



SIP/2004-WP8
Business case

Special Implementation Project

CNS/ATM systems – Planning and Implementation in the Middle East Region

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**Workshop on the development of business case for the
implementation of CNS/ATM systems**

Cairo, 6–9 September 2004

Middle East



Outline

- MIDANPIRG
- MID PROBLEMS
- CNS/ATM PLANNING IN THE MID REGION
- REGIONAL, STATE AND USER PLANNING
- REGIONAL PLANNING FOR CNS/ATM
- HOMOGENOUS ATM AREAS AND MAJOR TRAFFIC FLOWS
- ACTION PROGRAMME
- MID REGION DEVELOPMENTS
- CONCLUSION

MIDANPIRG

➤ MIDDLE EAST AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (MIDANPIRG)

- Established by the by the Council of ICAO, on 19 November 1993.
- Held its 1st meeting in Cairo, 7-11 November 1994.
- Held its 8th meeting in Cairo, 7-11 September 2003.

The objectives of the Group are to:

- a) ensure the continuous and coherent development of the MID Regional Plan as a whole, taking into consideration the effect of such development on the Regional Plans, and in relation to that of adjacent regions; and
- b) identify specific problems in the air navigation field and propose, in appropriate form, action aimed at solving these problems.

MIDANPIRG

Member States:

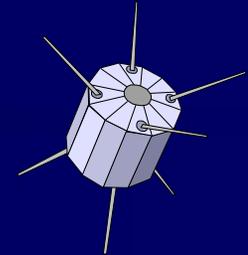
- ✈ Bahrain
- ✈ Egypt
- ✈ Iran
- ✈ Jordan
- ✈ Lebanon
- ✈ Oman *(present Chairperson)*
- ✈ Saudi Arabia
- ✈ United Arab Emirates



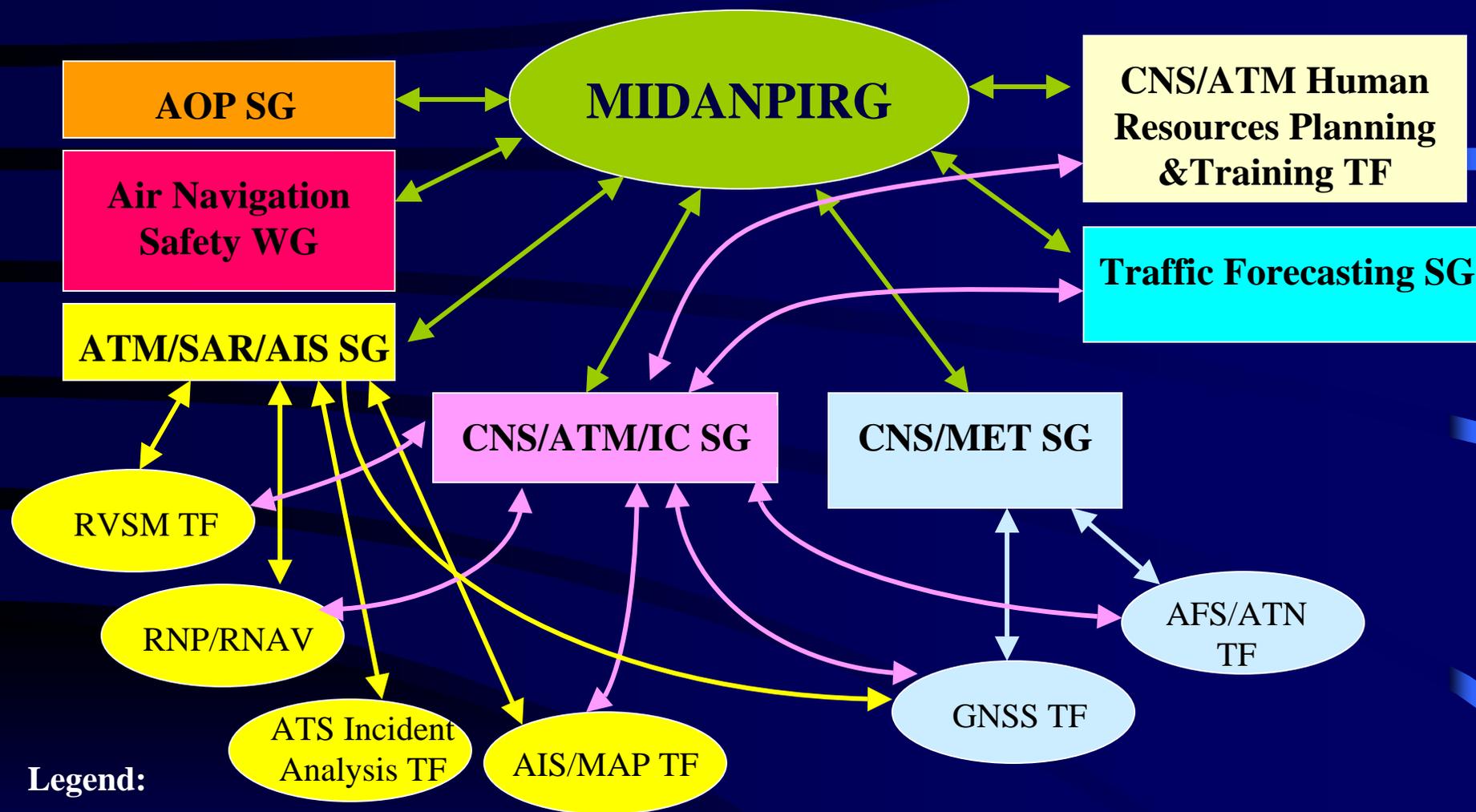
MIDANPIRG

MIDANPIRG Subsidiary Bodies:

- AOP Sub-Group
- ATM/SAR/AIS Sub-Group
 - * *ATS Analysis Task Force*
 - * *RVSM Task Force*
 - * *RNP/RNAV Task Force*
- CNS/ATM Implementation Coordination Sub-Group
- CNS/MET Sub-Group
 - * *AFS/ATN Task Force*
 - * *GNSS Task Force*
- Traffic Forecasting Sub-Group *(1st meeting 11-13 Sept. 2004).*
- CNS/ATM Human Resources Planning and Training Task Force *(1st meeting 3-5 Oct.2004).*
- Air Navigation Safety Working Group *(1st meeting 20-22 Dec. 2004).*



MIDANPIRG Organizational Structure



Legend:

SG = Sub-Group

TF = Task Force

WG = Working Group

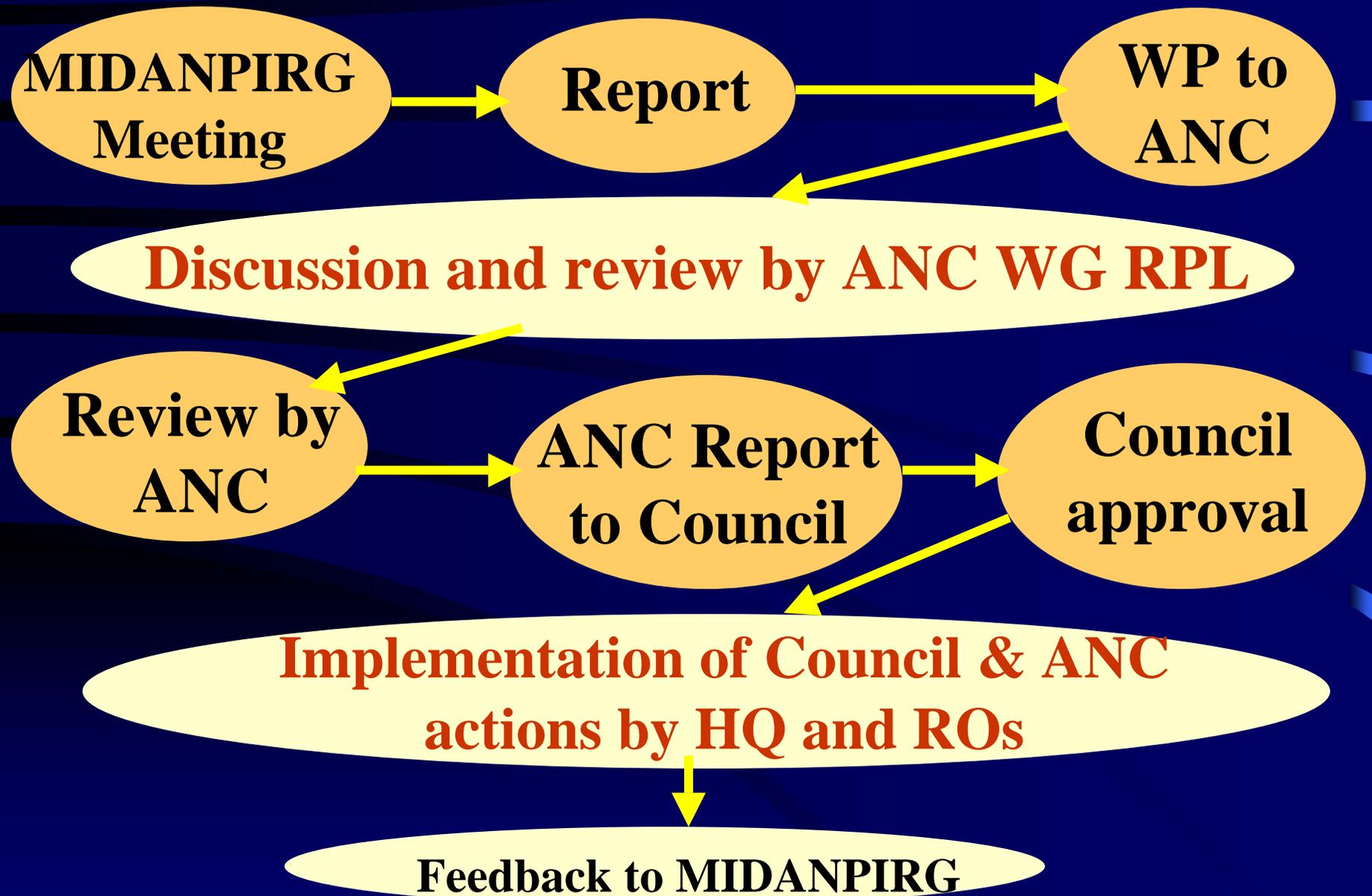
MIDANPIRG

MIDANPIRG Meetings:

- | | | | | |
|---|-----|---------------|------|----------------------|
| ➤ | 1st | 07-11 Nov | 1994 | Cairo |
| ➤ | 2nd | 22-26 May | 1995 | Cairo |
| ➤ | 3rd | 23-26 Jun | 1996 | Bahrain |
| ➤ | 4th | 01-05 Dec | 1997 | Cairo |
| ➤ | 5th | 29 Nov-03 Dec | 1998 | Jordan |
| ➤ | 6th | 10-14 Sept | 2000 | Cairo |
| ➤ | 7th | 21-25 Jan | 2002 | Cairo |
| ➤ | 8th | 07-11 Sept | 2003 | Cairo |
| ➤ | 9th | 18-22 Apr | 2005 | Cairo (<i>TBD</i>) |

MIDANPIRG

Report Review Process



MID Problems



- **CNS**

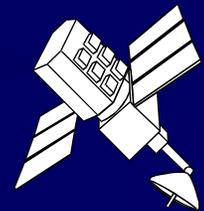
- Communication (air/ground) VHF, HF
- Communication (ground/ground) Slow AFTN, few DSCs
- Navigation (adequate)
- Surveillance - RADAR coverage (some parts of Arabian Peninsula, Eastern parts of Mediterranean)

- **ATM**

- civil/military
- upper/lower airspace
- point source nav aids
- ATC capacity
- Dissimilar ATS procedures
- Parallel route structure
- lack of RADAR in some FIRs
- Comm facilities / language
- Costs primary RADAR
- lack of air/ground data links
- inefficiency / duplication
- lack of automation

CNS/ATM Planning in the MID Region

- First Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG/1)
 - CNS/ATM Subgroup
 - Planning and Implementation
 - State Responsibility
 - Implementation Plans
- Limited Middle East (COM/MET/RAC) Regional Air Navigation Meeting (LIMIDRAN) 1996
- MIDANPIRG/6, Conclusion 6/26, Year 2000



Regional, State and User Planning

- **Regional Planning**

- Main engine
- Converging of approaches (top-down / bottom-up)
- Done by States or groups of States
- Implementation strategy by regional planning group

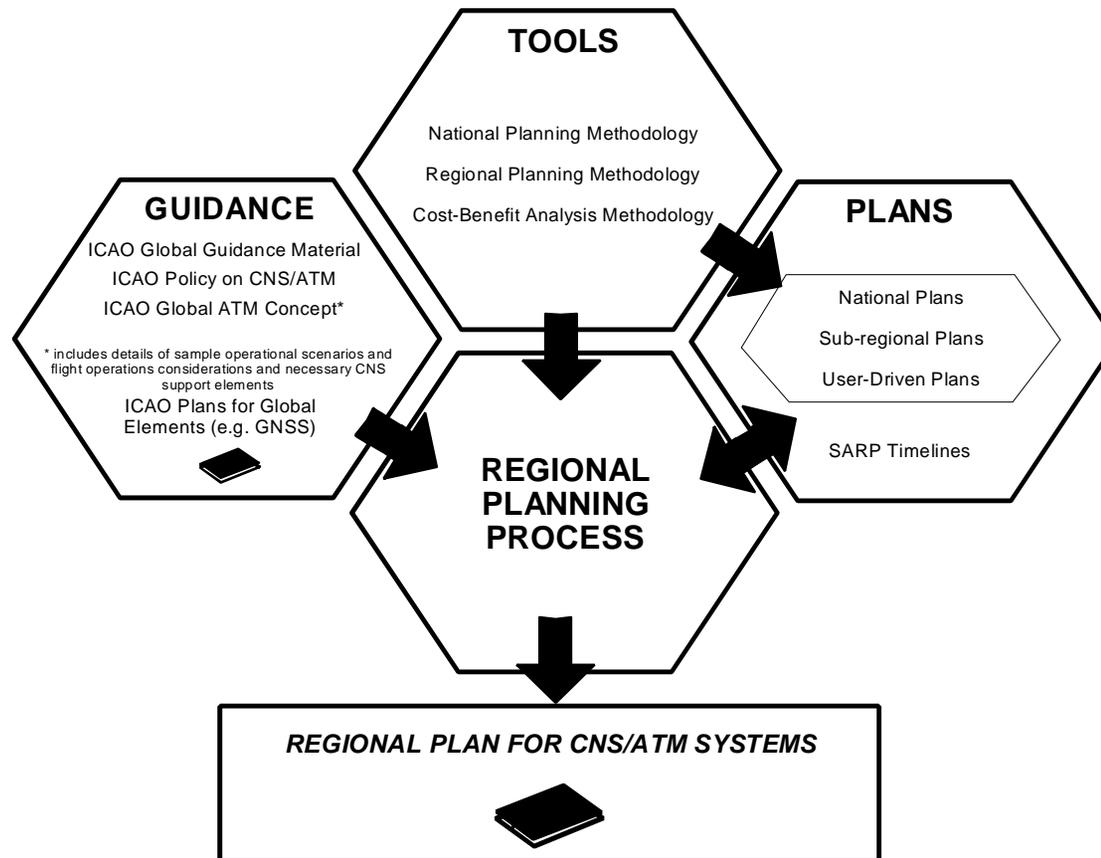
- **State planning**

- Each state to develop and publish own CNS/ATM Implementation Plan
- Plan submitted to MIDANPIRG

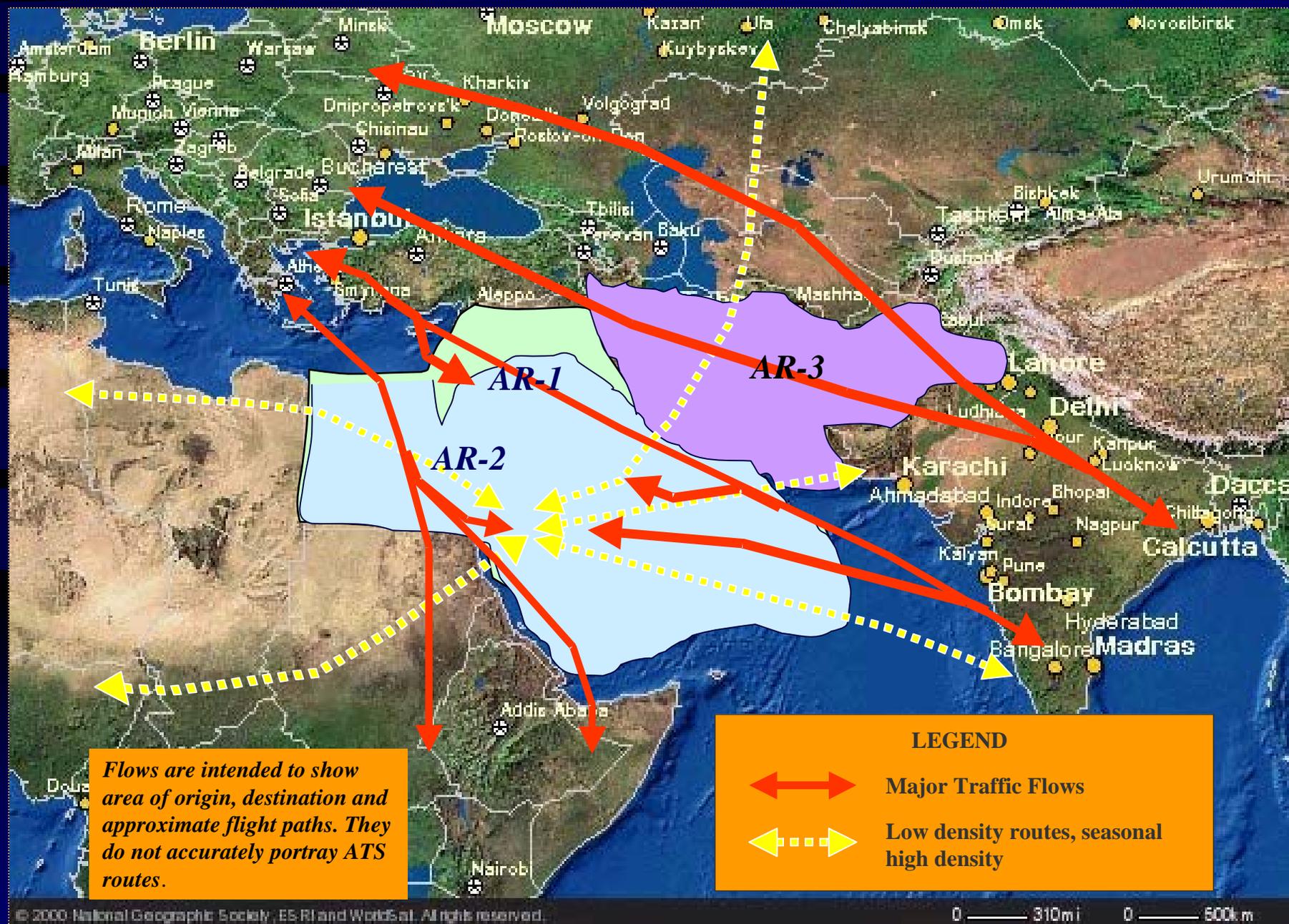
- **User Planning**

- Evolutionary approach to planning

Regional Planning for CNS/ATM



MIDDLE EAST REGION – Major Traffic Flows



Homogenous ATM Areas and Major Traffic Flows

<i>Area of routing (AR)</i>	<i>Traffic flow</i>	<i>FIRs involved</i>	<i>Type of area covered</i>	<i>Remarks</i>
AR-1	To, from or through Northern Arabian Peninsula, the Near East and Northern Egypt	Amman, Baghdad, Bahrain, Beirut, Cairo, Damascus, Emirates, Jeddah, Kuwait, Muscat, Tel Aviv	Continental high density	Mainly intra- and interregional MID(to EUR, ASIA/PAC, Central Asia, AFI, NAM); some overflying (EUR – Asia)
AR-2	To, from or through Southern Arabian Peninsula and Southern Egypt	Cairo, Bahrain, Emirates, Jeddah, Muscat, Sana'a	Remote Continental and Oceanic low density (but seasonally high density)	Arabian Peninsula to AFI and ASIA/PAC. Seasonal Haj flights.
AR-3	To from or through Iran/Afghanistan	Teheran, Kabul	Continental high density	Mainly overflying (EUR – ASIA/PAC, Central Asia to Arabian Peninsula); some intra- and interregional

Action Programme

ICAO	States/Regions	Service Providers	Users	Aviation Industry
<ul style="list-style-type: none"> ▪ Develop Standards and Recommended Practices (SARPs) including guidance material ▪ Monitoring and co-ordination of Global and Regional Plans ▪ Help States/regions develop plans in accordance with the global plan ▪ Develop and assist in training ▪ Provide technical assistance and assistance with cost/benefit analyses, including seminars as needed ▪ Support continued allocation of spectrum to meet requirements 	<ul style="list-style-type: none"> ▪ Follow ICAO implementation guidelines ▪ Establish requirements ▪ Develop and implement regional plans ▪ Perform cost/benefit analyses ▪ Engage in research, development, trials and demonstrations (RDT&D) ▪ Select implementation options ▪ Contact service providers ▪ Contact ICAO ▪ Implement early applications ▪ Adhere to institutional guidelines ▪ Develop and conduct training ▪ Define procedures and practices ▪ Remove obsolete equipment ▪ Conduct certification including RNP airspace 	<ul style="list-style-type: none"> ▪ Develop and install necessary infrastructure ▪ Participate in standards development ▪ Be involved in RDT&D ▪ Co-operate with each other and with air traffic services 	<ul style="list-style-type: none"> ▪ Install avionics standards ▪ Co-operate in planning the transition ▪ Be involved in RDT&D ▪ Exploit applications <ul style="list-style-type: none"> – AMSS <ul style="list-style-type: none"> • ATS • AOC • AAC • APC – GNSS <ul style="list-style-type: none"> • En-route • Terminal • Non-precision approach • Precision approach ▪ Participate in training 	<ul style="list-style-type: none"> ▪ Participate in standards development ▪ Participate in RDT&D ▪ Support transition planning activities ▪ Assure the provision of adequate logistics support and training for new CNS equipment

MID Region Developments

AERODROME OPERATIONS:

Aerodrome Certification :

- MIDANPIRG/8 requested States to report Certification of international aerodromes implementation status and urged States that had not yet initiated their aerodrome certification process to do so in relation to ICAO provisions.
- Two seminars/workshops were conducted in coordination with Airport Council International (ACI) in June 2002 & February 2003.
- A Workshop on Training of Aerodrome Inspectors was conducted in June 2004.

New Larger Aeroplanes (NLA):

- MIDANPIRG/8 invited States whose existing aerodromes will receive new larger aeroplanes to plan for the safe operations of these aircraft.

MID Region Developments

AERONAUTICAL INFORMATION SERVICES (AIS):

Reactivation of the AIS/MAP Task Force *(2nd meeting 15-17 March 2004).*

Automation of AIS

- A survey to be carried out and the result to be evaluated.

Quality System

- States were urged to take necessary measures to implement a quality system in their AIS in conformity with ISO 9000 series.

World Geodetic System – 1984 (WGS-84)

- 2 fully implemented *(all elements)*, 7 fully implemented *(except for minor elements)*, 3 partly implemented, 3 not implemented.

AIR NAVIGATION PLAN:

Draft MID Basic ANP (Air Navigation Plan) and FASID (Facilities and Implementation Document)

- The draft MID Basic ANP is with Headquarters for final process.

MID Region Developments

AIR TRAFFIC MANAGEMENT (ATM):

ACAS II (Anti Collision Avoidance System)

- Implementation of ACAS II in the MID Region is mandated with an applicable date of 1st July 2001.
- Exceptional exemptions on a case-by-case basis with supporting documents which indicate that positive action is being taken to upgrade or install ACAS II Version 7, was granted till 2003 for operators that could meet the requirements.

RNP (Required Navigation Performance) /RNAV (Area Navigation) Implementation

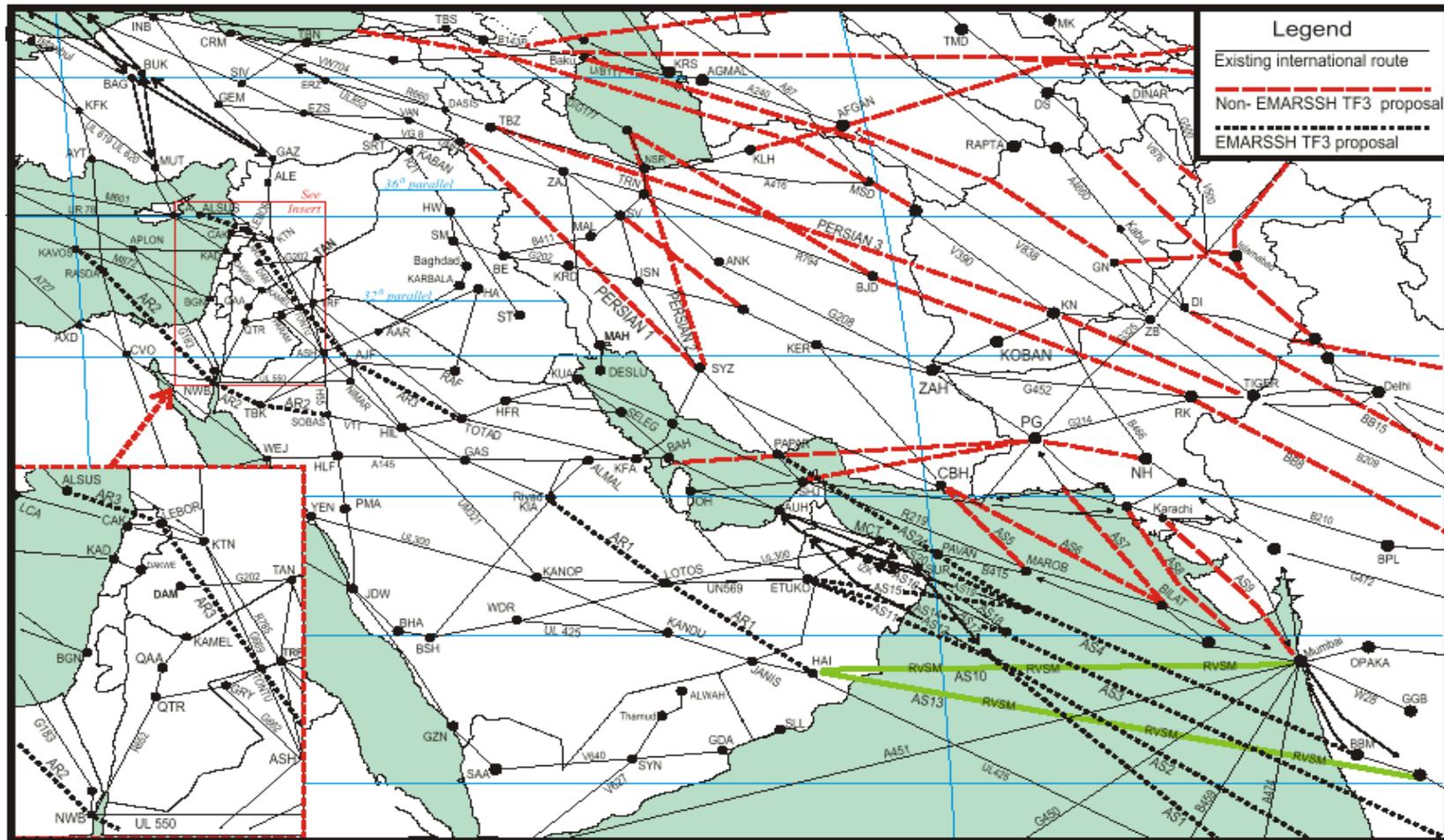
- Phase I of RNP 5 in the MID Region, covering selected priority routes, was implemented effective from 14 June 2001.
- Phase II comprising of RNP5/RNAV areas instead of RNP/RNAV route systems as of 28 November 2002.

MID Region Developments

EMARSSH (a Revised ATS Route Structure – ASIA to Middle East/Europe, South-of-the-Himalayas)

- **Endorsed by Regional Directors of Asia/PAC, EUR and MID Regions at the Interregional Coordination Meeting in Bangkok in October 2000.**
- **The EMARSSH Project was implemented on the agreed date of 28 November 2002.**
- **EMARSSH Implementation coincides with the RNP 5/RNAV Phase II implementation in the MID Region, Asia/PAC Region would implement RNP 10.**
- **New Middle East ATS route network – 22 December 2003.**

EMARSSH (a Revised ATS Route Structure – ASIA to Middle East/Europe, South-of-the-Himalayas)



Appendix G

MID Region Developments

RVSM Implementation

- The MID Region implemented RVSM FL290 – FL410 (inclusive) on the agreed date of 27 November 2003.
- A Regional Safety and Monitoring Agency (Middle East Central Monitoring Agency “MECMA”) was established in Abu-Dhabi, UAE, with the focus on monitoring RVSM and RNP/RNAV implementation in the MID Region (costing UAE more than USD. 300,000.00). However, UAE support to MECMA was terminated on 1st June 2004.
- As part of the project preparations to implement RVSM in the MID Region, which would provide an end-to-end RVSM environment between Asia and Europe through the Middle East. Two interregional coordination meetings took place with the Asia/Pacific Region (west Bay of Bengal area) in October 2002 and August 2003; with Europe in November 2003; and Africa planned for November/December 2004.
- An RVSM training SIP was conducted for Jordan, Lebanon, Syria and Yemen.

MID Region Developments

The Europe Middle East Regional Coordination Mechanism on Air Traffic Management (EMAC)

- Protocol signed by Member States Ministers in February 2003 in Nicosia, Cyprus.
- Objective: to increase the collective performance of ATM systems in the MID region, while satisfying the users' need at lowest possible costs while enhancing the safety of air navigation in the region.
- Member States:
Cyprus Egypt Jordan Lebanon Syria
- Observers:
EUROCONTROL ICAO Other Organizations (*invitation only*)
- Steering Committee: Governing Body – DGCA's
- Working Groups: Safety (ATM aspects) & ATM

MID Region Developments

COMMUNICATION, NAVIGATION and SURVEILLANCE (CNS):

MID Very Small Aperture Terminal (VSAT)

- A Special Implementation Project was approved by the Council of ICAO to progress the task of developing a MID regional VSAT network for ground-ground data/voice communications, to serve as an important step in planning for transition to CNS/ATM systems.
- The feasibility study for this project in cooperation with Air Traffic & Navigation Services (ATNS) of South Africa was presented to the MIDANPIRG/8 meeting in September 2003. Expecting possibilities of future integration with the African NAFISAT through a common pilot project.
- Nine site visits were conducted in the MID to update and gather information contained in the feasibility study. Final study result will be ready by November 2004.

MID Region Developments

Aeronautical Telecommunication Network (ATN)

- Current AFTN circuits being improved for smooth transition to ATN.
- Guiding principles related technical/planning documentation, with a focus on ground-ground applications mainly ATS message handling system (AMHS) and ATS inter-facility data communications (AIDC) was prepared and presented to MIDANPIRG/8.

Global Navigation Satellite Systems (GNSS)

- In order to gain early benefits of the implementation of GNSS, the MID Region has agreed the use of GNSS as a supplemental and primary means for en-route and non-precision approaches (NPA) operations in the MID Region effective from 18 April 2002.
- Strategy for implementation of GNSS is developed.
- SBAS test bed, in cooperation with EGNOS, carried out.

MID Region Developments

CNS/ATM SYSTEMS:

CNS/ATM Plan

- The MID regional plan for CNS/ATM systems has been reviewed and includes updated timelines in terms of implementation of various elements of CNS/ATM systems.

TRAFFIC FORECASTING:

Traffic Forecasting Group (MER TFG)

- A set of traffic forecasts for major route groups from, to and within the MID Region up to the year 2015 has been developed.
- Restructuring the MER TFG within the MIDANPIRG as a contributory body (Traffic Forecasting Sub-Group (TF SG)) was agreed by MIDANPIRG/8 in September 2003; adopted by ICAO Council.

MID Region Developments

METEOROLOGY:

World Area Forecast System (WAFS)

- Migration from T4 charts to WAFS forecasts in digital code forms (i.e. WMO BUFR and GRIB code forms) is being addressed.
- Workshops on use of GRIB and BUFR coded WAFS data organized by the WAFC Provider States, in coordination with ICAO and World Meteorological Organization (WMO).

Satellite Distribution System (SADIS)

- In view of the introduction of the SADIS mandatory cost-recovery scheme in 2001. Egypt and Saudi Arabia were the nominated members to represent the SADIS user States in the MID Region.

MID Region Developments

DEFICIENCIES:

- **Uniform methodology for the Identification, Assessment and Reporting of Air navigation Deficiencies**
- **The MIDANPIRG/8 adopted the revised uniform methodology, including the new definition of deficiency in addressing the deficiencies of the MID Region.**
- **The MID Regional Office has sent follow-up letters to MID States, in relation to the Secretary General letter of 27 September 2002, and several inputs were received to be discussed in MIDANPIRG/8 meeting.**
- **With a view to enhance safety of air navigation services in the MID Region, MIDANPIRG/8 established an Air Navigation Safety Board Working Group to address the issue of deficiencies at a regional level and identify ways and means for elimination of deficiencies.**

CONCLUSION

CONCLUSIONS:

- MID Region is an important link between its neighbouring regions of Africa, Asia/Pac and Europe. Interface and coordination meetings should continue between the three regions.
- The MID Region has started implementing its Air Navigation Plan (ANP) and the CNS/ATM systems.
- Continued commitments and collaboration shown by all (MID States and users (IATA)) is the key towards a timely and successful implementation of the CNS/ATM systems in the MID Region.
- The MID Regional Office is committed as part of the Global network in following-up the CNS/ATM implementation process in the MID Region and elimination of Deficiencies.
- Cooperation and coordination between ICAO, MID States and the users (IATA) is a must to for the MID Region to benefit and, to be part of the Global CNS/ATM network.

*** END ***

Thank you!



Questions?