



ICAO MID



الهيئة العامة للطيران المدني  
GENERAL CIVIL AVIATION AUTHORITY



# CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation

Abu Dhabi, UAE 13 – 14 June 2022



**Asim Rizwan**  
Head AIM & ATM Performance

**Strinivasa Venketsamy**  
Deputy Manager ATS  
Global Air Navigation Services (GANS)

## Airspace Design Process & AUH Case Study



ICAO MID



# CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation



Abu Dhabi, UAE 13 – 14 June 2022

## Agenda

- GANS Introduction
- Airspace Design Process
- Design Issues During UAE Airspace Project
- CCO/CDO Case Study in Abu Dhabi



ICAO MID



# CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation



الهيئة العامة للطيران المدني  
GENERAL CIVIL AVIATION AUTHORITY

Abu Dhabi, UAE 13 – 14 June 2022

## GANS Overview



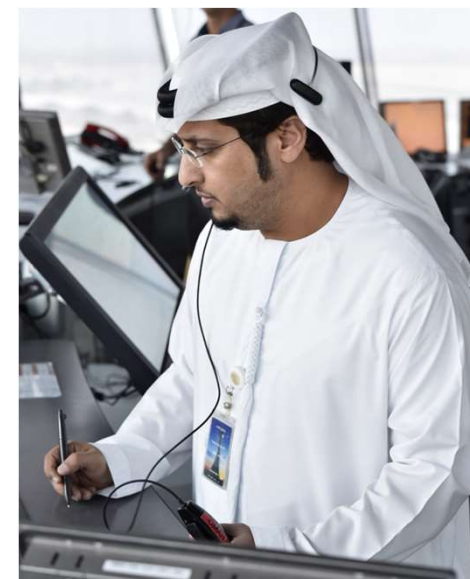
- GANS is a leading provider of Air Navigation Services (ANS) to civil and military customers. It provides services at many airports and airbases and is responsible for more than 530,000 annual air traffic movements within the UAE Flight Information Region.
- GANS strategic plan builds on the success of the company with a focus on our highly skilled people, technology and the processes required to deliver efficient and cost effective services and solutions to our customers
- GANS growth strategy focusses on the consolidation of existing contracts by ensuring that they are successfully renewed and used as a springboard to grow and expand our customer base through the exploitation of innovative technological solutions.





## GANS In Numbers

<b>14</b>	Number of years providing Air Navigation Services	<b>20</b>	The number of countries where services delivered
<b>6</b>	Core Services <ul style="list-style-type: none"> <li>• Air Traffic Services</li> <li>• CNS Engineering Services</li> <li>• Aeronautical Information Services</li> <li>• ATC Training Services</li> <li>• Meteorological Services</li> <li>• ATC Consultancy</li> </ul>	<b>900</b>	Highly skilled personnel employed by GANS
<b>16</b>	Units where we provide Air Navigation Services	<b>50</b>	The number of nationalities which make up our highly skilled workforce
<b>34</b>	Total number of customers	<b>6155</b>	Number of trainees trained at GANS training academy





ICAO MID



## CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation



Abu Dhabi, UAE 13 – 14 June 2022

# Airspace Design Process for CCO-CDO

- Assess Current Procedures for Flight Profiles
  - Instrument Approaches
  - Departures
  - SIDs and STARs
- Discuss with End Users (Airlines, Military, Business Jet, Royal) for Inefficiencies
- Identify areas of improvement (safety, fuel efficiency, noise reduction etc.)
- Consider In-house versus External Resources



ICAO MID



## CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation



الهيئة العامة للطيران المدني  
GENERAL CIVIL AVIATION AUTHORITY

Abu Dhabi, UAE 13 – 14 June 2022

# Enablers Required

- Certified Procedure Designers and Charting Specialist
- PANS-OPS Software or AutoCAD/Microstation/ArcGIS
- Fast Time Simulation Models for Efficiency Gains (AirTOP, TAAM etc.)
- Real Time Simulation Facility
- Flight Simulators (Airline or private)
- Safety Specialist



ICAO MID



## CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation



Abu Dhabi, UAE 13 – 14 June 2022

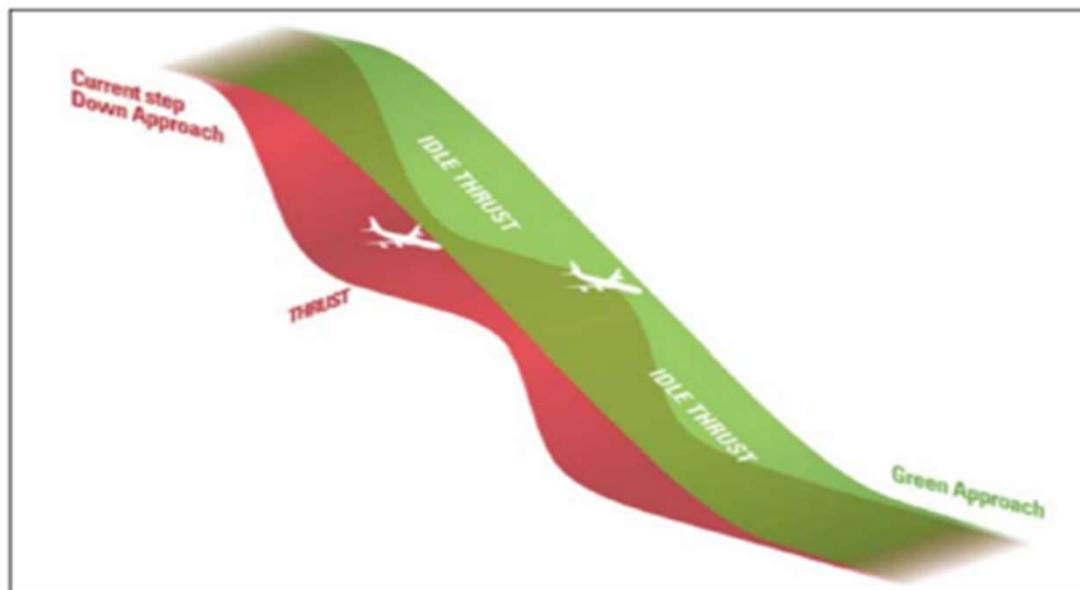
# Design Issues during UAE Airspace Project

- Priority between CCO or CDO (For same and different airports)
- ATC Preference between Closed and Open Star
- Sequencing traffic from different entry points to same runway (Speed Control vs Trombone)
- Aircraft Energy Management
- Independent Parallel Runway Operations (IPO Requirements)
- Holding Patterns
- Buffer Area with Prohibited, Restricted and Danger Areas
- Evaluation of Alternatives using FTS Data
- Safety Issues raised in RTS due to CCO and CDO (Workload and complexity)



## CCO AND CDO OPERATIONS

**FIGURE 1:** Optimal CDO approach (green) versus a non-optimal approach (red)







## Benefits of CCO and CDO

- Stakeholders have long recognized the environmental benefits associated with optimized CCO and CDO. All ATM stakeholder organizations (e.g. ICAO, CANSO, ACI, IATA, etc.) strongly support CCO – CDO and readily promote the benefits of such operational procedures.
- Not only do CCO and CDO allow aircraft to follow a flexible optimum flight profile but as they are flown with optimal fuel and in low drag configuration, they minimize fuel burn and fuel cost, while simultaneously cutting gaseous emission and reducing noise. In addition it can be done without and adverse effect in safety. (Ref: ICAO Doc 9993 and ICAO Doc 9931)

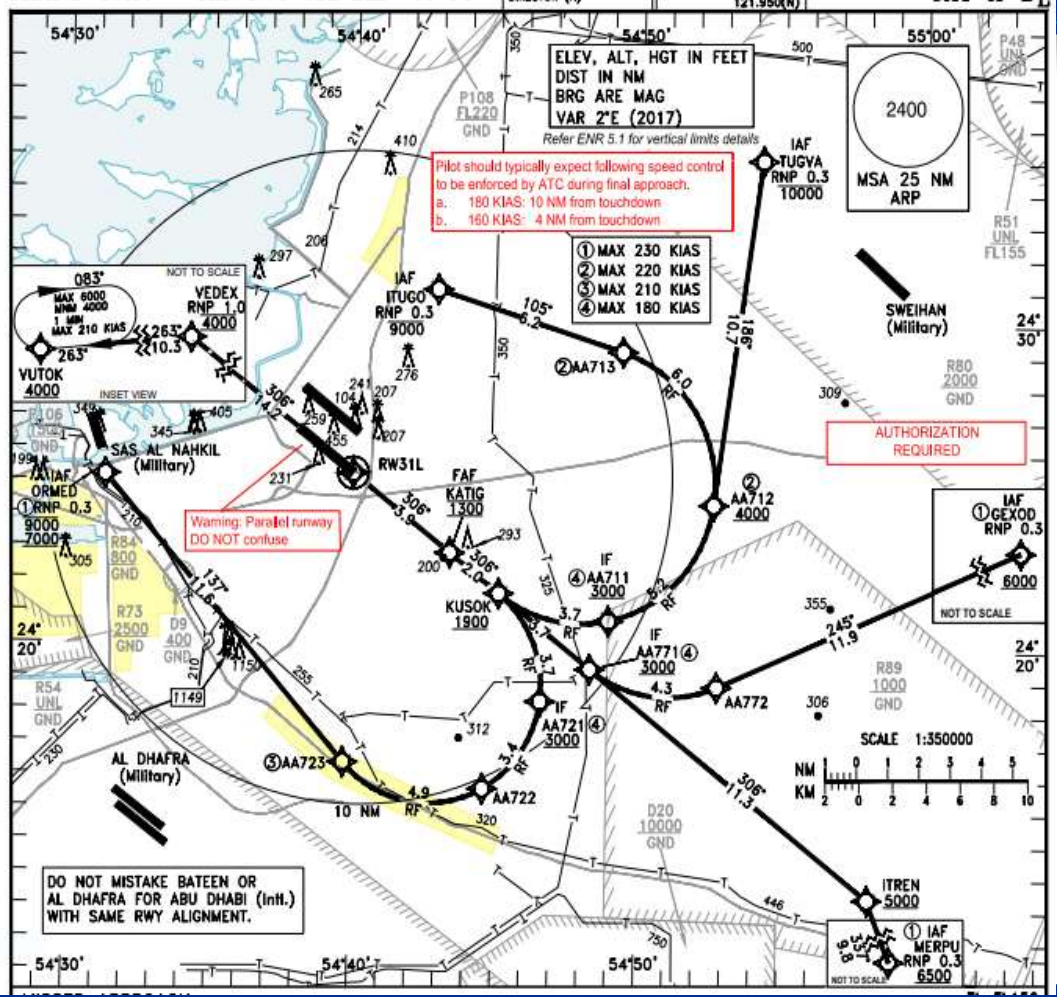
AIP UNITED ARAB EMIRATES

OMAA AD 2 - 73

INSTRUMENT AERODROME ELEV 83 FT  
APPROACH HEIGHTS RELATED TO  
CHART-ICAO THR RWY 31L ELEV 83 FT

ABU DHABI RADAR (W)	128.100	ABU DHABI RADAR (E)	133.550
ABU DHABI RADAR (C)	124.400	ABU DHABI INFO	127.500
ABU DHABI DIRECTOR (S)	118.000	TWR	119.200(S) 118.675(N) 123.875(S) 121.950(N)
ABU DHABI DIRECTOR (N)	118.425	GND	

ABU DHABI / Intl.  
RNAV(RNP) Y RWY 31L  
CAT A-DL



June 2022

# CDO in Abu Dhabi Airspace



ICAO MID



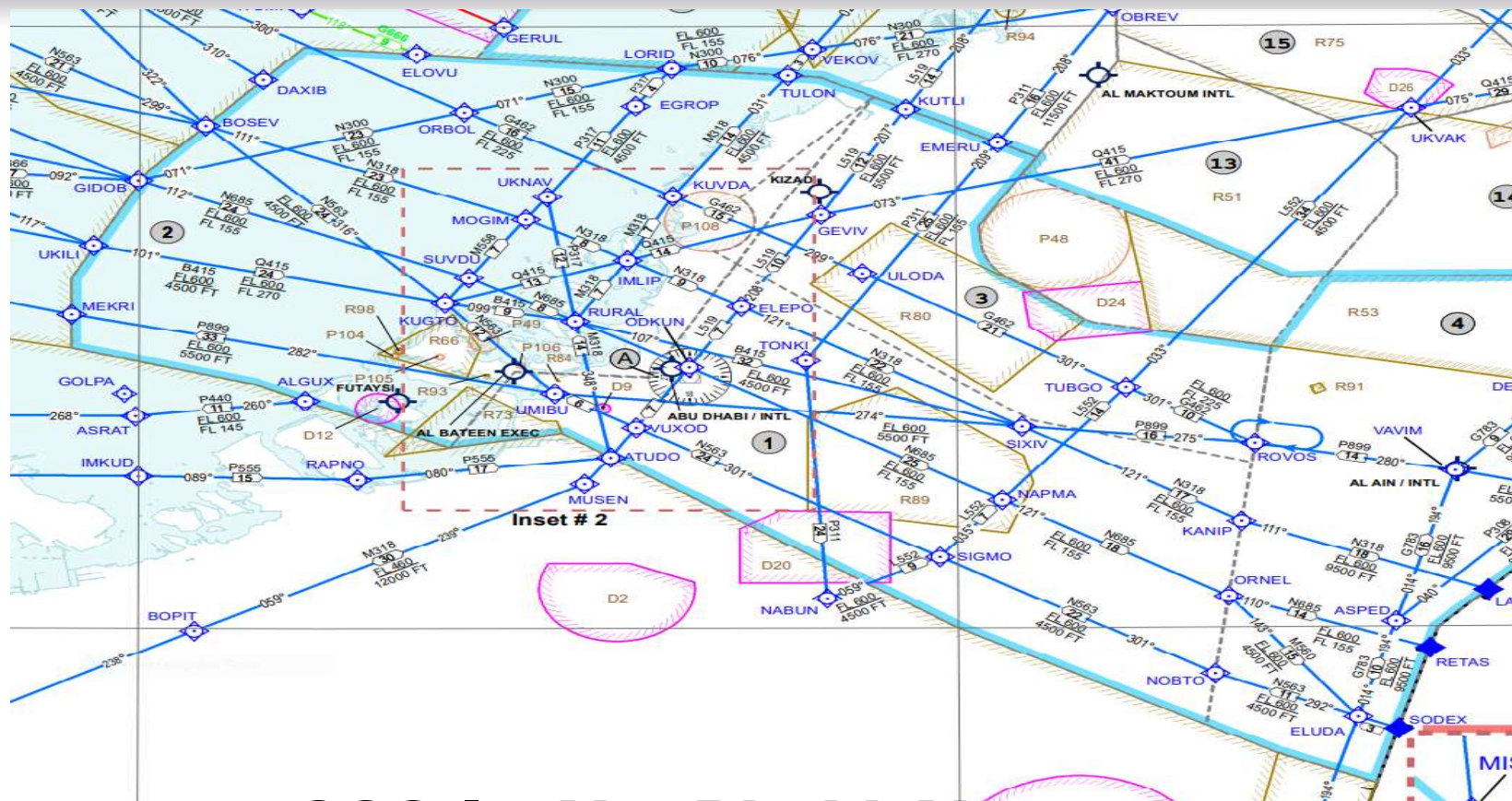
# CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation



الهيئة العامة للطيران المدني  
GENERAL CIVIL AVIATION AUTHORITY

Abu Dhabi, UAE 13 – 14 June 2022



## CCO In Abu Dhabi Airspace



## CCO and CDO in Abu Dhabi Airspace

- Although the Abu Dhabi Airspace is not fully CDO/CCO capable in its current iteration with ATS provision to 3 Civilian Airports (OMAA, OMAD, OMAL) and 4 Military Airports (OMNK, OMAW, OMAX and Ghantoot Airbase) as not all airports have SIDS and STARS, SID and STARS do exist for OMAA, OMAD, OMAL and these procedures are strategically de-conflicted to the fullest extent possible to allow for safety and maximum efficiency of air traffic.
- Additionally at OMAA, all RNP-AR Approaches are designed for Continuous Descent Operations from the IAF (Initial Approach Fix approx. 25-30 NM from touchdown) until the TDZ of the runway in use (Touch Down Zone). Furthermore it is an objective of ATC to tactically manage the airspace to allow for Continuous Climb and Continuous Descent of air traffic as much as practically possible.
- When “Green Flight Aircraft” are in operation, ATC endeavors to ensure Continuous Descent and Climb Operations within Abu Dhabi Airspace for these specific flights.



ICAO MID



# CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation



الهيئة العامة للطيران المدني  
GENERAL CIVIL AVIATION AUTHORITY

Abu Dhabi, UAE 13 – 14 June 2022

- Asim Rizwan  
+971508189073  
Asim.Rizwan@gans.aero



ICAO MID



# CCO-CDO Workshop

ICAO MID Workshop on the Continuous Climb Operations (CCO) /  
Continuous Descent Operations (CDO) Implementation



الهيئة العامة للطيران المدني  
GENERAL CIVIL AVIATION AUTHORITY

Abu Dhabi, UAE 13 – 14 June 2022

# THANK YOU

