



# AIM RBIS Project – Workshop on Go-team methodology

## SODEXAM - Experience sharing on TOD implementation

Presented by:

BOUSSOU Kouakou Dominique

SODEXAM/Côte d'Ivoire

*Virtual June 2022*

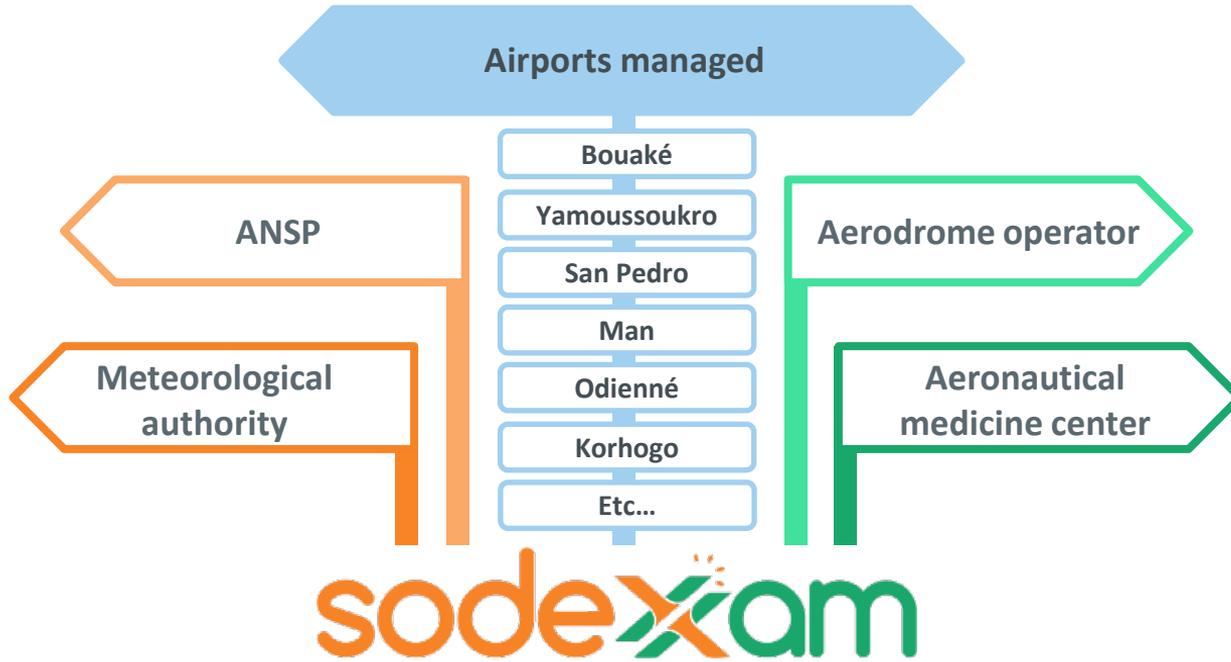


# Outline

- Introduction
- Description of the implementation process
- Challenges encountered
- Lessons & recommendations



# Introduction

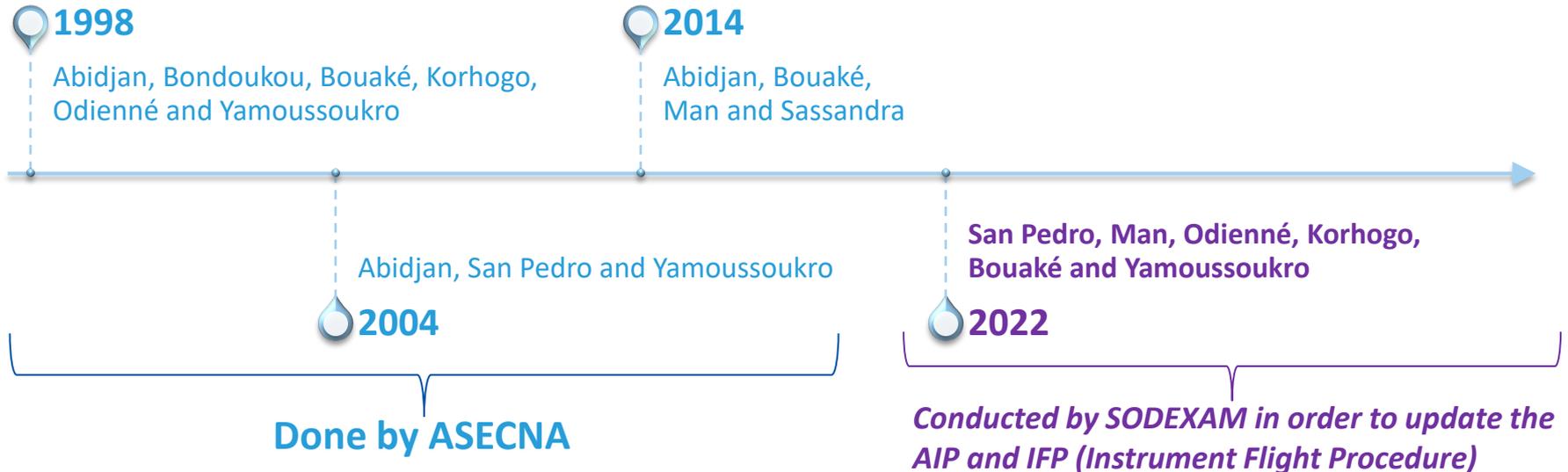


As ANSP and aerodrome operator, SODEXAM is responsible of TOD implementation



# Introduction

- History of Côte d'Ivoire WGS-84 survey





# Description of the implementation process

SODEXAM  
TOD  
Implementation

WP10-Project  
Management

*This project covers only the WGS-84 survey of obstacles and aerodromes infrastructures data.*

*Terrain data is not yet implemented by SODEXAM*

WP20-  
Development  
of TOR

WP30-Contract  
with supplier

WP40-Follow up  
Survey Activity

WP50-Survey  
report approved



# Description of the implementation process

## TOR Terms Of Reference

### ETOD - TERMS OF REFERENCE

#### **CONSULTING SERVICES FOR WGS-84 AERODROME, NAV AIDS, ILS AND OBSTACLE SURVEY- YAMOUSSOUKRO, BOUAKE', KORHOGO, ODIENNE', MAN, SAN PEDRO AIRPORTS IN COTE D'IVOIRE**

##### **1. Background**

1.1 The requirement to implement electronic terrain and obstacle data is published in ICAO Annex 15 Chapter 10. This requirement is a strategic plan i.e. (Manage the transition of AIS to AIM), activity (implement electronic Terrain and Obstacle Data (eTOD) **Area 2, 3 and 4**).

##### **2. Objective(s) of the Assignment**

2.1 The objective of this project is to acquire WGS-84 Ground Survey and obstacle data at **YAMOUSSOUKRO, BOUAKE', KORHOGO, ODIENNE', MAN, SAN PEDRO AIRPORTS** to meet the International Civil Aviation Organization (ICAO) requirements. The data is intended to be used in the following air navigation applications:

- a) The development and maintenance of Instrument Flight Procedures [Conventional, Global Navigation Satellite System (GNSS) and Performance Based Navigation (PBN)];
- b) Implementation of ICAO Annex 15 Chapter 10 **Area 2, 3 & 4** Obstacle database areas;
- c) Determination of contingency procedures for use in the event of an emergency during a missed approach or take-off;
- d) Aircraft operating limitations analysis;
- e) Aeronautical chart production and on-board databases.
- f) Assist in determining the height restriction or removal of obstacles that pose a hazard to air navigation.

##### **3. Scope of Services, Tasks (Components) and Expected Deliverables**

###### **3.1 Proposed Scope of Work/Services**

- a) Provide an Acceptable work plan to be used to conduct the WGS 84 survey at **YAMOUSSOUKRO, BOUAKE', KORHOGO, ODIENNE', MAN, SAN PEDRO AIRPORTS**. The work plan should include times to be taken, resources to be used and any backup by subcontracting companies.

## Contract with supplier



PROPOSAL  
BY

BKD SURVEYS (PTY) Ltd  
TO  
SODEXAM

COTE D'IVOIRE (IVORY COAST)

FOR

PROVISION OF WGS-84 SURVEY OF  
BOUAKE, KORHOGO, ODIENNE, MAN, SAN  
PEDRO AND YAMOUSSOUKRO AIRPORTS

OF

THE REPUBLIC OF IVORY COAST

### LEGAL AGREEMENT

I, (Name) \_\_\_\_\_, the duly authorised signatory on behalf of **SODEXAM MANAGEMENT**, hereby accept the proposal attached hereto and enters into an agreement with Survey company **T SURVEY FOR BOUAKE, KORHOGO, ODIENNE, MAN, SAN PEDRO and YAMOUSSOUKRO AIRPORTS.** for the **PROVISION OF WGS-84**

Duly signed on this (date) \_\_\_\_\_ at (Place) \_\_\_\_\_

Acting Director/Director Signature: \_\_\_\_\_

Witness 1: \_\_\_\_\_

Witness 2: \_\_\_\_\_

Witness 3: \_\_\_\_\_

Witness 4: \_\_\_\_\_





# Description of the implementation process

## Approval of supplier by CAA

**NATIONAL IMAGERY AND MAPPING AGENCY**



**Mr. Welcome S. Makhathini**  
In recognition of  
**Certificate of Achievement**  
As a participant in the Nairobi, Kenya  
**WGS-84 Surveys of Airports Workshop**

A workshop designed to disseminate information and develop skills needed in meeting International Civil Aviation Organization Document 9074 AN 946, World Geodetic System 1984. The program included 16 hours of presentation on the topics of airport safety, planning and requirements, GPS and conventional data acquisition and processing, data processing and storage and control, and modeling. Practical exercises included 16 hours of GPS or collection, processing, and adjustment by least squares.

September 2012



Secretary  
Property Pt  
Africa/16



**SOUTH AFRICAN CIVIL AVIATION AUTHORITY**

Postal Address: P.O. Box 1053, Midrand, 1685	Postal Address: P.O. Box 1053, Midrand, 1685	Telephone Number: 011 709 1000	Telex Number: 207234/ZA	Facsimile Number: 011 709 1000	E-mail Address: info@caa.co.za
Head Office: P.O. Box 1053, Midrand, 1685	Head Office: P.O. Box 1053, Midrand, 1685	Head Office: P.O. Box 1053, Midrand, 1685	Head Office: P.O. Box 1053, Midrand, 1685	Head Office: P.O. Box 1053, Midrand, 1685	Head Office: P.O. Box 1053, Midrand, 1685

22 November 2016

When it May Concern

Dear Sir/Madam

**INDIZA AERONAUTICAL AND TOPOGRAPHICAL SURVEYS (IATS)**

It is hereby confirmed that Indiza Aeronautical and Topographical Surveys (IATS) is recognized as a preferred aeronautical survey service provider in South Africa.

Mr Makhathini was previously employed by Air Traffic & Navigation Services (ATNS) as a surveyor. During this time Mr. Makhathini conducted various full and maintenance WGS84 aeronautical surveys at international and national airports.

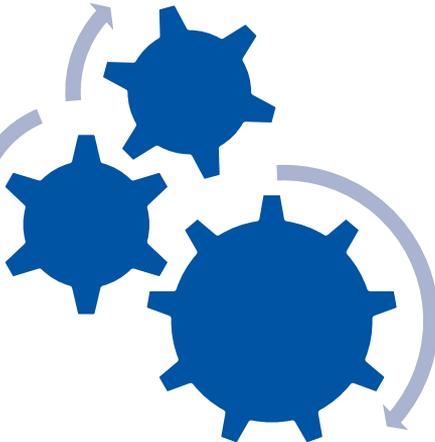
Mr Makhathini is the owner and managing director of Indiza Aeronautical and Topographical Surveys (IATS). IATS has been awarded the contract for a period of three years to conduct WGS84 aeronautical surveys for all the airports owned by Airports Company of South Africa (ACSA). These include international airports such as OR Tamboer IATS and Cape Town IATS, as well as national airports. IATS has also conducted WGS84 aeronautical surveys for airports owned by private organisations and individuals.

The WGS-84 aeronautical surveys conducted by IATS is of a very high standard and compliant with ICAO Doc 9074 (WGS-84 Manual, Annex 4 (Geometrical Charts, Annex 5 (List of Measurements), Electronic Terrain, Obstacle and Aerodrome Mapping Information).

Mr Makhathini possesses a significant amount of knowledge, skill and experience and IATS is therefore recommended as an aeronautical and topographical survey service provider.

Kind Regards

*Wernie Kuyntjies*  
Wernie Kuyntjies  
Acting Director / Director PANS-OPS/Campagna  
PANS-OPS (Procedures for Air Navigation Services - Aircraft Operations)  
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**MINISTRE DES TRANSPORTS**  
**AUTORITE NATIONALE DE L'AVIATION CIVILE**  
**DE CÔTE D'IVOIRE**

Abidjan, le 25 AOUT 2021

**LE DIRECTEUR GENERAL**

006133 ANAC/DG/DSNAA/SDMIA  
V/Réf : 002429/SDDEXAM-DG/DGAET/DNA/DPOA

Monsieur le Directeur Général de la SODEXAM

**ABIDJAN**

**Objet:** Autorisation de collecte des données numériques d'obstacles et de terrains (E-TOD)

**Monsieur le Directeur Général**

Faisant suite à votre courrier ci-dessus référencé relatif à la demande d'autorisation pour la collecte des données numériques d'obstacles et de terrains (eTOD) pour la Société Sud-Africaine IZINDIZA AERONAUTICAL TOPOGRAPHICAL SURVEY (IATS) sur les aérodromes gérés par la SODEXAM, j'ai l'honneur de vous informer que la demande d'autorisation est acceptée.

En outre, en vertu de votre connaissance que l'exploitation et la diffusion des données qui seront collectées ne pourront être possible qu'après leur autorisation par l'ANAC.

Veillez agréer, **Monsieur le Directeur Général**, l'assurance de ma considération distinguée.

Pour le Directeur Général et par intérim, le Directeur de la Sécurité des Vols

*Koffi Konan*  
**KOFFI Konan**

**ANAC**  
LE DIRECTEUR GENERAL / P  
Autorité Nationale de l'Aviation Civile

2021 ANNÉE DE LA CULTURE DE SÛRETÉ  
CADI

**ORGANE DE RÉGLEMENTATION DE CONTRÔLE DE SÛRETÉ ET DE SÉCURITÉ DU TRANSPORT AÉRIEN EN CÔTE D'IVOIRE**  
07 B.P. 148 ABIDJAN 07 - Tél: (225) 27 21 27 93 / 27 21 27 75 93 / 27 21 27 58 69 0001 - Fax: (225) 27 21 27 83 46 - E-mail: info@anac.cilac.cd@yahoo.fr



# Description of the implementation process





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Côte d'Ivoire WGS 84 Project 2022 SODEXAM CONSULTANT				sodexam	
From	To	Travel time days	Travel Date	Survey Days	Comments
Jhb	Abidjan	1	2022/04/02-03	1 day	Flying in from JHB-ACCRA-ABJ
	Abidjan	1	04/04/2022	1 day	Opening meeting with SODEXAM Officials
		1	05/04/2022	1 day	Clearing the equipment @customs
	Abidjan	1	06/04/2022	1 day	Clearing the equipment @customs
Abidjan	San Pedro	1	07/04/2022	1 day	Equipment received from Customs and Driving
San Pedro	Man	1	2022/04/08-22	15 days	Survey San Pedro airport
Man	Man		23/04/2022	1 day	Driving
Man	Man		2022/04/24 to 2022/05/08	15 days	Survey Man airport
Man	Odienne	1	09/05/2022	1 day	Driving
Odienne	Odienne		2022/05/10-24	15 days	Survey Man airport
Odienne	Korhogo	1	25/05/2022	1 day	Driving
Korhogo	Korhogo		2022/05/26 to 2022/06/09	15 days	Survey Korhogo airport
Korhogo	Bouake	1	10/06/2022	1 day	Driving
Bouake	Bouake		2022/06/11-25	15 days	Survey Bouake airport
Bouake	Yamoussoukro	1	26/06/2022	1 day	Driving
Yamoussoukro	Yamoussoukro		2022/06/27 to 2022/07/11	15 days	Survey Yamoussoukro airport
Yamoussoukro	Abidjan	1	12/07/2022	1 day	Driving
Abidjan	Abidjan	1	13/07/2022	1 day	Closing meeting - SODEXAM and Shipping the equipment
Abidjan	Jhb	1	14/07/2022	1 day	Flying out from ABJ-ACCRA-JHB
Jhb				2022/07/18 to 2022/09/30	Survey Team Rest & Recovery for 3 days
				2022/07/18 to 2022/09/30	Process Survey report
				1-2 Oct 2022	Quality Check
				03-oct-22	Survey Report Sent to SODEXAM CONSULTANT

**NOTES: The project has been delayed by 2 days due to the clearing of Survey Equipment from Customs**

**NOTES: The waybill documents were emailed to SODEXAM Officials on the 24 March 2022**



# Description of the implementation process



## Data collection

SODEXAM  
Aerodrome operator



## Data approval

ANAC – Côte d'Ivoire  
Civil Aviation Authority



## Data publication

ASECNA - AIS Provider  
For Data storage and  
publication in the  
appropriate format



# Challenges encountered

- SODEXAM encountered some challenges and wish to share the experience with other state
  - Problem of data approval due to the available survey reports not signed (difficult to publish data in the AIP, e.g : San Pedro airport)
  - The 5-year maintenance period expired
  - Lack of competency to develop TOD TOR
  - Inadequate financial resources
  - COVID impact (planning has been postponed and quotation increased)
  - Access permission of surveyors to all the premises involved
  - Data collection with skills transfer to local Survey Service Providers.



# Recommendations

- Commitment of state or organization for TOD implementation.
- Involve all stakeholders in the process (Surveyors, CAA, telephone operators, local authorities, ....)
- Access permission of surveyors to all the premises involved
- The process of acquiring, processing of terrain and obstacle data is expensive. Data coder(s) have been requesting States to share the data.
- Encourage states to acquire system(s) and application(s) for analyzing, verification, processing and storing of data.....



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THANK YOU