



***Provision of  
Multinational  
Services by an  
International  
Organization***

***Tegucigalpa, 30 Sep to Oct 4***

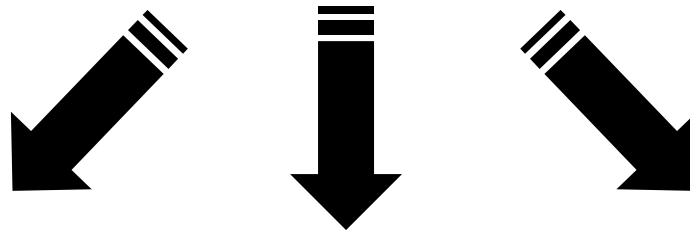
***Adriana Mattos***

# ***Our Agenda***

- **Datalink Service definition and performance requirements for ATC**
- **Network ownership and related responsibilities**
- **SITA as Datalink Service Provider**
- **SITA Aircraft Services**
- **SITA AIRCOM Service for AOC and ATS**
- **ACARS to ATN Transition**
- **SITA ATN Activities**
- **Possibilities for Providing Services**

# Data Link - Data Utilization

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|--|
| 113.8118.30031.720113343.5528084.385194531 |
| 213.8118.31031.590114345.5530084.255214432 |
| 313.8118.31031.840114347.0532082.755184534 |
| 413.8118.34031.560113340.0527079.135194832 |



# ***Datalink Service definition for ATC***

- **The data link service will be required to connect ANSP CNS/ATM Workstation or integrated end-system located in specified locations to aircraft operating or intending to operate in controlled airspace**
- **Main aspect of data link service is to provide connectivity between the two end-system users**
- **CNS/ATM operations require a high level Quality of Service (QoS) in the overall system connectivity, which is fully affected by the complex technology in CNS/ATM systems**
- **Achieving the desired QoS relates to the procurement, installation, operation, maintenance and administrative support for the delivery and exchange of data messages between a participating aircraft end-system and ground end-system**

# ***Data Link Service Performance Requirements for ATC***

- **All data link services will be required for operational use 24 hours per day, 7 days per week**
- **The current acceptable message delivery performance is associated with FANS1/A as published in the South Pacific Operations Manual is:**
  - **95% of messages will be delivered within 60 seconds; and**
  - **99% of messages will be delivered within 120 seconds**
- **The Datalink Service Provider (DSP) should handle failure procedures and related control measures accordingly**
- **The DSP should demonstrate how end-to-end service availability and integrity is measured and calculated. This could be demonstrated using statistical data and/or Reliability, Maintainability and Availability (RMA) modeling**

# ***Data Link Service Performance Requirements for ATC***

- **Data link service performance is based on the ATS application and limited to the aircraft capabilities**
- **ICAO CNS/ATM applications associated with the Aeronautical Telecommunications Network have detailed Required Communications Performance based on service integrity and continuity**
- **Aircraft data link capabilities include:**
  - **VHF ACARS**
  - **FANS 1/A**
  - **CNS/ATM Package 1 (ATN, ADS, CPDLC, CM, FIS)**
- **ATS providers will require DSPs to cater for all aircraft data link capabilities**

# ***Network ownership and related responsibilities***

Provision of data service networks include:

- **ACARS VHF Ground Stations, VHF Digital Links stations, Satellite infrastructure and supporting telecoms**
- **Significant processing/switch capability for message routing outside DSP domain.**
- **Technological expertise from internal to external provision**
- **Network responsibilities**
  - >>> performance control, availability, reliability, operation, maintenance, interoperability, internetworking, audit, standards compliance**

# ***A quick view on SITA***

- Created in 1949, with an initial 11 member airlines with a shared vision**
- Pool of airline communications, technology and telecommunications expertise**
- Owned by the air transport community**
- Global reach, co-operation and neutrality**
- Membership and customers across the industry**

# ***SITA as Datalink Service Provider***

**SITA as datalink services providers aims to**

- be a global data service provider**
- continue to offer the airlines the best value for money solution**

**SITA implemented the AIRCOM data link service to provide airlines that install data link avionics in their aircraft with a means of connecting them to the airline systems and ATS application systems connected to the SITA terrestrial network.**

**Today many airlines rely heavily on data link for airline fleet management and operations.**

# ***SITA Aircraft Services Overview***

## **Expansion of data network coverage**

- **VHF ground stations:**

  - datalink in over 165 countries and over 700 ground stations, forming the world's largest VHF data network**

- **Satellite INMARSAT ground stations**

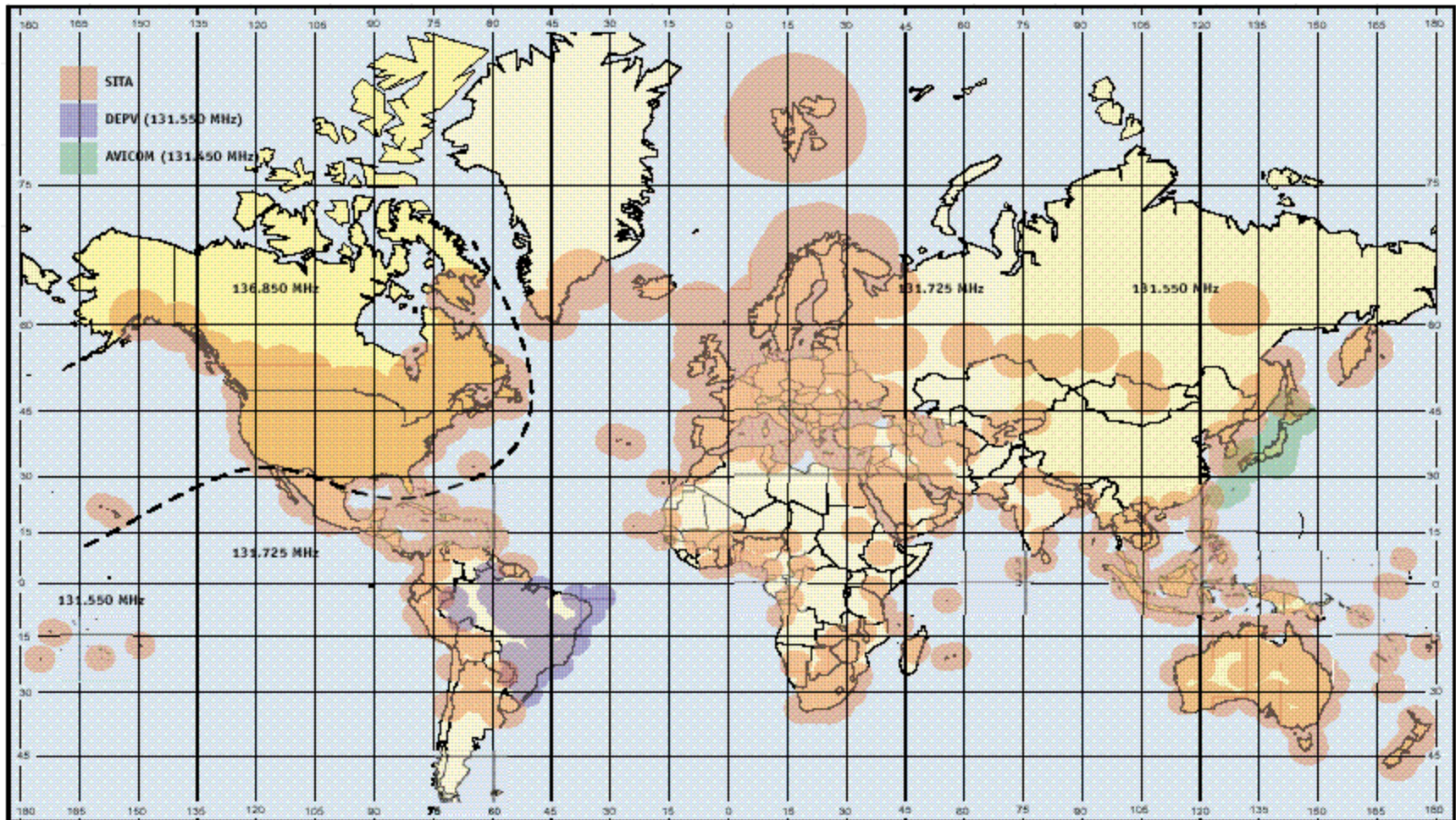
# ***SITA AIRCOM Services***

- **SITA provides AIRCOM Data Link service for use by Aircraft Communication Addressing and Reporting System (ACARS) avionics.**
  - ✓ **Plain Old ACARS (POA)**
  - ✓ **ACARS Over Aviation VHF Link Control (AVLC) (AOA)**
  - ✓ **Internetworking**

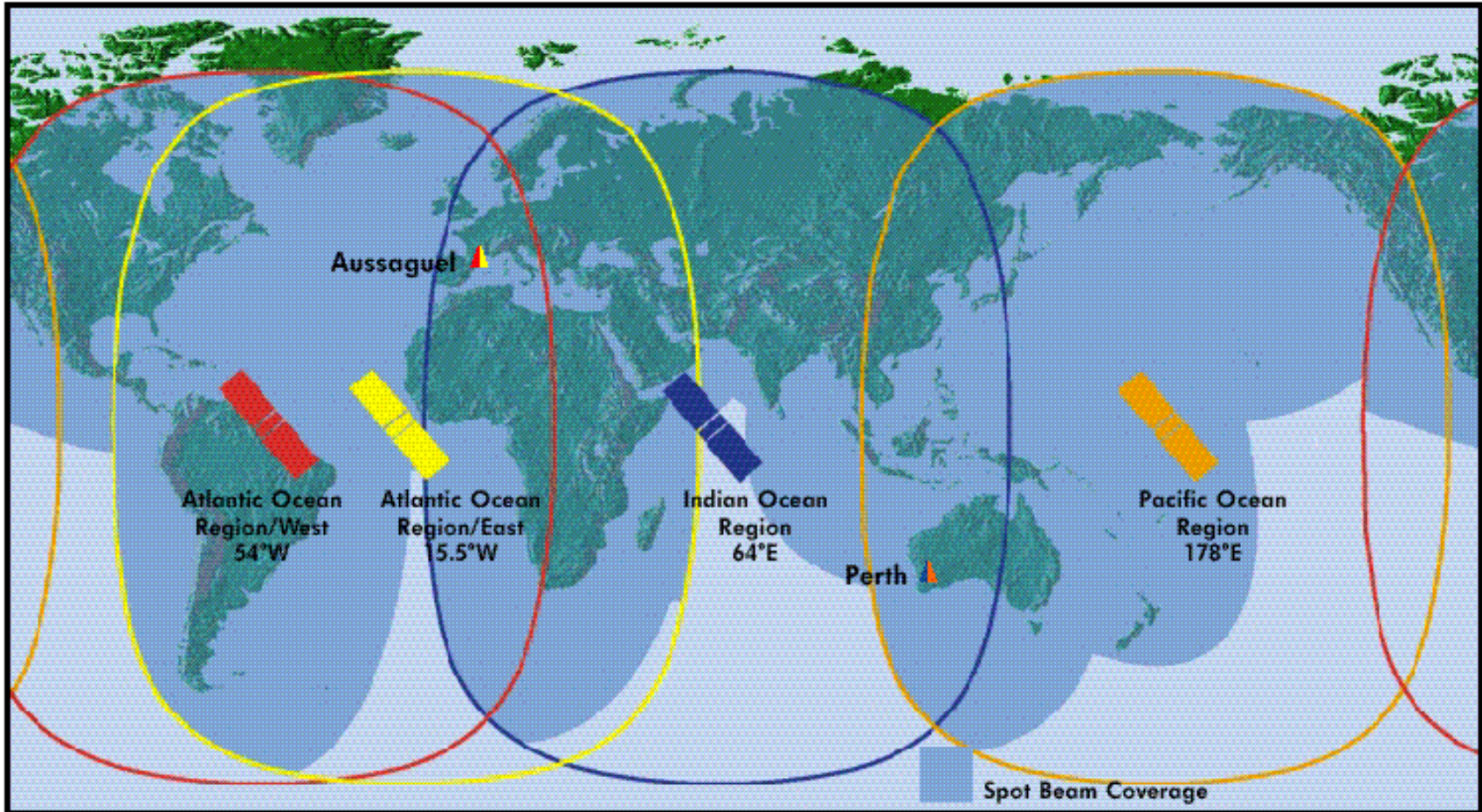
# ***AIRCOM use for AOC***

- **SITA introduced the VHF ACARS services (VHF AIRCOM) in the early 1980's to support movement messages**
- **Today SITA provides ACARS services to over 5,000 aircraft for AOC comms, which use the service collectively generate 400,000 messages**
- **Over 100 of the world's airlines are VHF AIRCOM customers with 4,000 aircraft and an additional 1,000 BizJets**
- **SITA has 1900 air transport aircraft that are satellite AIRCOM customers, generating 50,000 + messages per day**

# VHF AIRCOM Coverage



# Satellite AIRCOM Coverage



# ***AIRCOM Use for ATS***

- **Sets of data link applications using ACARS:**
  - **“Pre-FANS” applications that use only the basic text messaging capability of the ACARS avionics:**
    - ✓ **Departure Clearance (DCL) and Oceanic Clearance (OCL)**
    - ✓ **Automatic Terminal Information Service (ATIS)**
  - **The FANS applications which require special processing capability in the user aircraft:**
    - ✓ **Automatic Dependent Surveillance (ADS)**
    - ✓ **Controller Pilot Data Link Communications (CPDLC)**
    - ✓ **ATC Facilities Notification (AFN)**
  - **On regional context the following airlines have datalink capabilities:**
    - LANCHILE, COPA, MEXICANA, AIR JAMAICA, TACA, MARTINAIR, TAM, VARIG, Alianza Summa ( Avianca/Aces).**

# ***AIRCOM ATS Services***

- **SITA provides DCL, OCM, D-ATIS communications services (ATS AIRCOM) to an increasing number of ATS providers**
- **D-ATIS direct connections to:**
  - **Australia, Austria, Bahrain, Denmark, France, Germany, Ivory Coast, Korea, Singapore, Spain, Switzerland, United Kingdom**
- **DCL/PDC direct connections to:**
  - **Australia, Belgium, Denmark, France, Ivory Coast, Korea, Spain**
- **SITA supports pre-FANS internetworking with other DSPs to ensure maximum access to ATS applications by aircraft operators**
- **ATS AIRCOM provides customers with comprehensive support including help-desk and monthly performance data that reports against key indicators, e.g.**
  - **Service availability**
  - **Uplink success rate**
  - **Uplink transit delay**

# *ATS Use of ACARS - FANS*

To date, FANS 1/A services have been introduced in remote and oceanic airspace

An Industry group, under the Link2000+ programme, studied FANS accommodation in an ATN environment

SITA currently provides direct FANS 1/A communications services to over 20 ATS providers including the FAA, Eurocontrol, France, Spain, South Africa, Singapore, Australia and India

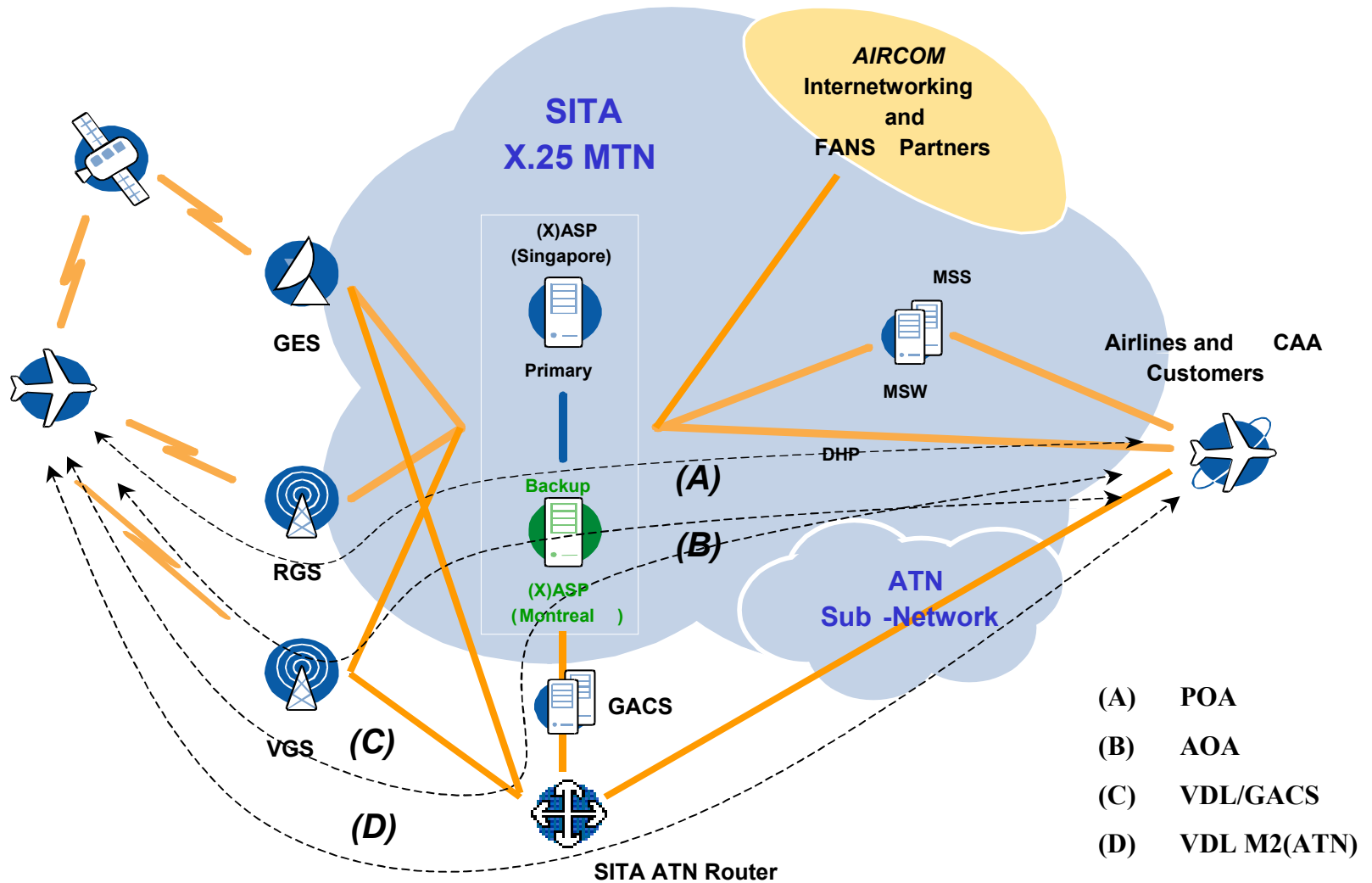
SITA works with ATS providers directly and through ICAO Regional Planning Groups and FANS Interoperability Teams to ensure the datalink service continues to meet their requirements

SITA supports FANS internetworking with other DSPs to ensure maximum availability of services to aircraft operators

# ***ATN Overview***

- **ATN is a data communications internetwork that is both:**
  - **A ground based Internet providing communications services between ground based users, and**
  - **An air/ground Internet providing communications services between airborne and ground users**
- **It will integrate the various communications media: AMSS, VHF digital link, Secondary Surveillance Radar(SSR), Mode S data link, HF data link and private/public ground-ground networks.**
- **ATN standards are included in ICAO Annex 10**
- **ATN will connect air traffic service providers, aircraft operators and aircraft**
- **The ATN applications will provide the same functions as the Pre-FANS and FANS applications but in place of ACARS data links they will use new higher performance ICAO standard ATN data links and will only be available to aircraft with ATN avionics**

# SITA VDL and ATN Implementation and Service Migration Architecture



# ***SITA VDL and ATN Implementation and Service Migration Architecture***

- **POA : VGS to replace RGS for provision of old “Plain ACARS” (POA) service . ACARS messages still supported as before by (X) ASP platforms in Montreal and Singapore.**
- **VDL mode 2/AOA : Provision of VDL mode 2 AOA (ACARS over AVLC).Higher level message formats are identical to POA without any changes to the airborne and ground application.**
- **VDL mode 2/GACS : Support ACARS over ATN VDL Mode 2. This service requires the implementation of ATN Avionics , ATN ground routers and the Generic ATN Communication services (GACS) gateway implemented as a DSP ATN end system .**
- **VDL mode 2/ATN:End to end support of VDL mode 2 in an ATN environment**

# ***SITA ATN Activities***

- **SITA actively contributed to ICAO ATN standardisation/ validation and development of RTCA, Eurocae, AEEC standards**
- **SITA is supporting CPDLC/ATN/VDL M2 flight trials with Eurocontrol**
- **ATN Service will be launched to meet Eurocontrol Maastricht “Petal to Link2000+” project timescales**
- **Currently working with the FAA to work out participation in the CPDLC Build Programme**
- **SITA works with ATS Providers and Regional ICAO Groups to support ATN/VDL M2 trials**
- **In LAM region, SITA can connect VDL ground stations and provide backup services and connectivity between nodes and ATS units for regional networks as REDDIG**

# ***Possibilities for providing datalink services***

**SITA can play different role in association to an ANSP in order to assure datalink access to ATC ground applications to the airlines**

- as full DSP (e.g. Airservices Australia)**
- as partial DSP ( e.g. FAA)**
- as partner DSP for owned datalink service (e.g. Datacom service owned by Brazilian authorities)**

# ***Final considerations***

- **SITA works with the ATS providers developing data link applications to ensure they are accessible to the AIRCOM customer airlines**
- **SITA encourages the use of the existing ACARS AIRCOM infrastructure to the ATS providers for initial ATS datalink applications (D-ATIS, DCL, OCM, FANS 1/A)**
- **ATS providers implementing CPDLC services will have to offer them to ATN and FANS-1/A equipped aircraft to have a significant impact on airspace capacity by 2005**

## ***By concluding...***

**To provide datalink services is a challenge that SITA, through its high qualified staff faces every day with professional commitment in order to make its customers be sure that all required standards and performance criteria be achieved and the best service will be delivered.**



**embracing the future in partnership**