



SBAS-ASECNA Programme Update

EGNOS Service Provision Workshop
27-28 September 2016
Warsaw, Poland

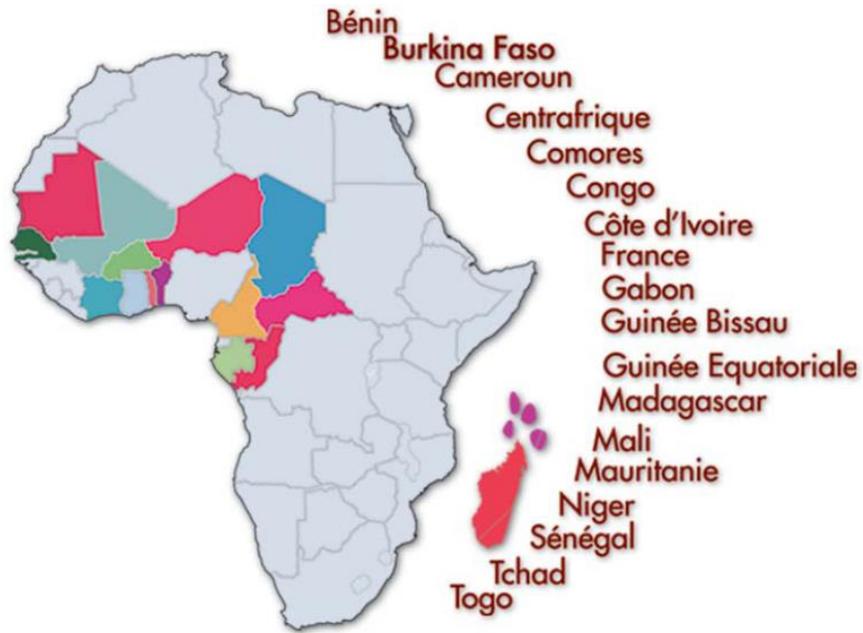
ASECNA at a glance



Agency for Air Navigation
Safety in Africa
and Madagascar



Benin, Burkina Faso, Cameroun, Centrafrique, Congo, Côte d'Ivoire, France, Gabon, Guinée Bissau, Guinée Equatoriale, Madagascar, Mali, Mauritanie, Niger, Sénégal, Tchad, Togo, Union des Comores



Cooperative management of a Single Sky of 16,1 millions km²
(1,5 * Europe)

Policy background



Africa-EU Strategic Partnership: a widespread multilateral political support to satellite navigation in Africa

- ‘Roadmap 2014-2017’ adopted by African & EU Heads of State at the 4th Africa-EU Summit (April 2014) - Commitment to provide sustainable and adequate financial and human resources [...] for the deployment EGNOS in Africa



EU-Africa Summit
Sommet UE-Afrique
Bruxelles 2014 Brussels

ASECNA Member States:

A strong commitment to introduce EGNOS/GALILEO -based satellite navigation services

- Resolutions n°2005 CM 44-11 and 2011 CA 120-18
- Mandate of the Director General



Policy background

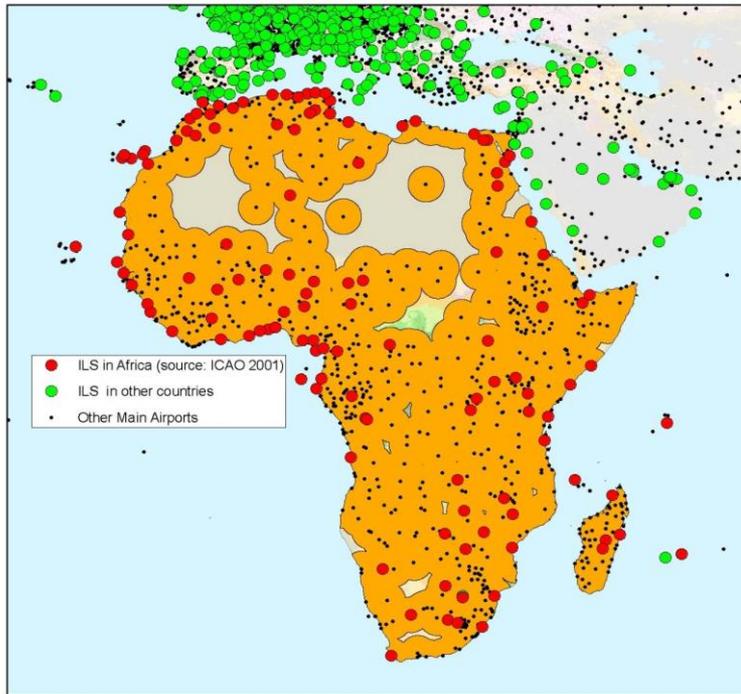


African Union Space Policy and Strategy: Policy drivers for African Space programmes towards social, political and economic integration

Navigation and positioning

- Development of indigenous continental level navigation augmentation system
- Building on existing infrastructure such as ASECNA

Operational needs



Safety lessons learned

% of runways ends ILS equipped

IATA forecasting 2013-17 CAGR : 5,3%



Need for RNP APCH APV
(ASBU Block 0 essential element)



LNAV/VNAV (Baro) (short-term)
LPV/LP (SBAS) (medium-term)



SBAS-ASECNA services

Strategic objectives

- **Strategic vision**
 - Prepare the future
 - Strengthen the positioning of the Agency as an added-value services provider
- **Directions:**
 - Ownership of the SBAS infrastructure
 - Control and provision of Signal in Space (SiS)
 - Autonomous provision of SBAS services to end users
- **Service provision objectives:**
 - En-route, terminal and approach operations
 - Support to ADS-B operations

Strategic objectives

**CAT-I equivalent services
« everywhere every time »**

enabled by ILS + SBAS ... + GBAS (tentative)

- **Timeframes:**
 - **Step 1: Early SBAS services (L1) by 2019/20**
=> APV, LPV-200, LP
 - **Step 2: Full SBAS services (DFMC) by 2023 onwards**
=> ... + CAT-I autoland ...

Towards early services



- **Ionosphere characterisation: SAGAIE (2013-on-going)**
 - Following-up the first feasibility study performed in 2011 with CNES
 - Deployment & exploitation of a network of GNSS stations in ASECNA
 - Collection of GNSS raw data for ionospheric studies, to improve knowledge on equatorial ionosphere in order to optimise EGNOS model for SBAS-ASECNA system

Joint initiative:



complemented by



Towards early services

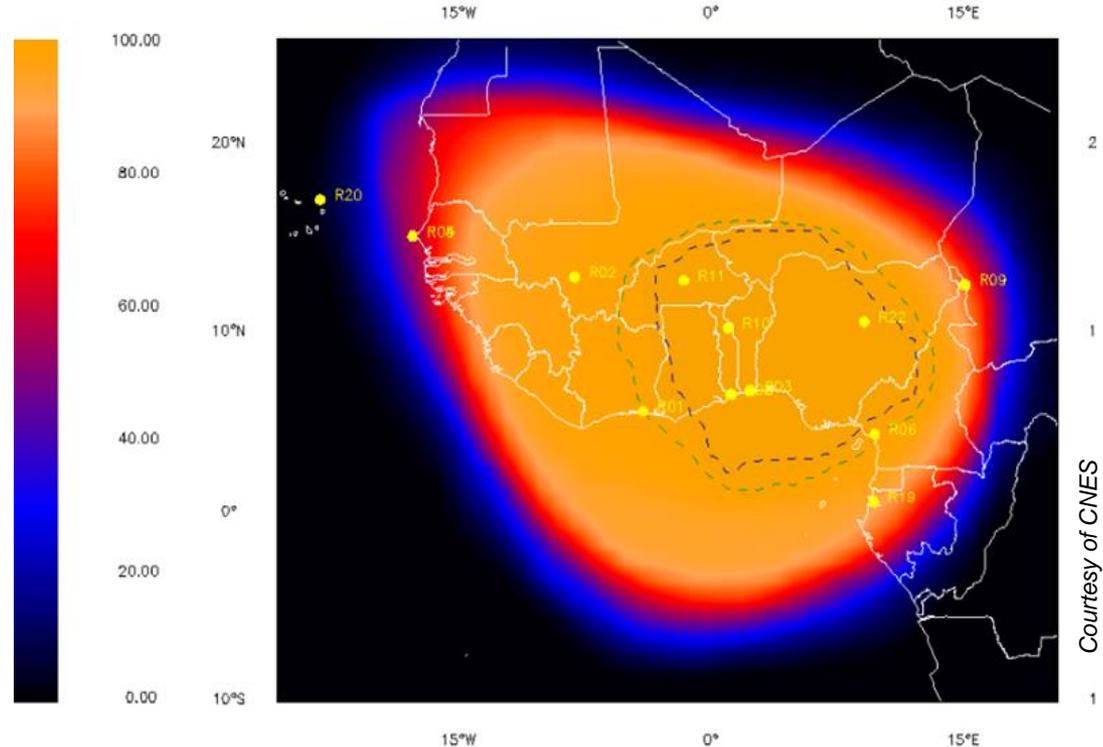


- Analysis of scintillations and plasma's bubbles
- SBAS emulation using a platform implementing EGNOS v2.4.1M and a dedicated iono algorithm

**APV-1
availability**

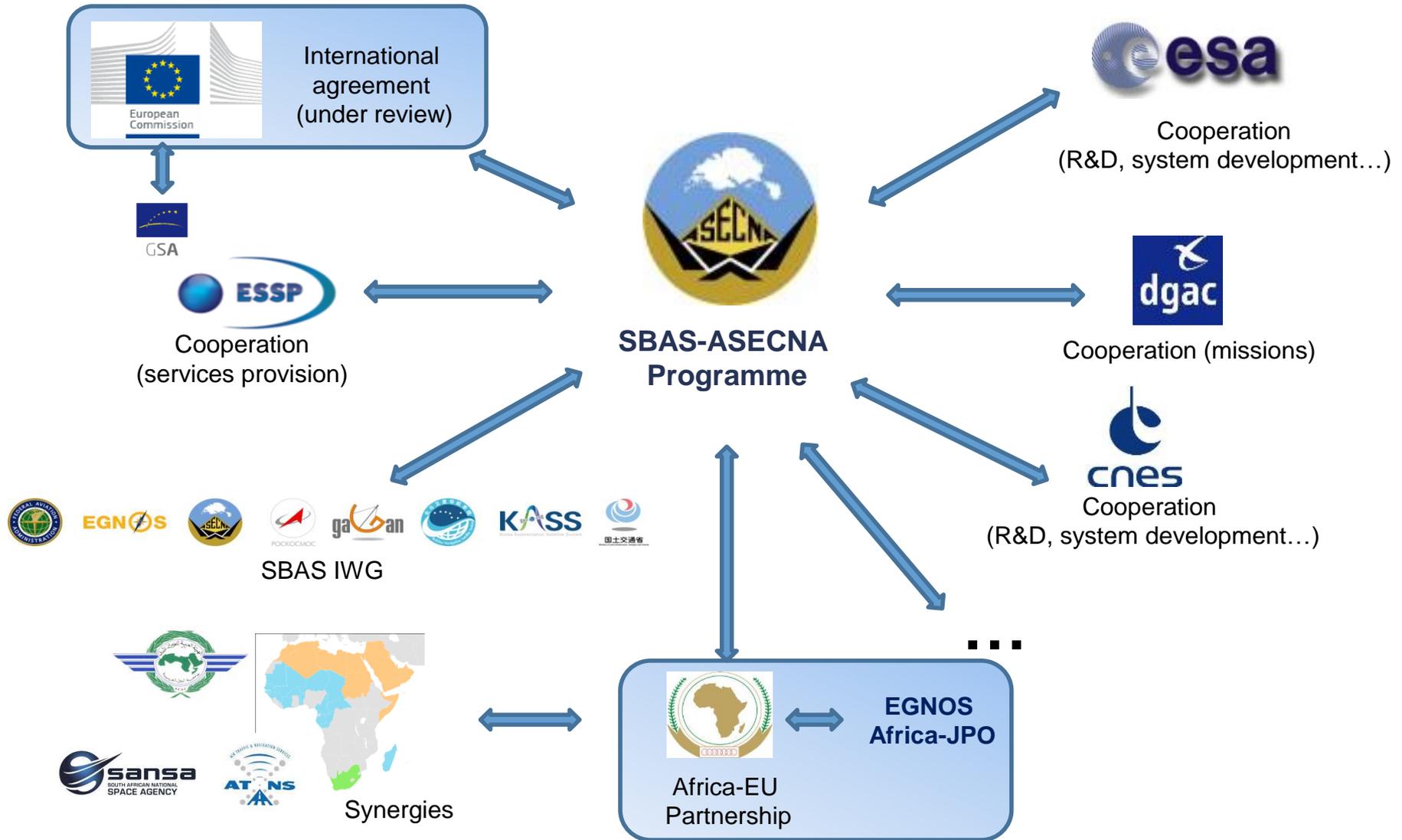
**11/10/2015
(24h)**

**(high iono
activity)**

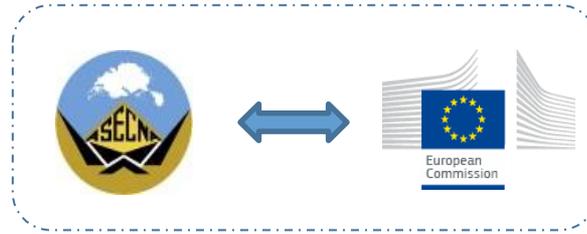


- Important progress towards the resolution of the high ionosphere activity issue for SBAS L1 service in equatorial area !

Institutional ecosystem for international cooperation



ASECNA-EU international agreement



- To lay down the terms and conditions for the provision of SBAS services, based on EGNOS, in the ASECNA area
- As per the Regulation (EU) 1285/2013 and the resolution n°2011 CA 120-18 of ASECNA Member States
- Opening of negotiations authorised by the Council of EU (Competitiveness Council, 25-26 September 2014)
- Negotiations launched on March 2015 in Dakar, very satisfactory progress, main phase completed on April 2016 in Dakar
- Draft of agreement under review within the EU institutional system

EGNOS-Africa Joint Programme Office

Pan-African entity to coordinate and support harmonised SBAS/EGNOS development and services provision in Africa

- Implementing measure of the Africa-EU Strategic Partnership
- Pan-Africa team of experts based in Dakar, Senegal
- Phase 2016-17 (funded by EU and ASECNA): to accelerate the adoption of SBAS/EGNOS in Africa
- Regional modular approach foreseen:
 - Northern (**M1**),
 - West-Central (**M2**),
 - Eastern Africa (**M3**),
 - Southern (**M4**)
- Status: on-going consultations with RECs for the creation of modules



THANK YOU FOR YOUR ATTENTION



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