



**SAT/FIT/3**

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**Third Meeting of the FANS I/A Interoperability Team**

**(SAT/FIT/3)**

**FINAL REPORT**

**(Montevideo, Uruguay, 5-6 May 2008)**

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## **HISTORY OF THE MEETING**

### **ii-1 PLACE AND DURATION OF THE MEETING**

The Third Meeting of the FANS 1/A Interoperability Team (FIT) was held in Montevideo, Uruguay, from 5 to 6 May 2008, under the auspices of Uruguay, supported by INDRA Sistemas S.A. from Spain, and INSA.

### **ii-2 OPENING CEREMONY AND OTHER MATTERS**

Mr. Jorge Fernandez Demarco, Regional Officer ATM/SAR of the ICAO South American Office, greeted the participants, and highlighted the importance of the issues to be dealt with.

Col. Jesus Iglesias, Civil Aviation General Director, on behalf of the DINACIA Director, Uruguay, welcomed the participants highlighting the importance of the matters to be dealt with at a regional level. Then, he opened the meeting.

### **ii-3 SCHEDULE, ORGANIZATION, WORKING METHODS, OFFICERS AND SECRETARIAT**

The Meeting agreed to hold its sessions from 0800 to 1530 hours, with appropriate breaks. The work was done as a Single Committee, Working Groups and Ad-hoc Groups.

Mr. José Emmanuel Rodrigues, delegate from Cape Verde, served as Chairman of the Meeting and Mr. Harry Roberts, delegate from South Africa acted as Rapporteur of the SAT/FIT.

Mr. Jorge Fernández Demarco, RO/ATM/SAR Regional Office, Lima, acted as Secretary.

### **ii-4 WORKING LANGUAGES**

The working language of the Meeting was English. and its relevant documentation was presented in this language.



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**AGENDA**

The following agenda was adopted:

- Agenda Item 1: Adoption of the Agenda
- Agenda Item 2: Review of the terms of reference of the FANS 1/A Interoperability Team
- Agenda Item 3: Review of SAT/FIT/2 Report
- Agenda Item 4. Review of ADS/CPLC programmes and implementation activities in SAT FIRs
- Agenda Item 5. System performance monitoring and maintenance
  - a. Interoperability requirements
  - b. Safety monitoring aspects
  - c. Problem identification, reporting and resolution procedures
- Agenda Item 6. Future work programme
- Agenda Item 7: Any other business

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**ATTENDANCE**

The meeting was attended by 26 participants from 7 States, and 3 Organizations, ASECNA, IATA and SITA. The list of participants is shown in pages iii-1 to iii-4.

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## **REPORT OF THE SAT/FIT/3 MEETING**

### **Agenda Item 1: Adoption of the Agenda**

1.1 The meeting elected Mr. Harry Roberts, Air Traffic Management Specialist of ATNS and member of the South African delegation as Rapporteur of the meeting. Subsequently, the provisional agenda was discussed and adopted by the meeting.

### **Agenda Item 2: Review of the terms of reference of the FANS 1/A Interoperability Team**

2.1. The meeting reviewed and accepted the FIT terms of reference and work programme, as defined by SAT/FIT/2 are shown at **Appendix A** to this report.

### **Agenda Item 3: Review of SAT/FIT/2 Report**

#### **Status of implementation of conclusions and decisions emanating from the SAT/FIT/2 Meeting Report**

3.1 Recommendations adopted by the SAT/FIT/2 Meeting (Cape Town, South Africa, 19 - 20 February 2007), were reviewed under this agenda item, as well as actions taken thereon by SAT Members and the Secretariat.

3.2 Regarding Recommendation 2/1 the meeting was informed that AENA and Cape Verde will be ready for full operational implementation by December 2008. Senegal advised that they will be able to operationally implement by July 2009, while Brazil informed that it will be fully operational by April 2009.

3.3 The meeting was of the opinion that full operational implementation in the EUR/SAM Corridor will be achieved in July 2009. Also, the meeting agreed that full operational implementation means that only surveillance activities will be provided to support procedural separation in applicable airspaces at this stage. Taking into account the above the meeting formulated the following Conclusion:

#### **Conclusion SAT/FIT/3-1 ADS/CPDLC in the SAT Area**

That:

- a) SAT members take cognizance of the various conclusions related to the need for implementation/operational application of ADS/CPDLC in the SAT area by the end 2010 or before; and
- b) Canarias FIR, SAL Oceanic FIR, Dakar Oceanic FIR and Atlántico FIR (EUR/SAM Corridor), will take the appropriate measures aiming at full operational implementation by July 2009, in compliance with previous SAT conclusions.

3.4 Likewise, it was agreed that SAT meetings take into consideration the need for ADS/CPDLC Regional harmonization and implementation activities, and consequently, Recommendation 2/2 was considered completed.

3.5 The meeting considered that Recommendation 2/3: Creation of a regional database and management of FOM, was completed. In this connection, IATA presented a full data base to the meeting, as shown in **Appendix B** to this report. The meeting further resolved that the activity regarding the management and maintenance of the data base would be an ongoing activity by IATA.

3.6 Regarding management of the FOM, South Africa would continue in the role, with a request directed to FIT members for the continued supply of data and pertinent information, which could be considered by all contributors to the FOM, internationally.

3.7 Regarding Recommendation 2/4: Creation of Central FANS Reporting Agency (CFRA), and in agreeing that a CFRA be created, the meeting considered draft Terms of Reference and proposed duties and responsibilities of the CFRA, including the purpose of the agency. In that sense the recommendation was considered completed. The draft Terms of Reference and Duties and responsibilities are included in **Appendix C** to this report.

3.8 In relation with the above, the meeting noted the offer of SITA to provide technical assistance to the CFRA. The meeting also analyzed a proposal of Brazil to invite other potential CFRA service providers, like SITA, BOEING and CRASA, to present their proposals in the next SAT/FIT meeting, to be the CFRA Agency and have alternatives for the best choice. However, the meeting was of the opinion that SATMA could host the Agency with the technical support of any of the above-mentioned service providers.

3.9 In that sense, the service providers will be invited to make presentations regarding the technical support that could be best provided to SATMA.

3.10 Also, it was agreed that during the SAT/FIT/4 SATMA presents information with respect to the funding of the CFRA and issues surrounding the hosting of the agency. Keeping all the above in mind, the meeting agreed to the following Conclusion:

**Conclusion SAT/FIT/3-2      Hosting of the Central FANS Reporting Agency, (CFRA)by SATMA**

That SATMA host the CFRA, according with the terms of reference and duties and responsibilities approved with the technical support of a service provider, to be selected in the forthcoming SAT/FIT/4 Meeting.

3.11 The meeting considered Recommendation 2/5: “Participation at SAT/FIT meetings” to be valid as it stands. It was agreed that IATA contact the airline operators and that ICAO send a letter to the GCADs, highlighting the importance of the participation of both regulators and main airlines. The meeting formulated the following conclusion:

**Conclusion SAT/FIT/3-3      Participation at SAT FIT meetings**

That:

- a) In case the regulator is different than the service provider, SAT States should ensure participation of regulators in the SAT/FIT meetings in order to have full commitment to the implementation activities; and
- b) Main airline representatives should also participate in the SAT/FIT meetings.

3.12            Reviewing the Recommendation; 2/7: Implementation of ADS/CPDLC the meeting was of the opinion that those States who have already implemented ADS/CPDLC offered assistance to other States. The meeting agreed on the following Conclusion:

**Conclusion SAT/FIT/3-4            Implementation of ADS/CPDLC**

That the Regulators and the ANSPs who have not done so expedite and harmonize their implementation activities in order to gain early benefits of the ADS/CPDLC capabilities.

3.13            The meeting analyzed that Recommendation 2/8 regarding the update of ADS/CPLDC activities by States and particularly the need to update their action plan and formulate the following Conclusion:

**Conclusion SAT/FIT/3-4            Update of ADS/CPDLC activities by States:**

That States should update their plan of action/activities at Appendix D to SAT FIT/2 report and return to the Rapporteur as an on going activity for presentation to SAT Meetings.

3.14            Finally the meeting review Recommendation 2/10 regarding the update of the Fans Operational Manual (FOM) and was of the opinion that a new controller version should be posted in the ICAO website and formulate the following Conclusion:

**Conclusion SAT/FIT/3-5            Update of FOM**

That a new controlled version of the FOM be prepared by the Rapporteur and submitted to the Secretariat for posting to the corresponding ICAO Website.

*Note: Any further amendment shall be approved by the FIT.*

3.15            The SAT/FIT/2 Recommendations considered completed are shown in **Appendix D** to this report.

**Agenda Item 4.            Review of ADS/CPLC programmes and implementation activities in SAT FIRs**

4.1            SITA made a presentation under this agenda item. The same has been included at **Appendix E** to this report.

**Agenda Item 5.            System performance monitoring and maintenance**

- a.            Interoperability requirements**
- b.            Safety monitoring aspects**
- c.            Problem identification, reporting and resolution procedures**

5.1            SITA made a presentation under this agenda item. The same has been included at **Appendix F** to this report.



**Agenda Item 6.            Future work programme**

6.1            The Terms of Reference of the SAT/FIT and work programme were analysed under agenda item 1 (See Appendix A to this report).

**Agenda Item 7:            Any other business**

7.1            No other business was considered apart from the date of the next meeting, which is to be co-coordinated by ICAO.

## APPENDIX A

### TERMS OF REFERENCE, WORK PROGRAMME AND COMPOSITION OF THE SAT FANS 1/A INTEROPERABILITY TEAM (SAT/FIT)

1. The SAT FANS 1/A Interoperability Team (SAT/FIT) has been established to oversee FANS 1/A system performance monitoring to ensure that the system continues to meet safety and interoperability requirements and that operations and procedures are working as specified.
2. The FIT main objectives are to:
  - a) Monitor and harmonize ADS/CPDLC trials being carried out by SAT States and adjacent States;
  - b) Review identified problem reports and determine appropriate resolution;
  - c) Develop interim operational procedures to mitigate the effects of problems until such time as they are resolved;
  - d) Monitor the progress of problem resolution;
  - e) Prepare summaries of problems encountered and their operational implications;
  - f) Assess system performance based on information in Central FANS Reporting Agency (CFRA) periodic reports;
  - g) Co-ordinate system testing; and
  - h) nsure harmonization of ADS/CPDLC procedures

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### WORK PROGRAMME OF THE SAT FANS 1/A INTEROPERABILITY TEAM

WORK PROGRAMME		
TASK No.	SUBJECT	TARGET DATE
1.	Oversee FANS 1/A system performance monitoring to ensure that the system continues to meet safety and interoperability requirements and that operations and procedures are working as specified.	Continuous
2.	Carry out studies on the establishment of a central FANS reporting agency (CFRA) and related institutional issues	<b>Completed</b>
3.	Harmonize ADS/CPDLC programmes developed by SAT States/FIRs and analyze cost-benefit aspects related to their implementation.	Continuous
4.	Maintain ADS/CPDLC operational guidance material updated.	Continuous
5.	Conduct studies related to the implementation of the Global ATM Operational Concept and other enabling concepts within the SAT area.	Continuous
Note: The SAT FIT/2 should submit its meeting reports and proposals to the SAT Working Group.		
<b>COMPOSITION</b>		
<ul style="list-style-type: none"> <li>The SAT FANS-1/A Interoperability Team (FIT) of multi-disciplinary nature shall comprise of experts from States responsible of FIRs in AFI and SAM routing areas AR1/AH2 and AR2/AH8 as defined in the Global Air Navigation Plan (ICAO Doc 9750), and experts from adjacent FIRs and international organizations.</li> <li><b>Team Leader:</b> South Africa</li> </ul>		
<ul style="list-style-type: none"> <li><b>WORKING ARRANGEMENTS:</b> THE SAT FIT SHOULD COMPLETE ITS WORK AND SUBMIT ITS PROPOSALS TO THE SAT ATM WORKING GROUP. THE SAT FIT SHOULD WORK THROUGH ELECTRONIC CORRESPONDENCE PRIOR TO MEETINGS.</li> </ul>		



## IATA SURVEY

## ON BOARD NAVIGATION, SURVEILLANCE AND COMMUNICATION EQUIPMENT IN THE SAT REGION

Airline	Airplane type	NAVIGATION																	SURVEILLANCE				COMMUNICATIONS					COMMENTS	
		1 x FMS	2 x FMS	GNSS STAND ALONE	GNSS COUPLED TO FMS	IRU	RNAV DME/DME	RNAV DME/DME/RRU	RNAV GNSS	RNP 10	RNP 4 Oceanic	RNAV 5	RNAV 1	RNP 1.0	RNP .3	RNP <.3	SBAS	GBAS	FANS	ADS	ADS-B	Mode S	Mode S Enhance	HF	HF DATA LINK	ACARS	VDL 2		SATCOM
Air Europa	A330-200		Y		Y	Y		Y		Y	Y	Y		Y					Y	Y			Y	Y		Y	Y	Y	
	B737-800	Y			Y	Y		Y				Y	Y			Y						Y	Y			Y	Y		
	B767-300		Y		Y	Y		Y		Y	Y	Y	Y			Y						Y		Y					
Air France	A320		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y						Y	Y	Y	Y		Y			ADS-B OUT capable but not certified
	A330		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y			Y		ADS-B OUT capable but not certified
	A340		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	ADS-B OUT capable but not certified
	B747-200F		Y		Y	Y	Y		Y	Y	Y	Y	Y	Y	Y						Y	Y	Y	Y		Y	Y		
	B747-400/400ERF		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y	Y		Y	Y	Y	Y	Y	Y*	Y	*only 8 VDL2 equipped airplanes
	B777-200ER/300ER		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y	Y		Y	Y	Y		Y		Y	
British Airways	A319		Y		Y	Y		Y	Y			Y	Y	Y	Y						Y	Y	Y			Y			
	A320		Y*		Y*	Y		Y	Y*			Y	Y	Y	Y						Y	Y	Y	Y		Y			* except older A320s
	B737-400	Y				Y		Y				Y	Y	Y								Y	Y	Y		Y			
	B747-400		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y					Y	Y	Y	Y		Y		Y	
	B767-300		Y	Y		Y		Y		Y		Y	Y									Y	Y	Y		Y			
	B777		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		Y		
	B737-800		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y					Y		Y	Y		Y			
	B757-200		Y		Y*	Y		Y	Y	Y		Y	Y	Y	Y	Y						Y		Y		Y			* approx 20% have GPS
Delta	B757-200ER		Y		Y*	Y		Y	Y	Y		Y	Y	Y	Y						Y	Y	Y		Y				* approx 25% have GPS
	B767-300 / 300ER		Y		Y*	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y*	Y*		Y	Y	Y		Y	Y*		* approx 65% have SATCOM currently / approx 25% have GPS
	B767-400		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y*	Y*		Y	Y	Y		Y	Y*		* approx 40% have SATCOM currently
	B777		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y	Y		Y	Y	Y		Y	Y		
	MD88	Y				Y		Y				Y										Y				Y			
	MD-90	Y				Y		Y				Y										Y				Y			we are currently updating our fleet with GPS and SATCOM
	Emirates	A310/F		Y		Y	Y	Y	Y	Y		Y	Y	Y	Y							Y	Y	Y		Y			
A330-200			Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y	Y		Y		Y	
A340-300			Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y					Y	Y	Y	Y		Y		Y	
A340-500			Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y		Y	
B777-200/300			Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y	Y		Y		Y	
B777-300ER			Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y	Y		Y		Y	
FedEx	A300		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y			Y	Y			
	A310		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y			Y	Y			
	B727			Y*							Y											Y	Y			Y	Y		* approx. 20% of fleet has GPS
	MD-10		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y	Y	Y	Y	Y			
	MD-11		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y	Y	Y	Y		
	Iberia	A319		Y		Y	Y	Y	Y	Y			Y	Y								Y	Y	Y		Y			
		A320		Y		Y	Y	Y	Y	Y			Y	Y								Y	Y	Y		Y			
A340			Y		Y	Y	Y	Y	Y	Y		Y	Y								Y	Y	Y		Y		Y		
KLM	A330-200		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y		Y	Y	Y		Y		Y	
	B747-400		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y								Y	Y	Y		Y		Y		
	B747-400F		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y		Y	Y	Y		Y		Y	
	B777-200		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y		Y	Y	Y		Y		Y	
	MD-11		Y		Y	Y	Y	Y	Y	Y	Y	Y									Y	Y	Y		Y		Y		
LAN	A319-100		Y		Y	Y	Y	Y	Y	Y		Y	Y			Y							Y		Y				
	A320-200		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y			Y							Y	Y	Y				
	A340-300		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y		Y	Y		Y		Y		
	B767-300		Y		Y*	Y	Y	Y	Y	Y		Y	Y										Y	Y*	Y			Y	*10 of 29 B767s have GPS. Non-GPS 767s have HF datalink
Lufthansa	A340-300		Y		Y	Y		Y	Y				Y						Y			Y	Y	Y		Y	Y	Y	
	A340-600		Y		Y	Y		Y	Y				Y						Y			Y	Y	Y		Y	Y	Y	
	B747-400		Y		Y	Y		Y	Y				Y						Y			Y	Y	Y		Y	Y	Y	
	A318		Y			Y		Y					Y									Y				Y			



**IATA SURVEY**  
**ON BOARD NAVIGATION, SURVEILLANCE AND COMMUNICATION EQUIPMENT IN THE SAT REGION**

Airline	Airplane type	NAVIGATION																SURVEILLANCE				COMMUNICATIONS				COMMENTS			
		1 x FMS	2 x FMS	GNSS STAND ALONE	GNSS COUPLED TO FMS	IRU	RNAV DME/DME	RNAV DME/DME/IRU	RNAV GNSS	RNP 10	RNP 4 Oceanic	RNAV 5	RNAV 1	RNP 1.0	RNP 3	RNP <3	SBAS	GBAS	FANS	ADS	ADS-B	Mode S	Mode S Enhance	HF	HF DATA LINK		ACARS	VDL 2	SATCOM
	A319		Y			Y		Y					Y									Y		Y*		Y			* 3 of 16 have HF
Pluna	B767-300		Y			Y	Y	Y		Y	Y	Y										Y		Y		Y			
SAA	A319		Y			Y				Y	Y	Y	Y	Y	Y									Y	Y	Y			
	A340-200		Y			Y				Y	Y	Y	Y	Y	Y									Y		Y		Y	
	A340-300		Y			Y				Y	Y	Y	Y	Y	Y				Y	Y	Y			Y	Y	Y		Y	
	A340-600		Y			Y				Y	Y	Y	Y	Y	Y				Y	Y	Y			Y	Y	Y		Y	
	B737-800		Y			Y				Y		Y							Y	Y	Y			Y	Y*	Y			* 6 of 21 have HF datalink
	B747-400		Y	Y*	Y	Y	Y			Y	Y	Y	Y						Y*					Y	Y	Y		Y*	* some aircraft only. Only 4 aircraft have SATCOM.
Singapore Airlines	A340-500		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	
	A380		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y	Y	Y		Y	
	B747-400		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	
	B747-400F		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	
	B777		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	
TAM	A319		Y		Y	Y	Y	Y		Y		Y	Y		Y							Y		Y		Y		Y	
	A320		Y		Y	Y	Y	Y		Y		Y	Y		Y							Y		Y		Y		Y	
	A330-200		Y		Y	Y	Y	Y		Y		Y	Y	Y	Y				Y			Y	Y	Y		Y		Y	
	F100		Y			Y	Y	Y														Y		Y					
	MD-11		Y			Y	Y	Y		Y		Y										Y		Y					

## **APPENDIX C**

### **TERMS OF REFERENCE, DUTIES AND RESPONSIBILITIES RELATING TO THE CENTRAL FANS REPORTING AGENCY**

#### **1. Terms of Reference;**

To collect and disseminate operational information supporting ADS/CPDLC applications within the ATM system, in order to promote interaction between ATSPs, Stake Holders including Airline operators and FITs in adjacent airspaces.

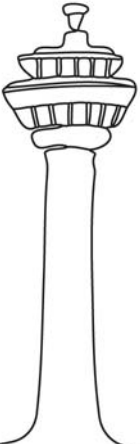
#### **2. Duties and Responsibilities;**

- a) Establish and maintain a systems incident database. Track resolutions, review and analyze data obtained.
- b) Monitor and report on system incidents and resolutions of incidents and system problems.
- c) Institute procedures to obtain monthly status reports from FIT members.
- d) Compile de-identified review reports from monthly FIT status reports for circulation to FIT members and other stakeholders on a regular basis.
- e) Identify and report on chronic system errors and trends, utilizing monthly FIT status reports.
- f) Produce annual reports on FANS1/A activity within the area of interest to the FCRA for review by the FIT and appropriate PIRGS, relating to trends and problems identified, together with progress on problem resolutions and trend mitigation.
- g) Monitor and report on ADS/CPDLC compliance with common procedures agreed to.
- h) Promote interaction between Service Providers and other Stake Holders, including FIT interoperability Teams in adjacent airspaces and Airline Operators.
- i) Harmonize ADS/CPDLC procedures within the CFRA area of interest and also with adjacent airspaces.

## APPENDIX D

### STATUS OF CONCLUSIONS AND DECISIONS RELATED TO SAT/FIT/2 MEETING

Recommendations	Implementation status	Remarks
<b>Recommendation 2/2: Harmonization of implementation activities</b> That the SAT meeting take into consideration the need of an ADS/CPDLC Regional harmonization and implementation activities.	Completed	
<b>Recommendation 2/3: Creation of a regional database and management of FOM</b> That: a) a regional database be created and maintained by IATA, identifying FANS 1/A equipped aircraft. b) South Africa (ATNS) be SAT principal contact point and tasked with the management of the FOM.	Completed	
<b>Recommendation 2/4: Creation of Central FANS Reporting Agency (CFRA)</b> That a Central FANS Reporting Agency (CFRA) be created. The purposes and funding of the CFRA will require further studies.	Completed	SATMA agreed to host the CFRA with the technical support of a service provider.
<b>Recommendation 2/6: Development of terms of reference (CFRA) in the SAT Region</b> That ATNS to develop terms of reference of CFRA taking cognizance of the FANS 1/A Operations Manual (FOM) and to be presented at the next FIT meeting.	Completed	
<b>Recommendation 3/9: Points of contact (POC)</b> That members of the FIT nominate POC and provide contact details	Completed	To keep pertinent information updated by the appropriate organization..



South Atlantic Group  
FANS Interoperability Team – FIT 3

**SITA FANS 1/A Status  
Implementation for SAM Region**

**Montevideo, Uruguay  
5-6 May 2008**

Adriana Mattos  
ATM Development Manager

Straightforward aircraft operations

**SITA**

## Implementing the future...

“Hola Adriana:

Ayer 03 de agosto, hemos hecho el primer ensayo CPDLC con una aeronave en vuelo, un A340 de LAN de Santiago a Buenos Aires al que monitoreamos su ruta hasta el aterrizaje con el ADS. En mi opinión, lo de ayer es un hito para nuestro servicio, solo comparable con la instalación de nuestro primer RADAR en 1973.

Hemos trabajado muy bien con la gente de SITA, Iñáqui y Damian,

Un abrazo,

Alberto Fernández D/ Servicios Transito Aéreo-DGAC Chile”

In June 6<sup>th</sup>, 2007, DGAC Chile was recognized by IATA with Eagle Awards for outstanding performance in customer satisfaction, cost efficiency and continuous improvement





## Our agenda

- FANS and ATN implementation timeline
- FANS 1/A main facts
- FANS expansion
- Data link Service Provider (DSP)
- FOM System Performance Requirements
- Internetworking
- Enabling FANS implementation – an easy approach
- ADS CPDLC workstation possibilities
- DGCA Chile – Case Study
- DECEA Brasil – FANS 1/A operations
- Conclusion

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## FANS and ATN Implementation Timeline

- 1988: ICAO FANS Committee 1988 Report
- 1995: First Boeing "FANS-1" Package Certified
- 1995: Initial Air Navigation Service Provider (ANSP) FANS Implementations
- 2000: First Airbus "FANS-A" Package Certified
- 2004: ATN-Based CPDLC Implemented in Maastricht UAC
- Today-Future: FANS-1/A implemented by ANSPs in many locations worldwide  
ATN being implemented throughout EUROCONTROL Link2000+ airspace  
ATN to be implemented in US commencing in 2012 timeframe.

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## FANS 1/A main facts

- Also referred to as:
  - FANS 1 – Boeing implementation
  - FANS A – AIRBUS implementation
- Operates over ACARS industry standard
- ICAO ATN SARPs also define version of ADS
  - Has not been implemented
- Generally equipped on long haul aircraft (B747, B77, A330/340)
- Around 2,000 aircraft equipped today
- Implements:
  - ADS-C (ADS-Contract) – previous ADS-A
  - CPDLC (Controller Pilot Data Link Communications)
  - AFN (ATS Facilities Notification)
- Operates over either VHF or SATCOM
- Intended to be used over remote/oceanic airspace



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## FANS Expansion

- First introduced in South Pacific on routes between Australia/New Zealand and USA
- Has since expanded to:
  - North Pacific
  - North Atlantic
  - Bay of Bengal (AAI)
  - Arabian Sea (AAI)
- Other regions have trialled and plan to introduce operational service in the next year or so:
  - Middle East & North Africa
  - Africa (ASECNA)
  - South Atlantic
- Some Air Navigation Service Providers in Europe plan to accommodate FANS aircraft – but focus is on the implementation of ICAO compliant systems



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## Datalink Service Provider (DSP)

- Air-Ground Communications and Ground-to-Ground Services for airlines users and air navigation service providers implementing ATS services using datalink communications
- Extensive VHF and Satellite Network worldwide
- Service performance as per FOM: Traffic Monitoring/ Statistics
- Internetworking (I/W)
- Customer Support Service: Helpdesk 24H, dedicated staff, technical support and performance reports.



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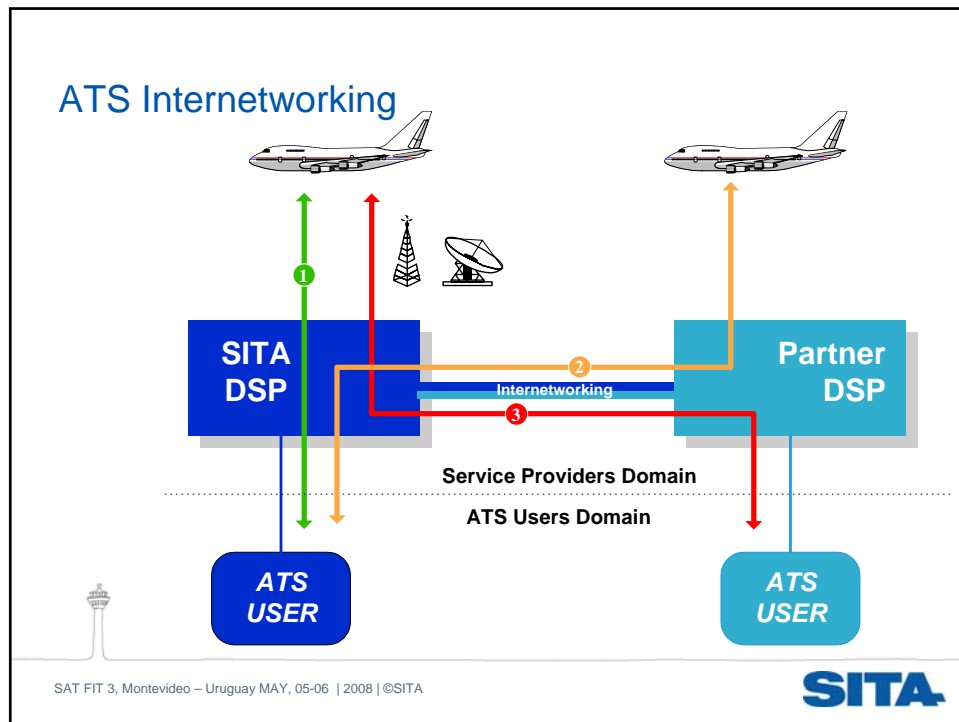
## FOM System Performance Requirements

- End-to-end round trip time for uplinks
  - 2 minutes for 95% messages
  - 6 minutes for 99% messages
- End-to-end round trip time for downlinks
  - 1 minute for 95% messages
  - 3 minutes for 99% messages
- Message delivery
  - Less than 1% of all messages delivered
- Availability 99%



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### Enabling a FANS implementation – an easy approach

- In order to enable an easy and early implementation approach by the ANSP, SITA developed an ADS CPDLC workstation system (ACW):
  - **Trial Air – Ground data link communication** performance and assess whether they are suitable with minimum requirements for en-route and/or oceanic environments.
  - **Acquire necessary experience** with ADS and CPDLC applications in order to specify appropriate requirements for such implementation in operational ATM infrastructure.
  - **Work independently** from existing ATM systems.



## ADS CPDLC workstation possibilities

- The ADS – CPDLC Workstation is capable to operate both applications in multiple datalink environments, in a seamless way for the controller, such as:
  - FANS only environment (supporting both FANS/1 and FANS/A).
  - ATN only environment (as defined per ICAO SARPS)
  - Mixed FANS and ATN environments.
- The use of the ADS / CPDLC Workstation (ACW) in an ATN environment would also require the implementation of an ATN Router and an ATN End System



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## DGCA Chile – Case Study

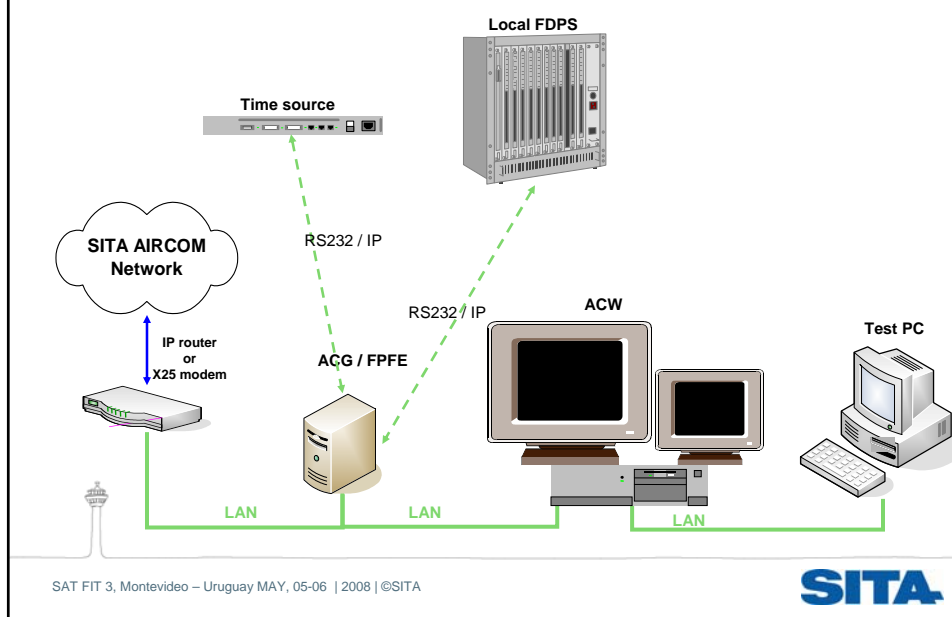
- DGCA Chile wished to acquire some initial experience with FANS 1/A for their South Pacific airspace
- Wanted to limit investment involved in integrating FANS 1/A capability in existing ATM automation
- Decided to implement stand alone FANS Workstation
- Started trials in August 2006
- Next Step – to consolidate FANS operations and define the requirements for new ATM system



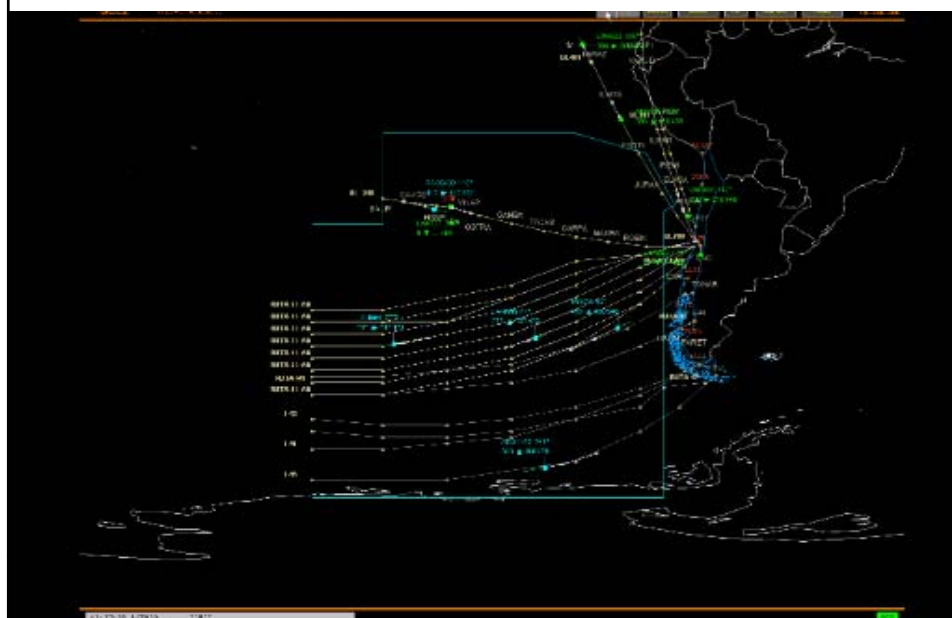
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## ADS-CPDLC Workstation (ACW) architecture



## ADS display



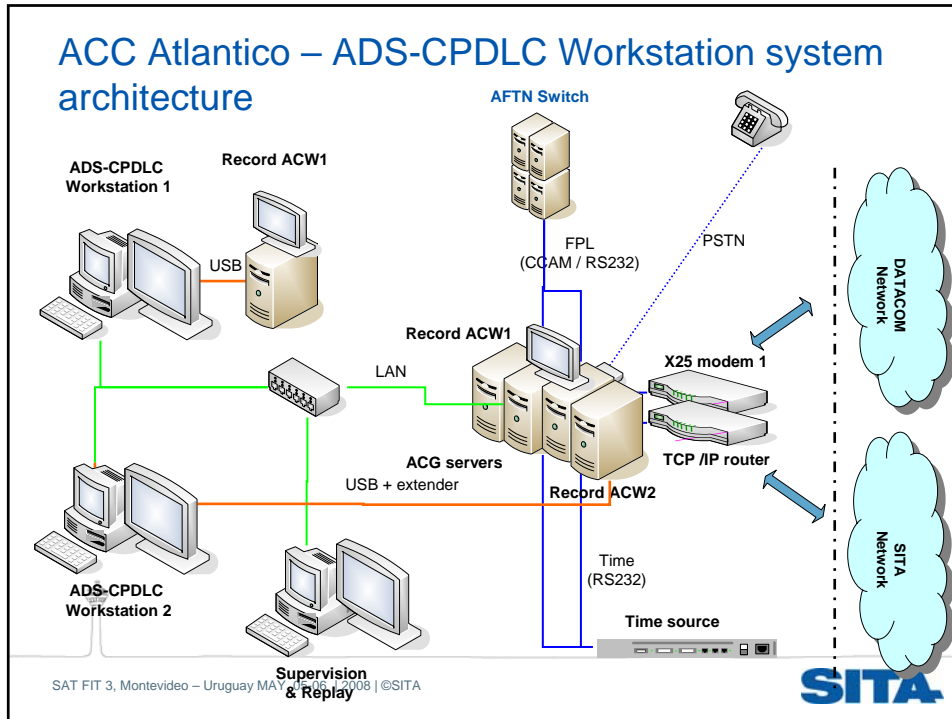
## DGAC Chile - ACC OCEANICO



## DECEA FANS 1/A operations

- Trials started in 2003 with ADS CPDLC prototype system but operations it was taking too long to become an operational service
- DECEA finally committed with FANS operations until end 2008
- A SITA ADS CPDLC workstation will be implemented in the ACC Atlantico for a 12 month period:
  - Proven software / robust platform and architecture
- A new integrated ATM system provided by ATECH will be deployed in Recife by 2009





## Final considerations

- FANS 1/A has been around for a long time
- It works !
  - Ground Systems
  - Avionics
- Trials should be limited in time otherwise airlines lose interest
- Advanced regions are reliant on the availability of the service
  - SITA has made multi million \$\$ investments in maintaining the Ground Earth Stations
- SITA is committed to working with ANSPs to introduce the technology around the globe and developed an ADS CPDLC workstation that can help to speed FANS 1/A implementation





*“That CAR/SAM States/territories/international organizations and users, based on ICAO existing recommendations, and to the cost/benefit considerations and taking into account the existence of technology installed in ground and on board aircraft, continue with the implementation of the applications feasible to be used with ACARS data and FANS 1/A during the transition towards the implementation of ATN.”*

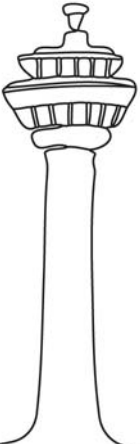
GREPECAS 12, Conclusion 12/42

Thanks for your attention! For any question, you can contact:  
[adriana.mattos@sit.aero](mailto:adriana.mattos@sit.aero)



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South Atlantic Group  
FANS Interoperability Team – FIT 3

**FANS 1/A Performance Reporting  
in SAT**

**Montevideo, Uruguay  
5-6 May 2008**

Adriana Mattos  
ATM Development Manager

Straightforward aircraft operations



## Agenda

1. SITA FANS service performance reporting system:
  - Description and examples of SITA AIRCOM Performance and Quality Plans (APQP), provided monthly to our FANS ANSP customers.
2. ANSPs and airlines in the SAT region doing FANS
3. Consolidated results of FANS service performance in the SAT trials from a SITA perspective
4. Compared Traffic for ANSPs in the SAT region and NAT ANSP (one provider)



## SITA FANS service performance reporting system

Main sections of the APQP report :

- Traffic data: number of messages/by airlines
- Availability of the service (processor, VHF network, Satellite network)
- Reliability of the service (uplink success rate)
- Performance data (uplink and downlink delivery times)



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## APQP – Traffic Data

- Message type

2.1 FANS GLOBAL DATALINK TRAFFIC							
	Ground Traffic in Messages (Uplink + Downlink)			Air-Ground Traffic in Blocks (Uplink + Downlink)			
ATS Provider	janv-07	12-month average	UP/DN ratio	janv-07	12-month average	UP/DN ratio	
ATS Provider	5 727	7 690	10,56%	4 384	6 790	12,07%	
AFN (Log-On)	258	503	38,71%	190	444	40,74%	
CPDLC	66	1 193	65,00%	69	1 129	76,92%	
ADS	5 403	5 993	9,06%	4 125	5 217	10,35%	

- Media and Airlines <sup>ADS</sup>

2.2 FANS TRAFFIC BY MEDIA AND AIRLINES							
FANS BY MEDIA				FANS BY AIRLINES			
ATS Provider	janv-07	12-month average	Percentage Total	ATS Provider	janv-07	12-month average	Percentage Total
VHF UP & DOWNLINK	940	1 777	16,60%	AFR	2 152	3 543	37,58%
Satellite UP & DOWNLINK	3 182	4 468	56,19%	LAN	1 321	917	23,07%
Internetworking: Co-DSP	1 541	1 224	27,21%	TAM	1 027	1 694	17,93%
				IBE	709	233	12,38%
Total FANS Traffic	5 663	7 470	100,00%	DLH	501	1 214	8,75%
				AEA	15	67	0,26%
				GS1	1	15	0,02%
				LDI	1	2	0,02%
				Total Airlines	5 727	7 690	100,00%



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## APQP – Availability of the service

Processor, VHF and SAT network combined availability

3.1 AIRCOM FANS SERVICE AVAILABILITY								
Service Availability	# of outages	Shortest Duration	Average Duration	Longest Duration	Total Duration	Availability	3-month average	12-month average
VHF FANS AIRCOM Processor Availability	0	0	0	0	0	100,00%	99,98%	99,99%
Satellite FANS AIRCOM Processor Availability	0	0	0	0	0	100,00%	99,98%	99,99%
VHF Access Network Availability						99,43%	99,65%	99,73%
Satellite Access Network Availability						99,94%	99,97%	99,98%
VHF FANS Service Availability						99,43%	99,63%	99,72%
Satellite FANS Service Availability						99,94%	99,95%	99,97%

Details: VHF stations (RGS/VGS) and SAT stations (GES)

3.2 FANS CRITICAL RGS AVAILABILITY								
Critical RGS Outages	# of outages	Shortest Duration	Average Duration	Longest Duration	Total Duration	Availability	12-month average	
AGP-F1	0	0	0	0	0	100,00%	99,98%	
BCN-F1	0	0	0	0	0	100,00%	100,00%	
BCN-F2	4	10	21	51	85	99,81%	99,48%	
BCN-F3	0	0	0	0	0	100,00%	100,00%	
BIO-F1	1	56	56	56	56	99,98%	99,99%	
BIO-F2	1	25	25	25	25	99,94%	99,59%	
FAO-F1	0	0	0	0	0	100,00%	99,76%	
FLW-F1	2	4	5	5	9	99,98%	99,50%	
GRX-F1	0	0	0	0	0	100,00%	98,15%	
LIS-F1	0	0	0	0	0	100,00%	100,00%	
MAD-F1	0	0	0	0	0	100,00%	99,99%	
MAD-F2	0	0	0	0	0	100,00%	99,86%	
MAD-F3	0	0	0	0	0	100,00%	100,00%	
OPO-F1	0	0	0	0	0	100,00%	99,92%	
PMI-F1	0	0	0	0	0	100,00%	99,79%	

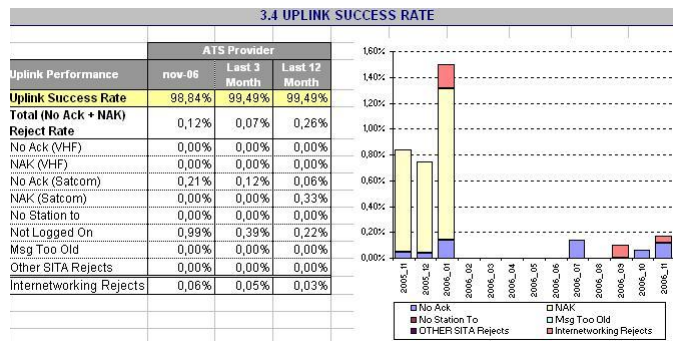
3.3 FANS CRITICAL GES AVAILABILITY		
Satellite Access Network Availability	janv-07	12-month average
AOE2	99,94%	99,98%
AOW2	99,94%	99,97%
IOR2		
POR1		
Average Availability	99,94%	99,98%

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## APQP – Reliability of the service

Messages delivered and reject causes



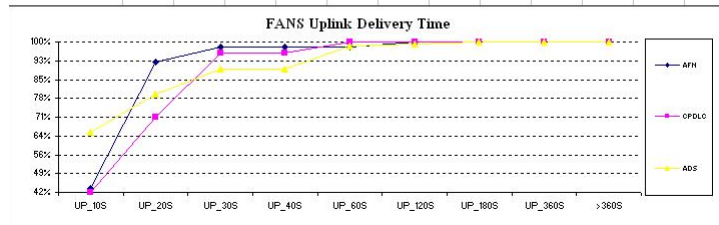
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## APQP – Response time performance (1)

### Uplink Delivery Time

1.4 FANS SERVICE PERFORMANCE (VHF+SAT)									
Uplink Message Delivery Time	10 s	20 s	30 s	40 s	60 s	120 s	180 s	360 s	>360 s
ATS Provider	60,37%	80,85%	90,96%	90,96%	98,40%	99,47%	100,00%	100,00%	100,00%
AFN (Log-on)	43,14%	92,16%	98,04%	98,04%	98,04%	100,00%	100,00%	100,00%	100,00%
CPDLC	41,67%	70,83%	95,83%	95,83%	100,00%	100,00%	100,00%	100,00%	100,00%
ADS	64,78%	79,73%	89,37%	89,37%	98,34%	99,34%	100,00%	100,00%	100,00%



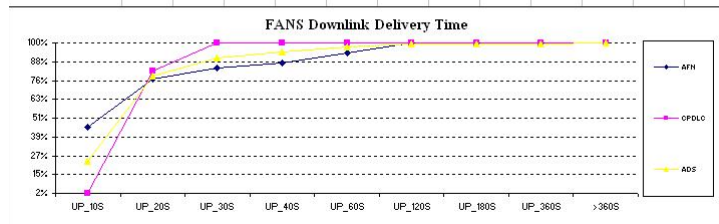
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## APQP – Response time performance (2)

### Downlink Delivery Time

Downlink Message Delivery Time	10 s	20 s	30 s	40 s	60 s	120 s	180 s	360 s	>360 s
ATS Provider	23,84%	78,26%	89,94%	94,08%	97,15%	99,43%	99,49%	99,55%	100,00%
AFN (Log-on)	45,16%	76,61%	83,87%	87,10%	93,55%	100,00%	100,00%	100,00%	100,00%
CPDLC	2,56%	82,05%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%
ADS	23,27%	78,26%	90,05%	94,26%	97,25%	99,40%	99,46%	99,53%	100,00%



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## ANSPs in the SAT region doing FANS

- Spain: AENA (Canarias)
- Cabo Verde : ASA
- Brazil : DECEA (Recife)
- South Africa : ATNS (Johannesburg)
- Portugal : Nav Portugal (Açores)
- Dakar: ASECNA
- All connected to SITA



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## Airlines in the SAT region doing FANS

- |                         |                      |
|-------------------------|----------------------|
| ▪ Air Europa            | ▪ Corsair            |
| ▪ Air France            | ▪ Continental        |
| ▪ Alitalia              | ▪ Malaysian Airlines |
| ▪ British Airways       | ▪ LTU Luftransport   |
| ▪ Iberia                | ▪ Lauda Air          |
| ▪ KLM                   | ▪ TAP                |
| ▪ Lan Chile             | ▪ Qantas Airways     |
| ▪ LTU                   | ▪ US Air Force       |
| ▪ Lufthansa             |                      |
| ▪ TAM                   |                      |
| ▪ QFA                   |                      |
| ▪ Singapore Airlines    |                      |
| ▪ South African Airways |                      |
| ▪ Swiss                 |                      |
| ▪ Virgin                |                      |



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## Consolidated performance data in the SAT region from SITA's perspective (1)

- Traffic for ANSPs in the SAT region

	Ground Traffic in Messages (Uplink + Downlink)	
ATS Provider	mar/08	12-month average
ATS Provider	86.325	65.759
AFN (Log-On)	15.101	11.089
CPDLC	28.137	20.605
ADS	43.087	35.982

- Note:

1. Recife, Dakar and Cape Verde are not currently full operational
2. NAV Portugal and South Africa are operational



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## Consolidated performance data in the SAT region from SITA's perspective (2)

### Uplink Delivery Time for ANSPs in the SAT region

Uplink Message Delivery Time	60 s	120 s	180 s
ATS Provider	97,79%	99,15%	99,86%
AFN (Log-on)	98,92%	99,54%	100,00%
CPDLC	98,67%	99,69%	99,80%
ADS	96,95%	98,74%	99,84%

### Downlink Delivery Time for ANSPs in the SAT region

Downlink Message Delivery Time	60 s	120 s	180 s
ATS Provider	98,38%	98,98%	99,24%
AFN (Log-on)	98,32%	99,08%	99,39%
CPDLC	98,70%	99,13%	99,22%
ADS	98,28%	98,90%	99,22%



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Compared Traffic for ANSPs in the SAT region and NAT ANSP (one provider\*)

Ground Traffic Msg (Uplink+Downlink)		
ATS provider	March08	12-month average
SAT ANSPs	86325	65759
NAT ANSP*	110003	112464



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Thanks for your attention!

For any question, you can contact

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