



AFRICAN CIVIL AVIATION COMMISSION
30th AFCAC PLENARY SESSION
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Agenda Item 6: Inputs for 2019-2021 AFCAC triennium Activities

Session 4: HUMAN RESOURCE OPTIMIZATION IN AFRICA

Theme: CHALLENGES IN HUMAN RESOURCE OPTIMIZATION IN AFRICA AFRICA (Women in Aviation; Next Generation of Aviation Professionals, Cooperative Schemes for Safety & Security, HRDF, ATO, etc.)

AFRICAN UNION INITIATIVES ON CAPACITY BUILDING IN THE FIELD OF SATELLITE NAVIGATION

(Presented by the African Union Commission)

EXECUTIVE SUMMARY

The African Space Policy and Strategy adopted in 2016 showed how Africa needs to rapidly increase its capacities in Earth observation, navigation, satellites and communications. This paper presents the continental strategy to meet the increasing need of competences in satellite navigation.

It provides the status of related African Union activities in this domain, especially the achievements of Joint Programme Office (JPO) and the Support to Egnos in Africa Programme, the creation of African Union Space Agency (AfSA) and its Programme dedicated to Positioning, Navigation and timing (PNT) and the operationalisation of the Pan African University Institute for Space sciences.

Action: The Plenary is invited to:

- a. Take note on the need to develop continental knowledge and capacity on GNSS for operational and research purposes.
- b. Take note on the capacity built within the JPO for implementation of satellite navigation programmes in Africa.
- c. Encourage the States of the AFI Region and designated organisations to collaborate for the development of GNSS training in conjunction with RECs, AFCAC, ICAO, ATOs and other relevant organisations.

References:

- Report of ICAO 13th Air Navigation Conference
- Global Air Navigation Plan (GANP); Global Air Safety Plan (GASP)
- AFI GNSS Strategy
- Reports of the 2nd, 3rd, 4th and 5th Africa-EU Summits

1. INTRODUCTION

1.1. Benefits of space sector to Africa

African Union Space Policy indicated that Space makes a considerable contribution to the creation of enabling environments for addressing a wide range of pressing continental challenges, including the need to create jobs, reduce poverty, manage resources sustainably, and develop rural areas. A formal space sector will assist Africa to realise the vision of a peaceful, united, and prosperous continent. The Space Policy also highlights the urgency of developing human resources in this domain due to its important contribution to the economic development of the continent.

However, Africa does not have the full technical know-how to participate independently in these space-related activities, due to the high cost of participating in space activities, while the continent needs to develop an adequate number of indigenous space scientists, engineers and related professionals who will actively contribute to finding solutions to continental problems.

1.2. Importance of satellite navigation

The development of Satellite Navigation in Africa is an overarching objective of African Union Space and Policy Strategy and Africa Integrated Maritime (AIM) Strategy (AIM 2050) for seas and oceans adopted in 2016 by the 26th Africa Union Summit and is embedded in Agenda 2063 Flagship Programmes. It is fully in line with the World trend where 4 global Satellite Navigation Systems and 8 Regional satellite based augmentation systems will be available, and requires the possession of a diversity of knowledge and skills.

In March 2017, the first session of the African Union Specialised Technical Committee on Transport, Transcontinental and Interregional Infrastructure, Energy and Tourism (STC-TTIET) has recognised the capacity built by the JPO and the Support to EGNOS in Africa Programme.

2. DISCUSSION

The African Union is developing indigenous capacity in the field of satellite navigation through the creation of the JPO, the Positioning, Navigation and Timing Programme in the African Space Agency, and the development of training capabilities in the Pan African University Institute for Space Sciences.

3. OBJECTIVE

The aim of this Paper is to present the status of capacity building in the JPO and AfSA and discuss the coordination of existing training opportunities in Africa, in order to meet the increasing demands on GNSS training.

4. PROGRESS STATUS

4.1. Building capacity on space Positioning, navigation and timing (PNT) with the creation of African Space Agency (AfSA)

The creation of the African Space Agency (AFSA) has been endorsed by the Summit of the African Union in 2017 and its operationalisation is on-going. AfSA has been established as an Organ of the African Union, dedicated to promoting, advising and coordinating the development and utilization of space science and technology in Africa and associated regulations for the benefit of Africa and

the world and forging intra-African and international cooperation.

The Agency aims at coordinating the development of a critical mass of African capacities in space science, technology and innovation through appropriate education and training programmes.

It is composed of three main programmes:

- Space Applications,
- Earth Observation, and
- Positioning Navigation & Timing (PNT).

The PNT programme will optimally coordinate all existing African assets in order to meet the user's requirements in different domains.

4.2. Training and Human resources development : the Pan African University Institute on Space Sciences

In 2015, the African Union selected five research areas which are identified as central to Africa's economic and social development. It was decided to concentrate resources in a different network of institutions, called Pan-African University Institutes, which are located in five different established universities in different African regions.

Since 2016, the African Union Summit has endorsed the creation of the Pan-African University Institute on Space Science which is hosted by South Africa (Cape Peninsula University of Technology). The Institute will play a role in education, training, human capacity building, and research in the areas of space science and technology.

4.3. International cooperation for capacity building on satellite navigation and the creation of the JPO

In 2009, during the first Africa-EU conference on aviation in Windhoek, African Union conditioned the implementation of satellite navigation services in Africa to the development of endogenous capacity on space programme management in Africa, leading to the creation of the JPO.

The creation of JPO enabled the setup of a highly specialized Team in the field of Satellite Navigation Services in Africa and a successful African stakeholders' capacity building programme. JPO commenced operations in December, 2013, in Dakar (Senegal) through SAFIR Project and the continuity of its activities was ensured through continuous Africa-Europe cooperation on funding and overseeing the programme.

After five years supporting African initiatives in various domains of satellite navigation, the JPO aims at playing a key role in the implementation of the continental vision on satellite navigation through its institutionalisation within the African Union space framework.

The governance of the JPO is assured by a Steering Committee, made up by representatives of EC, AUC, AFCAC, ACAC, ICAO, RECs, (EAC, COMESA, ECOWAS, ECCAS, IGAD, UEMOA, SADC), GSA, ASECNA.

4.4. Cooperation frameworks for capacity building on GNSS in Africa

In March 2017, the first session of the African Union STC-TTIE recognised the capacity built by the JPO and the Support to EGNOS in Africa Programme. This result was reached using short term training platforms (working sessions, training sessions) and long term working arrangements with RECs and other organisations.

From 2013 to 2015, the SAFIR project had built capacity within key African organisations by organising 8 working sessions on various topics in different African regions. To-date, JPO has established working arrangements through 10 MoUs (EAC, IGAD, COMESA, ECCAS, AATO, ACAC, CRASTE-LF, ARCSSTEE).

It has also conducted 10 workshops (Kigali, Dar-Es-Salam, Brazzaville, Kinshasa, Conakry, Abuja, Kampala, Dakar (2), and Nairobi), organised 1 training session (Dakar Septembre 2018). The workshops are destined to decision makers in the RECs with a view of appropriation of the technology and mastering the institutional, economic and financial aspects of SBAS implementation.

The average number of participants in the above sessions was 25 experts per session, coming from States, RECs (COMESA, EAC, IGAD) and key Stakeholders (AUC, AFCAC, CAAs, RCMRD, Ports Authorities and JPO staff).

This culminated with the submission of the first Preliminary Programme Proposal for the establishment of the Eastern Africa SBAS Module, during the Kampala workshop held in April 2018.

4.5. Technical studies and research activities

JPO Technical studies encompass both ground and space segments systems as well as applications in various sectors in aviation and non-aviation domains. Present in most of international GNSS/SBAS fora such as IWG, ESSP, and ITU, JPO continues to raise awareness at regional and continental Meetings to play advocacy on GNSS/SBAS and related applications.

4.6. Assessment of continental training capacity on GNSS and development

The JPO is conducting an assessment of the situation (Institutions, Programs and Actors) currently prevailing in Africa in terms of training and research in the field of space applications and more specifically in the field of GNSS.

It aims at mapping and preparing the panorama of training institutions and programmes in Africa, analyzing the gaps in the training capacity and the need of the continent taking into consideration the increasing demand on space applications.

JPO has organised a workshop involving three identified training organisations (CRASTE-LF, ARCSSTEE and AFRIGIST) with dedicated GNSS training curricula in Africa. The discussion between experts have proved the growing demand on the topic but insufficient training offers. The workshop highly expressed the need of coordination with training institutions, political decision makers and industry to support development of Africa in the field of space based technologies.

5. CONCLUSION

The Plenary is invited to:

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- b) Take note on the capacity built within the JPO for implementation of satellite navigation programmes in Africa.
- c) Encourage the States of the AFI Region and designated organisations to collaborate for the development of GNSS training in conjunction with RECs, AFCAC, ICAO, ATOs and other relevant organisations.