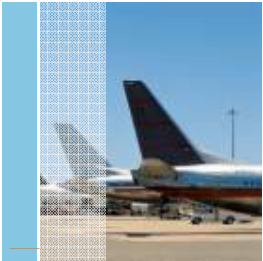# Roadmap for Pan-African CNS/ATM Infrastructure and Services Implementation

**Presentation to the Regional Symposium on airport and
Air Navigation services Infrastructure Financing**
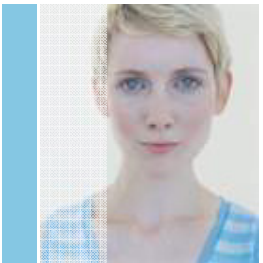
Maputo, Mozambique, 30 November 2010

Introduction

SITA is the world's leading provider of IT business solutions and communication services for the **AIR TRANSPORT INDUSTRY**

We are a community of over 600 airline, airport, aerospace, cargo and GDS members and over 1800 customers

We are unique in delivering integrated communication and IT solutions, on a global basis, for the air transport industry

We do this through a single supplier relationship

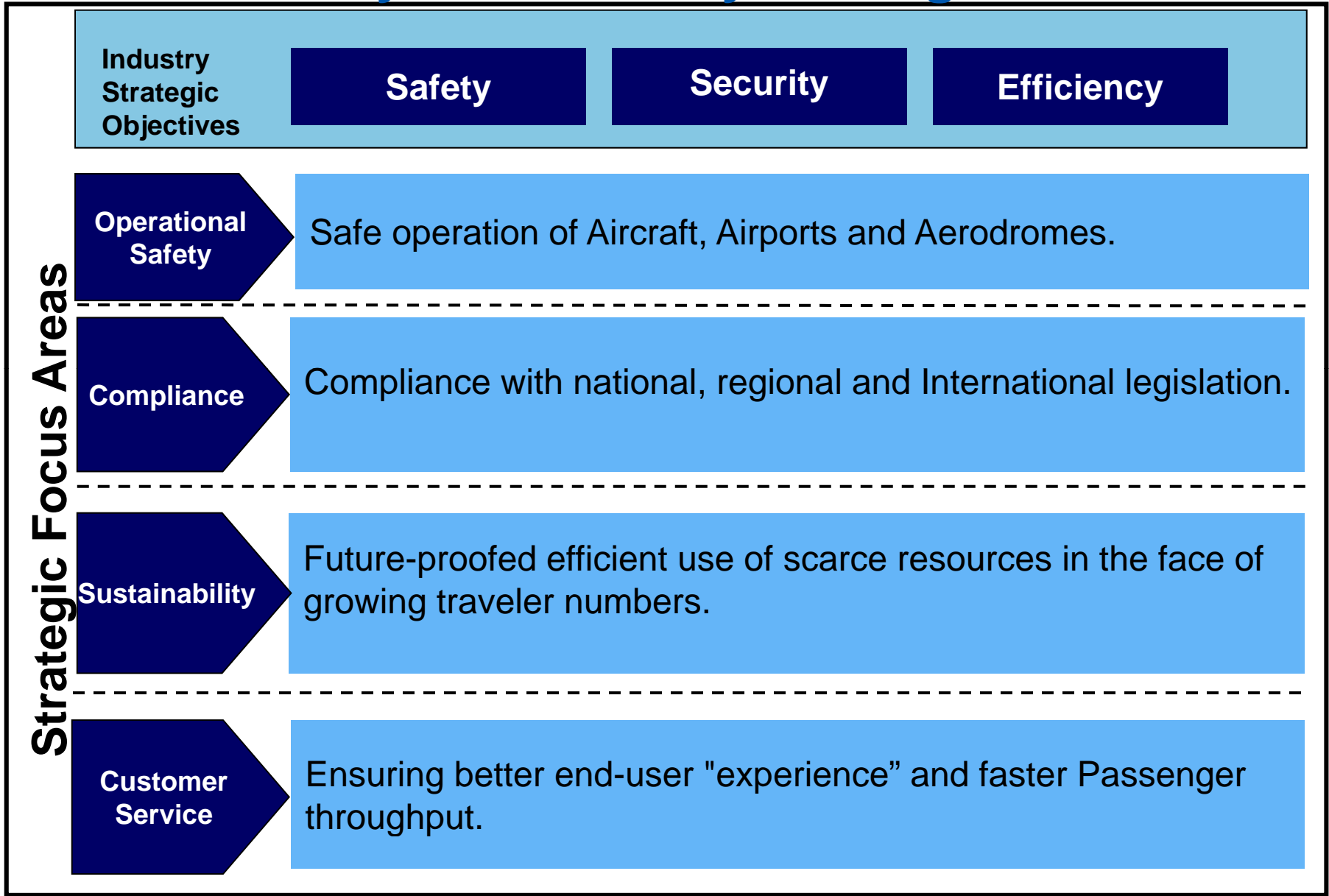**We are local, globally, with a presence in 220 countries and territories over 4,000 staff worldwide 140 nationalities, speaking over 70 languages**

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SITA in the Air Traffic Management Sector

- SITA has actively supported and contributed towards the standardisation, validation and implementation of ICAO recognised CNS/ATM technology.

- Currently, SITA provides VHF and satellite air/ground data link communications services to over 180 airlines and 60 Air Navigation Service Providers.

- SITA operates over 1,200 VHF data radios across the globe and delivers the satellite service via two Ground Earth Stations that provide access to INMARSAT geostationary satellites; the combined service is used on a daily basis by over 6,000 aircraft.

- SITA services are used for the delivery of air navigation services including Digital-ATIS, Departure Clearances, ADS-Contract and Controller Pilot Data Link Communications (the latter two more commonly referred to as "FANS 1/A" in the industry).

- Today SITA operates over 50 VHF Ground stations and provides blanket SATCOM coverage across the African region.

- Currently, SITA provides the critical Eurocontrol Central Flow Management Unit (CFMU) application with over 100 IP connections across Europe to enable the exchange of flow management data between the participating air navigation service providers and the CFMU.

- SITA is selected by Eurocontrol to design, implement and manage an IP enabled Pan European Network Service (PENS) to support the exchange of multiple application data.

Aviation Safety and Security Strategic Framework

Industry Strategic Objectives	Safety	Security	Efficiency

Strategic Focus Areas

Operational Safety	Safe operation of Aircraft, Airports and Aerodromes.
Compliance	Compliance with national, regional and International legislation.
Sustainability	Future-proofed efficient use of scarce resources in the face of growing traveler numbers.
Customer Service	Ensuring better end-user "experience" and faster Passenger throughput.

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Unique attributes of the Aviation Industry

Inter-dependence

The very nature of aviation requires considerable cooperation among states. Poor safety or security standards in one or more countries affect citizens of several countries as well as airlines operating to those countries.

Multi-Stakeholder Environment

The air transport industry has several stake-holders that rely on the capabilities and practices of other actors: Airlines, Airports, Air Traffic Management agencies, Immigration, Police, etc.

Inter-operability

There is an in-built requirement for inter-operable systems and tools for the aviation eco-system to function properly. Any non-standard development affects the efficiency of the whole system.

Common Destiny

Consumer confidence in one aspect of the industry cluster has a significant impact on the entire industry. Safety and security concerns lead to loss in trade and tourism.

Safety and security are as good as the next weakest link!

Current CNS/ATM challenges in AFI

- Long outstanding infrastructure related deficiencies

- Interoperability and seamlessness issues

- Fragmentation and lack of unified service standards
  - In most cases, each state being responsible for acquisition and maintenance of facilities both implementation and up-keep are a challenge

- Operating costs
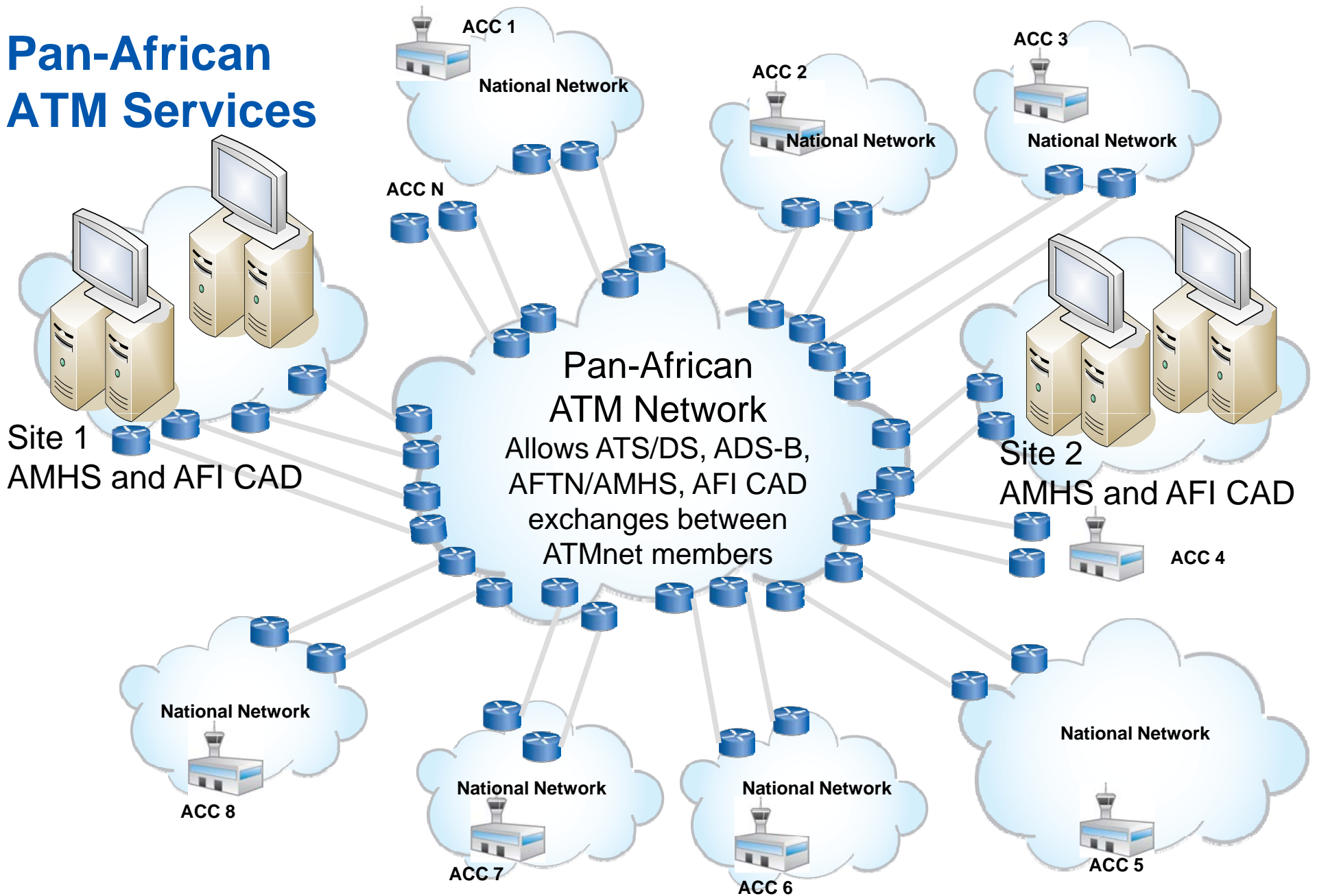 - Lack of economies of scale leading to increasing support costs.

Limitation of Current Approaches

- **Cost of switches (AFTN to AMHS)**

  - 1 to 2 M$ / State

  - 50 to 100M$ AFI wide

- **Cost of links**

  - Still using dedicated links! (in AFI these are mostly VSAT)

- **Cost of human resources**

  - Complex learning curve for implementation and operation of new services

- **Long transition delay**

  - Estimated for up to 20 years!

- **Difficulty to evolve with technology**

  - IP/Web/XML based secured messaging.

Symposium on Infrastructure Financing, Maputo - Mozambique | November 10 | 7   **SITA**

Pan-African ATM Services (PAAS) Objectives

- The delivery of a seamless and inter-operable Pan-African Air Traffic Management network to help AFI ANSPs:

    – address current deficiencies and maintain high level of safety;

    – cope with the forecasted growth in air traffic movement in Africa;

    – provide the infrastructure for the development of the AFI ATM;

    – help reduce the overall operating costs for African ANSPs; and

    – assist environmental objectives.

- The delivery of a common Message switching facility with full redundancy.

- The realization of AFI CAD (AFI Central Aeronautical Database) in a resilient manner.

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Pan-African ATM Services

Site 1
AMHS and AFI CAD

ACC N

ACC 1
National Network

ACC 2
National Network

ACC 3
National Network

Pan-African
ATM Network
Allows ATS/DS, ADS-B,
AFTN/AMHS, AFI CAD
exchanges between
ATMnet members

Site 2
AMHS and AFI CAD

ACC 4

National Network
ACC 8

National Network
ACC 7

National Network
ACC 6

National Network
ACC 5

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Why a Regional CNS/ATM Infrastructure?

A region-wide network offers the capability for ANSPs to share data across national and FIR boundaries by availing:

- ATS/DS through VOIP over a secure private network

- AFTN/AMHS switching with full redundancy

- Centralized Aeronautical Information Service (AIS) Database; and

- Collaborative Decision Making (CDM) capability.

The expected benefits are:

- Enhanced safety through a reliable, seamless and inter-operable communication infrastructure

- Operational efficiency as a result of better communication

- Cost effective adoption of technology through economies of scale; and

- Timely and uniform implementation across the AFI region obviating the need for staggered and expensive individual implementations.

# Executive summary

- **African countries need to meet international standards for infrastructure to provide safe air traffic management services;**

- **African ANSPs currently lack seamless and interoperable network services as well as other common databases (AIS/AMHS, etc.) and hence suffer from reliability and efficiency issues because of a fragmented infrastructure;**

- **The development of an Integrated Pan-African ATM Service can overcome fragmentation and help ANSPs in AFI region to comply with ICAO recommendations and practices and exploit common databases;**

- **The African Union (AU) is committed to maximizing Civil Aviation's economic contribution by providing Safe, Secure, and Sustainable Air Transport in Africa;**

- **AU through AFCAC and in collaboration with ICAO should work with funding agencies to avail funds for a Pan-African solution to assist African states in the deployment and use of such services.**
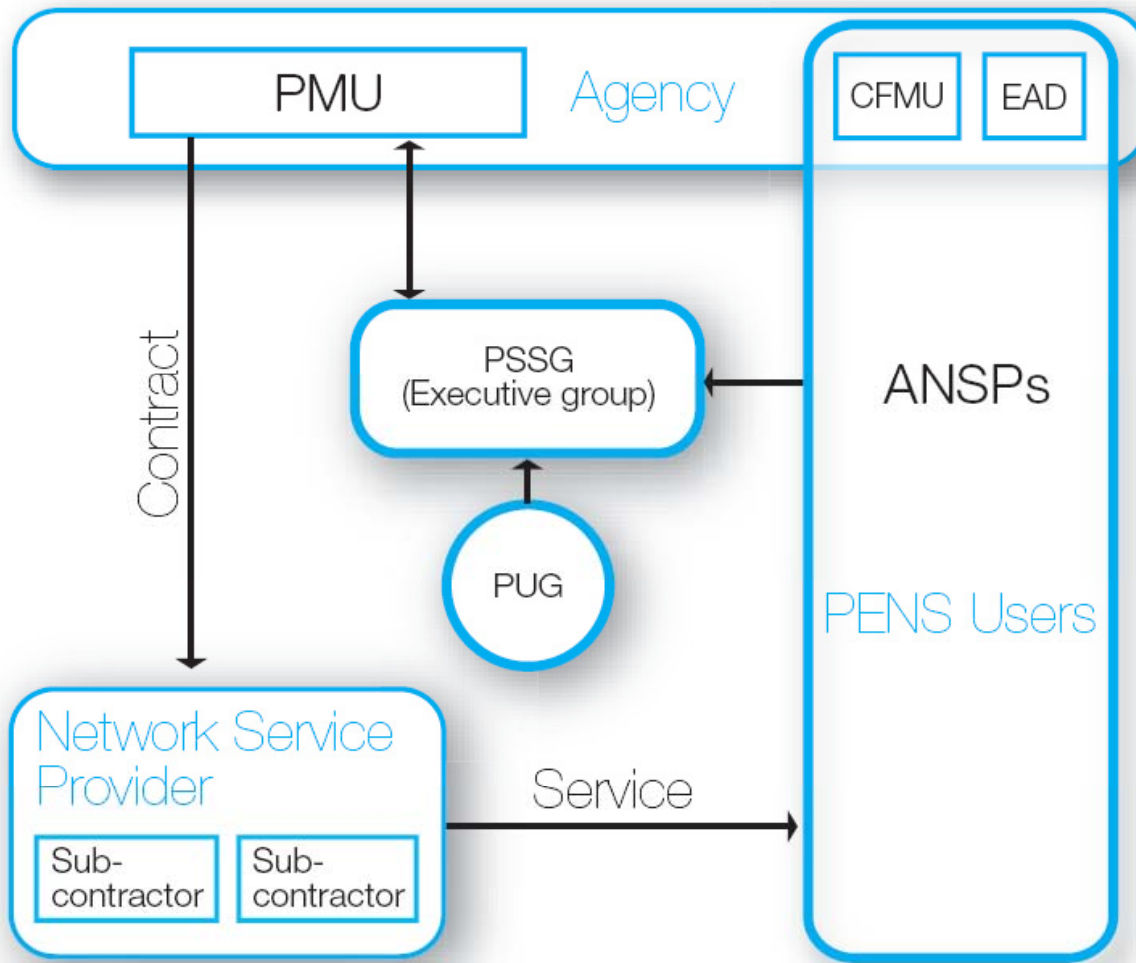
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Back-up Slides

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What is PENS?

- A joint EUROCONTROL ANSP led initiative to provide a common **IP based** network service across the European region

- covering **voice and data** communication

- Provides efficient support to **existing** services and **new requirements** that are emerging from future Air Traffic Management (**ATM**) concepts.

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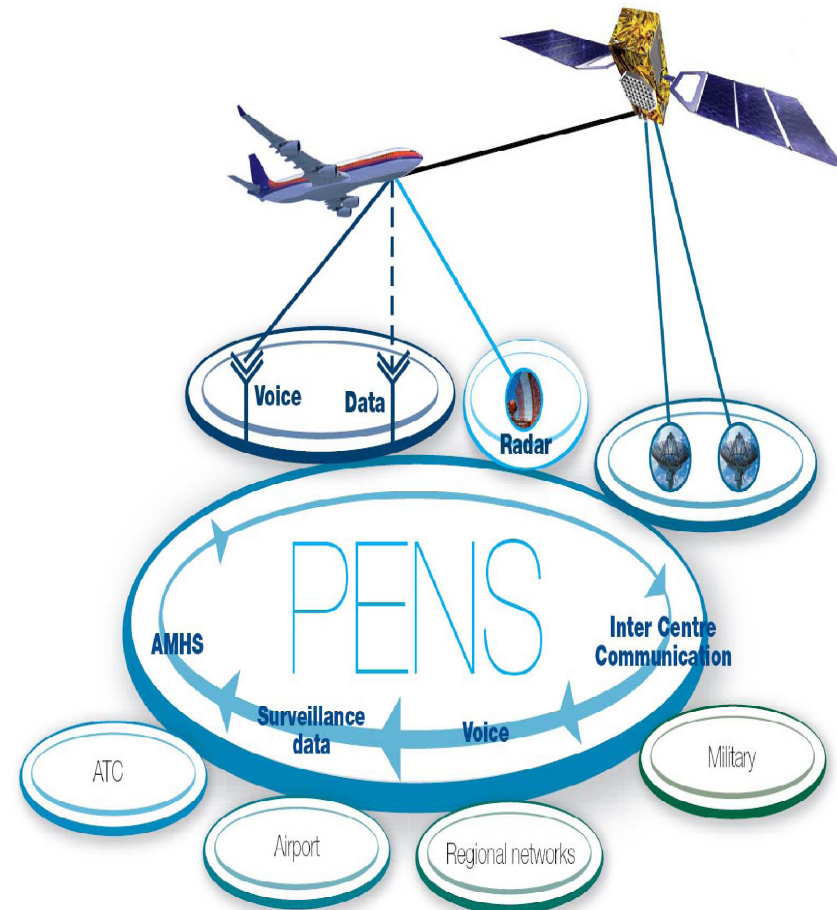
PENS Governance

- **PENS Service Steering Group (PSSG)**
  - set policy and standards
  - review performance.
- **PENS User Group (PUG),** provides technical, financial and administrative advice to the PSSG.
- **PENS Management Unit (PMU),**
  - implements policy and standards set by the PSSG,
  - manages the PEN Service.
- **Network Service Provider (NSP)**
  - Provides the PENS Service
  - Selected NSP is SITA

Why SITA for PAAS?

- SITA understands ATC/ATM communications:
  - Flight Plan data exchange (including AMHS)
  - Inter-centre coordination
  - Surveillance data (Radar, ADS-B)
  - AIS/AIM
  - Air/Ground data-link applications (Tower, En-Route, ATN)
- SITA knows how to commission an ATC/ATM network according to Industry Practices and Regulatory requirements (e.g. PENS) and already runs the largest VHF service globally
- SITA maintains offices all over Africa and has the resources on the ground to support network connections and end-user hardware as well as Server facilities.
- SITA provides a global 24 x 7 service desk and operates the only global command center for ATI operational support.

SITA References