Contents

a) Deliverables
b) Objectives
c) Scope
d) Methodology
e) Main Evolutions
f) Environmental impact
g) Financial Analysis
a) Deliverables

Organizational Review and Status of Current Kenya Airspace

Economic and Financial Analysis

Preliminary Environmental Impact and Benefit Assessment
a) Deliverables

Institutional, Legal and Regulatory Issues

Developmental Impact and Project Implementation Plan

Final Report for approval
b) Objectives

To plan evolutions and associated investments to be made by KCAA in ANS over next 15 years

To ensure consistency at global and regional levels

To consider Airspace Users’ expectations

To ensure consistency of planning with other major stakeholders (Airport SVC Provider, Airline Operators)

To take account of the current situation in Kenya (strengths, weaknesses, ongoing projects)

To be implementable
b) **Objectives**: Global and Regional consistency

ICAO Doc 9750 GANP 4\textsuperscript{th} Edition (ASBUs) 4 Blocks (0,1,2 & 3).

The four (4) Performance Improvement Areas (PIA) (Airport Operations, Global Inter operability, Capacity and Flexibility of Flights and Efficient Flight Paths)

50 modules each having several elements with threads from Block 0 to Block 3 offering implementation choices
b) Objectives: Global and Regional consistency


Gradual improvement in Operations

APIRG AFI Implementation Action Plan Priorities
b) Objectives: KPA

- Access/Equity
- Capacity
- Cost Effectiveness
- Efficiency
- Environment
- Flexibility
- Global Interoperability
- Participation of Stakeholders
- Predictability
- Safety
c) Scope

Operational evolutions
- ATM
- AIS
- SAR

Technical improvements
- CNS
- Automation

Human resources evolutions
- Staffing
- Training

Legal/regulatory aspects
d) **Methodology**

- Analysis of current situation & Benchmarking mission
- Recommendations on future evolutions & Legal analysis
- Implementation plan
- Stakeholders Forum
- Financial analysis
- Regular update of Master Plan (3-5 years)
d) Methodology

Egis

Project team

- ATM
- AIS
- Engineering
- Legal
- Environmental

KCAA counterparts

- ATM
- AIS
- Engineering
- Planning, Legal & Regulator
d) Methodology

Current situation analysis

Identification of strengths and weaknesses & Airspace Users expectations
d) Methodology

Stakeholders Forum

- Air Kenya
- East African Civil Aviation Academy
- Fly540
- IATA
- ICAO
- Kenya Air Force
- Kenya Airways
- KAAO
- KCAA/Regulator
- KCAA/ANS
- KCAA/EASA
- KCAA/Corporate
- Kenya Defense Forces
- Kenya Maritime Authority
- Kenya Meteorological Department
- Kenya School of Flying
- Mission Aviation Fellowship
- Rudufu Ltd
- SAC K Ltd
- Uganda Civil Aviation Authority

3/20/2019
e) Evolutions

Classified over three five year periods of:

✓ 2016-2020 short term
✓ 2021-2025 medium term
✓ 2026-2030 long term

Major finding: SMS & R&D
e) Evolutions

- **Short term**
  - SMS
  - ATS
  - AIS
  - CNS

- **Medium term**
  - ANS Director
  - ATM Security

- **Short term**
  - ANS Planning & Projects

Formal reporting
Informal reporting
## e) Evolutions

### ATM En-route

<table>
<thead>
<tr>
<th>Short term</th>
<th>Medium term</th>
<th>Long term</th>
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</thead>
<tbody>
<tr>
<td>- FUA extension to include HKR10 area</td>
<td>- AIDC operational use with neighboring countries</td>
<td>- ATFM implementation at regional level (if not done earlier)</td>
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<tr>
<td>- Routes network improvement using PBN</td>
<td>- Free Route extension (continental airspace)</td>
<td>- Free Route extension (regional level)</td>
</tr>
<tr>
<td>- ADS-C and CPDLC operational use</td>
<td>- New ACC implementation</td>
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<tr>
<td>- Free Route concept implementation (oceanic area)</td>
<td>- New En-route sectorisation</td>
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<tr>
<td>- Local ATFM implementation</td>
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<tr>
<td>- AIDC operational use between Nairobi and Mombasa</td>
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</table>
Short term:

- (AMAN and DMAN implementation in Nairobi TMA
- Continued PBN implementation, enabling CCO/CDO.
- Point Merge concept implementation in Nairobi, supporting CDO
- New Nairobi APP sectorisation
- JKIA tower cab reorganisation (additional positions and TWR position arrangements)
e) Evolutions

ATM Approach & Tower

- Short term:
  - Apron and Vehicle management improvement on maneuvering area
  - Provision of Air Traffic Control at Lamu airport and Aerodrome Flight Information Services (AFIS) at other smaller airports
  - Nairobi JKIA Airport Collaborative Decision Making (A-CDM) development
  - JKIA 2nd runway ANS adaptations
- **Medium term**- Continuation of PBN implementation and Provision of ANS at other small Airports
e) Evolutions

**SAR**

**Short term**

- RCC upgrade (integrated ASAR software)
- Provision of dedicated frequency for communications with search aircraft
## e) Evolutions

### Short term

- AIS system renewal (priority), on-line services to file flight plans
- Integration of “AMHS/AFTN management and operations” with AIS NOTAM Office
- Relocation of AIS offices (Kisumu, Wilson)

### Medium and long terms

- SWIM implementation at national level
- AIM System extension to integrate new functions enabled by SWIM
### CNS & Automation

**e) Evolutions**

<table>
<thead>
<tr>
<th>Short term</th>
<th>Medium term</th>
<th>Long term</th>
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</table>
| • Communication links improvement  
• HF equipment replacement (for back-up)  
• ADS-B operational transition  
• MLAT systems extension (e.g. Kisumu)  
• Airport MLAT system at JKIA  
• A-SMGCS operational transition | • Preparation of transition from MSSR to ADS-B  
• EUROCAT system upgrade /replacement (SWIM, Free Route, additional positions for 3rd ACC sector, Disaster Recovery concept with new ACC, ATN B2) | • ATN Baseline 2 implementation  
• NAVAIDs rationalization  
• GBAS Cat II / SBAS  
• Transition to full ADS-B in En-route |
### e) Evolutions

#### Training

<table>
<thead>
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<th>Short term</th>
<th>Medium term</th>
<th>Long term</th>
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<tr>
<td>- Training plans /programs for the different categories of personnel and the different stations</td>
<td>- Continued training for the main categories of personnel (ATCO/AFISO, ATSEP and AIS)</td>
<td>- 3D Tower simulator at JKIA</td>
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<td>- AIS proficiency check tools</td>
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<tr>
<td>- OJTI and OPSUP training to ATCOs</td>
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<tr>
<td>- Specialized training to AIS staff in Aeronautical Chart</td>
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<td>- Specialized and refresher training to PANS-OPS Officers</td>
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<tr>
<td>- Training on instructional techniques and refresher and advanced technical training for ATSEP</td>
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e) Evolutions

### Staffing

<table>
<thead>
<tr>
<th>CNS (Engineering)</th>
<th>ATM (ATCOs)</th>
<th>AIS</th>
<th>SMS</th>
<th>ANS Planning &amp; Projects</th>
<th>ATM Security</th>
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</tbody>
</table>

- Aeronautical communication officers will be re-assigned to other functions (e.g. SMS data collection)
f) Environmental Impact Assessment

Applicable ASBU modules having environmental impacts identified

Both Qualitative and Quantitative analysis of the environmental impacts conducted

Kenya target of average annual improvements in aviation fuel efficiency: at least 2 percent per year until 2020 from a 2010 baseline taken into consideration.
f) Environmental Impact Assessment

Prepare an Environmental Policy and Management System

• Monitor stakeholders compliance to commitments and environmental legislation.

• Advice NEMA on this master plan and request if Strategic Environmental Analysis will be required.
g) Financial Analysis

Identification of investments grouped together (73 Projects)

Estimated costs and benefits for each project.

✓ (Total capital expenditure up to 2030 amounts to US$36.8 million)
 ✓
 ✓ (US$18.5m relates to projects that are required in the Base Case assuming no Master Plan)

Note: Safety benefits are extremely important, but difficult to quantify
g) Financial Analysis

Between 2016 and 2030
✓ Additional operating costs of between US$0.3m to US$1.9m per annum in the Base Case and
✓ US$0.3m to US$4.6m per annum in the Master Plan Scenario

Projects will incur total quantifiable benefits amounting to US$45.5 million.

Last 10 years, KCAA has spent an average of US$5.6m per annum on capital projects.
g) Financial Analysis

Capital cost of the Master Plan projects is estimated at US$36.8m (or an average of US$2.5m per annum) Lower than the previous investment levels.

Operating costs predominantly staff costs, amount to US$45.3m for 2015-2030.

Total cost will therefore be US$82.1m or an average of US$5.5m which is comparable to historic values.
g) Financial Analysis

2015 revenue of US$35.0m may increase due to traffic growth generating an additional US$24m per annum by 2030.

Many of the projects are inter-dependent so careful planning and monitoring of projects is required.
Thank you
Asante
Merci