AIM RBIS Project – Workshop on Go-team methodology

Experience sharing on TOD implementation

Presented by: *Kenya*

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Outline

- Introduction
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- Challenges encountered
- Lessons & recommendations

Introduction

Kenya Civil Aviation Authority is a government agency established by a Civil Aviation Act to:

- Regulate and oversight Aviation Safety;
- Provide Air Navigation services; and
- Train of aviation personnel.

AIM, ATS and CNS departments support KCAA to achieve the mandate of provision of Air Navigation Services.

Introduction

- AIM department collects, collates, assembles, edits, formats, originates, publishes and distributes Aeronautical Information/ Data necessary for Safety, Regularity and Efficiency of Air Navigation concerning the entire Nairobi Flight Information Region (FIR).

- The Cartography and PANS/OPS units within AIM coordinates WGS-84 surveys and manage electronic terrain and obstacle database.

Introduction

Kenya has implemented;

- WGS-84 aeronautical ground survey for 12 airports.
- Terrain and obstacle data for:
  - Area-1-Entire Nairobi FIR.
  - Obstacle data for Area -2 & 3 on 9 airports.
  - Area - 2 Terrain data for 5 airports.
- Conducts continuous maintenance as required.
- AMDB on-going; acquiring an upgrade of the charting system.

Description of the implementation process

- KCAA progress towards implementation of TOD. To achieve the objective the following milestones were necessary;

i. Developed a roadmap and TOD implementation matrix.

ii. Established Terrain and Obstacle Data Working Group (TOD WG) and focal points from participating organizations

iii. Development of regulatory framework and incorporation of the procedures in the Manual of operations.

iv. Developed a maintenance plan eg. Priority major airports, planned survey with a target of 5 years interval.

Description of the implementation process

v. Budgetary allocation and availing financial resources.

vi. Upgrade of AIXM 4.5 and continuously upgrading to AIXM 5.1 database: to have capability of processing TOD digital datasets.

vii. Signing LOU with the regulator on modalities of sharing obstacles that lie within Obstacle Limitation Surfaces (OLS).

viii. Conducted training and awareness to stakeholders.

Description of the implementation process

Process of Data collection;

i. Develop TOR; This includes a series of tasks; objectives, scope of work, deliverable, reporting elements, aeronautical data requirements and identifying risks on the project implementation as a whole.

ii. Procure for consultancy services and develop criteria of evaluation.

iii. Evaluate to acquire a credible organization to conduct the aeronautical survey.

iv. Monitor through progress report and follow-up.

Description of the implementation process

Process of Data collection;

v. Data validation and verification using GIS applications eg. Google earth application, Global mapper and Geo-spatial Data Management System (GDMS)

vi. Loading and sharing of the Terrain and Obstacle data (TOD).

Description of the implementation process

- Kenya has highlighted some difficulties encountered during capturing and updating of data:

  a) Determining the appropriate survey methodology that are cost effective eg. terrestrial survey, aerial photogrammetry, airborne laser scanning etc.

  b) Difficult topography and inaccessible sites.

  c) Limitations in human resources & logistics.

  d) Meteorological factors; poor visibility, rainy seasons, low cloud levels.

  e) Survey organization lacks personnel with aviation background.

Description of the implementation process

Difficulties encountered Cont……

f) Unable to ascertain accuracy of survey equipment eg. GPS, Total Station and level of calibration.

g) Delay in data collection and processing.

h) Non-conformity of the data.

i) Surveys and validations are performed according to needs or reports received.

j) Manipulation of data hence impact the integrity and accuracy requirements.

Challenges encountered

- Kenya encountered some challenges and wish to share the experience with other state;

  i. Insufficient SARPS/guidance material/regulation.

  ii. Cross border issue on provision and acquisition of data for the overlapped areas i.e lack of Letters of agreement with neighbouring states.

  iii. Special use of airspaces that are within area 2.

  iv. Inadequate financial resources.

  v. Determining the methodology to be used for data capturing.

  vi. Lack of capacity with appropriate knowledge to analyze, validate and verify the data.

Challenges encountered

- Encountered challenges cont……;
  v. AIXM 4.5 unable to generated TOD dataset and therefore had to upgrade to AXIM 5.1.1.
  vi. Maintenance period interval of 5 years is a very short for a remote airport.
  vii. Varying degrees of land use controls.
  viii. The standard is not clear who is responsible of TOD data collection (Aerodrome operator or ANSP).
  ix. Interference of GNSS signal hence data capture taking too long.
  x. Lack of data redundancy to allow validation.

LESSONS LEARNT

- States should have TOD regulatory framework in place.
- Allocate continuously adequate financial resources.
- Build capacity including conducting stakeholders awareness.
- Establish TOD working group.
- Acquire TOD systems and applications for analyzing, verifying, processing and storing the data.
- Establish monitoring system for TOD and OLS areas

Recommendations

- Encourage states having ICAO Trainair Plus Institutions, to develop TOD training/course in order to build capacity within the AFI region.
- ICAO to provide guidance material on the appropriate cost effective methodology and techniques for each areas of data capture.
- The process of acquiring, processing of terrain and obstacle data is expensive. ICAO to provide guidance to States on how to avail the data to Data coder(s) and user(s).

Recommendations

- ICAO should organize workshops and seminars regarding TOD and facilitate Global States with experience of TOD to share knowledge and ideas.

ICAO

THANK YOU