



## Second Meeting of the Air Navigation System Implementation Group (ANSIG/2)

*Cairo, Egypt, 6-8 December 2016*



**EGYPT**

ASBU Block 0 modules  
Implementation Status



# Outline

- Brief on the Egypt National ASBU Implementation Plan**
- Status of ASBU Implementation**
- Outlook 2020**
- Challenges**
- Recommendations**



# Egypt National ASBU Implementation Plan



- Develop Egypt strategic plan with a goal of global aviation system interoperability.
- Implement priority 1 ASBU Block 0 modules according to Egypt operational requirements and the MID region air navigation strategy to be in line with global air navigation objectives.



# Status of ASBU Implementation



# Status of ASBU Implementation



## B0 – APTA: Optimization of Approach Procedures including vertical guidance

| Elements                         | Applicability                             | Status  | Action Plan/Timelines       | Remarks   |
|----------------------------------|---|---|-----------------------------|---|
| States' PBN Implementation Plans | Egypt                                     | <b>Implemented</b>  |                             | <b>Updated Version Edition 1.5 by August 2016</b>         |
| LNAV                             | All RWYs Ends at International Aerodromes | <b>86 % of RWY Ends (19 THR) with RNAV (GNSS)</b>                     | 100% by 2016                |   |
| LNAV/VNAV                        | All RWYs Ends at International Aerodromes | <b>18 % of RWY Ends (4 THR) provided with Baro-VNAV APP procedure</b> | 55% by 2016<br>100% by 2018 | <b>Timelines will be modified at the next PBN version</b> |



# Status of ASBU Implementation



## B0-SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)

| Elements        | Applicability                          | Status             | Action Plan/Timelines | Remarks                     |
|-----------------|--|--------------------|-----------------------|-----------------------------|
| A-SMGCS Level 1 | As per the MID Air Navigation Strategy | <b>Implemented</b> |                       |                             |
| A-SMGCS Level 2 | As per the MID Air Navigation Strategy | <b>Implemented</b> |                       | <b>Completed since 2013</b> |



# Status of ASBU Implementation



## B0 – ACDM: Improved Airport Operations through Airport-CDM

| Elements | Applicability                          | Status          | Action Plan/Timelines | Remarks  |
|----------|--|-----------------|-----------------------|--|
| A-CDM    | As per the MID Air Navigation Strategy | Not Implemented | TBD                   | Timeline will be determined after completion of the gap analysis by the designated committee (High level). |



# Status of ASBU Implementation



| B0 – FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration |               |             |                       |   |
|--|---------------|-------------|-----------------------|---|
| Elements   | Applicability | Status      | Action Plan/Timelines | Remarks   |
| AMHS capability  | Egypt         | Implemented |                       |   |
| AMHS Impl. /interconnection  | Egypt         | Implemented |                       |   |
| Impl. of AIDC/OLDI between adjacent ACCs   | Cairo ACC     | Implemented |                       | <ul style="list-style-type: none"> <li>• Currently connected to Athens ACC</li> <li>• Stopped with Jeddah due to Compatibility issue</li> </ul> |





# Status of ASBU Implementation



## B0 – DATM: Service Improvement through Digital Aeronautical Information Management

| Elements             | Applicability  | Status   | Action Plan/Timelines         | Remarks                     |
|----------------------|--|--|-------------------------------|-----------------------------|
| National AIM Roadmap | Egypt  | Implemented  |                               | Updated Version by Nov 2016 |
| AIXM                 | Egypt  | Implemented  |                               |                             |
| eAIP                 | Egypt  | Partially Compliant  | Fully Implemented by Dec 2018 |                             |
| QMS                  | Egypt  | Fully Compliant  |                               |                             |
| WGS-84               | ENR<br>AD<br>TMA<br>GUND   | Fully Compliant  |                               |                             |
| eTOD                 | Area 1 Terrain<br>Area 1 Obstacle<br>Area 4 Terrain<br>Area 4 Obstacle | Fully Compliant<br>Not Compliant<br>Fully Compliant<br>Not Compliant | Fully Implemented by Dec 2018 |                             |



# Status of ASBU Implementation



## B0 – AMET: Meteorological information supporting enhanced operational efficiency and safety

| Elements                     | Applicability | Status      | Action Plan/Timelines | Remarks                                |
|------------------------------|---------------|-------------|-----------------------|--|
| SADIS 2G or Secure SADIS FTP | Egypt         | Implemented |                       |  |
| QMS                          | Egypt         | Implemented |                       | Renewal ISO 9001 Certified at May 2015 |



# Status of ASBU Implementation



## B0 – FRT0: Improved Operations through Enhanced En-Route Trajectories

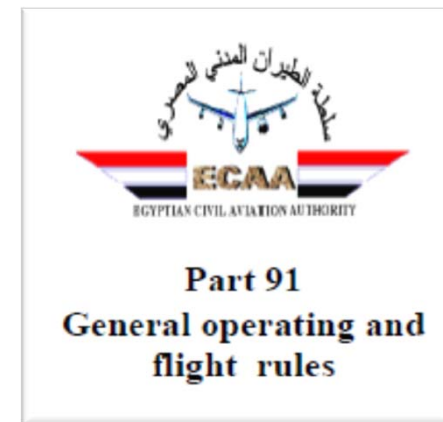
| Elements                       | Applicability | Status          | Action Plan/Timelines | Remarks   |
|--------------------------------|---------------|-----------------|-----------------------|---|
| Flexible use of airspace (FUA) | Egypt         | Not Implemented | TBD                   | Timeline will be defined after completing the establishment of civil\Military coordination center |
| Flexible routing               | Egypt         | Not Implemented | TBD                   |   |



# Status of ASBU Implementation



| B0 – ACAS: ACAS Improvements                     |               |                    |                       |  |
|--|---------------|--------------------|-----------------------|--|
| Elements   | Applicability | Status             | Action Plan/Timelines | Remarks  |
| State Regulation on carriage of ACAS (TCAS v7.1) | Egypt         | <b>Implemented</b> |                       | ECAR Part 121.356 & ECAR Part 91.221<br><br>ECAA ensure the conformity through its oversight program |





# Status of ASBU Implementation



## B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO)

| Elements                                | Applicability                          | Status  | Action Plan/Timelines               | Remarks |
|---|--|---|-------------------------------------|---------|
| PBN STARs                               | As per the MID Air Navigation Strategy | 55 % of International Aerodromes/TMAs with PBN STAR implemented | 64% by Dec 2016<br>100% by Dec 2018 |         |
| International aerodromes/ TMAs with CDO | As per the MID Air Navigation Strategy | Not Implemented   | TBD                                 |         |



# Status of ASBU Implementation



## B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO)

| Elements                                | Applicability                          | Status   | Action Plan/Timelines               | Remarks |
|---|--|--|-------------------------------------|---------|
| PBN SIDs                                | As per the MID Air Navigation Strategy | 59 % of International Aerodromes/TMAs with PBN SID implemented | 68% by Dec 2016<br>100% by Dec 2018 |         |
| International aerodromes/ TMAs with CCO | As per the MID Air Navigation Strategy | Not Implemented  | TBD                                 |         |



## Other ASBU Block 0 Modules (priority 2) Implemented by the State



| Module         | Module Title  | Status     |           | Remarks |
|----------------|---|------------|-----------|---------|
|                |   | Yes        | No        |         |
| <b>B0-WAKE</b> | Increased Runway Throughput through Optimized Wake Turbulence Separation              | <b>Yes</b> |           |         |
| <b>B0-RSEQ</b> | Improve Traffic flow through Runway Sequencing (AMAN/DMAN)                            |            | <b>No</b> |         |
| <b>B0-SNET</b> | Increased Effectiveness of Ground-Based Safety Nets                                   |            | <b>No</b> |         |
| <b>B0-ASUR</b> | Initial capability for ground surveillance  |            | <b>No</b> |         |
| <b>B0-ASEP</b> | Air Traffic Situational Awareness (ATSA)  |            | <b>No</b> |         |
| <b>B0-OPFL</b> | Improved access to optimum flight levels through climb/descent procedures using ADS-B |            | <b>No</b> |         |
| <b>B0-TBO</b>  | Improved Safety and Efficiency through the initial application of Data Link En-Route  |            | <b>No</b> |         |



# Outlook 2020

## (Status of ASBU Block 0 Modules by 2020)



| Module         | Module Title  | Status by 2020 |    |    |     | Remarks                                |
|----------------|---|----------------|----|----|-----|--|
|                |   | FI             | PI | NI | N/A |  |
| <b>B0-APTA</b> | Optimization of Approach Procedures including vertical guidance                       | FI             |    |    |     |  |
| <b>B0-WAKE</b> | Increased Runway Throughput through Optimized Wake Turbulence Separation              | FI             |    |    |     |  |
| <b>B0-RSEQ</b> | Improve Traffic flow through Runway Sequencing (AMAN/DMAN)                            |                |    |    | N/A |  |
| <b>B0-SURF</b> | Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)                       | FI             |    |    |     |  |
| <b>B0-ACDM</b> | Improved Airport Operations through Airport-CDM                                       | TBD            |    |    |     | Reported after completing Gap Analysis |
| <b>B0-FICE</b> | Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration | FI             |    |    |     |  |





# Outlook 2020

## (Status of ASBU Block 0 Modules by 2020)



| Module         | Module Title   | Status by 2020 |    |    |     | Remarks |
|----------------|--|----------------|----|----|-----|---------|
|                |  | FI             | PI | NI | N/A |         |
| <b>B0-DATM</b> | Service Improvement through Digital Aeronautical Information Management          | FI             |    |    |     |         |
| <b>B0-AMET</b> | Meteorological information supporting enhanced operational efficiency and safety | FI             |    |    |     |         |
| <b>B0-FRTO</b> | Improved Operations through Enhanced En-Route Trajectories                       | FI             |    |    |     |         |
| <b>B0-NOPS</b> | Improved Flow Performance through Planning based on a Network-Wide view          | FI             |    |    |     |         |
| <b>B0-ASUR</b> | Initial capability for ground surveillance                                       | FI             |    |    |     |         |



# Outlook 2020

## (Status of ASBU Block 0 Modules by 2020)



| Module         | Module Title   | Status by 2020 |    |    |     | Remarks |
|----------------|--|----------------|----|----|-----|---------|
|                |  | FI             | PI | NI | N/A |         |
| <b>B0-OPFL</b> | Improved access to optimum flight levels through climb/descent procedures using ADS-B      |                |    |    | N/A |         |
| <b>B0-ACAS</b> | ACAS Improvements  | FI             |    |    |     |         |
| <b>B0-SNET</b> | Increased Effectiveness of Ground-Based Safety Nets  | FI             |    |    |     |         |
| <b>B0-CDO</b>  | Improved Flexibility and Efficiency in Descent Profiles (CDO)                              |                |    |    |     | TBD     |
| <b>B0-TBO</b>  | Improved Safety and Efficiency through the initial application of Data Link En-Route       |                |    |    | N/A |         |
| <b>B0-CCO</b>  | Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO) |                |    |    |     | TBD     |



# Challenges



| Challenge                   |  | Mitigation Measures  |
|-----------------------------|--|--|
| <b>B0-APTA</b>              |  |  |
| <b>GNSS Vulnerabilities</b> | <ul style="list-style-type: none"> <li><input type="checkbox"/> The low power signal received from GNSS core satellite constellations can be easily interfered by low power transmitters (<b>Unintentional interference</b>) or spoofed by <b>Intentional Interference</b>.</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Retaining terrestrial aids as part of a mitigation strategy during <b>GNSS Interference events</b>, Through reliance on stand alone systems such as Instrument landing system till at least the end of Block 1 interval (2024).</li> </ul> |
| <b>GNSS RAIM Outage</b>     | <ul style="list-style-type: none"> <li><input type="checkbox"/> Unpredicted outages of GNSS services can cause undesired interruptions on aircraft operations. Safety impacts may become more severe during approach phase of flights.</li> </ul>                                      |  |



# Challenges



| Challenge  | Mitigation Measures  |
|--|--|
| <b>B0-APTA</b>   |  |
| <input type="checkbox"/> Training and lack of qualified Personnel (Procedure Designers).   | <input type="checkbox"/> Perfecting Technical training for procedure designers (LNAV\VNAV APP Procedures). |
| <b>B0-FICE</b>   |  |
| <input type="checkbox"/> Difficulty of coordination with the remaining neighboring ACCs by establishing AIDC/OLDI connection with these ACCs due to compatibility issues of their systems. |  |



# Challenges



| Challenge   | Mitigation Measures   |
|---|---|
| <b>B0-FRTO</b>  |   |
| <input type="checkbox"/> Complicated Egyptian Airspace Structure (Segregated Airspaces aren't exist).                                   | <input type="checkbox"/> Establishing Civil/Military Coordination center by 2019. |
| <b>B0-CCO &amp; B0-CDO</b>  |   |
| <input type="checkbox"/> Training and lack of qualified Personnel.<br><input type="checkbox"/> Complicated Egyptian Airspace structure. | <input type="checkbox"/> Establishing Civil/Military Coordination center by 2019. |
| <b>B0-DATM</b>  |   |
| <input type="checkbox"/> Interoperability with meteorological products.   |   |



# Recommendations



## □ B0-APTA

- A common, regional RAIM prediction service for MID region can prove to be effective solution to unpredicted outages of GNSS services, since RAIM prediction results are needed daily by pilots, flight dispatchers, ATC....etc.

## □ B0-ACDM

- The ICAO MID office consider organizing seminars/workshops on ACDM implementation.



Thank You !

