



Competency of Surveyors

Session 2.1: Obstacle Identification & Data Collection
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AERODROME SAFEGUARDING WORKSHOP
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Presented by:
Michelle Soliman, Aerodrome Ops Inspector
General Civil Aviation Authority, United Arab Emirates



Aeronautical Surveyors

Collecting Aeronautical Data in terms of obstacles and /or terrain for aeronautical purposes

Creating and Maintaining obstacle and/or terrain Databases –
Generating Raw Aeronautical Data

Conducting Aeronautical Studies to determine the impact of the obstructions - obstacles and/or terrain on the air operations and/or NAVAIDS



Aeronautical Surveyor Considerations

Aeronautical surveying is **Highly Specialized**, providing critical information about the airport features, obstacles, terrain, obstructions and navigational aids

The data is needed for safe aircraft operations and is therefore **Safety Critical**

Airport surveying needs **Extensive Knowledge of ICAO** documents related to aerodromes and its environs in respect to operational areas, obstacle limitation surfaces, navigational facilities, PANS-OPS surfaces etc.

Surveyors must know the ICAO required **Accuracies, Integrity** of the data collected and adoption of the **WGS84** as standard geodetic reference system for international civil aviation



Determining the Height Restriction or Removal of **Obstacles** that pose a hazard to air navigation

Determination of **en-route “drift-down” procedure** and **en-route emergency landing location**

Determination of Contingency Procedures for use in the event of an emergency during a missed approach or take-off

Instrument Procedure Design (including circling procedure)

Aeronautical Chart production and on-board databases

Flight Simulator and synthetic vision systems

Aircraft Operating Limitations analysis

Advanced Surface Movement Guidance and Control System

Ground Proximity Warning System with forward looking terrain avoidance function and minimum safe altitude warning system

Data provided by the Aeronautical Surveyors

(ICAO Annex 15)



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Errors in Aeronautical Information

- **Background:** Most part of the errors identified in the Aeronautical Information - generated by the Aeronautical Surveyors

- **Reason:** Poor quality of the service provided because of:
 - Unqualified personnel
 - Inadequate equipment
 - Lack of training, including operating airside area training
 - Lack of aviation related knowledge
 - Lack of methodology data collection related knowledge
 - Lack of quality management system
 - Lack of safety management system
 - Insufficient funds
 - Indiscipline
 - Lack of training on radio phraseology
 - Low level of English Language Proficiency
 - Lack of quality check conducted by ANSPs



Errors in Aeronautical Information

➤ Contributing Factors:

- No regulations
- No control
- Lack of oversight and supervision
- No levers for Safety and Quality Assurance and Compliance
- No levers for accountability responsibilities

➤ Proposed Solution:

- Aeronautical surveyors to be regulated and/or subject to oversight*

➤ Benefits:

- Enhanced control of the surveyors' activity which will lead to:
 - Enhanced Service
 - Quality requirements Enforcement → Enhanced Quality
 - Safety requirements Enforcement → Enhanced Safety
 - Available correction and prevention actions



Solution: Model 1

EASA | AVIATION UNDERTAKINGS



EASA NPA 02-2016 2.3.2. Aeronautical Data Quality - *Origination Activities by Aviation Undertakings*

EASA NPA 2016 – 02, Article 3: “Member States shall ensure that aviation undertakings originating data comply with Appendix 1 to this article.”

“**Aviation Undertaking**” - means an entity, person or organization, other than the service providers regulated by this Regulation or other than the aerodrome operators regulated by Regulation that is affected by or affects a service delivered by a service provider or an aerodrome operator.

They can also be non-aviation entities.

Subject	ADQ Regulation	EASA approach	NPA
Data originators	Data originators are regulated parties (Article 2(2))	Aviation undertakings to comply with minimum data quality requirements. Responsibility of Member States	Requirements on data origination for: service providers, aerodrome operators, aviation undertakings.



EASA NPA 02-2016 2.3.2. Aeronautical Data Quality - *Origination Activities by Aviation Undertakings*

The NPA proposes that **Member States** shall be responsible for Aviation Undertakings when they are involved in the origination of aeronautical data

These "**Data Originators**" such as geodetic institutes and surveyors are essential actors involved at the very beginning of the aeronautical data chain

They create, modify or delete aeronautical information and aeronautical data for the purpose of aviation

They are not service providers and can therefore not be regulated as such

However, there is a need to ensure that when they originate aeronautical information and aeronautical data, they provide data of sufficient quality



Solution: Model 2

UAE | QUALIFYING COMPANIES



UAE Civil Aviation Advisory Publication – CAAP 61 - *Aerodrome Survey Requirements*

Qualifying Surveying Companies

The **Aerodrome Certificate Holder** shall satisfy itself as to the competence of the surveyors it employs for aerodrome surveys.

The following is a list of characteristics that should be considered:

- Accreditation to an ISO standard or operate an equivalent quality control system.
- Professionally qualified surveyors and project managers to oversee the survey.
- Field survey staff competent in aerodrome surveying techniques and experienced at working in an operational aerodrome environment.
- Professional indemnity cover.

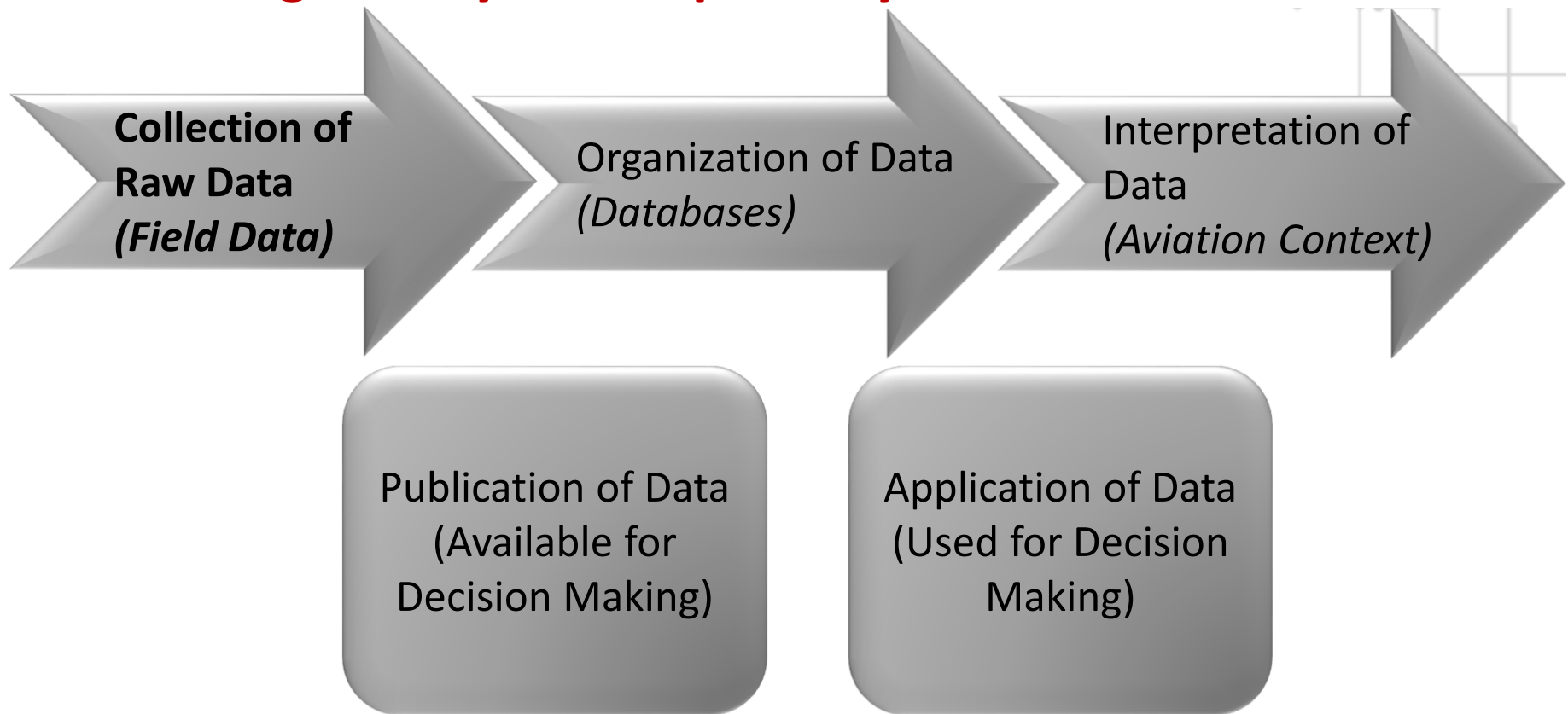
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Solution: Model 3 ...WORKSHOP...



Ensuring Surveyor Competency....





Ensuring Surveyor Competency....

What types of Organizations are Involved in the chain?

- **Surveyors / Geodetic Organizations**
- Aviation Solution Providers
- Aeronautical Publication Organizations

Who is responsible?

- States
- Aerodromes
- Publication Services

What Mechanisms are Available?

- Certification of Organizations / Individuals
- Safety Management Systems within these Organization
- Vetting or Pre-Qualification – Endorsement
- Blacklisting

