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Bangkok, Thailand, 15 – 19 July 2002

Agenda Item 4: Air-ground Communications

SITA ENHANCED GROUND TO AIR (EGTA) VOICE SERVICE

(Presented by SITA)



SITA Enhanced Ground to Air (EGtA) Voice Service

CNS/MET/SG/6

Bangkok 15-19 July 2002

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Aircraft Services

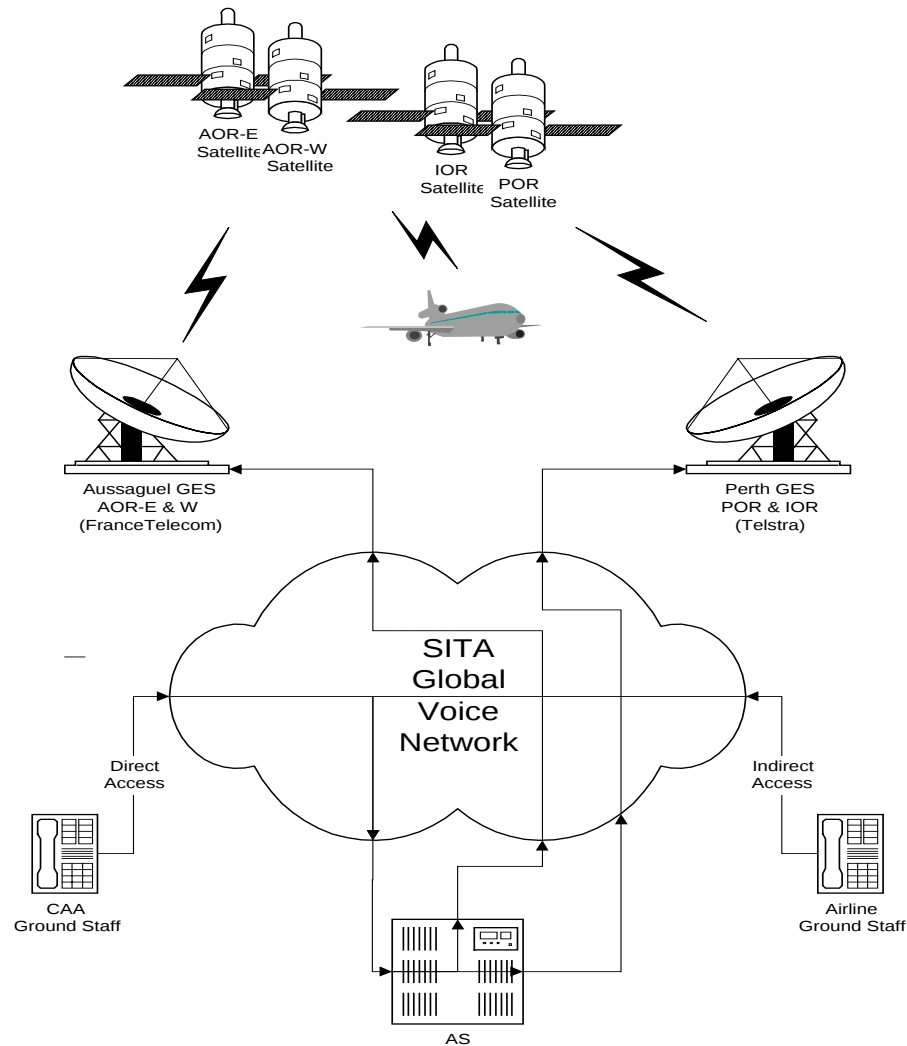
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Enhanced Ground to Air Voice

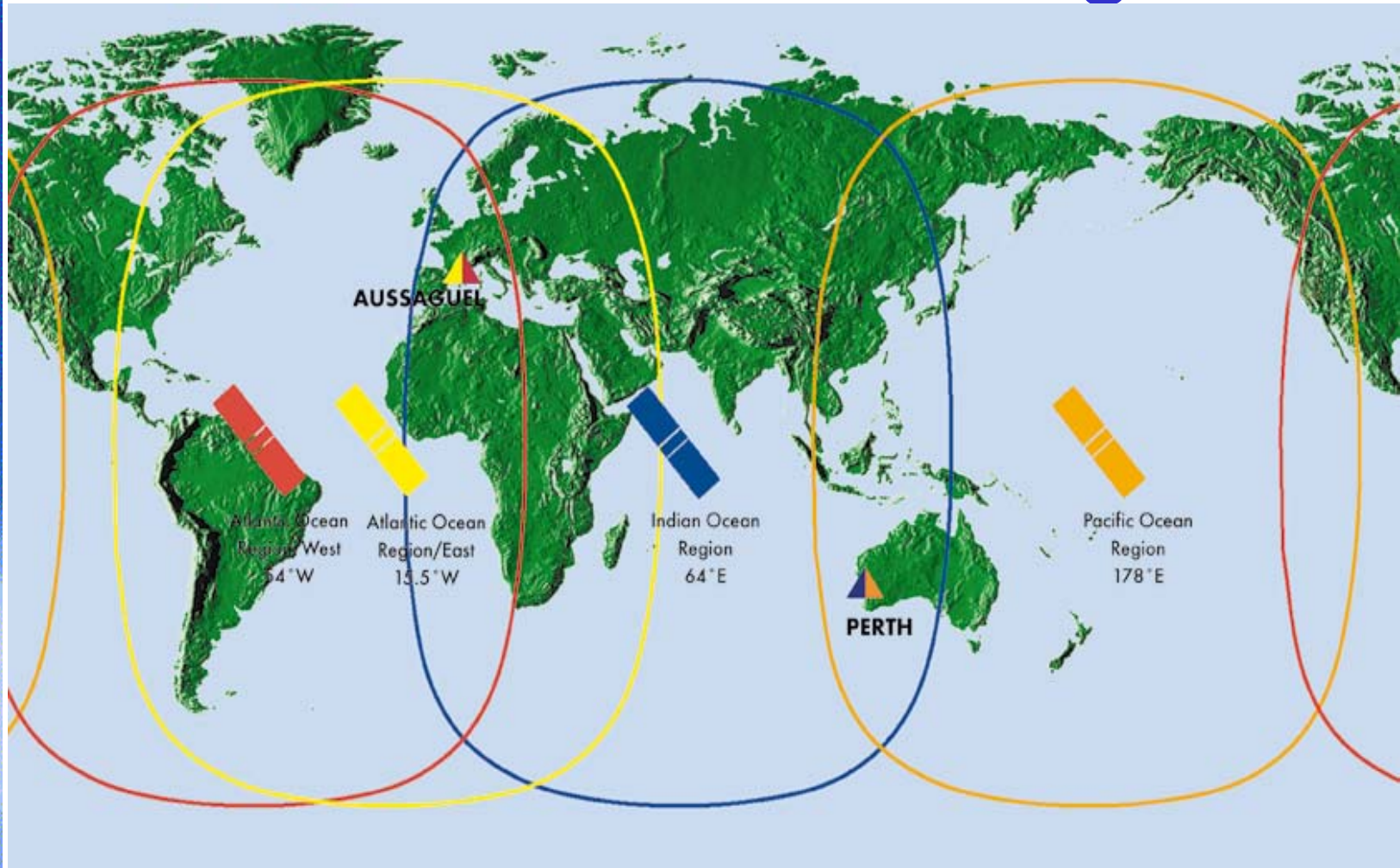
- The SITA Enhanced Ground to Air Voice Service has been designed to meet the needs of ATS Providers and airlines;
- EGtA is designed for use as an emergency or intervention tool that uses voice;
- The EGtA Service offers each customer access in all 4 Ocean Regions through a single Access Point and a unique user interface.

Enhanced Ground to Air Voice - Satellite Architecture



SITA Satellite Enhanced Ground to Air Voice Service

Satellite Network – voice and data service coverage





Satellite AIRCOM

- ***SITA Satellite AIRCOM*** includes:
 - 60+ contracted airlines
 - 1000+ equipped aircraft
 - Support of high, intermediate and low gain antenna configurations (Aero-H+, Aero-I, Aero-H)
 - Two, dual-Ocean Region Satellite Ground Earth Stations (GES)
 - Perth, Australia and Aussaguel, France
 - Currently supports:
 - FANS1/A ADS and CPDLC applications
 - Airline telephony services and applications

SITA Satellite Enhanced Ground to Air Voice Service



Satellite AIRCOM

- **Aeronautical Mobile Satellite Service (AMSS) standards were developed by the ICAO Aeronautical Mobile Communications Panel (AMCP)**
- **ICAO AMSS SARPs are based on the Inmarsat service:**
 - **Circuit mode**
 - **Packet mode**
 - **Data 2**
 - **Data 3**



Satellite AIRCOM

- ***SITA Satellite AIRCOM Services comply with certification guidelines derived from ICAO SARPs for Aeronautical Mobile Satellite Services (AMSS)***
- ***SITA uses Inmarsat's Satellite systems and services which comply with the Inmarsat System Definition Manual (SDM) for Aeronautical Services.***

Aeronautical Mobile Satellite Service priority scheme

ICAO/RTCA Priority Level	Inmarsat Q Number	Description	Comment
1	15	Distress & Urgency	Not accessible from PSTN. Requires specific switching equipment.
2	12	Flight Safety	
3	10	Regularity and Meteorological	
4	9	Public Correspondence	Accessible from PSTN

- The Inmarsat and ICAO/ RTCA call priority scheme enables call pre-emption.
- This allows a critical call to seize the satellite resource assigned to an existing less important communication and clear it.



Enhanced Ground to Air Voice

- The requirement for a high performance, easy to use, secure Satellite Ground to Air Voice Service to priority Q12, was first generated by ISPACG and then reinforced by airlines at the 1998 SITA AIRCOM User Group.



Enhanced Ground to Air Voice - Background

- EGtA Statement of Needs (V2.0) was determined by consultation with ATS Providers and airlines in April 1999
 - ATS Providers at FIT/05, Melbourne
 - Airservices Australia
 - Airways NZ
 - SEAC French Polynesia
 - Airports Fiji Ltd
 - airlines
 - Air New Zealand at FIT/05
 - Swissair, SAS & American Airlines at SITA AUG Focus Group for EGtA in Geneva



Enhanced Ground to Air Voice - Background

- Inmarsat Q12 priority equates to ICAO/ RTCA priority level 2 and is for the purposes of flight safety
- Access to priorities higher than Q9 is not possible using only the Packet Switched Telecommunications Network (PSTN)
- Priority Q10 and Q12 require the use of SITA's Global Voice Network (GVN) which is accessible at the customer's premises via the PSTN
- EGtA Service is for priority Q9 and above



Enhanced Ground to Air Voice - Background

- The EGtA Service will allow:
 - registered airline ground user to establish a call for AAC (Aeronautical Administrative Communications) purposes (Q9)
 - registered airline ground user to establish a call for AOC (Aeronautical Operational Control) purposes (Q10)
 - registered ATS Provider ground user to establish call for ATS purposes (Q12)
- There will be one different telephone number associated with each priority level.



Enhanced Ground to Air Voice - Background

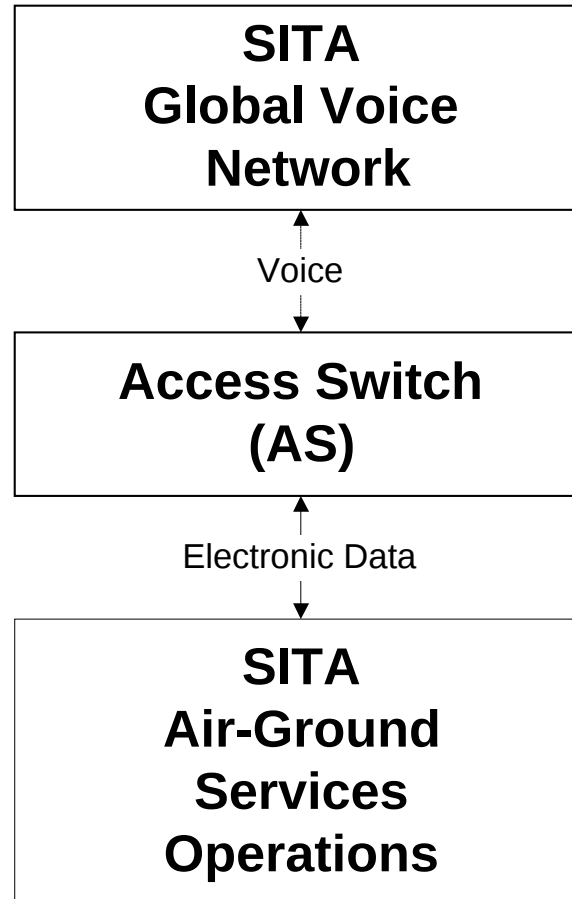
- To aircraft equipped with an Aircraft Earth Station (AES)
 - with high or intermediate gain antenna and makes use of either full or reduced rate voice channels
 - commissioned by Inmarsat for GtA communications
 - which is logged on to one of Inmarsat's 4 Ocean Regions reachable through a SITA GES
 - AES ORT (Owner Requirement Table) is configured to receive incoming calls at the requested priority
 - ground caller is a registered customer of the Service and is authorised to access the aircraft at the requested level



Enhanced Ground to Air Voice - Service Description

- **The Global Voice Network (GVN)**
 - routes ground user-originated calls world-wide to the newly developed Ground to Air Access Switch
 - routes calls from the AS to the 2 Satellite AIRCOM Ground Earth Stations (GES) i.e. the AS places 2 calls, one to each GES, in order to route the call to the acft.
- **SITA has two Satellite AIRCOM Ground Earth Stations (GES)**
 - Aussaguel, France (AORE, AORW)
 - Perth, Australia (POR, IOR)
- **The GES act as gateways between the Satellite and ground Voice networks**

Enhanced Ground to Air Voice - Service Description



System Performance

SITA EGtA complies with following service levels:

- **Availability:**
 - 24 hours a day year round
 - Monthly availability of 99.9%
- **Quality:**
 - Shall not degrade or distort voice quality
- **Accessibility (Q12):**
 - Higher than 98%
- **Mean Establishment Delay:**
 - Less than 60 seconds from completion of aircraft dialling sequence to first ring



Security

1. AAC PINs allocated to Airlines shall not allow calls at a priority other than Q9.
2. Airlines wishing to prevent incoming calls at a priority similar to PSTN calls shall ensure their onboard avionics configuration does not accept Q9 incoming calls.
3. Access to GtA calls at Q12/ ATS priority shall be restricted to ATS Providers only. Such access should be via a leased line or rely on Calling Line Identification if access is granted through the PSTN.
4. ATS Providers shall not be technically restricted from calling certain aircraft.



Security

5. If Airlines/ ATS Providers wish that only the ATS Provider for the current FIR be able to call the aircraft, ATS Provider's operational procedures must be agreed between them and Airlines.
6. Access to GtA calls at Q10/AOC priority shall be restricted to Airlines only.
7. Implementation of a Closed User Group is not justified. Airlines should establish ad hoc procedures between the calling and called parties (e.g. verbal password).
8. Access Switch telephone numbers, PIN information, Service User Guides are treated as sensitive and secure data.



Security

9. Use of automated (e.g. computer-assisted) dialling systems at the customer's premises is highly recommended to protect data confidentiality. Such systems would help limit dialling sequence errors.
10. As the Inmarsat network supports transit calls across the various service providers, it is extremely important that a number of security measures are implemented network-wide I.e. by all service providers. For example, access to Q10 calls should be limited to airlines, and Q12 calls to ATS Providers.

Who will use SITA's EGtA Voice Service?

- Qantas has signed up as a launch airline for the EGtA Voice service, with interest also from Air NZ;
- Discussions for ATS EGtA service launch has been held with Airservices Australia and Airways NZ;
- It is expected most users of SITA's FANS service will take up the EGtA Service
 - Some 1000 aircraft
 - Some 31 airlines
 - Some 23 ATS Providers

Conclusions

- ✓ Airlines use Satellite Voice for airline operations (includes pilot HMI);
 - ✓ Relevant ICAO and RTCA/EUROCAE Standards are in place;
 - ✓ Statement of Needs has been developed (FANS Implementation Team);
 - ✓ Known and understood Satellite voice statistics and performance.
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- Still require ATS Provider processes for use as alternative to HF voice;
 - Still require ATS Provider study of HMI.