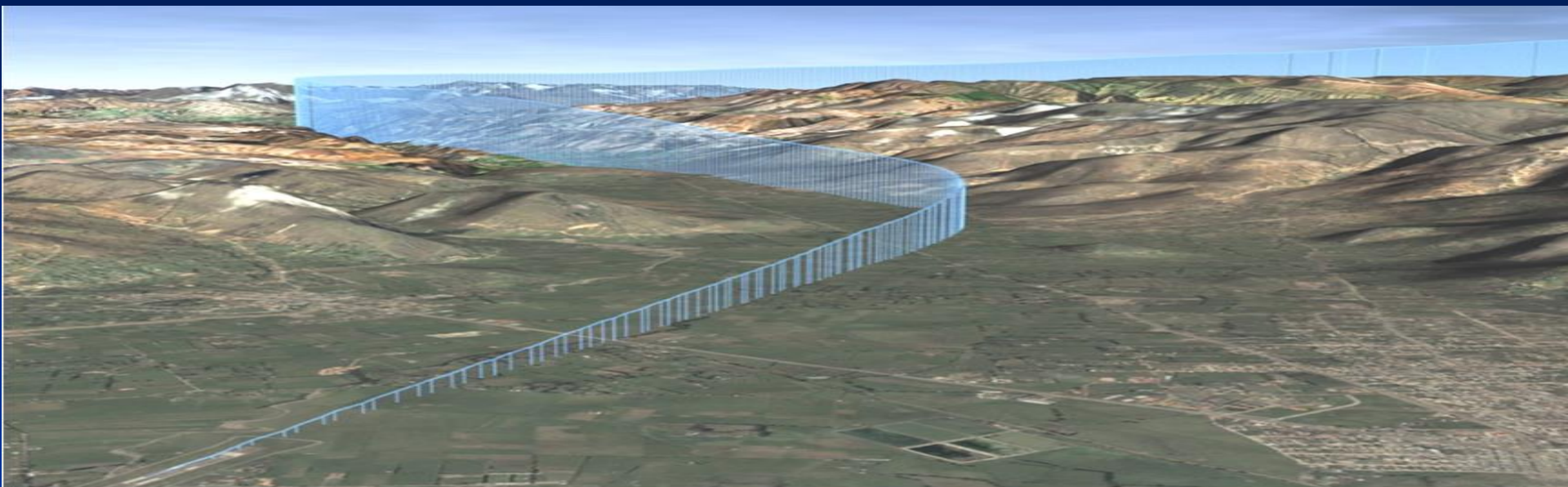


MIDANPIRG PBN SG/4 Meeting Cairo, Egypt, 19-21 January 2020



Presentation Outline

- **Brief of the State National PBN Implementation Plan**
- **Status of Implementation**
- **Post assessment results of the PBN Implementation**
- **Lessons Learned**
- **Challenges**
- **Thoughts/Recommendations**

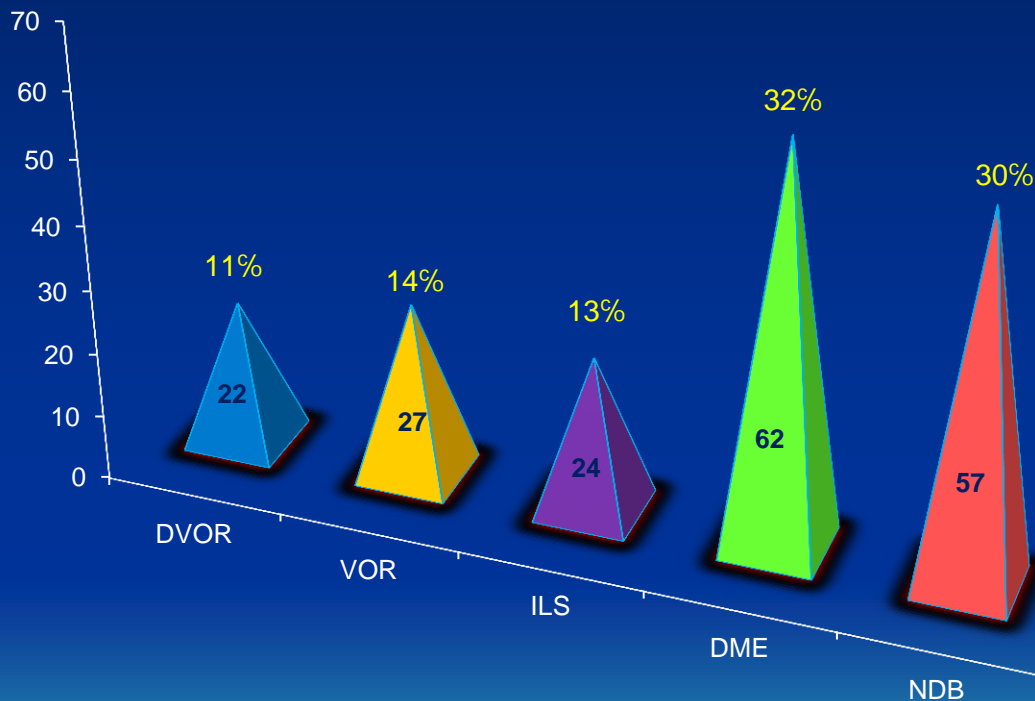
Iran PBN implementation plan

- Iran air navigation national plan completed.
- ASBU committee is held periodically.
- ASM committee is held periodically(Procedure designer ,airspace planer ,controller ,AIS senior expert).
- ANS committee is held periodically.
- Flight operation panel (FOP): Procedure designer ,airspace planer, AIS senior expert and flight check and flight inspection& validation, CNS senior experts.

CURRENT STATUS

CONVENTIONAL NAVIGATION AIDS

ILS,DVOR/DME,VOR,DME,NDB



CURRENT STATUS

CONVENTIONAL INSTRUMENT APPROACH PROCEDURES (IAPs, STARs, SIDs)

- 52 ILS CAT I IAP
- 2 ILS CAT II IAP
- 134 VOR/DME IAP
- 95 VOR IAP
- 53 NDB/DME IAP
- 98 NDB IAP
- 695 STARs
- 765 SIDs

CURRENT STATUS

AERODROMES according to AIP

9 Primary/major international aerodromes

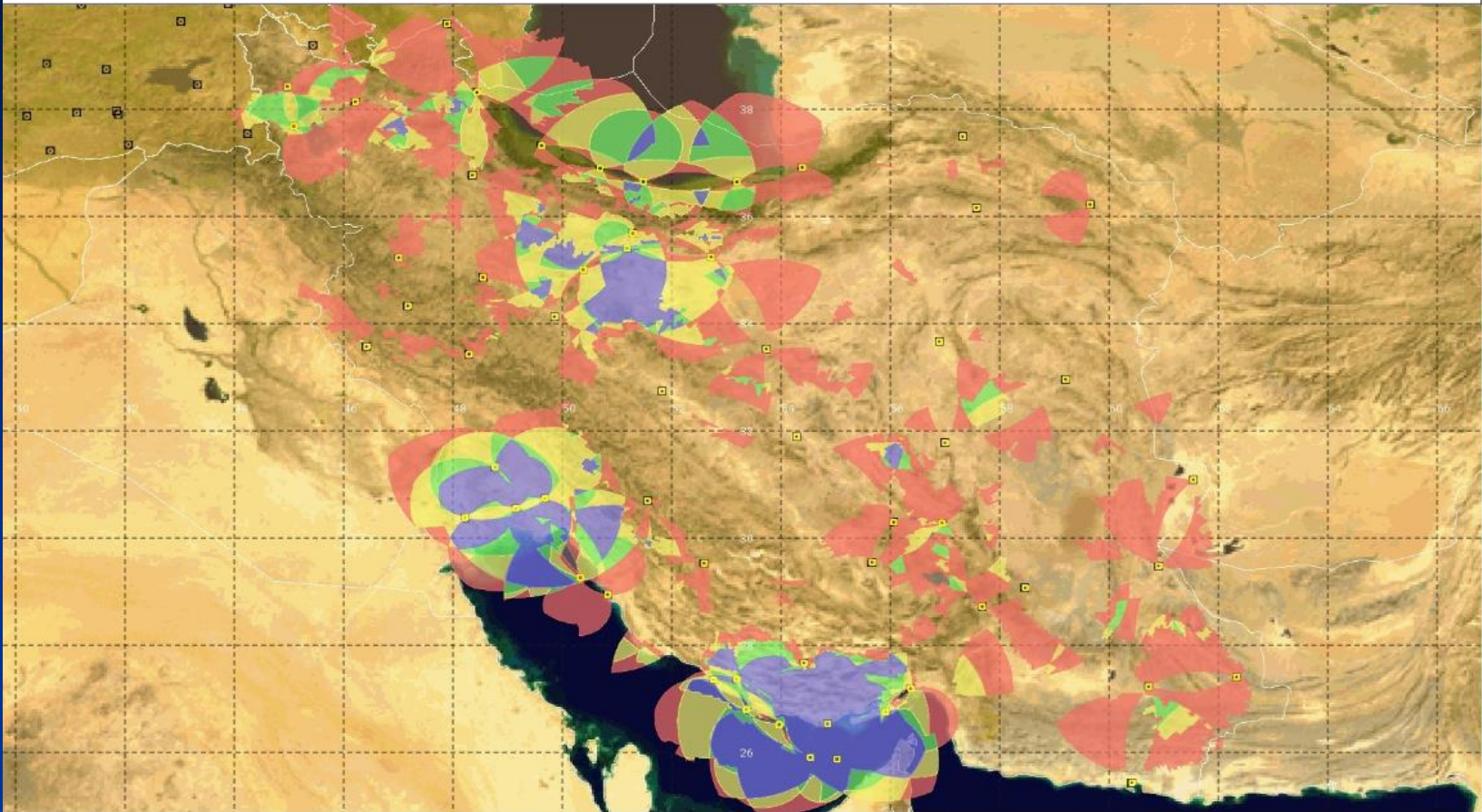
(OIKB OIFM OIMM OISS OITT OIIE OIII OIYY OIZH)

30 Secondary/Other international aerodromes

48 National and domestic aerodromes

DME/DME COVERAGE FL180 REDUNDANCY

18000 DME.DME REDUNDANCY



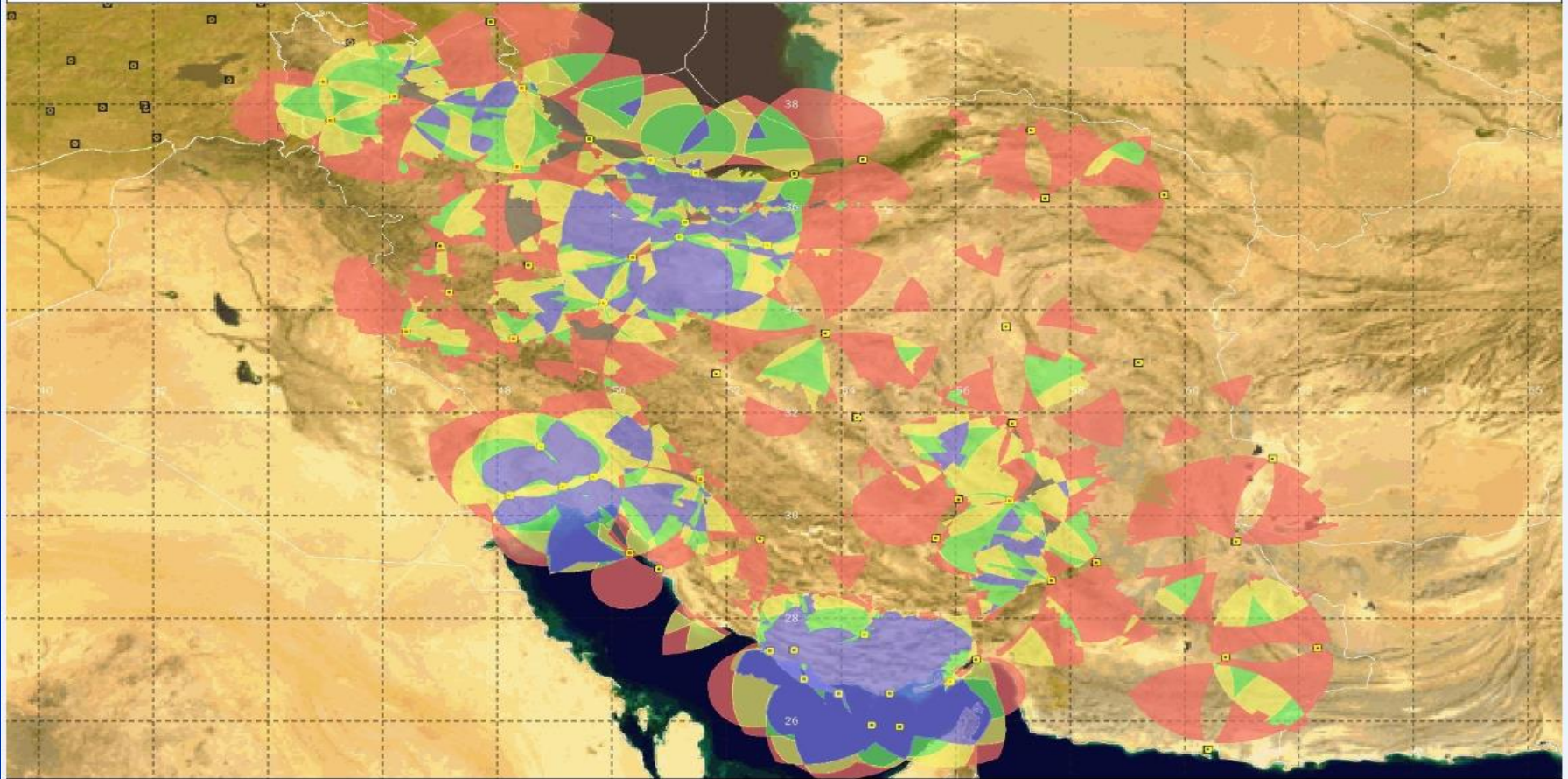
18000 DME.DME REDUNDANCY

Legend:

- No Coverage
- No Redundancy
- Limited Redundancy
- Full Redundancy
- Excessive Redundancy

DME/DME COVERAGE FL280 REDUNDANCY

28000 feet redundancy



20000 feet redundancy

Legend:

- No Coverage
- No Redundancy
- Limited Redundancy
- Full Redundancy
- Excessive Redundancy

Status of Implementation

- overview of the State's PBN capabilities:
- Regulations : CAO of I.R. Iran
- PANS-OPS Inspectorate : 2 persons (CAO)
- Airspace concept : 3 persons
- Procedure Design Entity : 1 IAC
- Number of procedure designers : 6 conventional & 3 PBN experts
- Automated tools : GEOTITAN

APTA Implementation Plan

Implementation Steps	Applicability	Performance Indicators/Metrics	Milestone	Targets	Status	Responsible Body	Remarks
LNAV/VNAV Flight Procedure	OIIE 29R OIII 29L OIKJ OIZH OINN OIKQ OIMM OIFM OITT OISS OIYY OIKB	Number of runway ends at International aerodromes with RNAV(GNSS) Approach Procedure (LNAV/VNAV)	Publication of LNAV/VNAV Procedure in AIP	100% by DEC.2020	29R OIIE 29L OIII OIKJ, are Completed	IAC	- RAIM Prediction is not available. -Software procedure design is not available. -Validation problems. -System for record and retention GNSS data.
PBN PLAN	FIR	publication	Submission to ICAO MID	DEC 2016 (revised plan NOV 2018)	PBN Plan Developed and approved Completed	CAO	Fleet Assessment to be done.
WGS84	FIR	Number of critical Points Coordination	Publication of Coordinates in AIP tables	Completed	Completed	IAC	Resurvey in progress
Training of ATCOs	ATC relevant staffs	-	Training courses and workshops	100% by Dec. 2020	OIII in progress Other Airports will be planned	IAC	
LNAV/VNAV Contingency plan			Local procedures and add to AIP				Available in AIC 2/18
Airlines PBN approval					Under progress		

CCO & CDO TEHRAN TMA Implementation Plan

Tehran TMA	Item Name	Start Date	Due Date	Point of Contact	Status
Plan	Conceptual design	Oct. 2015	Oct. 2015	Procedure Design	Done
	Stakeholder review	Oct. 2015	Nov. 2015	Procedure Design, ATC and Pilot	Done
Design	Final design (apply criteria)	Nov. 2015	Jan. 2020	Procedure Design	Done
Validation	Desktop simulation (ground validation)	Dec. 2020	Dec. 2020	Procedure Design	Done
	ATC simulator evaluation (Flight track/RADAR track)	Feb. 2020	Mar. 2020	ATC	In progress
	Flight validation	Jun. 2020		Flight Inspection	-
Implementation	Procedure Publication		8 Nov2020	AIM	-

CCO & CDO Int'l airports Implementation Plan

Mashhad, Isfahan, Shiraz, Bandar Abbas TMA's Zahedan, Tabriz and Yazd CTRs	Item Name	Start Date	Due Date	Point of Contact	Status
Plan	Conceptual design	Oct. 2015	Oct. 2015	Procedure Design	Done
	Stakeholder review	Oct. 2015	Nov. 2015	Procedure Design, ATC and Pilot	Done
Design	Final design (apply criteria)	Nov. 2015	Dec. 2020	Procedure Design	In progress
Validation	Desktop simulation (ground validation)	Dec 2021	Mar. 2021	Procedure Design	Plan
	ATC simulator evaluation (Flight track/RADAR track)	Mar. 2021	Jul. 2021	ATC	Plan
	Flight validation	Jul2021	Nov2021	Flight Inspection	Plan
Implementation	Procedure Publication		Dec 2021	AIM	Plan

Status of Implementation

RWY Ends	ILS / CAT	LNAV	LNAV/ VNAV	LPV	RNP AR	RNAV SID	RNAV STAR
TEHRAN/IKA 29R & 11L	CAT I & II	LNAV	LNAV/VN AV				5 RWY 29R
TEHRAN/MEHR ABAD 29L	CAT I		(RNP ILS) RWY 29L				
MASHHAD 31R	CAT I	Designed RWY 13	Designed RWY 31			Designed	Designed
BANDAR ABBAS 21L	CAT I	Designed RWY 03	Designed RWY 21			Designed	Designed
SHIRAZ 29L	CAT I	Designed RWY 11	Designed RWY 29			Designed	Designed
ESFEHAN 25R	CAT I	Designed RWY 07	Designed RWY 25			Designed	Designed

Status of Implementation

RWY Ends	ILS / CAT	LNAV	LNAV/ VNAV	LPV	RNP AR	RNP SID	RNP STAR
ZAHEDAN 35L	CAT I	LNAV 35L & 17R	LNAV/ VNAV 35L				8 RWY 35L 8 RWY 17R
Rasht	CAT I	LNAV 09	LNAV/ VNAV 27			Designed	Designed
Yazd 31	CAT I	LNAV 13	LNAV/ VNAV 31			Designed	RWY 13 RWY 31
JIROFT 31	-	LNAV				2 RWY 31	2 RWY 31
<u>Nowshahr</u> 28		Designed				Designed	Designed
Qeshm		Designed				Designed	Designed

Mid Term (2018 – 2023)

Phase of Flight	Navigation Specification	Places
En - route	RNAV5 & RNAV1	Tehran FIR (At or Above FL 200)
TMA	RNAV1 in Surveillance Environments RNP in Non- Surveillance Environments	Domestic Airports
Approach	RNP APCH with Baro-VNAV	Domestic Airports
	In case of operational benefits, commencement of RNP AR study phase	Int. Airports

Long Term (2023 – 2028)

- **Enroute:**
RNAV 1 at or above FL160
- **TMA:**
Fully completed
- **Approach:**
GLS for Int. Airports

Lessons Learned

- **Airlines:** were familiar with PBN Procedures and its benefits.
- **Implementation of ASBU** blocks require close collaboration of ATM community from first step of planning to the final steps.
- **Procedure Designers:** Got more experience to PBN procedures.
- **Managers:** were informed to benefits of PBN Implementation.

Training

- **ATC:** PBN training in Progress for controllers .
- **Approach Procedure Designers:** 3 officers trained and 4 officers scheduled for training.

Challenges

- Data gathering
- approach procedure Software problem
- Flight Validation
- Shortage of PANS OPS and Airspace planners experts
- Military coordination

An aerial satellite-style map of Cairo, Egypt, showing the Nile River and surrounding urban areas. Several flight paths are overlaid on the map, represented by thick colored lines: a red line on the left, a green line curving around a lake, and a magenta line extending from the center towards the top right. Small blue airplane icons are placed along these paths, indicating flight directions. Green arrows also point from the magenta line towards the center. The text 'THANKS FOR YOUR ATTENTION' is overlaid in large, bold, red-outlined letters across the middle of the map.

THANKS FOR YOUR ATTENTION