CNS SG/15

CNS Planning and Implementation in the MID Region

Doha, Qatar 10-14 May 2026

Agenda

- Introduction.
- Egypt surveillance current situation.
- Egypt Strategic Objectives
- Current En-Route coverage.
- Egypt Surveillance and Automation Plan.
- Surveillance and Automation centers by 2027
- Lessons Learned and Recommendations

Introduction

Surveillance is the third side of the square CNS/ATM communication Navigation Surveillance/ Air traffic management , the four sides named air space concept by ICAO and are mandatory to make air space system .

Surveillance is a key function of air traffic control. Surveillance systems are the “eyes” of air traffic controllers; they show who is in the sky, where they are and when they were there.

Egypt strategic objectives :

One of Egypt's future objectives is to move toward a more **flexible use of airspace** operations.

This concept will provide several important benefits for Egypt and region as :

- Increasing airspace capacity and improving traffic flow
- Reducing flight delays and congestion
- Enhancing flight safety and operational efficiency
- Saving fuel and reducing operating costs for airlines
- Lowering environmental impact through reduced emissions
- Supporting the growth of air traffic and future aviation projects in Egypt
- Strengthening Egypt's position as a regional aviation hub in the Middle East and Africa

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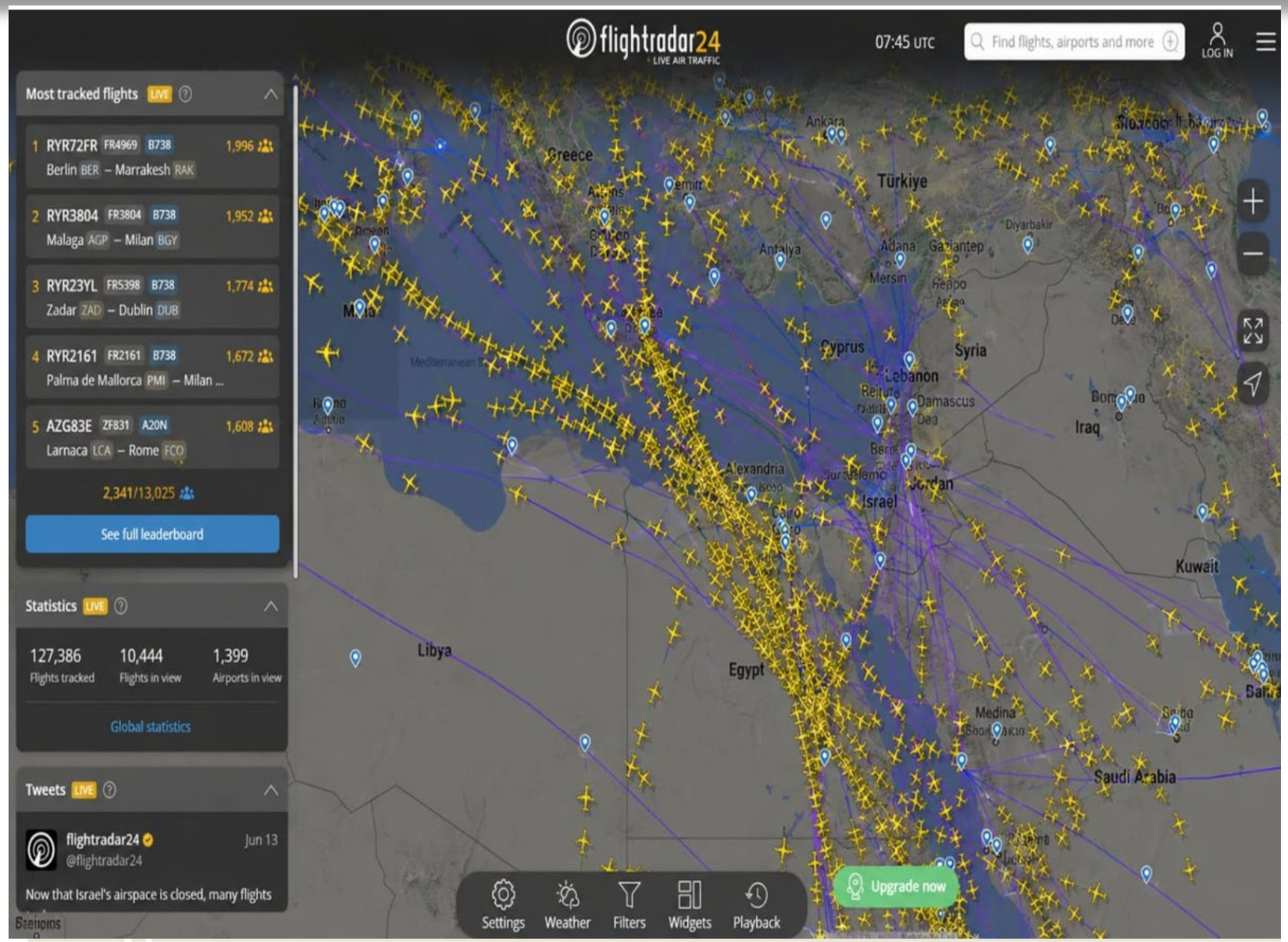
Surveillance



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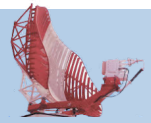
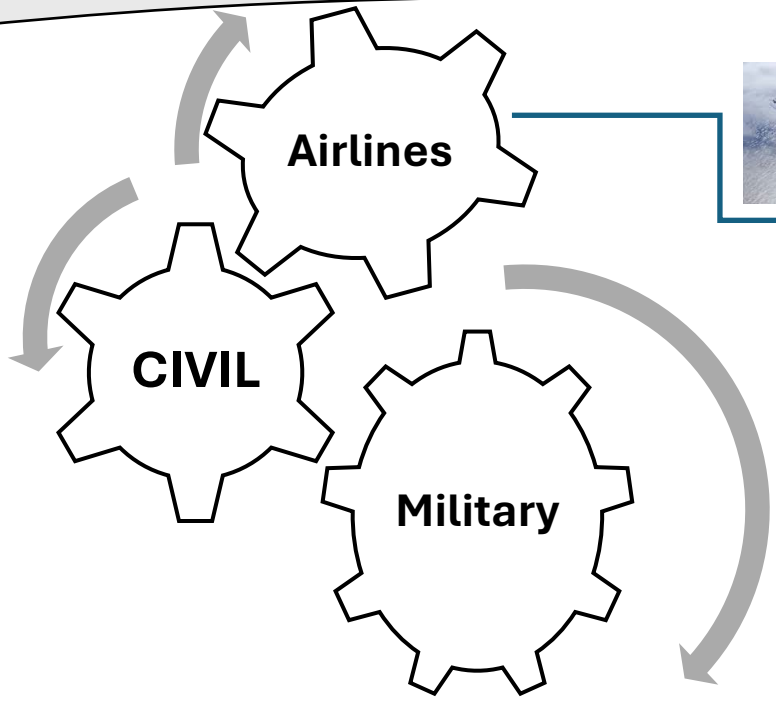


Surveillance

The flexible use of the airspace will fulfill the requirements of the entities operating and using the airspace

- Reduce flight time
- Increase safety rate
- Attract a greater proportion of air traffic
- Increase revenue



- Reduce flight time
- Reduce flight distances
- Reduce fuel consumption

- Maintain full capacity to perform its functions

Efficient and sustained coordination

To achieve this Objective , it was necessary to implement several important projects, including:

- Modernization of Surveillance systems
- Establishment of the Egyptian National Airspace Management Center NASMC
- Modernization of air traffic management systems
- Upgrading the communication and integration systems between Surveillance systems and air traffic management systems
- Restructuring the Egyptian airspace to support flexible airspace use

Modernization of Surveillance systems

Egypt surveillance systems previously consisted of :

- Only 6 En route (secondary) radars to cover FIR Air routes.
- 8 Approach Radars (primary + secondary) to serve 8 airports (Cairo , Hurghada, Sharm El sheekh, Aswan, Luxor, Borg Elarab, Elarish and Taba).
- A-SMGCS system at Cairo airport

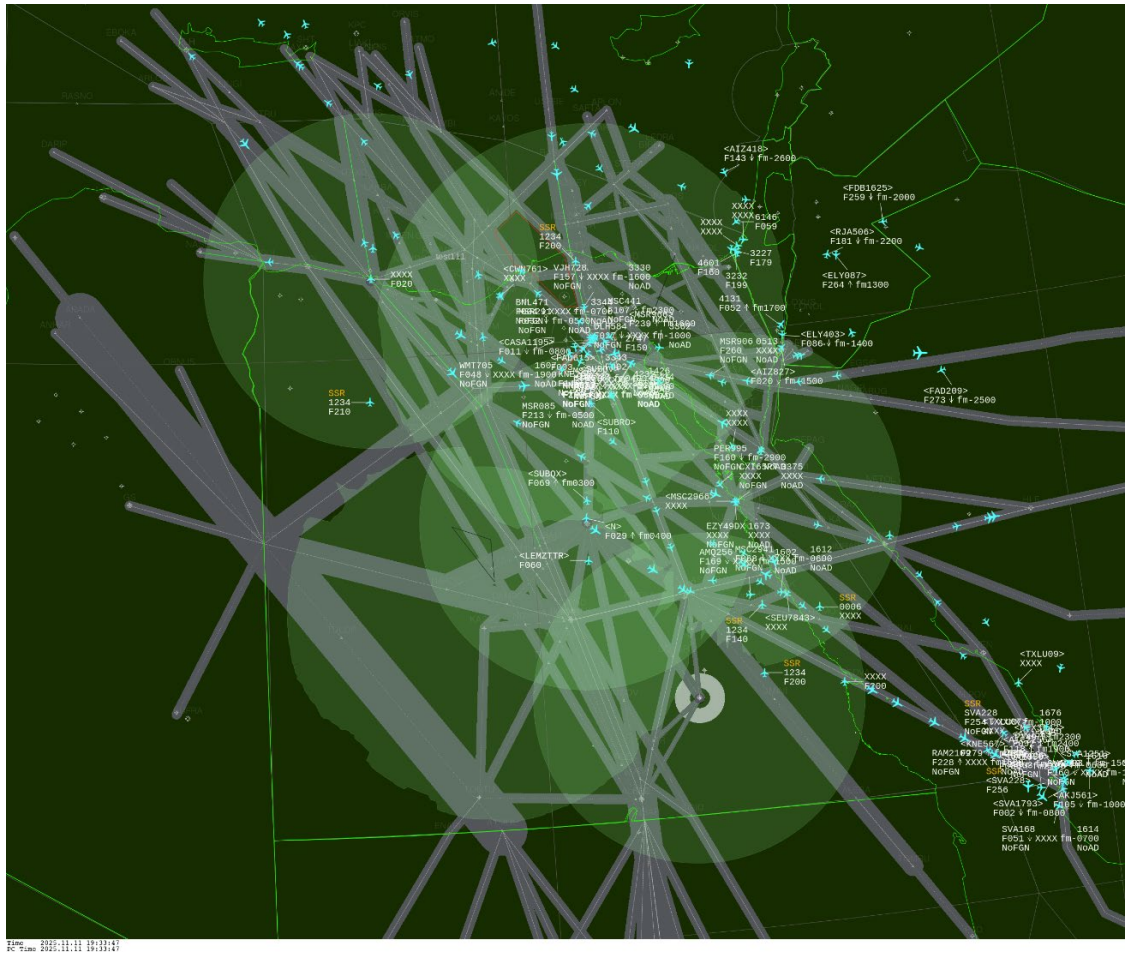
Although the almost of FIR Covered by secondary radars but :

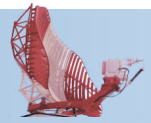
- There is lack of double radar coverage, especially at the lower airspace .
- the single radar coverage and the lack of coverage at low altitude will not enable us to apply some concepts as Fixable use of air spaces, ,and civil /military access requirements and consideration with respect to SUA.

For overcome the drawbacks Egypt started to implement a new surveillance plan

Previous En-Route coverage

Coverage at 35000 ft altitude





- Therefore, Egypt launched a modernization program for its surveillance systems by installing 22 new radar stations.
- Each station consists of a Primary Radar, a Secondary Radar, and an ADS-B system.
- The main objectives of this program were to enhance radar coverage and increase redundant radar coverage across the Egyptian airspace.
- The project was implemented in three phases between 2018 and 2022.
- It is worth mentioning that the installation works for 19 stations were carried out by NANSC engineers.

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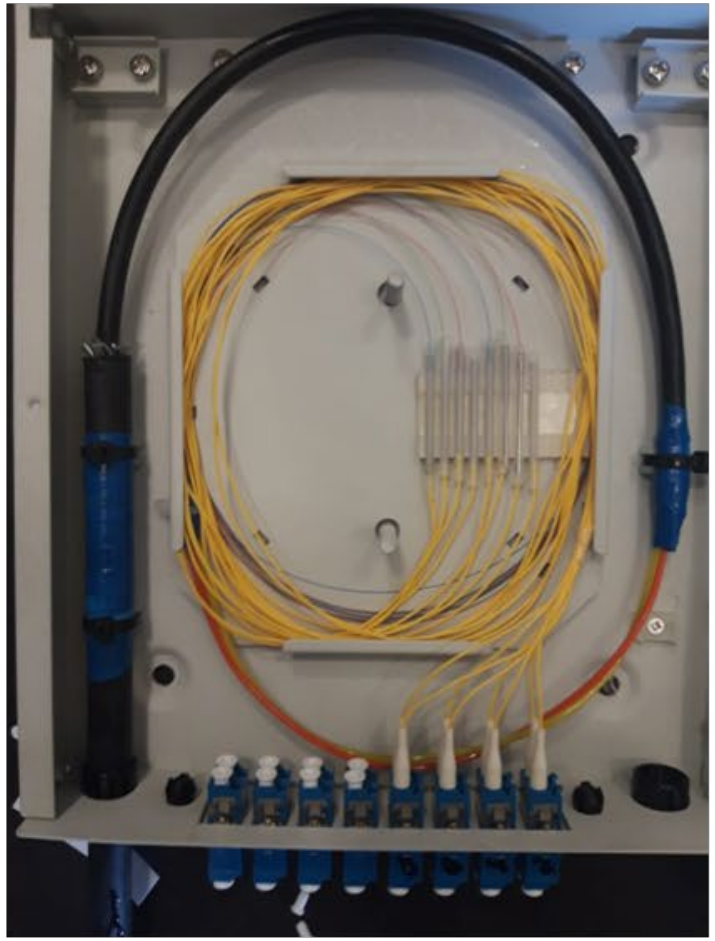

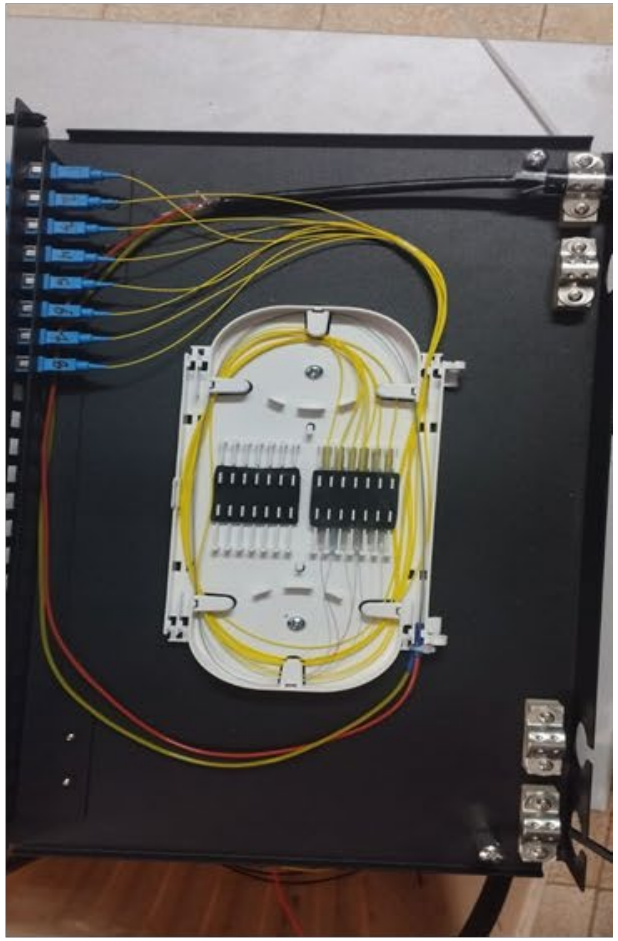

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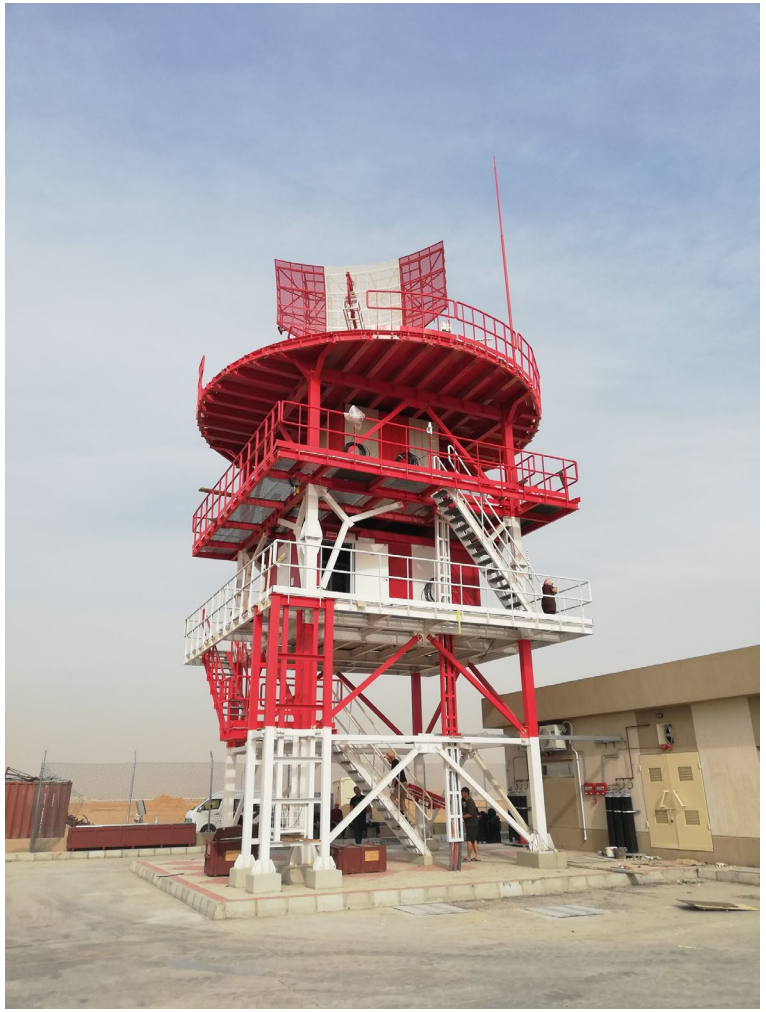

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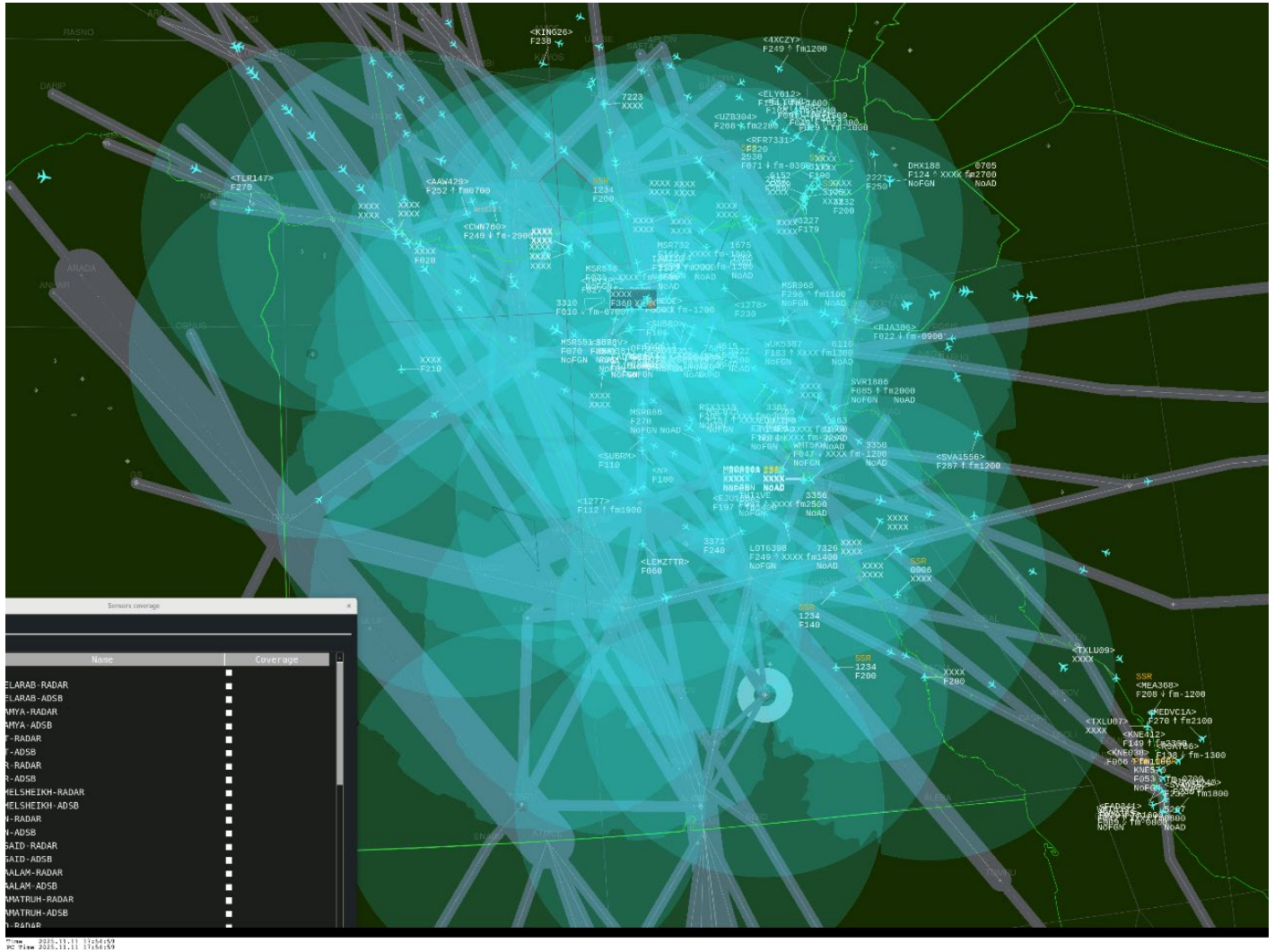
Surveillance

Radar coverage at FL350 after having the 22 new radars (PSR + Mode S + ADS-B) commissioned.



Current Situation

- At present, the Egyptian airspace is managed from the Air Traffic Management Center located at the headquarters of the Air Navigation Company at Cairo Airport.
- The Main Air Navigation Center consists of the main Data Center, as well as the OPS and TBS operational halls.
- The Air Traffic Management Center requires modernization due to system aging and in order to accommodate the new radar systems as well as ADS-B systems.
- This represented a major challenge for maintaining service continuity. Therefore, Egypt developed a three-phase modernization plan.

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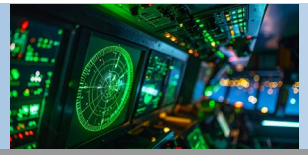
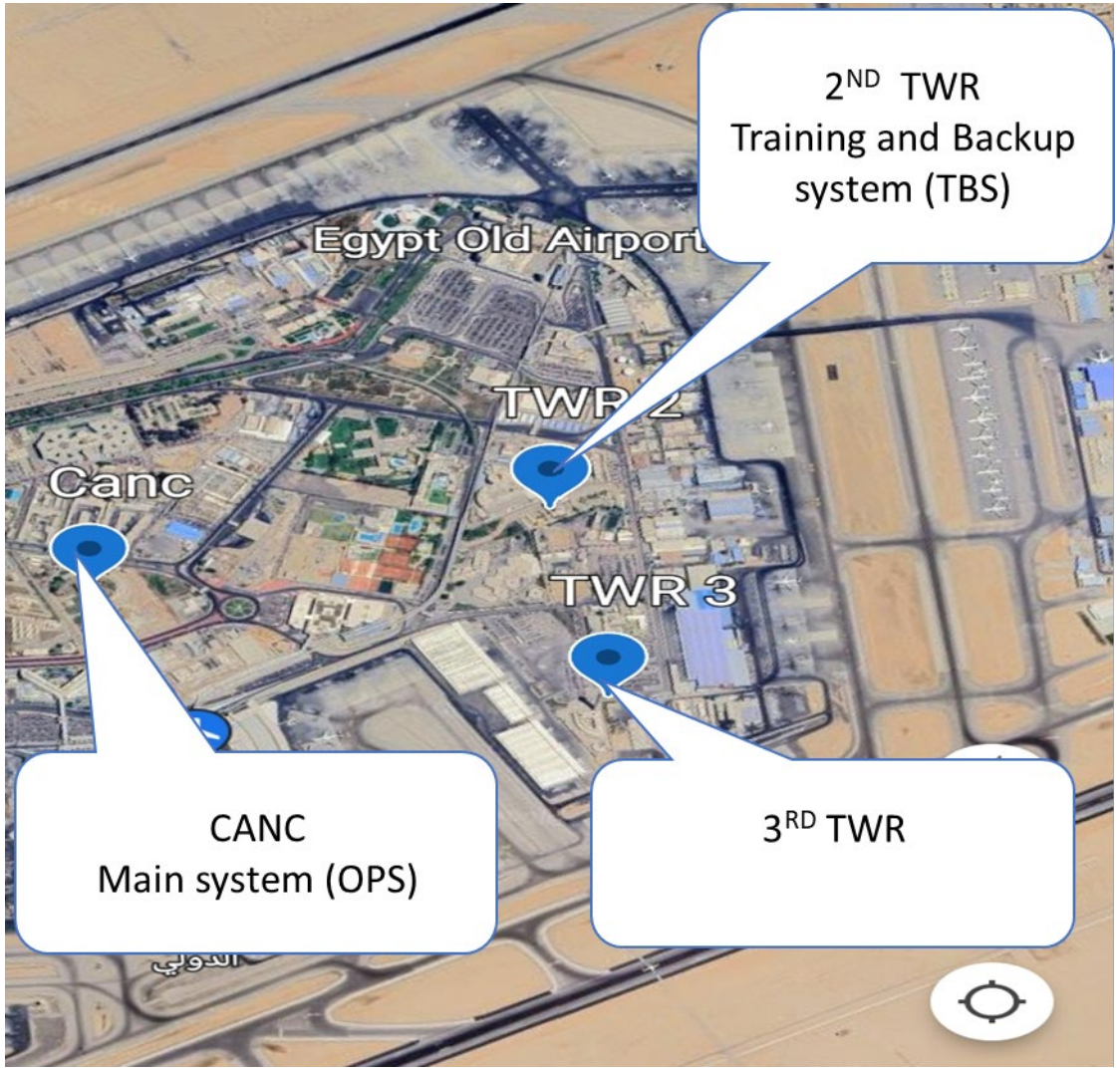


Automation system

Phase 1 1/2024 to 5/2026

- Upgrading the old Tower 2 building
- establishing the backup Air Traffic Management Center (TBS) for Area Control radar processing systems.



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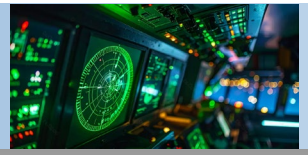

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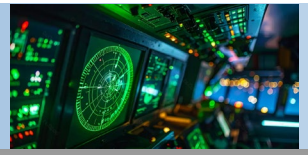

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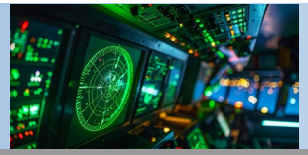
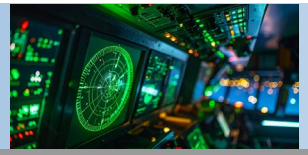


Automation system

Phase 2 6/2026

- Establishing the Emergency Center at NASMC, technically integrating it with the TBS, and operating it in shadow mode for testing purposes.
- Commissioning the second tower (TBS) and the Emergency Center at Katameya into operational service.
- Starting the modernization of the main OPS control room at CANC.



Phase 3 9/2026 to 6/2027

- Operating Control Tower No. (2) and starting air traffic control operations there.
- Completing the development works of the Area Control Room at the Air Navigation Center and Tower (3).
- Transferring air traffic control operations to the CANC building after fixing all technical remarks, and starting actual operation following final system handover.

2027 situation

By June 2027, the situation will be as follows:

- The main operations will be conducted from the Air Navigation Center located at CANC. (Data center tier 4).
- Backup operations and training will be carried out at the Air Navigation Center in Tower 2.
- The emergency center will be located at NASMC in the New Capital.
- Air Traffic Control centers will be fed with data from 22 radar stations (PSR, SSR, and ADS-B)
- Radar stations will be interconnected using different communication methods such as satellites and fiber optic networks.

Lessons Learned and Recommendations

- Participation in navigation system installation activities helps engineers better understand the system. This reduces maintenance time and improves service continuity.

- Single radar coverage is not enough for modern airspace operations. Redundant coverage is necessary to maintain service continuity during failures or maintenance.

- Communication media used for transmitting radar data are as important as the radar stations themselves. Therefore, communication diversity and redundancy are highly recommended.

Lessons Learned and Recommendations

- Physical separation between operational centers increases system reliability and reduces operational risks.
- Modernization projects should be implemented in phases to ensure smooth transition without affecting operations.
- It is necessary to review the regional surveillance plan in light of current events and operational changes.

Thank You !

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