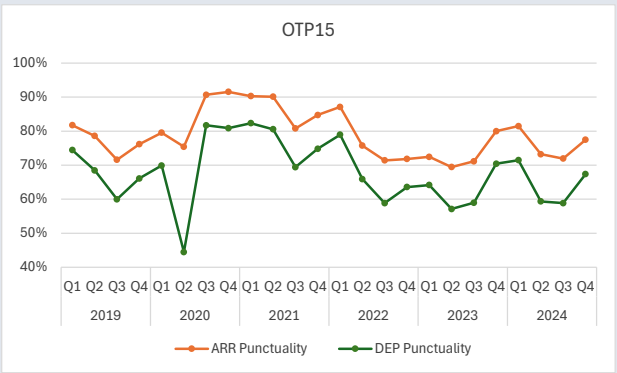
Traffic

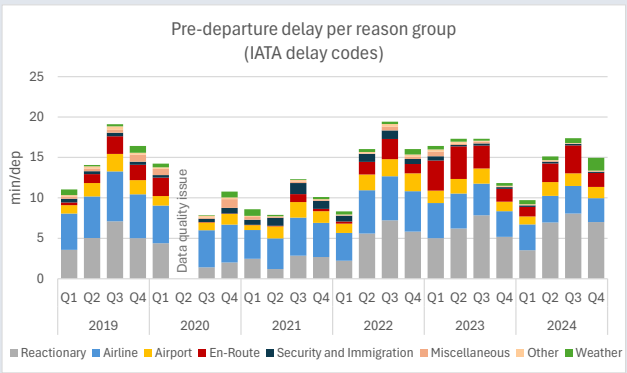




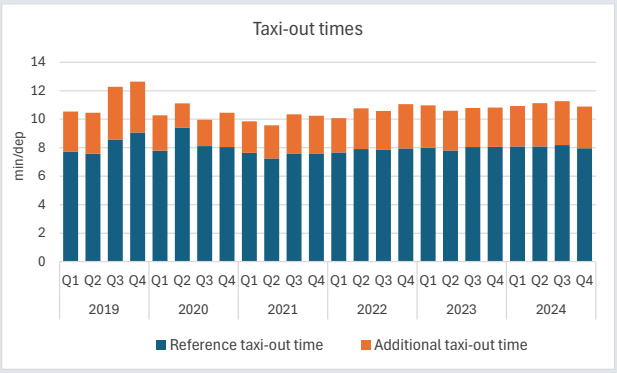


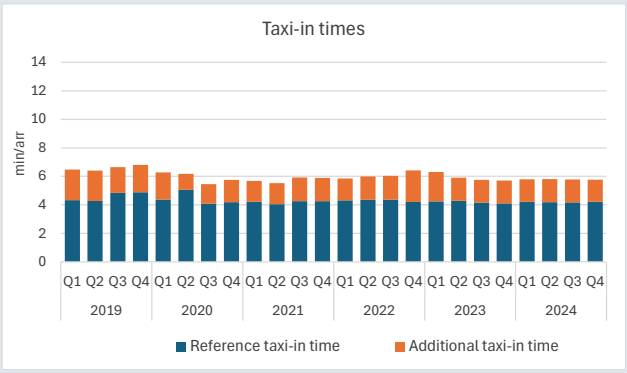
Punctuality



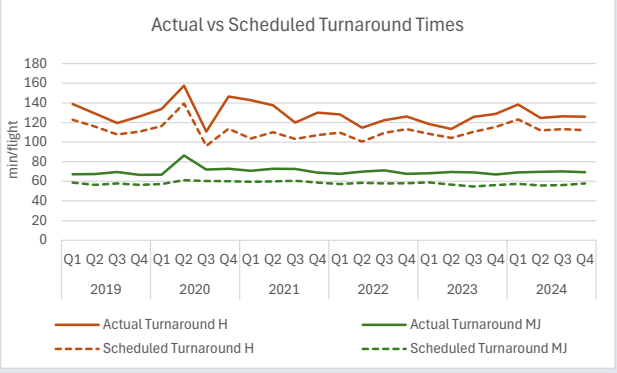


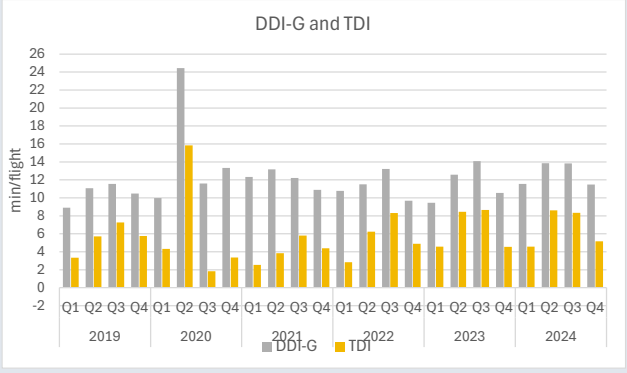
Taxi times





Turnaround times





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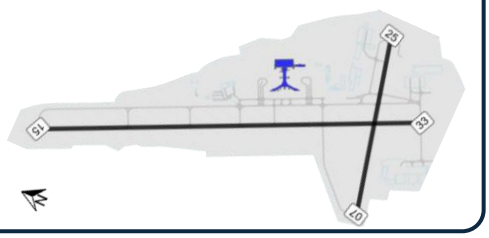
APOC BSL/LFSB

Basel-Mulhouse Airport

Traffic (ATMs) 2024: 76K (#64)

Traffic (PAX) 2024: 8.9M (#72)

A-CDM: No



Airport Operator: EuroAirport

ANSP: DSNA

Main Aircraft Operator: easyJet (42%)

Stakeholders at APOC

Physical

- EuroAirport
- Ground handlers*
- Main AO's*
- De-icing
- Police*
- Border control*
- Check-in
- PRM*
- Baggage
- Voice/ Info Desk*
- RFFS*

(*) Also virtual

Virtual

- DSNA
- FMP DSNA
- Slot coord.
- MET service
- Pax transfer
- Security
- Airport access

The APOC is situated in the terminal building, airside, near the gates area.

Working arrangements

Agreements

The **Airport Operations Manual** (Manuel de Gestion) is not signed at the moment by all partners. Currently only the Airport Operator has signed that agreement.
There are established processes for collaborative decision making, through 35 checklists created by the ADM (Airport Duty Manager). These checklists foresee various irregularities.
Meetings:
Kick-Off Mtg, Daily OPS Mtg, Shift Briefings, delay code clearing briefings and weekly performance meeting.

APOC team(s)

- APM Team (Airport Performance Meeting) for follow up of previous weeks operation and performance (KPI) and preparation for following week.
- ADM (Airport Duty Manager) for anticipation and irregularity handling on a daily basis.
- Apron Coordination for leading the Delay Code Clearing briefings

DCB does not have a dedicated team but occasionally some staff members work on the subject.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI DPI G-API

Others

At the moment the performance monitoring during the day of operations is not fully implemented yet, however with the ECRA project this subject will be in the hands of Apron Coordination and Terminal Duty Managers.

Performance monitoring

Performance Monitoring

There is a performance review dashboard presented on the weekly performance mtg APM
This dashboard is not used at the moment by other actors, it is awaiting new version of operation tool (AirportKeeper).

Monitoring of waiting times at passport control and security checks.
Baggage delivery performance indicators to follow.

KPIs

- OTP
- Pax figures
- Delays
- Aircraft movements
- More KPIs to follow

KPIs with associated targets

- OTP
- DL87

Data sources/missing data

All necessary data is available. However, we have to work and improve on how to capture, handle and display this data.

The only important data missing in regards of A-CDM/ECRA is the TSAT in real time.

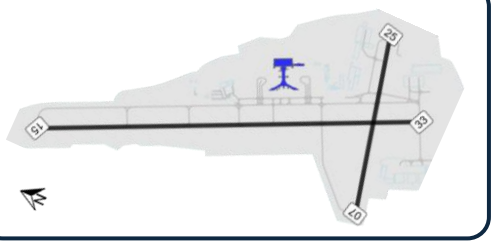
APOC BSL/LFSB

Basel-Mulhouse Airport

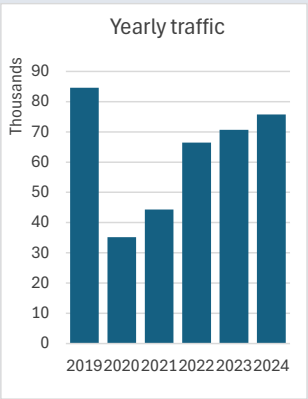
Traffic (ATMs) 2024: 76K (#64)

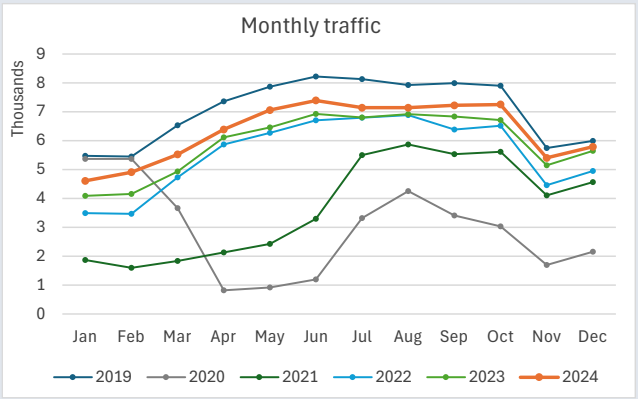
Traffic (PAX) 2024: 8.9M (#72)

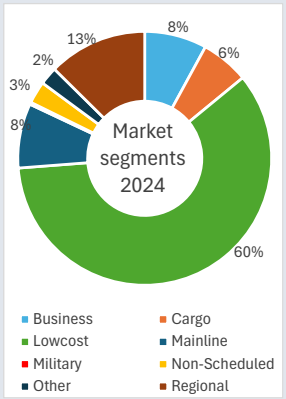
A-CDM: No



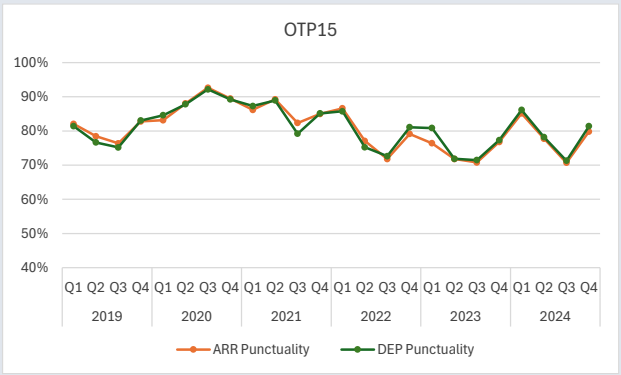
Traffic

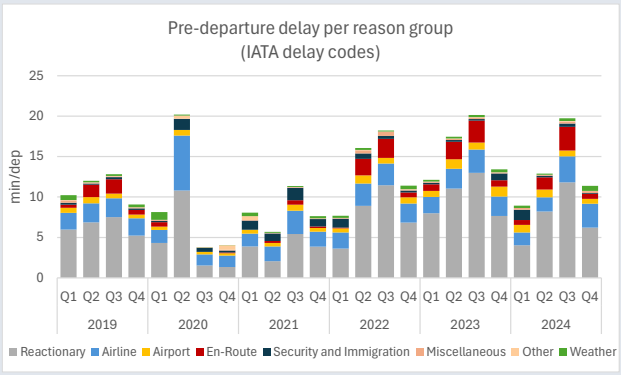




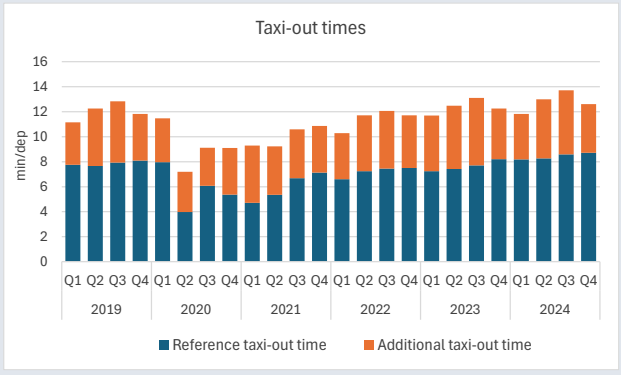


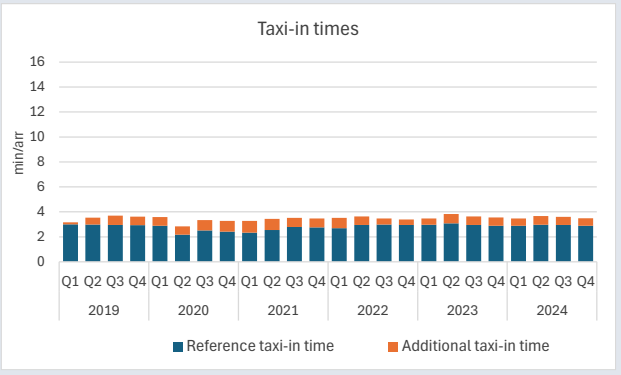
Punctuality



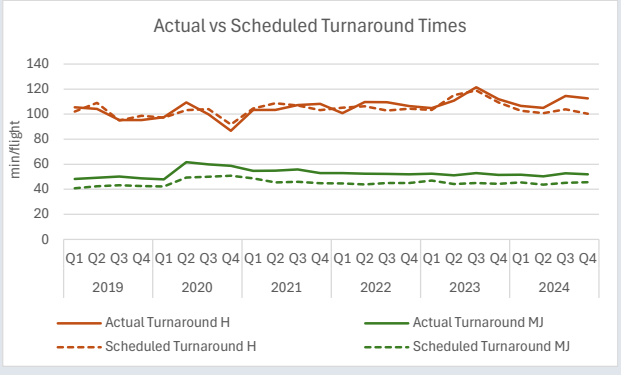


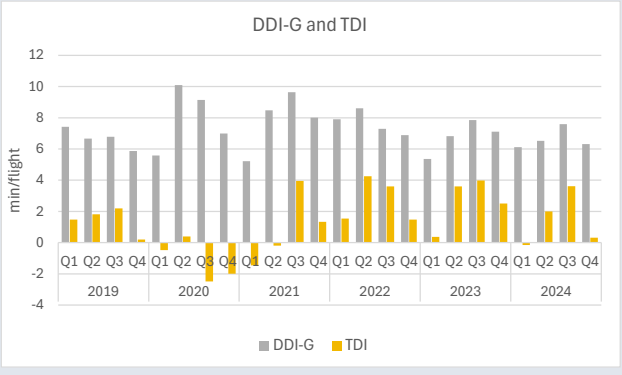
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

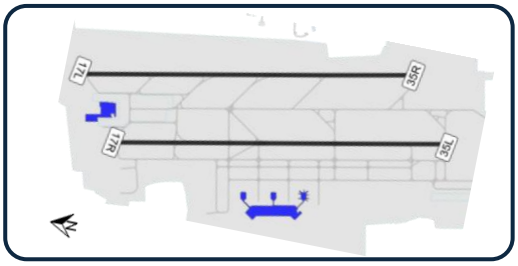
APOC MXP/LIMC

Milan Malpensa Airport

Traffic (ATMs) 2024: 215K (#21)

Traffic (PAX) 2024: 28.9M (#23)

A-CDM: Yes



Airport Operator: SEA Milan Airports

ANSP: ENAV

Main Aircraft Operator: easyJet (23%)

Stakeholders at APOC

Physical

- SEA Milano (Planned)
- Ground handlers (Planned)
- Main AO's (Planned)
- De-icing (Planned)
- Security (Planned)
- Baggage (Planned)
- PRM (Planned)
- Airport access (Planned)

Virtual

- ENAV (Planned)
- Maintenance infrastructure

There is no physical APOC facility at the moment, project is ongoing.
It should be developed in the terminal building, in the airside area.
We have an AOCC only with airport function and without any stakeholder.
Fisical APOC will be ready for 2027.

In the first phase, the project will probably look at planning, pre-tactical and tactical phases

Working arrangements

Agreements

There is no Memorandum of Cooperation amongst local partners yet.
The APOC project has been presented to stakeholders (State bodies, Airlines, ground handlers)

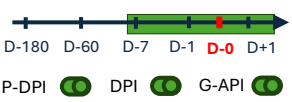
As a fully A-CDM airport, there are established A-CDM processes with airlines, ground handler and ATC provider.

APOC team(s)

- Airport Operations Department: in charge of DCB
- AOCC unit within the Airport Operation Department: in charge of performance monitoring during the day of operations.
- Terminal Management: in charge of monitoring the pax flow.

AOP and integration with NOP

AOP?



AOP/NOP integration is ongoing. We expect to have the integration for Q1 2024

Others

Operations, Client Management, Supply chain and ICT departments are involved in the different stages of the AOP

Performance monitoring

Performance Monitoring

There is a performance review report provided by AOCC department and is distributed to other internal actors and stakeholders during client's meetings.

Post-ops review is done, but not on regular basis.

KPIs

- Overall Punctuality
- Delay codes
- First wave punctuality
- Stand allocation

KPIs with associated targets

- Overall Punctuality
- Delay codes
- First wave punctuality
- Stand allocation

Data sources/missing data

In order to go deeper in the analysis, we should have data from ground handlers' performance.

APOC MXP/LIMC

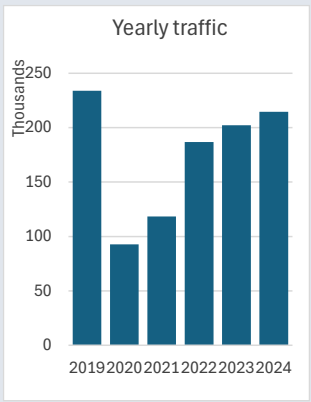
Milan Malpensa Airport

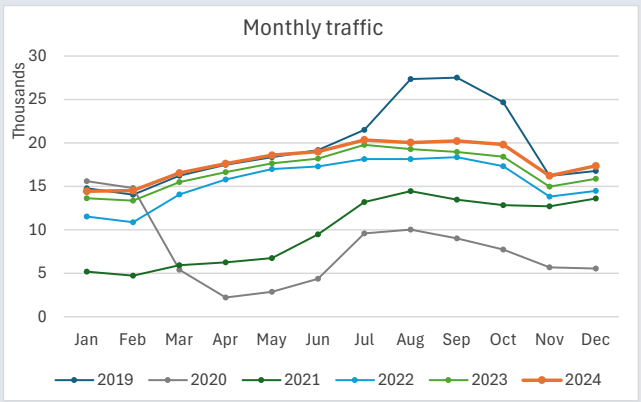
Traffic (ATMs) 2024: 215K (#21)

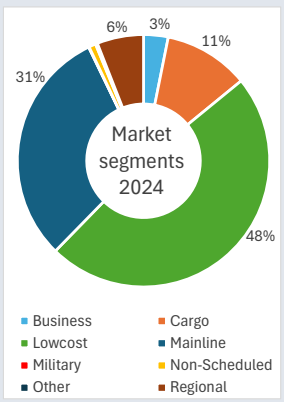
Traffic (PAX) 2024: 28.9M (#23)

A-CDM: Yes

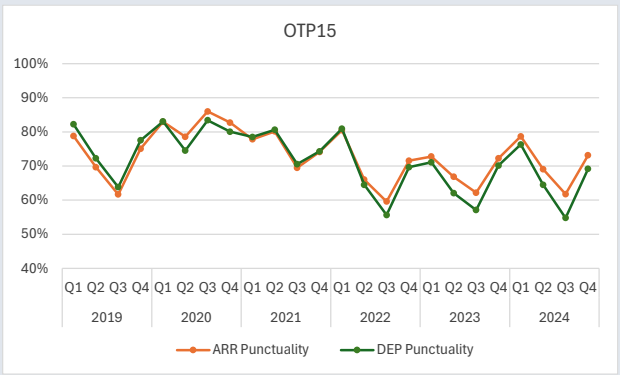
Traffic

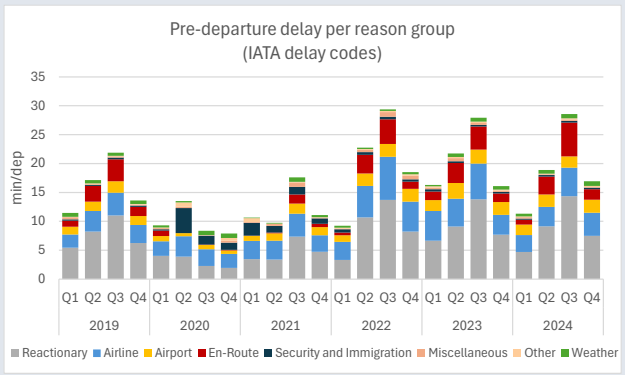




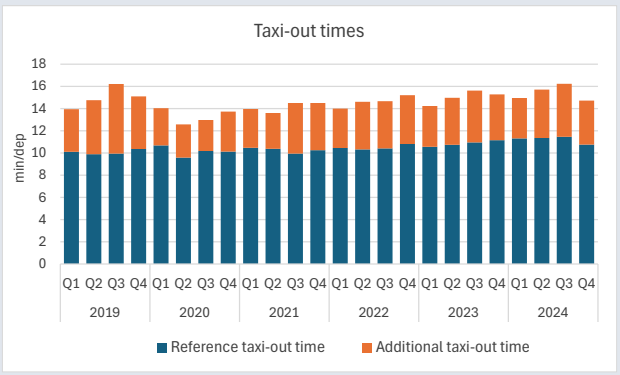


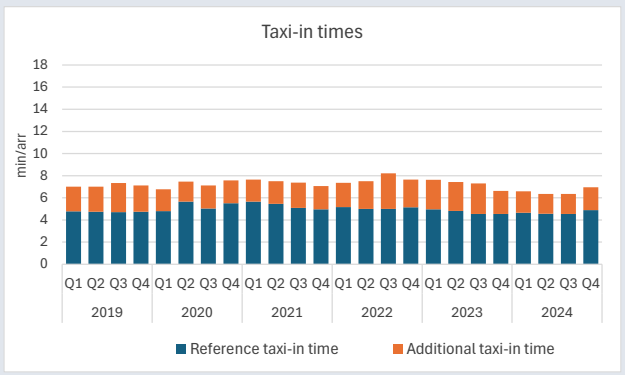
Punctuality



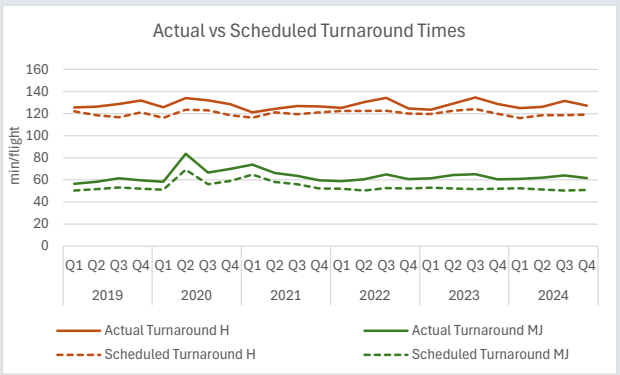


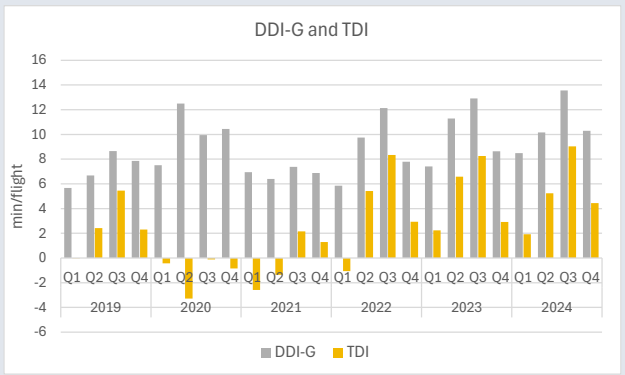
Taxi times





Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

APOC FCO/LIRF

Rome Fiumicino Airport

Traffic (ATMs) 2024: 316K (#9)

Traffic (PAX) 2024: 48.9M (#8)

A-CDM: Yes

Airport Operator: Aeroporti di Roma

ANSP: ENAV

Main Aircraft Operator: ITA Airways (30%)

Stakeholders at APOC

Physical

- ADR
- ITA airways
- Security
- Baggage
- Ground handlers (Planned)

Virtual

- PRM

The APOC facility is situated in the terminal building, airside area, on the APRON level.
APOC is physical but all the systems are virtualized in order to be accessible everywhere.
There is also a physical back-up room on the opposite side of the airport.
The APOC looks at planning, pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

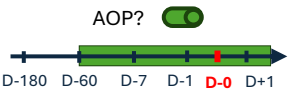
There is no Memorandum of Cooperation but there are established processes which describe responsibilities and working flows involving all the representatives of the different ADR (Aeroporti di Roma) operational rooms.
We have a list of more than 150 disruptions with the associated communication flows and resolution procedures.

APOC team(s)

DCB is done by the ANSP.

The APOC Manager and the Flight Control Center monitor performance during the day of operations.

AOP and integration with NOP

AOP? 

The first AOP is established D-60. There are different plans : seasonal, monthly and weekly up to the day of ops.
Operational planning and pre-coordination center are involved in the different stages of the AOP.
AOP-NOP integration was achieved in July 2024.

Others

There is post-ops performance review at D+1 to understand the root causes which might have led to KPI below target values and to implement mitigation actions if necessary.

Performance monitoring

Performance Monitoring

There is a performance review dashboard (internal to the Airport Operator). Then there are other dashboards that are used weekly/monthly to discuss with other stakeholders (mainly GH and AO)
Performance is monitored during the day of operations and in post-ops.

KPIs

- OTP
- Delay causes
- Flight allocation (% of contact stand, wiwo stand etc)
- TOBT expired
- Etc

KPIs with associated targets

- OTP
- Delay causes
- Flight allocation (% of contact stand, wiwo stand etc)
- TOBT expired
- Etc

Data sources/missing data

It would be helpful to have the booked number of pax the day before ops in order to optimize the operational plan. Now we have them only for AZ flights

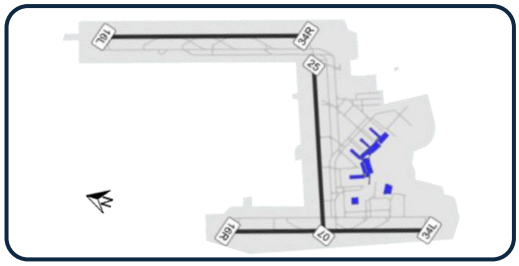
APOC FCO/LIRF

Rome Fiumicino Airport

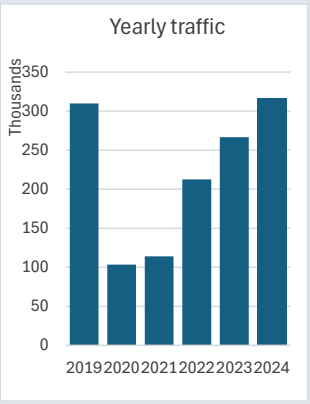
Traffic (ATMs) 2024: 316K (#9)

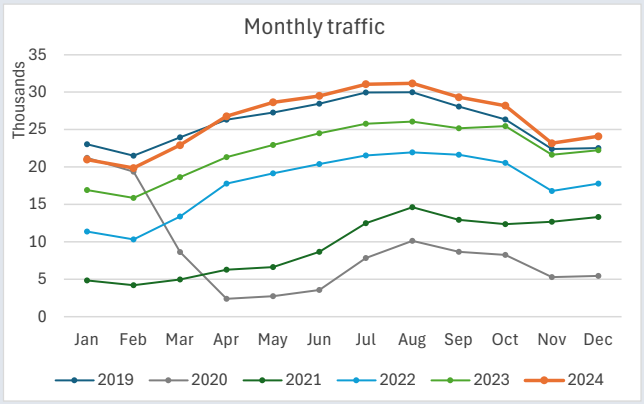
Traffic (PAX) 2024: 48.9M (#8)

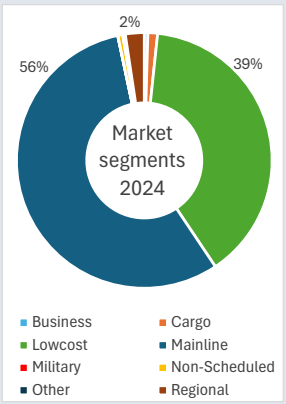
A-CDM: Yes



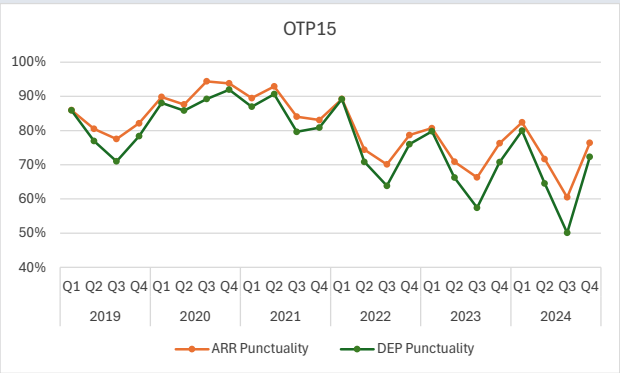
Traffic

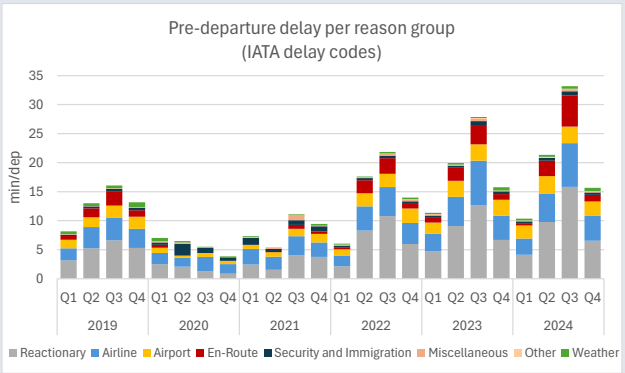




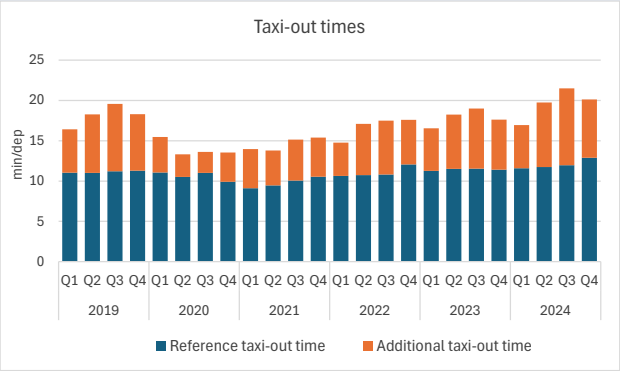


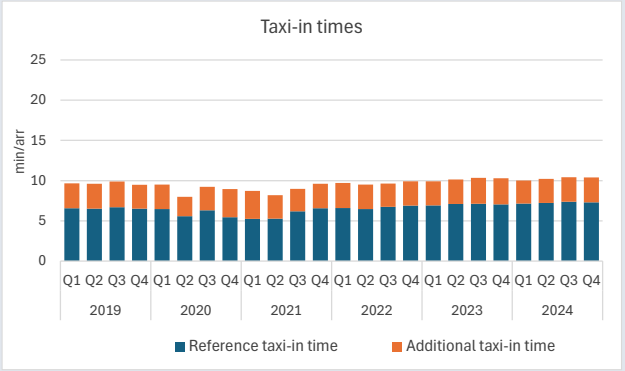
Punctuality



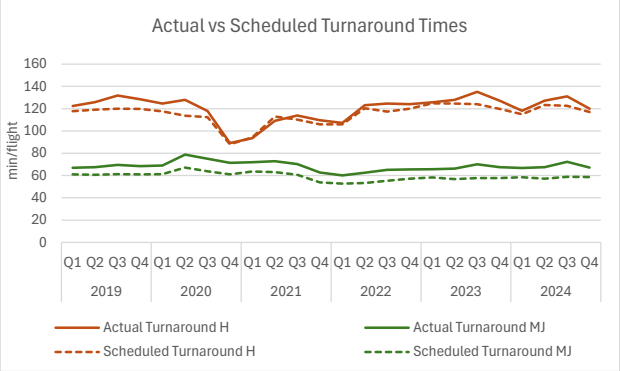


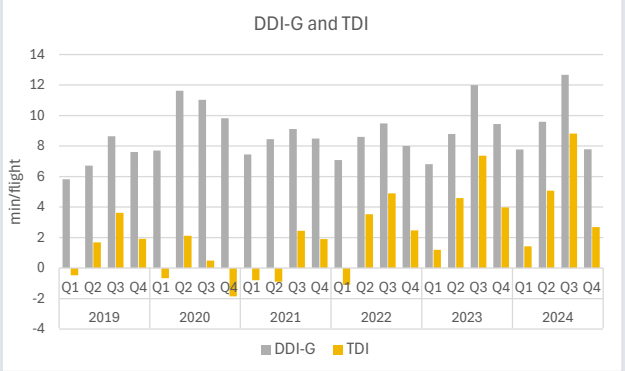
Taxi times





Turnaround times





Sources

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For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

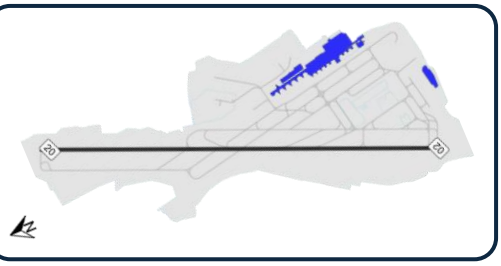
APOC LIS/LPPT

Lisbon Airport

Traffic (ATMs) 2024: 229K (#18)

Traffic (PAX) 2024: 35.1M (#13)

A-CDM: Yes



Airport Operator: ANA Airports (Vinci group)

ANSP: NAV Portugal

Main Aircraft Operator: TAP (48%)

Stakeholders at APOC

Physical

- Lisbon Airport
- TAP
- RYR
- Ground handlers
- Baggage
- Check-in
- Pax transfer
- PRM
- Customer experience

Virtual

- NAV Portugal
- FMP NAV Portugal
- EZY
- Airport access
- Border control
- Police

The APOC facility is in the terminal building, international area.
The APOC is physical with some degree of remote participation by a small number of stakeholders.

The APOC looks at planning, pre-tactica and tactical phases. Post-ops is carried out by another unit.

Working arrangements

Agreements

There is no formal MoC signed by all stakeholders, but there is a policy for the APOC that has been prepared by the airport and accepted by all users.
The decision-making process is designed between the stakeholders and the APOC supervisors during normal operations.
During irregular operations, the decision-making process is carried out by all stakeholders in the APOC Crisis Room (more stakeholders than during normal operations) supported by the Airport Duty Manager.

APOC team(s)

- APOC supervision and management
- Stand & gate allocation
- Airside management + coordination with tower
- Terminal management
- Baggage terminal monitoring
- Monitoring of ACDM and Delay Clearing + coordination with tower regarding CDM
- General monitoring of AO/GH operations
- AO/GH <>APT coordination
- Queue monitoring and management
- Passenger assistance, mainly during operational disruptions
- Traffic and access roads monitoring

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI DPI G-API

LIS has an i-AOP and is in the process of developing the E-AOP to be used by all APOC stakeholders.
At this stage, only the airport, GH/AOs and ANSPs are to be part of the AOP.

Others

Post-op analysis is performed on a weekly basis.

During irregular operations, more stakeholders integrate the physical APOC in the Crisis Room

Performance monitoring

Performance Monitoring

- Formal Briefing (physical & virtual) daily at 03H00 to share airport information (PAX forecast /Border control forecast/ Capacity Impact / Events...)
- D+1 post-ops debriefing.
- Informal briefing after first wave (physical).

Performance review dashboard, not interoperable, so it's not yet being used by all stakeholders; it is visible when displayed on the video wall.
Performance is monitored during the day of operation.
Post-ops review is outside the scope of the APOC.

KPIs

- Punctuality,
- TOBT Quality
- TSAT volatility

KPIs with associated targets

- Punctuality,
- TOBT Quality

Data sources/missing data

There is a lack of data relating to runway operation (integration of the arrival sequencer with the tower, both systems belonging to the ANSP).
A Runway Capacity Performance Monitor with more detailed approach information is needed to assess performance.

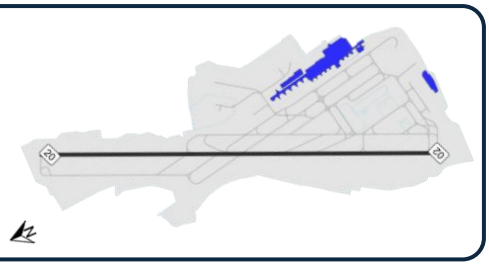
APOC LIS/LPPT

Lisbon Airport

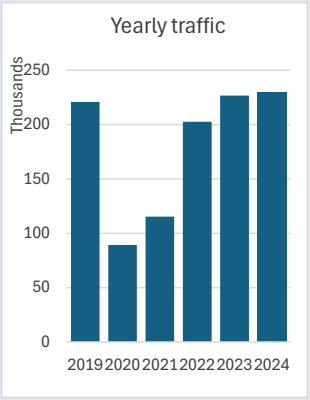
Traffic (ATMs) 2024: 229K (#18)

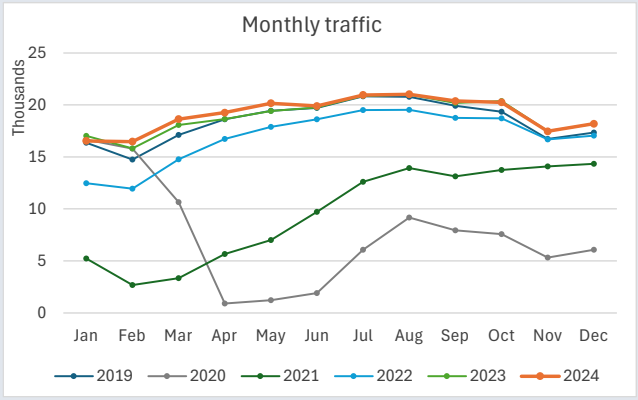
Traffic (PAX) 2024: 35.1M (#13)

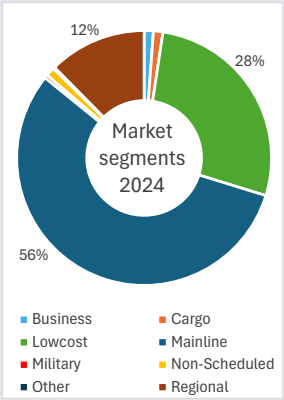
A-CDM: Yes



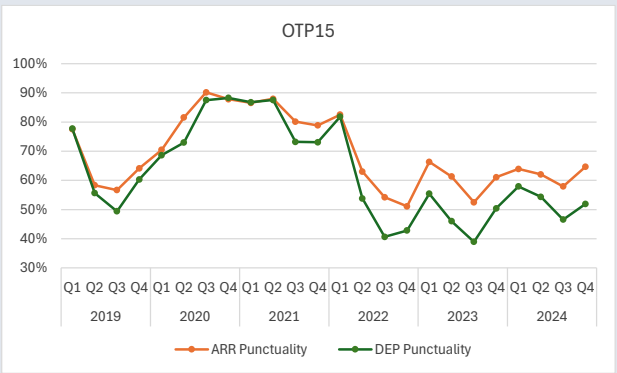
Traffic

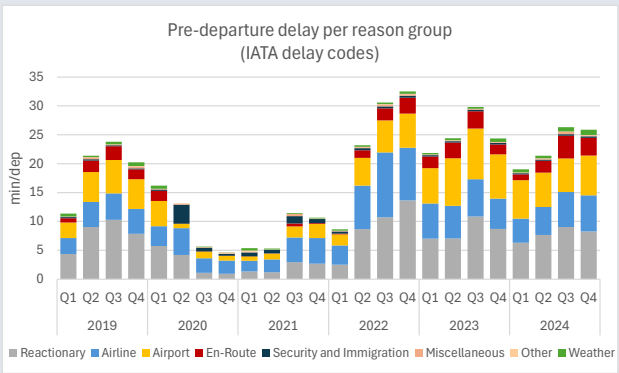




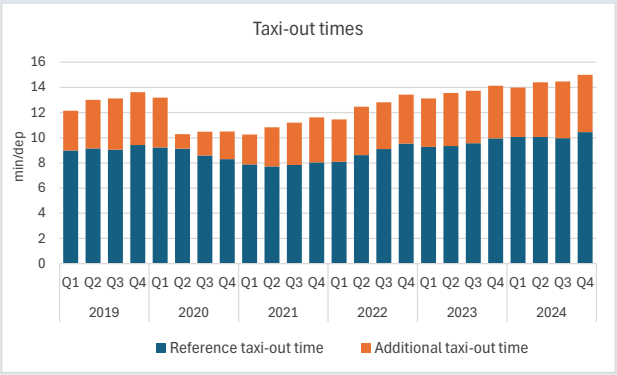


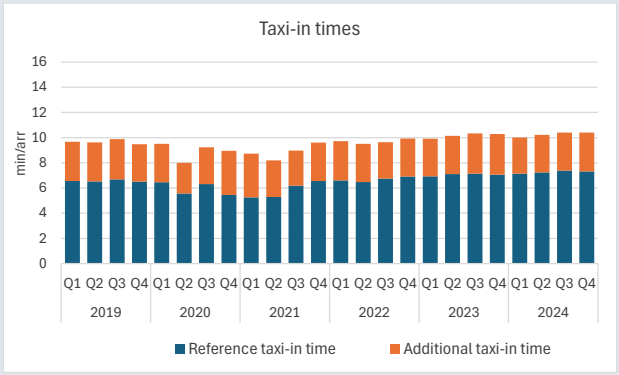
Punctuality



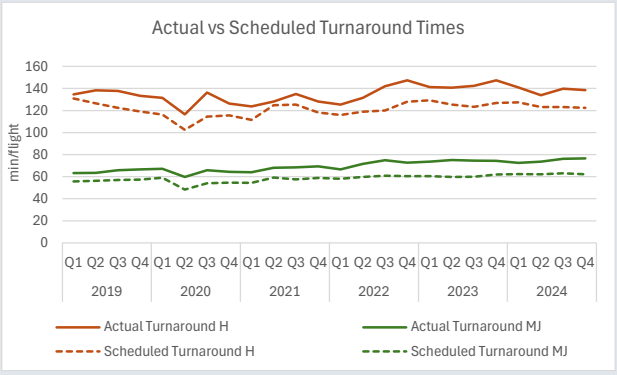


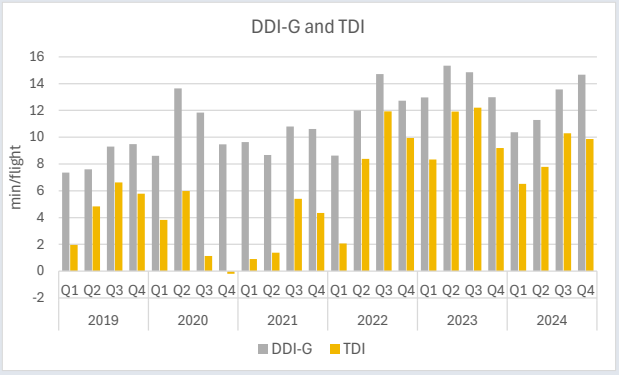
Taxi times





Turnaround times





Sources

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For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

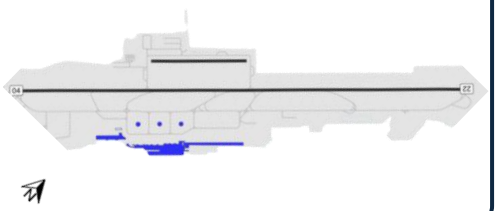
APOC GVA/LSGG

Geneva Airport

Traffic (ATMs) 2024: 173K (#29)

Traffic (PAX) 2024: 17.7M (#32)

A-CDM: Yes



Airport Operator: Genève Aéroport

ANSP: Skyguide

Main Aircraft Operator: easyJet (32%)

Stakeholders at APOC

Physical

- Genève Airport
- Main AO's
- Ground handlers
- Border control*
- Security*
- De-icing
- Check-in*
- Terminal Management
- Pax bus transport

(*) Also virtual

Virtual

- Skyguide
- FMP Skyguide
- Ground handlers (GA/BA)
- Baggage
- Police
- RFFS
- MET service
- Fuel services
- Airport access

The APOC facility is situated in the operational building, airside with access to landside, next to TWR. (About 800m from terminal)

The APOC looks at pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

There is a Memorandum of Cooperation amongst local partners, signed by the ground handlers.
For the collaborative decision making, a CONOPS was developed with stakeholders plus there is a Code of Conduct.

There are 2 coordination meetings per day with all partners (with lists of information expected from each partner).
Roles and responsibilities are defined in normal and degraded situations.

APOC team(s)

APOC is headed by Airport Duty Manager (ADM) during operating hours.

Emergency plan team:
Ensuring an optimum transition between normal operating conditions and degraded situation by including the main partners.

Team in charge of DCB is still under development. POC already concluded for the landside part.
The airport operator, handling agents, customs and major airlines monitor performance during the day of operations.

AOP and integration with NOP

AOP? 

P-DPI  DPI  G-API 

AOP is still under development.

It is expected at D-179 with continuous automatic updates, involving all APOC partners.

We have monthly performance meetings in place and planning meetings every 15 days

Others

Coordination with the NMOC is still done through the Airport Corner.

Performance monitoring

Performance Monitoring

Individualized dashboards for forecasted movements, passengers, and baggage for the day of operations are in place for majority of stakeholders.

Performance review dashboards are used at management level.

KPIs

- Night movements
- Delays (first wave and general – Scheduled Flights and General Aviation)
- Number of passengers
- Number of flights
- Quality of forecasted figures.
- Etc

KPIs with associated targets

- Performance of forecasts
- Delays
- Number of night flights
- Waiting time at the security control
- Number of passengers transported by bus, etc.

Data sources/missing data

All data available except planification of expected registration used by airlines for all sectors in advance (anticipation of delays at the Planification stage).

APOC GVA/LSGG

Geneva Airport

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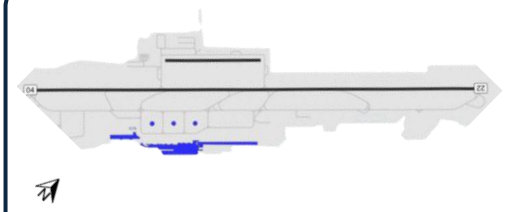
A-CDM: Yes



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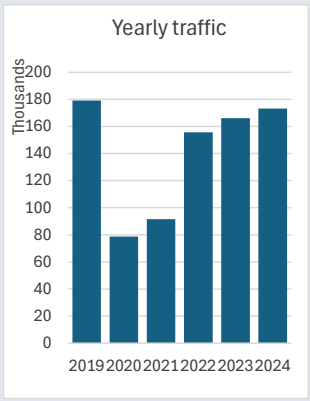
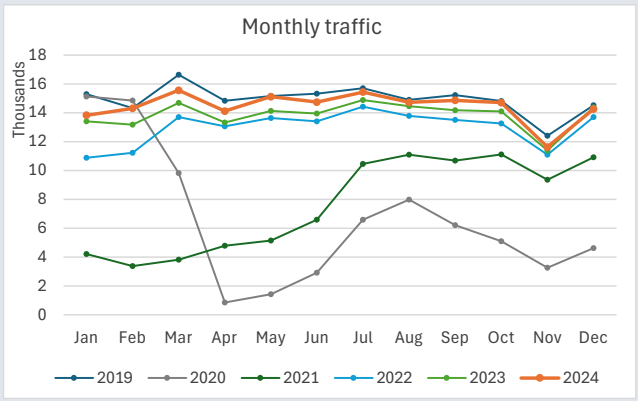
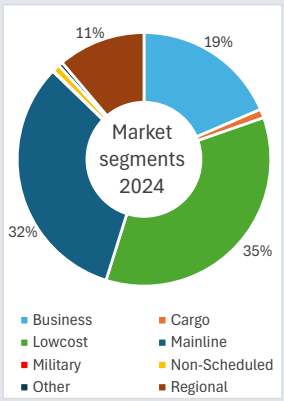
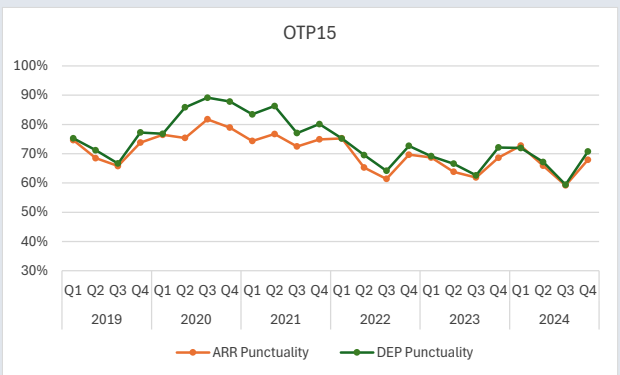
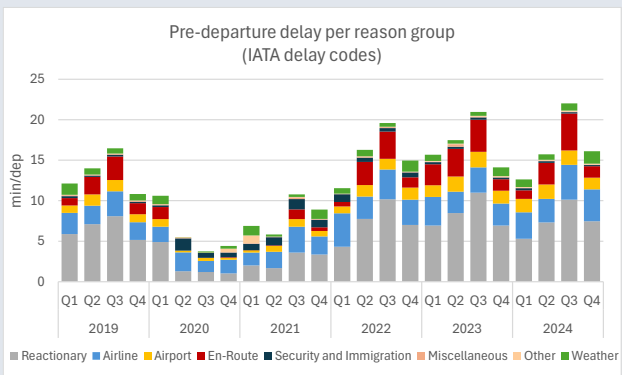




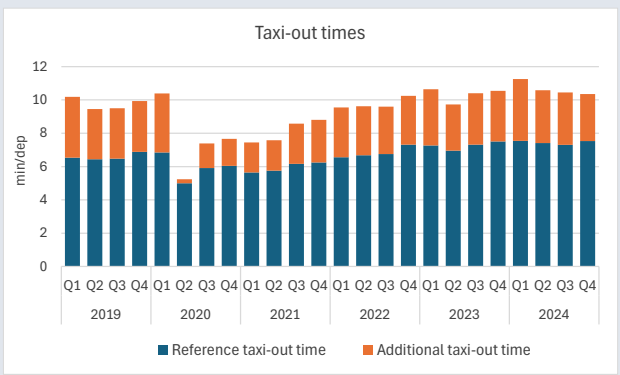


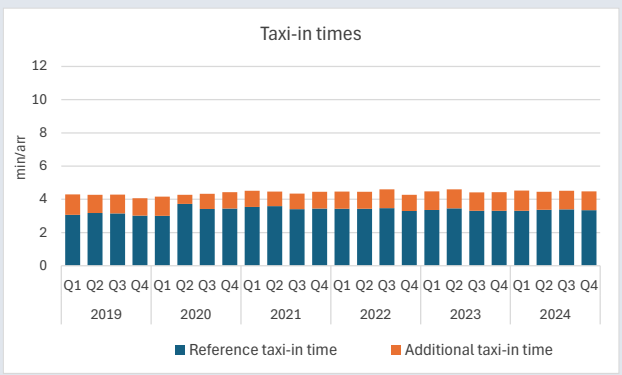
Punctuality



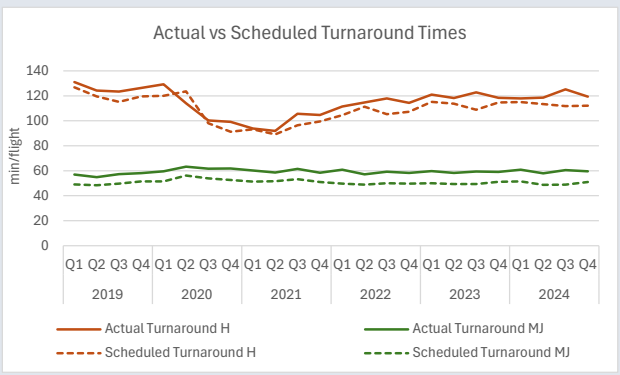


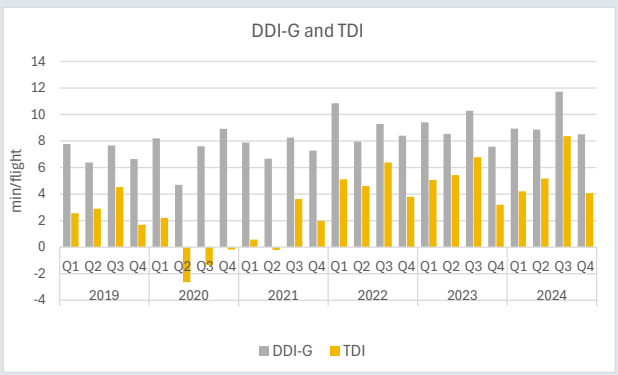
Taxi times





Turnaround times





Sources

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For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

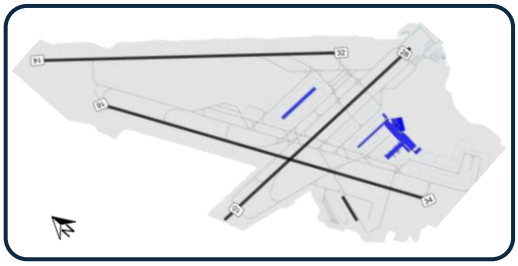
APOC ZRH/LSZH

Zurich Airport

Traffic (ATMs) 2024: 258K (#12)

Traffic (PAX) 2024: 31.1M (#19)

A-CDM: Yes



Airport Operator: Zurich Airport

ANSP: Skyguide

Main Aircraft Operator: Swiss (56%)

Stakeholders at APOC

Physical

- Zurich Airport
- Swiss airlines
- Security
- De-icing
- Ground handlers*
- Cleaning
- Pax bus transport
- Catering services
- A-CDM
- Resource Mgmt
- Airport Guides

(*) Also virtual

Virtual

- Skyguide
- FMP Skyguide
- Slot coord.
- MET service
- Check-in
- Pax transfer
- PRM
- Baggage
- Terminal Management
- Border control
- Police
- RFFS
- ICT helpdesk
- Maintenance infrastructure
- Airport access
- Car Park Mgmt

The APOC facility is on top of terminal A, next to the tower.
APOC is both physical and virtual .

The APOC looks at pre-tactical and tactical phases. Post-ops is observed only in regard of delay code clearing.

Working arrangements

Agreements

There is a Memorandum of Cooperation that must be signed by all stakeholders at Zurich airport.
All involved actors do everything to provide an on-time departure for the aircraft.

APOC team(s)

DCB in regard of runway capacity is not done by the APOC. The APOC makes the planning of passenger flow (i.e. security checks, border control) and de-icing.
All stakeholders monitor performance during the day of operations.
Other APOC teams:

- Contingency planning (infrastructure)
- Security crews planning
- AODB first level support
- Coordination of WIP
- Development of new applications regarding turnaround management and passenger flow

AOP and integration with NOP

AOP? ON

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI OFF DPI ON G-API OFF

The AOP is not developed through the APOC but involves several stakeholders (Airport operations, airlines, GH, Police, Inmigration). Basic version at M-6 and continuously developed further.
No coordination at the moment with NMOC but the target is to establish a B2B connection.

Others

A post-ops review suite should be released any time soon. The prediction of the AOP is compared with the final figures.

Currently send DPI and API. The implementation of P-DPI and G-API, along with the transition from AFTN to the B2B data exchange format, is planned as part of airport system upgrades (lifecycle management), including the new AODB and Departure Manager. Implementation date: 31/12/2027

Performance monitoring

Performance Monitoring

There is a performance review dashboard (internal to the Airport Operator). The most important data is published in our daily airport report.
Performance is monitored during the day of operation and in post-ops.

KPIs

- Departure/Arrival Punctuality
- Ground Time Adherence
- Top Ten Delay codes of the day
- Runway Concept
- Waiting times at security and border control

KPIs with associated targets

- Waiting times at security and border control,
- De-icing capacity

Data sources/missing data

All required data is available.

The process might be affected by short term staff shortages.

APOC ZRH/LSZH

Zurich Airport

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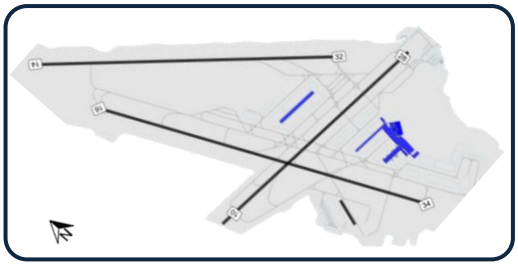
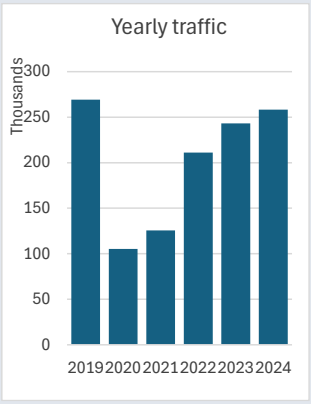
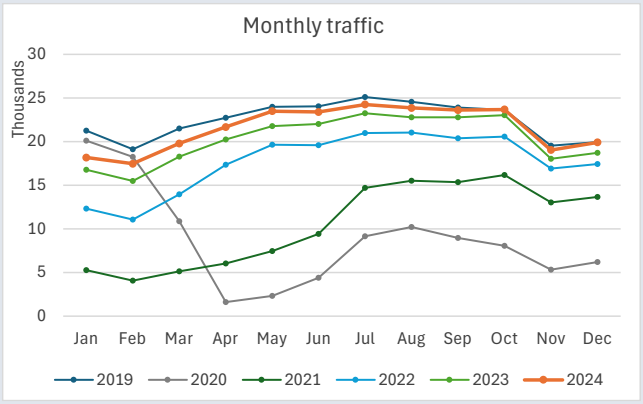
Traffic (PAX) 2024: 31.1M (#19)

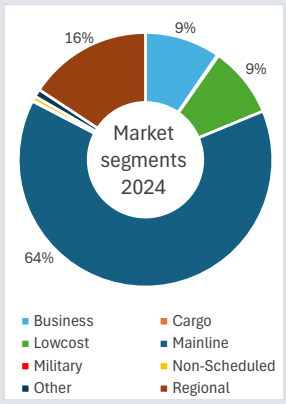
A-CDM: Yes



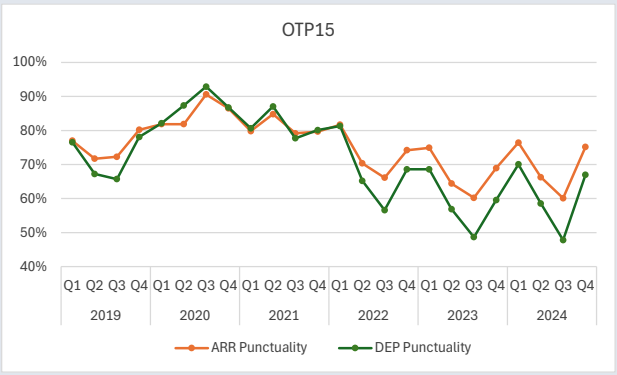
Traffic

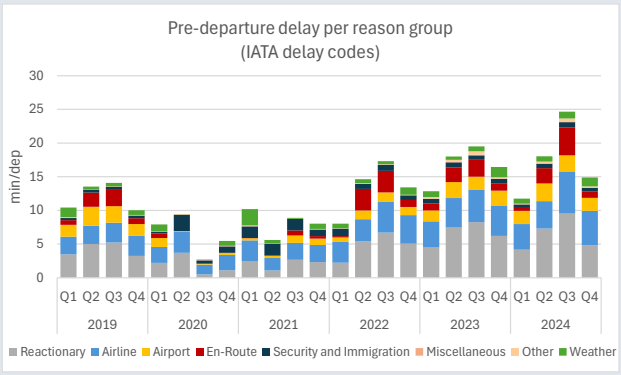






Punctuality





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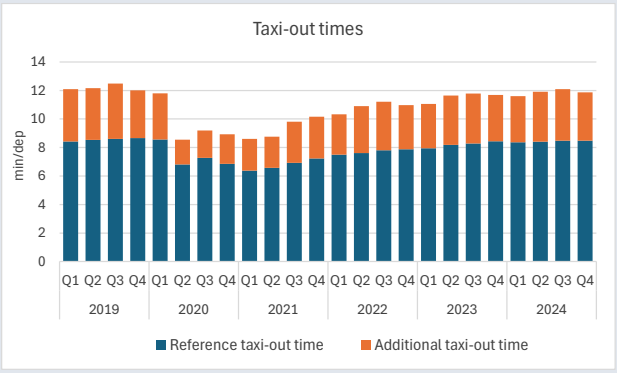

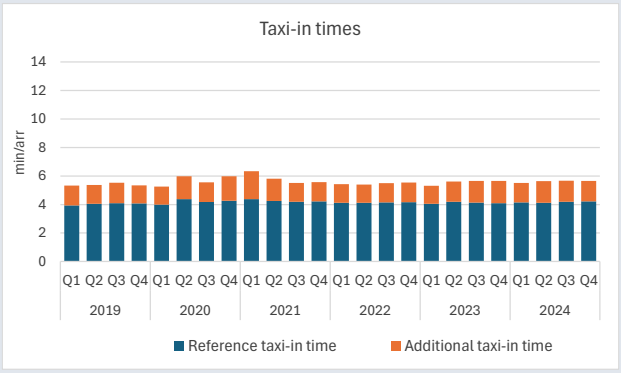

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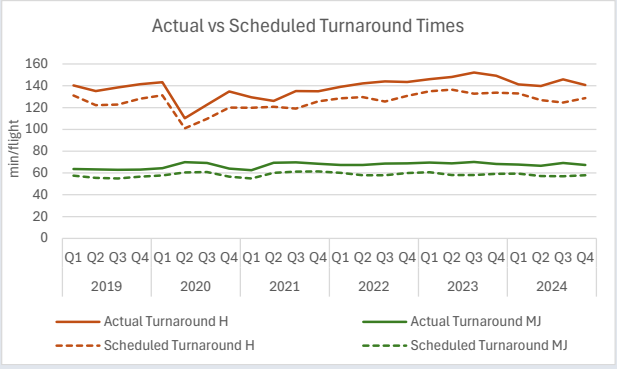

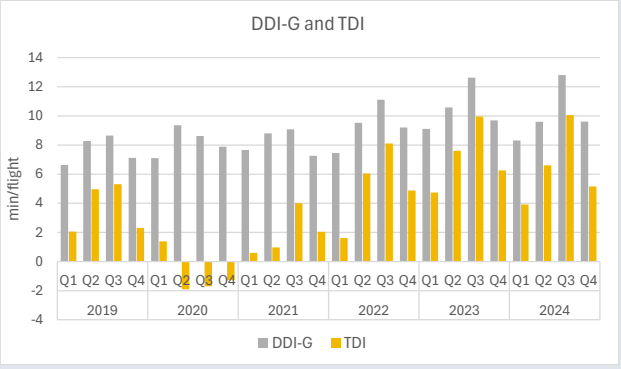

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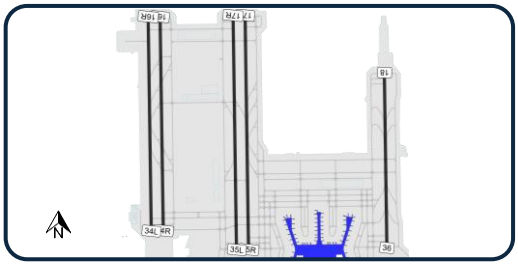
APOC IST/LTFM

Istanbul Airport

Traffic (ATMs) 2024: 513K (#1)

Traffic (PAX) 2024: 80.1M (#2)

A-CDM: No



Airport Operator: Istanbul Airport (IGA)

ANSP: DHMI

Main Aircraft Operator: Turkish Airlines (76%)

Stakeholders at APOC

IGA*, DHMI*, THY*, Ground handlers*, A-CDM, Security*, Police*, Baggage*, De-icing, Check-in*, Pax transfer*, PRM*, RFFS*, Resource Mgmt*, Facility Mgmt*, Queue Mgmt*, Call center*, Healthcare

(*) Also virtual

Virtual

FMP DHMI, Border control, Slot coord., MET service, Digital ramp control, Airport access

The APOC has 2500 m2 (both physical and virtual) and it is situated in the terminal building.
The Ramp Tower is situated in the APOC and is a Virtual Tower
There is also an 800 m2 SOC (Security Operations Center), and a 1080 m2 THY HCC (Hub Control Center)

The APOC looks at planning, pre-tactical, tactical and post-ops phases.

Working arrangements

Agreements

The **Airport Operations Manual** contains all details regarding the cooperation between stakeholders and APOC.
MoU for A-CDM: signed between THY, AOC (Airline Operators Committee), ground handlers, IGA, and DHMI.
Other established processes for collaborative decision-making: winter operations, irregular operations, earthquake/disaster response operations, operations during special events, and emergency response operations.
Depending on the nature of the operations, all relevant parties are involved.

APOC team(s)

- Ramp Tower
- Flight Information and Counter Allocation
- A-CDM
- Resource Management
- ARFF & Airside
- Technical Operations (Facility Management)
- TOC – Terminal Operations
- Security & Queue Management
- Call Center & Info Kiosk
- Crises Center

DCB studies are conducted in collaboration with the airport planning department and APOC.

AOP and integration with NOP

AOP?

D-180 D-60 D-7 D-1 **D-0** D+1

P-DPI DPI G-API

Currently developing a procedure to transition our ConOps into an AOP.
APOC, airport planning, airport technical services, as well as ANSP and airlines will be involved in the AOP.
The current plan for AOP development aligns with the D-179 seasonal tariff schedule.

Others

The APOC focuses on pre-tactical, tactical and post-ops phases.
Post ops; daily, weekly, monthly and other long-term reports are published by the APOC.
Currently, we compare D+1 with the planned values. If there is a significant deviation, we conduct a root cause analysis along with a lessons learned analysis. Based on these studies, we may create procedures to handle similar situations.
A similar approach will be employed during the AOP implementation. However, this time, the benchmarking will be done in comparison with D-179.

Performance monitoring

Performance Monitoring

Each APOC function has its own set of performance metrics that are monitored on a daily basis. Additionally, all these performance metrics are displayed on the main dashboard.

Regular post-operations performance reviews on D+1, D+7, D+30, YTD, MTD, and cumulative operational data since the opening. Once transition into the AOP phase, all data will be transferred to the AOP.

KPIs

- Planned/actual # flights
- # Flights per Airline, Body category, Flight status (cancelled, diverted), GA/BA, Cargo, De-icing, Taxiing, Take-offs/landings per runway.
- Planned/actual number of PAX
- Stands/Counters in use and occupancy rate
- International/domestic bus gates in use
- Terminal parking lot occupancy rate
- Taxi times (min./ avg./ max.)
- OTP (min./ avg./ max.)
- Most penalizing arrival/departure flights
- Terminal entrance anticipated waiting times

KPIs with associated targets

- The KPIs under direct IGA responsibility and control: Waiting times, bridge usage, BHS in-system times lost baggage rate
- The KPIs under third party responsibility and control but monitored by IGA: first bag/last bag, ROT, additional taxi-in/taxi-out, runway usage

Data sources/missing data

Except for detailed delay reasons and specific delay information, most of the data is provided through our systems, such as ASMGCS, AODB, BHS, etc.

We have our own dashboard. External actors typically have their own dashboards, but the information is shared through system integrations among stakeholders.

APOC IST/LTFM

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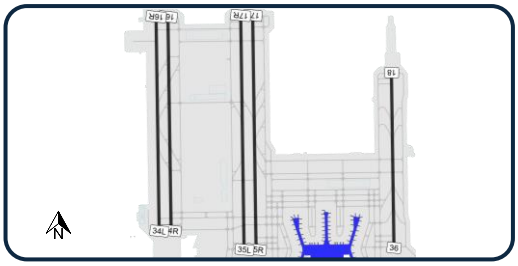

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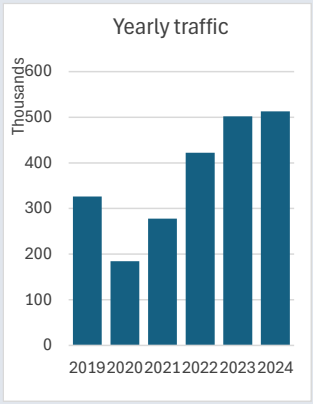

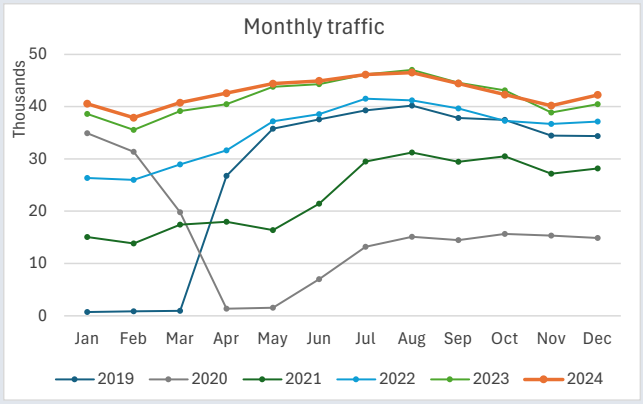

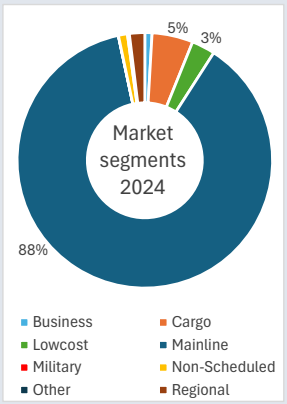

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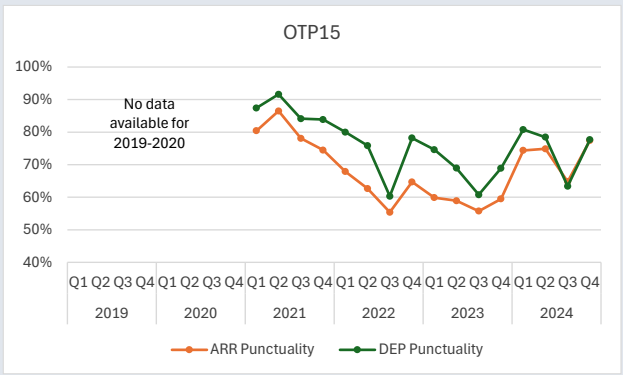

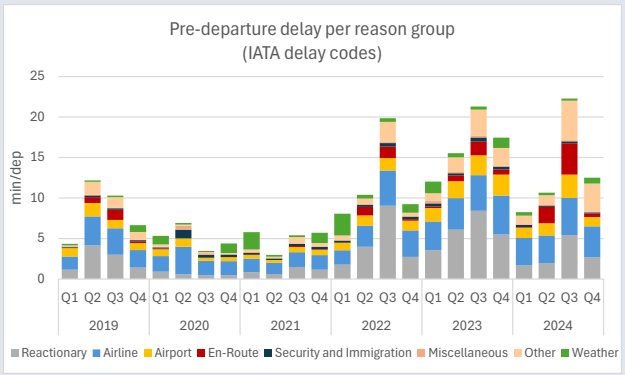

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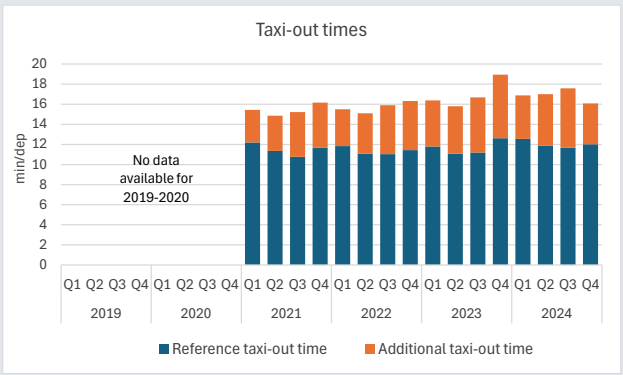
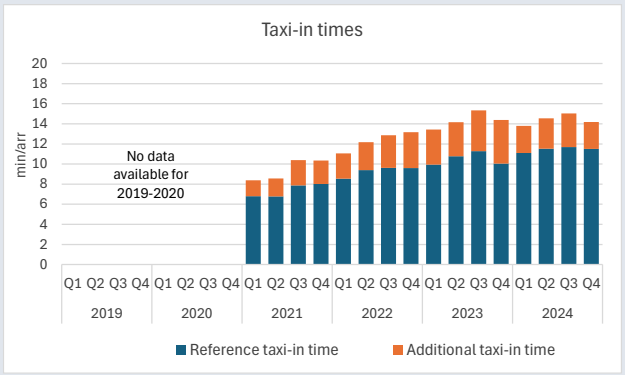
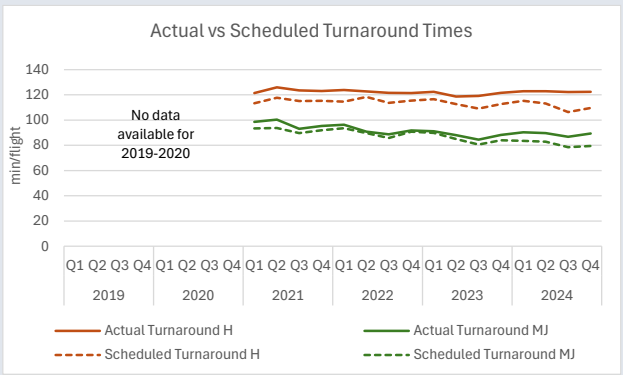
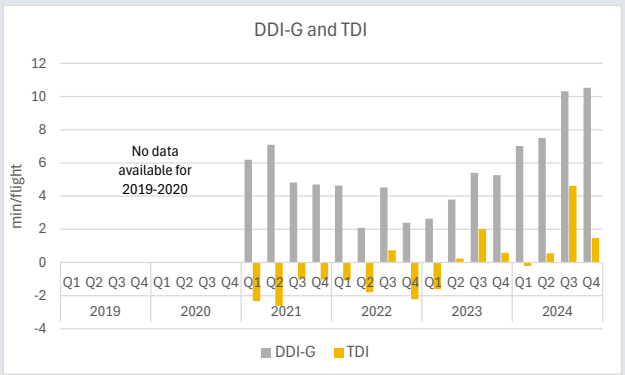




Turnaround times





Sources

Traffic: Network Manager
OTP15, taxi and turnaround times: Airport Operator Data Flow (PRU)
Pre-departure delay: Aircraft Operator Data Flow (CODA)
For more information, please visit the AIU Airport Performance Dashboard: https://ansperformance.eu/dashboard/stakeholder/airport/db/

ANNEX II: CODA Delay Groupings

	CODA CAUSE	Description	IATA Code
Primary Delay Causes	Airline	Passenger and Baggage	11-19
		Cargo and Mail	21-29
		Aircraft and Ramp Handling	31-39
		Technical and Aircraft Equipment	41-48
		Damage to Aircraft & EDP Automated Equipment Failure	51-58
		Flight Operations and Crewing	61-69
		Other Airline Related Causes	Others
	Airport	ATFM due to Restriction at Destination Airport	83
		Airport Facilities	87
		Restrictions at Airport of Destination	88
		Restrictions at Airport of Departure	89
	En-Route	ATFM due to ATC En-Route Demand Capacity	81
		ATFM due to ATC Staff Equipment En-Route	82
	Governmental	Security and Immigration	85-86
	Weather	Weather (other than ATFM)	71-77
		ATFM due to Weather at Destination	84
	Miscellaneous	Miscellaneous	97-99
	Reactionary	Late Arrival of Aircraft, Crew, Passengers or Load	91-96

Source: CODA Digest 2019

ANNEX III: APOC Questionnaire

PRC REVIEW OF OPERATIONAL PROJECTS: APOC[1]

INTRODUCTION

Description of the project

Name of project	APOC[1] XXXX Airport
ANSPs involved	
ATC units involved	
Airport operator involved	
Main aircraft operators involved	
Ground handlers involved	
Brief description	
Planned cost of project including implementation	
Actual cost of project including implementation (if already available)	
APOC Point of Contact and his/her function	
E-mail address	

Planning for implementation

	Original planning for implementation (Anticipated)	Execution of implementation (Actual)
Start date of implementation	[date]	[date]
End of implementation	[date]	[date]
Full realisation of benefits	[date]	[date]

EXPECTED/ACTUAL BENEFITS

Area	Could you describe the expected benefits?	How do you measure performance changes?	What is the expected vs actual (if available) improvement?
Capacity and Resilience / Delay			
Flights Efficiency / Environment			
Cost Efficiency			
Safety			
Flexibility / Scalability			
Other			

[1] An Airport Operations Center (APOC) is one form of a ground coordination (GC) arrangement at an airport, whereby operational stakeholders (actors) collaborate for the effective/efficient implementation of an agreed operational plan, in a structured manner with agreed processes, either through physical or virtual interaction.

ISSUES AND LESSONS LEARNED

Area	Could you describe the issues during implementation if any?	Has it been solved? If yes, how did you solve it?	Lessons learned and other comments
Regulation			
Technical			
Coordination			
Other			

APOC implementation

APOC facilities

Is there a physical APOC facility?	
Where is it located? (Terminal building, TWR, ACC, offices at the airport, if other, please specify)	
Is the APOC physical, virtual or both?	

APOC stakeholders/actors/roles

Please check all the stakeholders represented at the APOC and specify if physical, virtual or both (current and planned status)
If additional actors are involved, please use the available empty cells.
If an actor represents several roles at the APOC, please indicate which roles are performed/represented by whom (i.e. a role represented at the APOC by the Ground Handler representative, just mention Ground Handler in the column "Represented by"

STAKEHOLDER or ROLE	Current (Physical/Virtual/ Both)	Planned (Physical/Virtual/Both) Please include target date	Represented by
AIRSIDE			
Airport operator			
ANSP – ATC			
Airport coordinator (slot coordinator)			
De-icing			
Main Aircraft Operator(s)/Handling Agent			
ANSP - FMP			
Ground handlers			
MET services			
LANDSIDE			
Baggage			
Airport security			
Fire brigade			
Airport access (train, metro, taxi,			

etc)			
Check in			
Police			
Immigration/border control			
Pax transfer			
PRM processes			

Working arrangements

Do you have a memorandum of cooperation amongst the local partners? (Written arrangement comprising all actors involved in the APOC processes)	
If yes, which actors signed the agreement?	
Are there established processes for the collaborative decision making?	
If yes, could you list them and provide a high level description and which actors are involved?	
Does the APOC look at planning, pre-tactical, tactical and post-ops phases? If only some of these phases, which ones?	

APOC teams

Do you have a team in charge of DCB (demand capacity planning)? And if so, which actors are involved?	
Do you have a team in charge of performance monitoring during the day of operations? And if so, which actors are involved?	
Are there any other APOC *teams* in charge of specific duties? Could you list them and give a high level description?	

PRODUCT: AOP[2] (Airport Operations Plan) and integration with NOP

Is there an AOP (Airport Operations Plan) developed through the APOC?	
When is the first AOP for D Day (day of operations) established? (e.g., D-179, D-60, D-7, D-1…)	

[2] A consolidated rolling airport operational plan containing all necessary data, contextual information, scenarios and KPIs to enable decision making in a collaborative manner. It is extended in time and scope compared to A-CDM, contains DCB checks and interacts with NOP.
For more information: Concept for establishment of an Airport Operations Plan (AOP):
https://www.eurocontrol.int/sites/default/files/publication/files/airport-network-integration-apoc-aop-v1.pdf

Who is involved in the different stages of the AOP?	
Is there any coordination with NMOC and integration with the NOP? If so, how and at which stage (D-1, D-0)?	
Do you perform post-ops performance review in D+1 to evaluate the quality of the AOP?	
How do you use the post-ops D+1 review to improve the AOP?	

PERFORMANCE REVIEW

Is there a performance review dashboard used by the actors at the APOC? Is this dashboard used by other external actors?	
Which KPIs are monitored in the performance dashboard?	
Which KPIs have associated targets and associated actions in case of deviations from the target?	
Is this performance monitored during the day of operations and/or in post-ops?	
Are all required data elements available or is there any critical data missing from the available data sources? In case some data/information is missing, could you describe which data/processes are missing?	

FUTURE DEVELOPMENT AND DEPLOYMENT ALL OVER EUROPE

Do you have plans to further develop the APOC concept into Total Airport Manager? If so, could you provide a high-level timeline?	
In your opinion what would be the benefits at network level if this project were introduced throughout Europe?	
What should be done to accelerate the implementation of APOCs throughout the main airports in Europe?	
Do you have recommendations for future deployment at other European airports?	

OTHER COMMENTS

Please feel free to add any information that you consider relevant regarding the APOC at your airport.

ANNEX IV: Acronyms

ACRONYM	DECODING
AC	Aircraft
A-CDM	Airport Collaborative Decision Making
ACI EUROPE	Airports Council International Europe
AHM	Airport Handling Manual
AIBT	Actual In-Block Times
AIU	Aviation Intelligence Unit
AMC	Airport Management Centre
ANSP	Air Navigation Service Provider
AO	Aircraft Operator
AOBT	Actual Off-Block Times
AOCC	Airport Operations Control Centre
AODB	Airport Operational Database
AOP	Airport Operations Plan
APOC	Airport Operations Centre
ARFF	Aircraft Rescue and Fire Fighting
ARR	Arrival
ASMGCS	Advanced-Surface Movement Guidance and Control System
ATC	Air Traffic Control
ATFCM	Air Traffic Flow And Capacity Management
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATOT	Actual Take-Off Time
ATXIT	Additional Taxi-In Time
ATXOT	Additional Taxi-Out Time
B2B	Business-To-Business
BA	Business Aviation
BAG	Baggage
BHS	Baggage Handling System
CODA	Central Office for Delay Analysis
COM	Communications
ConOps	Concept Of Operations
CTOT	Calculated Take Off Time
CUAS	Counter-Unmanned Aircraft Systems
DCB	Demand Capacity Balancing
DDI-G	Delay Difference Indicator - Group
DEP	Departure
DL	Delay
DM	Duty Manager

ACRONYM	DECODING
DPI	Departure Planning Information
eAOP	Extended Airports Operations Plan
ECRA	European Connected Regional Airports
EOBT	Estimated Off-Block Time
EU	European Union
FMP	Flow Management Position
GA	General Aviation
G-API	General -API
GC	Ground Coordinator
GH	Ground Handler
GTO	Ground Time Overshoot
HR	Human Resources
iAOP	Initial Airport Operations Plan
IATA	International Air Transport Association
ICT	Information And Communication Technology
IOBT	Initial Off-Block Time
IT	Information Technology
KPI	Key Performance Indicator
LTO	Landing Take-Off
MASP	Minimum Aviation System Performance Standards
MET	Meteorological Services for Air Navigation
MoU	Memorandum Of Understanding
MTD	Month To Date
NM	Network Manager
NMOC	Network Manager Operations Centre
NOP	Network Operations Plan
OPS	Operations
OTP	On Time Performance
PAX	Passenger
P-DPI	Predicted DPI
PDS	Pre-Departure Sequencer
PI	Performance Indicator
POC	Point Of Contact
PRC	Performance Review Commission
PRM	Person With Reduced Mobility
PRU	Performance Review Unit
RFFS	Rescue And Fire Fighting Services
ROT	Runway Occupancy Times
RWY	Runway
SEC	Security

ACRONYM	DECODING
SIBT	Scheduled In-Block Times
SOBT	Scheduled Off-Block Times
TAM	Total Airport Management
TDI	Turnaround Delay Indicator
TOBT	Target Off-Block Time
TSAT	Target Start-Up Approval Issue Time
TSS	Transformation Support Strategy
TTOT	Target Take-Off Time
TWR	Tower
TWY	Taxiway
TXIT	Taxi-In Time
TXOT	Taxi-Out Time
USCBP	U.S. Customs and Border Protection
WIP	Work In Progress
YTD	Year To Date

ANNEX V: References

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About the Performance Review Commission

The PRC was established in 1998, following the adoption of the European Civil Aviation Conference (ECAC) Institutional Strategy the previous year. A key feature of this Strategy is that "an independent Performance Review System covering all aspects of ATM in the ECAC area will be established to put greater emphasis on performance and improved cost-effectiveness, in response to objectives set at a political level".

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