

ICAO

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IFATSEA
International Federation of Air Traffic Safety Electronics Associations

AIR NAVIGATION WORLD

COMMUNICATIONS, NAVIGATION, SURVEILLANCE, AND SPECTRUM

CNSS 2026

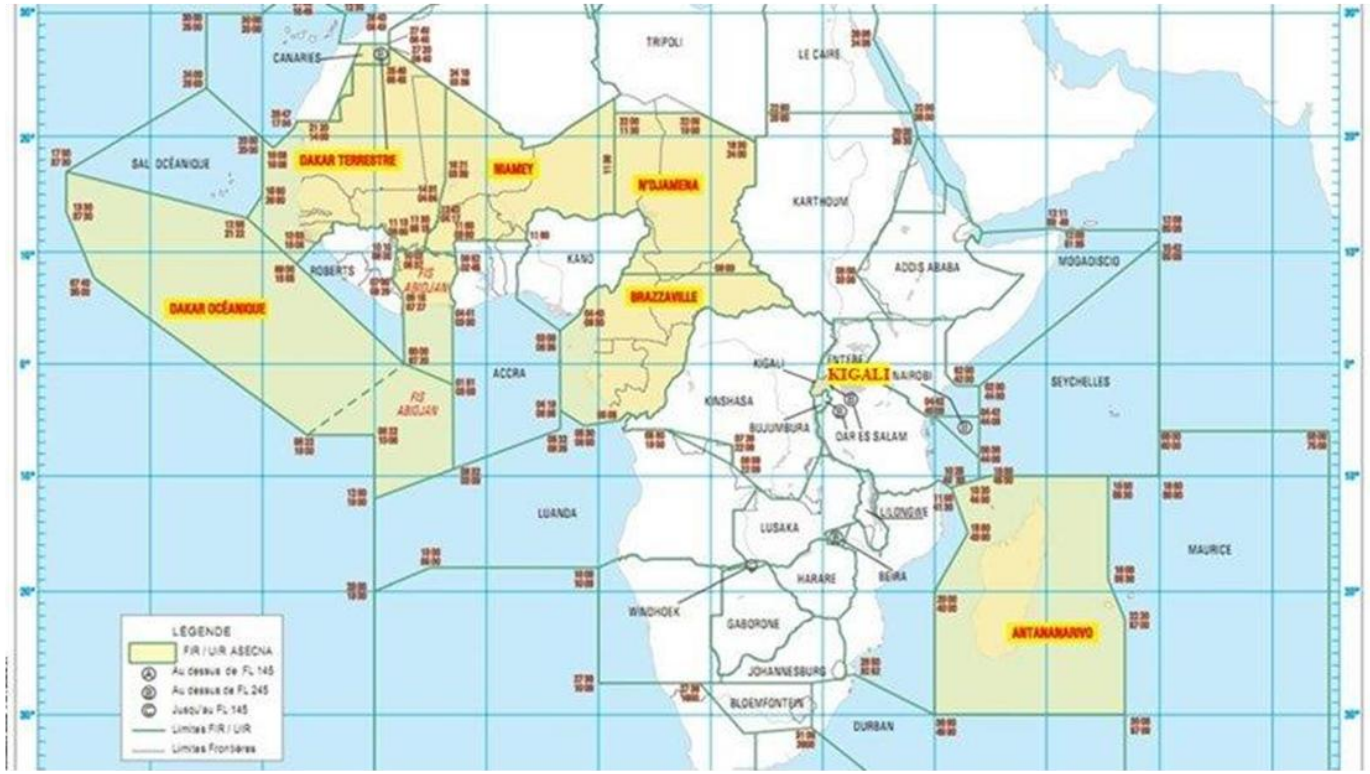
12 - 15 October | Kotor, Montenegro

Session 11- SBAS: Enabling Growth in AFI

ASECNA at a glance



- International public organisation
- Mission: air navigation safety
- 19 Member States
- Created in 1959
- 7 Flight Information Regions (FIRs)
- > 16 millions km^2 of single sky airspace



Approach navigation challenges in AFI

< 15 % of runways ends ILS equipped

Operational and safety limitations of non precision approaches

ICAO/RASG-AFI - 2013-2023

- CFIT > 20% of fatal accidents worldwide
- Majority occur during approach and landing
- Often linked to non-precision approaches
- Accident rate 5× higher for non-precision than precision approaches

Need for precision approaches on all QFUs

SBAS as a cost-effective complement to ILS



Airports with > 1 ILS-equipped runway

Source: Continental SBAS CBA study and strategy (courtesy of)

ANGA programme

ANGA
Augmented Navigation for Africa

A VISION FOR AFRICA

A satellite navigation solution developped and operated by Africa for Africa

GOALS FOR AFRICA

- **Prepare the future of Africa** in a growing competitive international environment, in which satellite navigation services provision crosses by essence the natural borders of States
- **Strengthen Africa's position** within the global satellite navigation value chain
- Provide **high-added value satellite navigation services** for the benefit of the African economy
- Develop an **African-wide native infrastructure** and develop **African capacities for its exploitation**
- Use, adapt and improve **existing technologies**

ANGA services

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Augmented Navigation for Africa

Services roadmap

SARPs compliance

Step 0: **Demonstration service** (since **2020**)

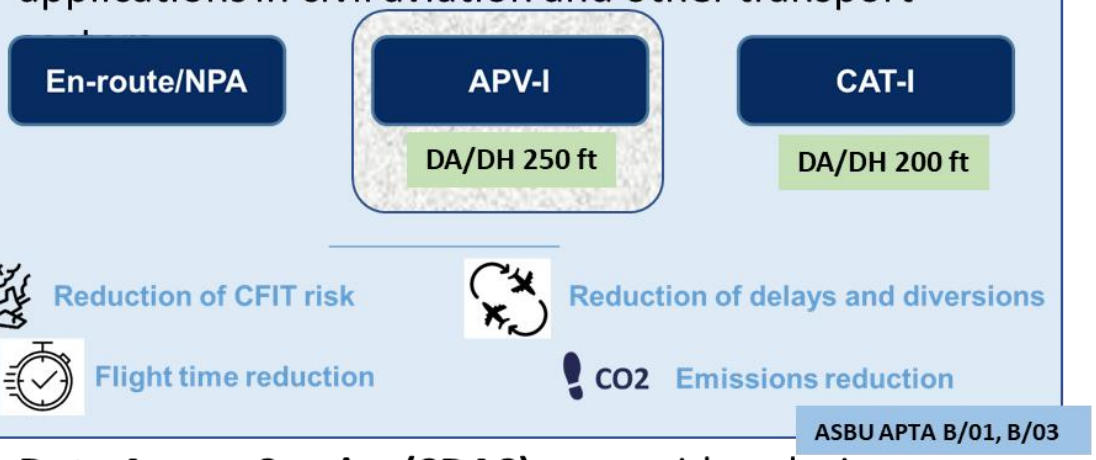
Step 1: **L1 services** (from **2029/30**)

Step 2: **DFMC services** (beyond **2032**)

- **Open Service (OS)** to be used by mass-market receivers for general purpose applications



- **Safety of Life service (SoL)** for safety-critical applications in civil aviation and other transport



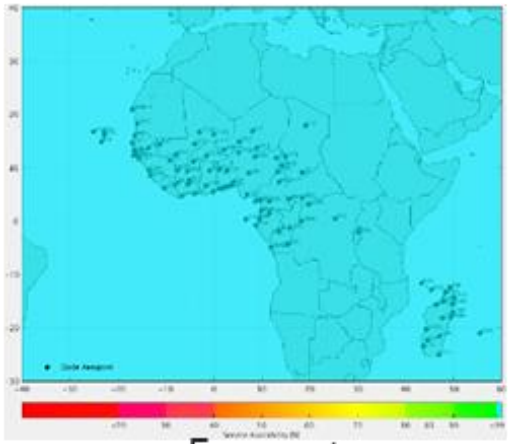
- **Data Access Service (SDAS)** to provide solutions with enhanced performance for professional use

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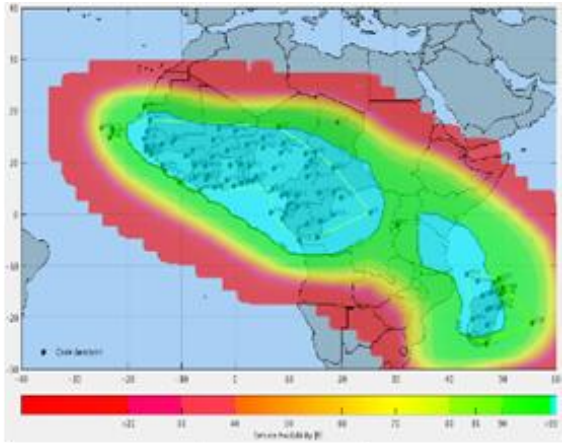
Service Provider identifier n°7

ANGA services

2030/31

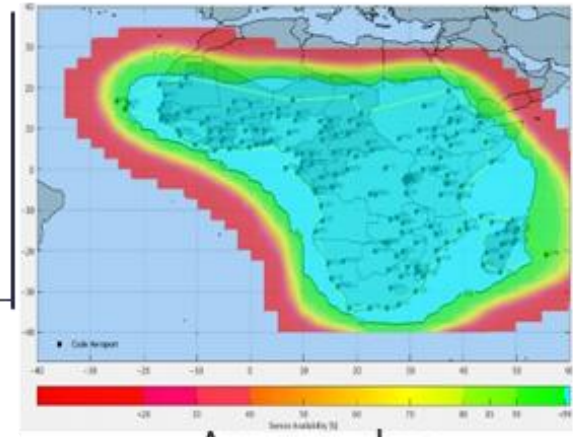


En-route



Approaches

Post-2032



Approaches

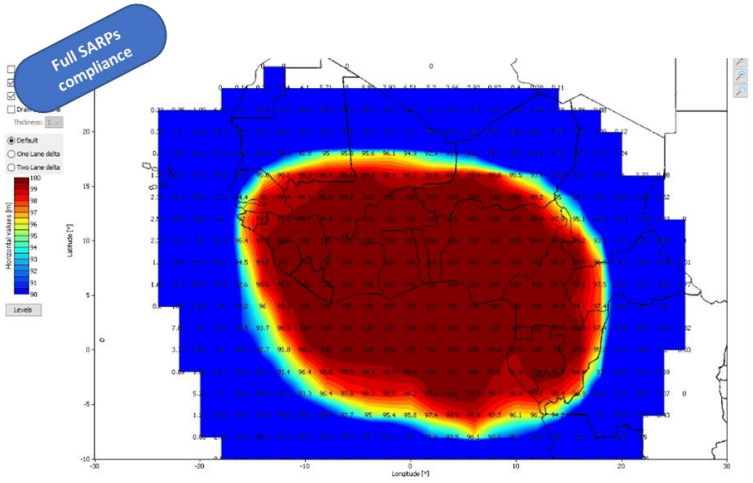
- Complement to existing navigation services

CAT-I equivalent services « everywhere every time »

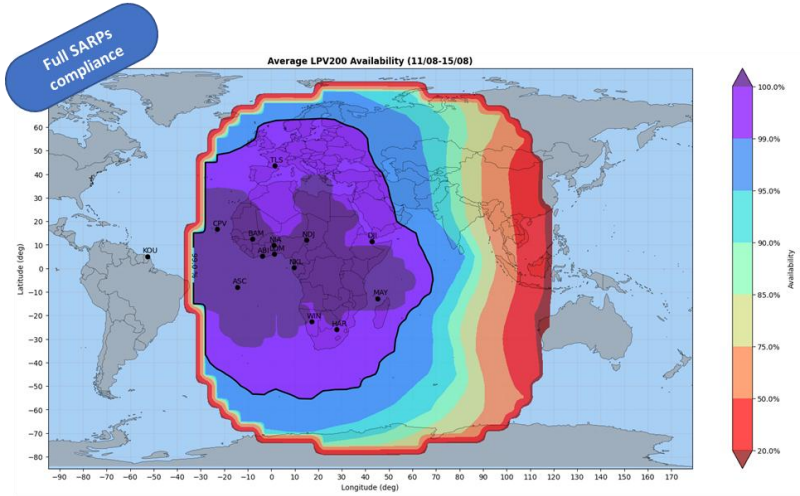


- Existing conventional navaids, including ILS, to be maintained with an evolution towards a MON/RON to maintain safe and continuous operations during GNSS outages
- Consideration of on-going development of airborne EFVS capabilities as enabler of straight-in landing operations beyond CAT-I minima

ANGA demonstration services



APV-1 availability (L1)



CAT-I availability (DFMC)



SBAS LPV final approach on RWY22 (DH 250ft)



SBAS PinS procedures and Low-Level Route

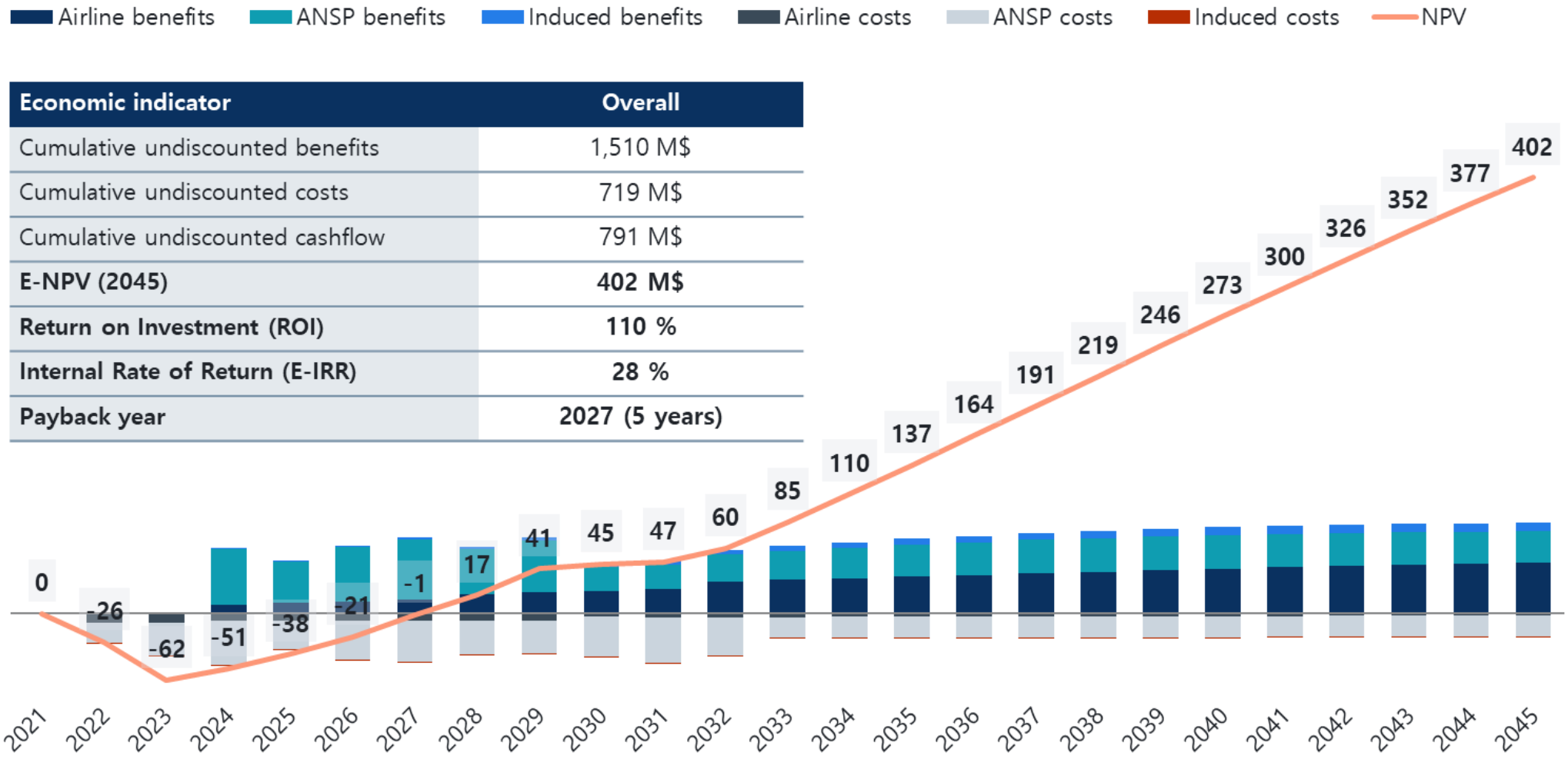


SBAS LPV final approach on RWY22 (DH 330ft)

Since 2020, ANGA demonstration services have :

- successfully validated the system's performance capabilities for L1; and
- supported a range of successful operational demonstrations, clearly demonstrating the significant benefits of SBAS for African airspace users.

SBAS attractiveness in Africa



Economic indicator	Overall
Cumulative undiscounted benefits	1,510 M$
Cumulative undiscounted costs	719 M$
Cumulative undiscounted cashflow	791 M$
E-NPV (2045)	**402 M$**
Return on Investment (ROI)	**110 %**
Internal Rate of Return (E-IRR)	**28 %**
Payback year	**2027 (5 years)**

Airlines' perspectives

« African airlines recognize the value of SBAS in enhancing safety and improving efficiency at African airports not equipped with ILS »

« To have SBAS in Africa will increase our aircraft efficiency and will provide more options for alternate airports »

« SBAS will quickly supersede conventional navigation, including ILS Cat I »

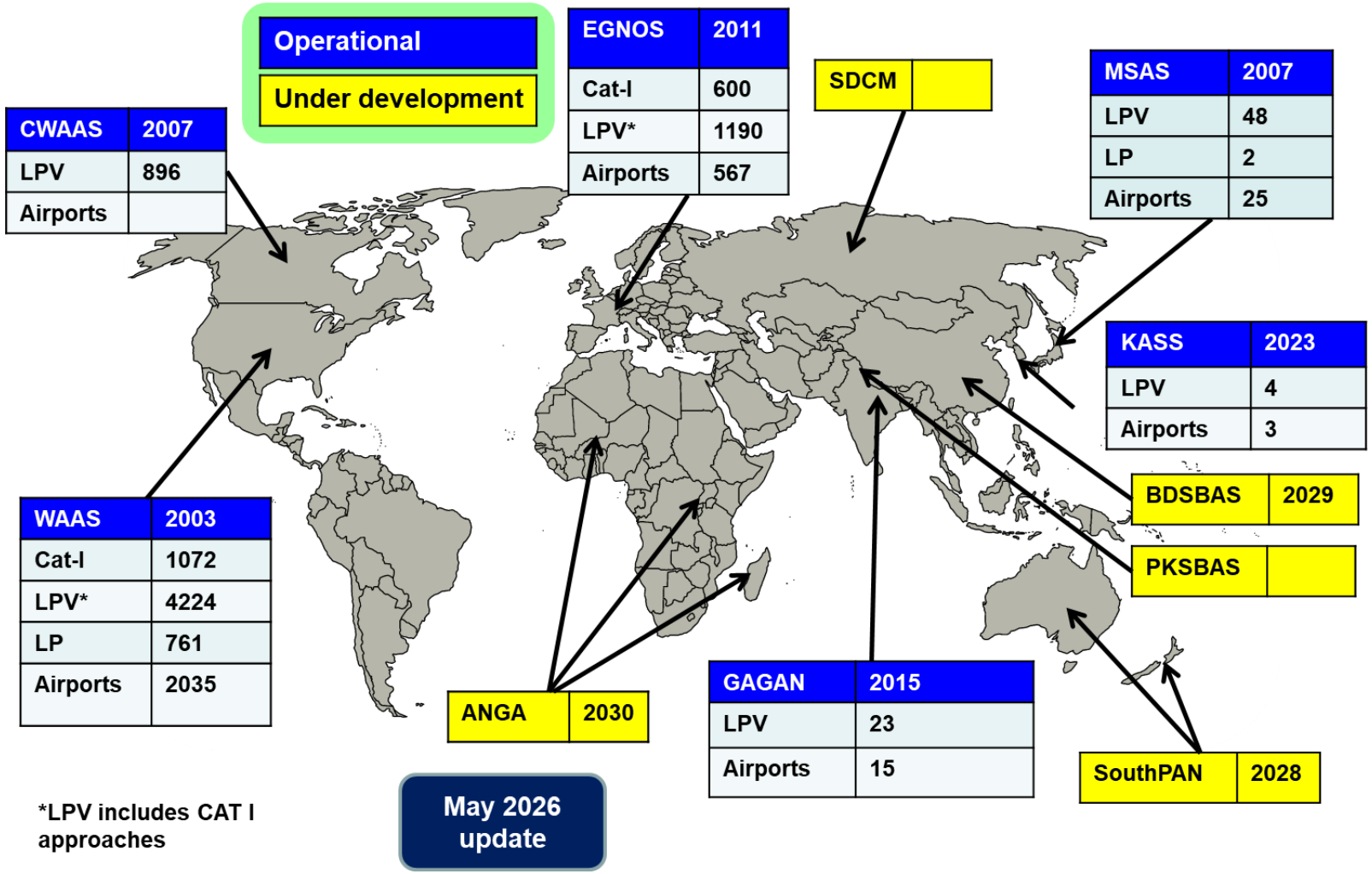
« Support to SBAS deployment, especially in Africa »

« SBAS will guarantee safety to access even remote regions »

« SBAS will reduce scheduled flights disruptions especially due to weather events »

Global SBAS/LPV procedures status

Africa is joining a mature and rapidly expanding global SBAS ecosystem



*LPV includes CAT I approaches

Join us for the **SBAS IWG Global Webinar Series 2027** on **SBAS/LPV strategy for airlines !**



2026 edition

Conclusions

SBAS is a key enabler of sustainable growth and enhanced air connectivity across the AFI Region by

- expanding access to precision approach capabilities,
- improving airport accessibility,
- enhancing operational safety and efficiency, and
- contributing to environmental protection through reduced emissions

ANGA
Augmented Navigation for Africa

- A fully-fledged SBAS solution, developed and operated by Africa for Africa, recognised by ICAO, with operational L1 services expected from 2030
- Airlines acknowledge the important benefits of SBAS in Africa and support the deployment of ANGA
- An integral component of the global GNSS infrastructure

Follow us on:

ANGA

Augmented Navigation for Africa



The high-performance navigation solution for Africa

- Improved flight safety and efficiency
- CO2 Reduced CO2 emissions
- Increased airport accessibility
- Rationalisation of infrastructure