

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

SITA AIRCOM Service (VHF & Satellite)

Safety in the Air 2009
Montego Bay, Jamaica, January 28-29, 2009

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ATM Business Development Manager
Latin America and Caribbean



Agenda

- SITA Ground Network
- SITA AIRCOM Service
- VHF & Satellite coverage maps
- SITA AIRCOM Service Support and Monitoring
- AIRCOM Datalink Traffic Demand
- Conclusion

SITA Ground Network

Evolved over the past 50 years to provide network services to over 220 countries

Backbone of SITA business for communications and applications:

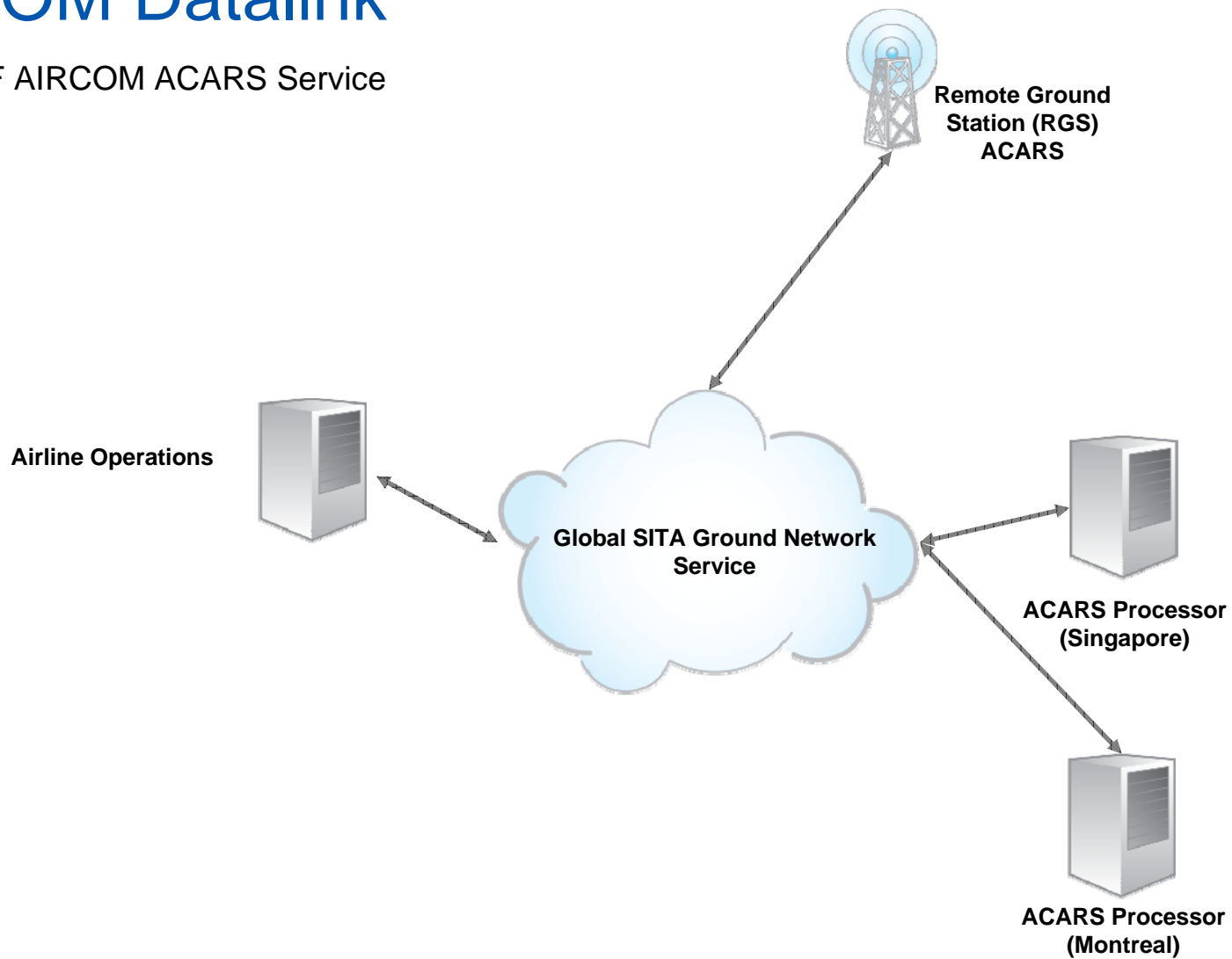
- *airports*
- *airlines*
- *passengers*
- *government*



AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

AIRCOM Datalink

1984: VHF AIRCOM ACARS Service

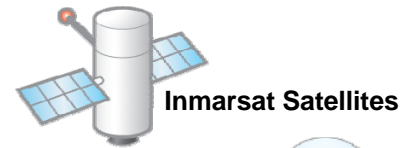


AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

AIRCOM Datalink

1984: VHF AIRCOM ACARS Service

1990s: Satellite AIRCOM
ATC AIRCOM
AOC Internetworking
ATS Internetworking



Remote Ground
Station (RGS)
ACARS



Satellite Ground Earth
Stations (GESs)

Airline Operations



ACARS-Based Air Traffic Services
("pre-FANS" (e.g. D-ATIS, DCL, OCL)
FANS-1/A-Based AFN, ADS, and CPDLC)



Global SITA Ground Network
Service

Internetworking*

ACARS Processor
(Singapore)



ACARS Processor
(Montreal)



•AOC Internetworking with: AVICOM Japan, DECEA Brazil
ATS Internetworking with: ARINC, AEROTHAI, ADCC China, AVICOM Japan, DECEA Brazil

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AIRCOM Datalink

1984: VHF AIRCOM ACARS Service

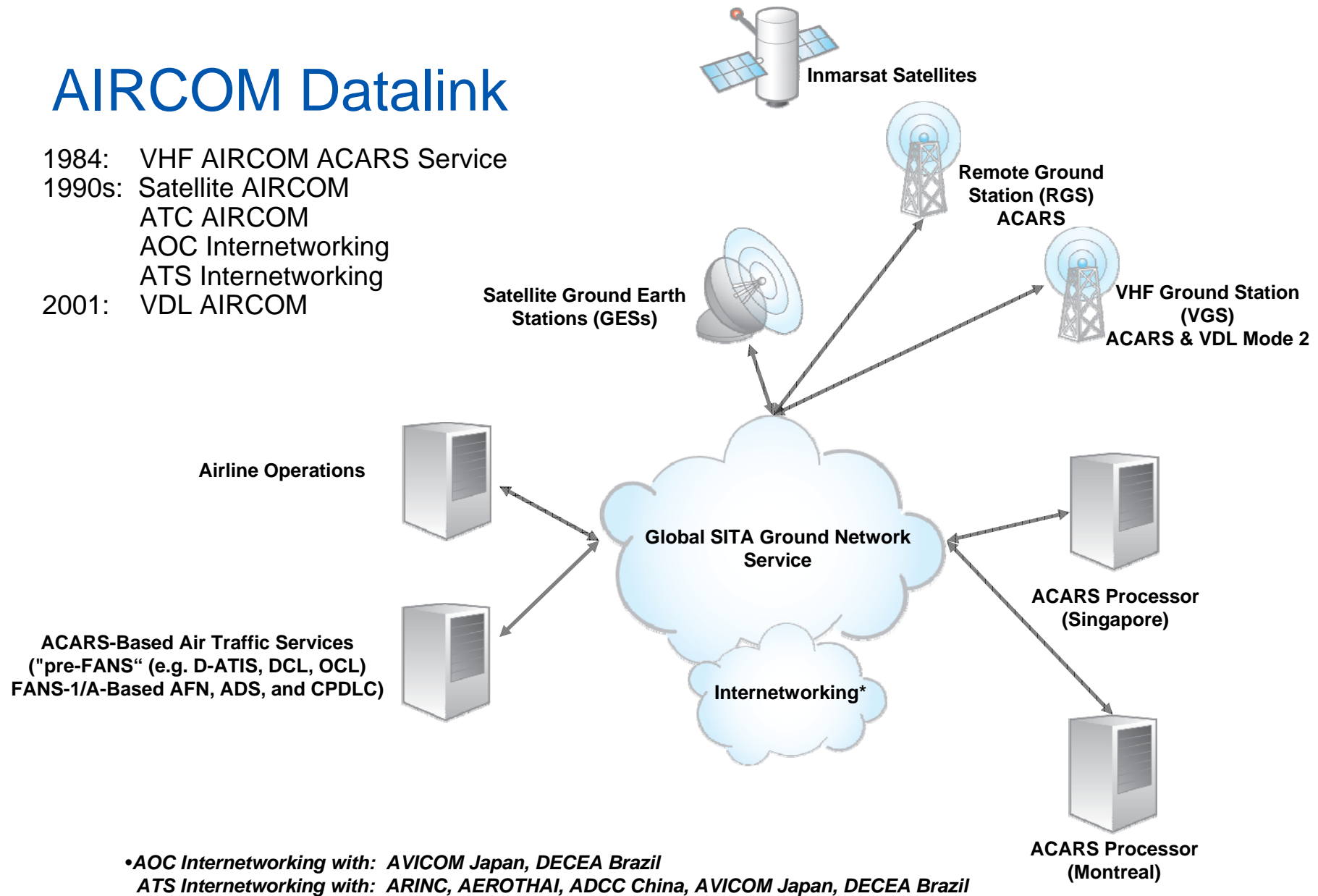
1990s: Satellite AIRCOM

ATC AIRCOM

AOC Internetworking

ATS Internetworking

2001: VDL AIRCOM



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AIRCOM Datalink

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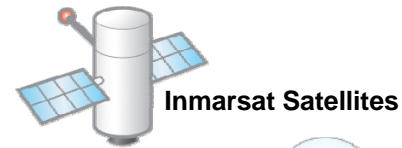
ATC AIRCOM

AOC Internetworking

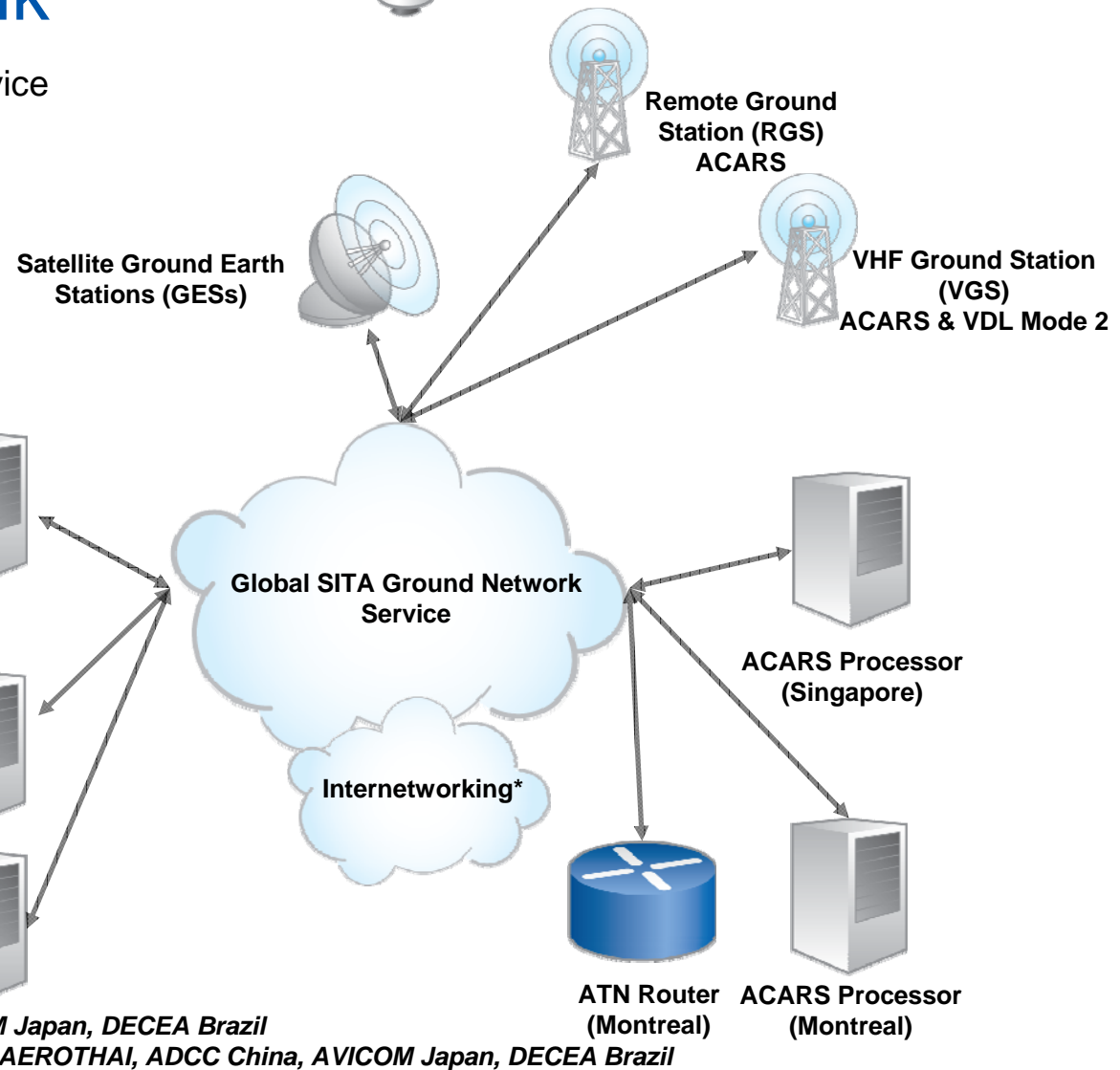
ATS Internetworking

2001: VDL AIRCOM

2005: ATN AIRCOM



Inmarsat Satellites



AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

AIRCOM Datalink



1984: VHF AIRCOM ACARS Service

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ATC AIRCOM

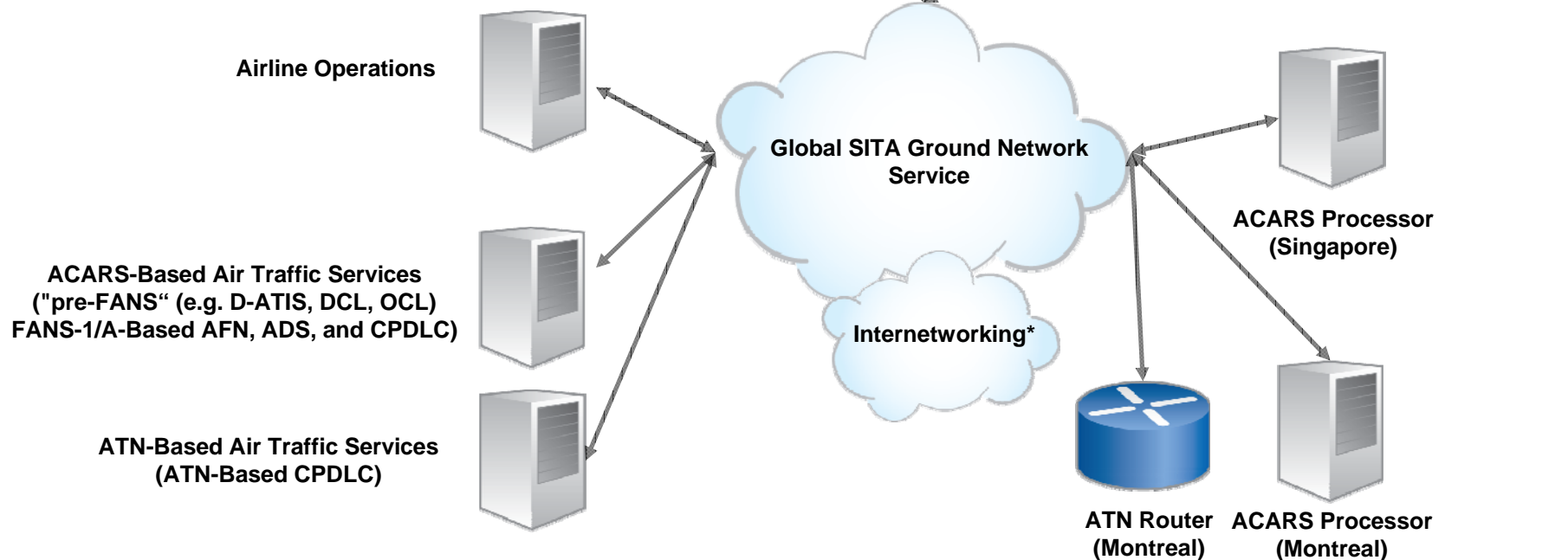
AOC Internetworking

ATS Internetworking

2001: VDL AIRCOM

2005: ATN AIRCOM

2008: Iridium (Initially AOC only. ATS use subject to regulatory approval.)



•AOC Internetworking with: AVICOM Japan, DECEA Brazil, and Japan Civil Aviation Bureau (JCAB) (in 2007).

ATS Internetworking with: ARINC, AEROTHAI, ADCC China, AVICOM Japan, DECEA Brazil, and JCAB (in 2007).

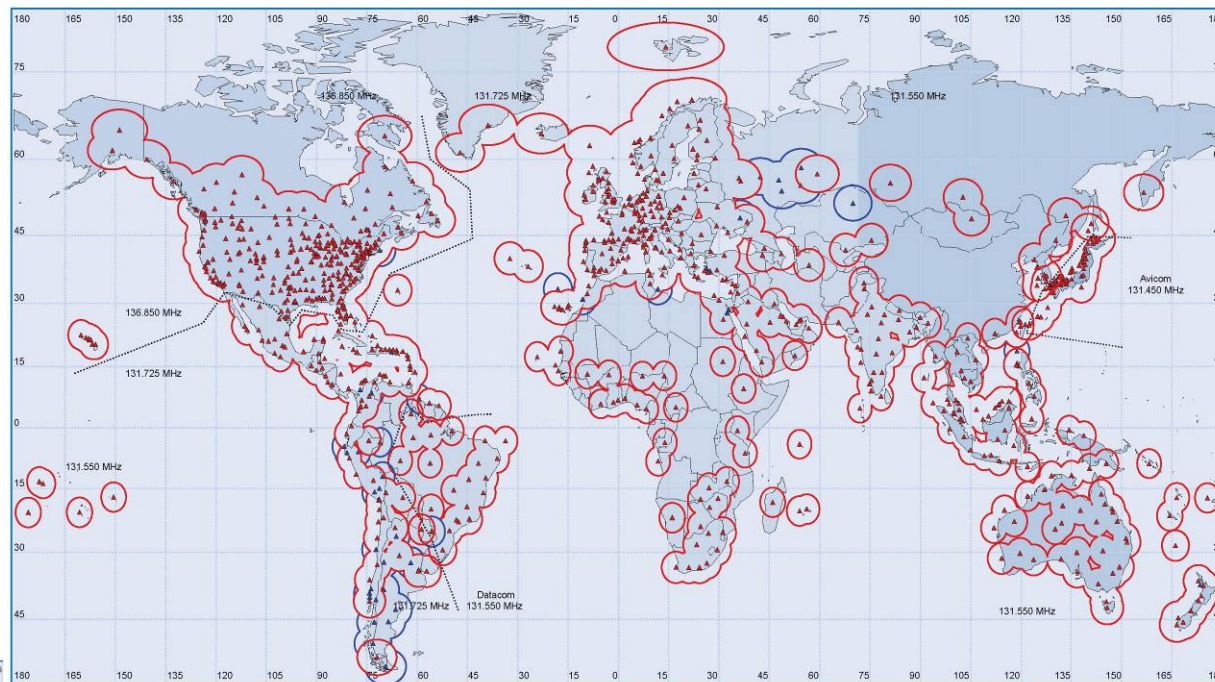
AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

VHF Coverage*

- World's largest a/g VHF datalink network with over 1100 radios worldwide in over 150 countries as of Dec 30, 2008 and growing.
- 180+ airlines using AIRCOM Datalink service serving 8000+ aircraft.

* Maps as of March 2008.

On-line in **red**, planned in **blue**.



VDL Mode 2 Coverage*

- 87 VDL Mode 2 radios on-line as of Dec 30, 2008 and growing.

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

Americas VHF AIRCOM ACARS Coverage^{*,**}



■ VHF AIRCOM Coverage in North America as of

Dec 30, 2008 and growing:

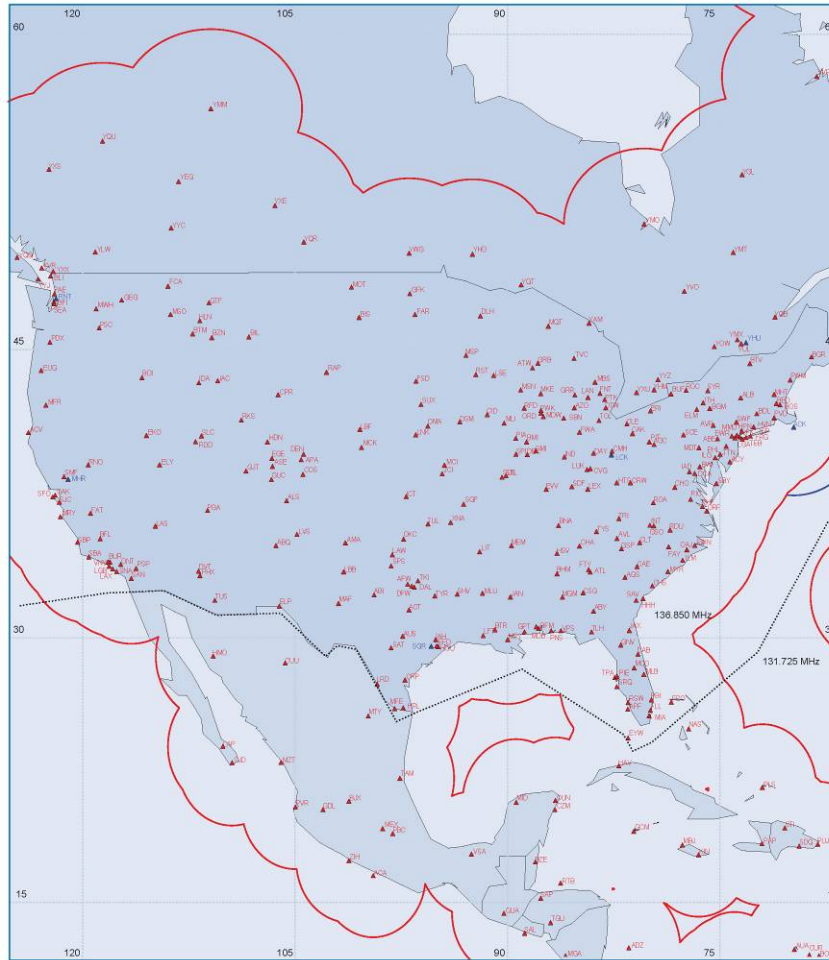
- 375 Radios in US
- 45 Radios in Canada
- 20 Radios in Mexico
- 9 North American airlines using SITA VHF in the US

* Map as of March 2008, Altitude 30,000 feet-On-line RGS** are in red, planned are in blue.

** Over 70 of the stations in the US are actually the SITA next generation VHF Ground Stations, referred to as VGSSs, which are capable of supporting VDL Mode 2 and VHF ACARS in parallel. 11 of the US VGSSs have a radio configured for VDL Mode 2.

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

SITA US VHF Coverage*

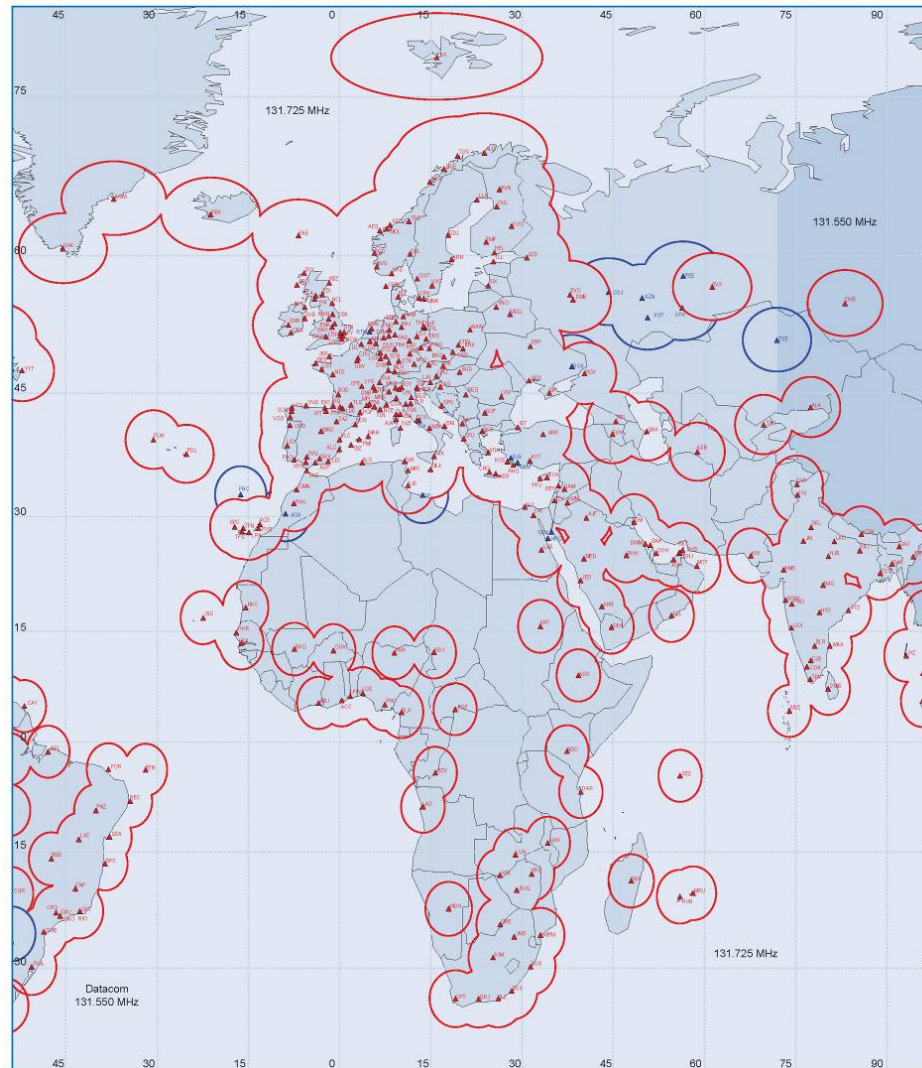


- SITA US VHF network is used for domestic ACARS service by 8 US airlines
- SITA as of Dec 30, 2008 is operating 375 VHF data link radios in US & still expanding
 - 70+ of the SITA VHF ground stations are capable of VDL Mode 2 and 11 have a radio configured to provide VDL Mode 2.
- SITA fills in coverage and redundancy to meet needs of each new customer signed

* Map as of March 2008, Altitude 30,000 feet-On-line RGS** are in red, planned are in blue.

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

SITA Europe, Africa, and Middle East Coverage*

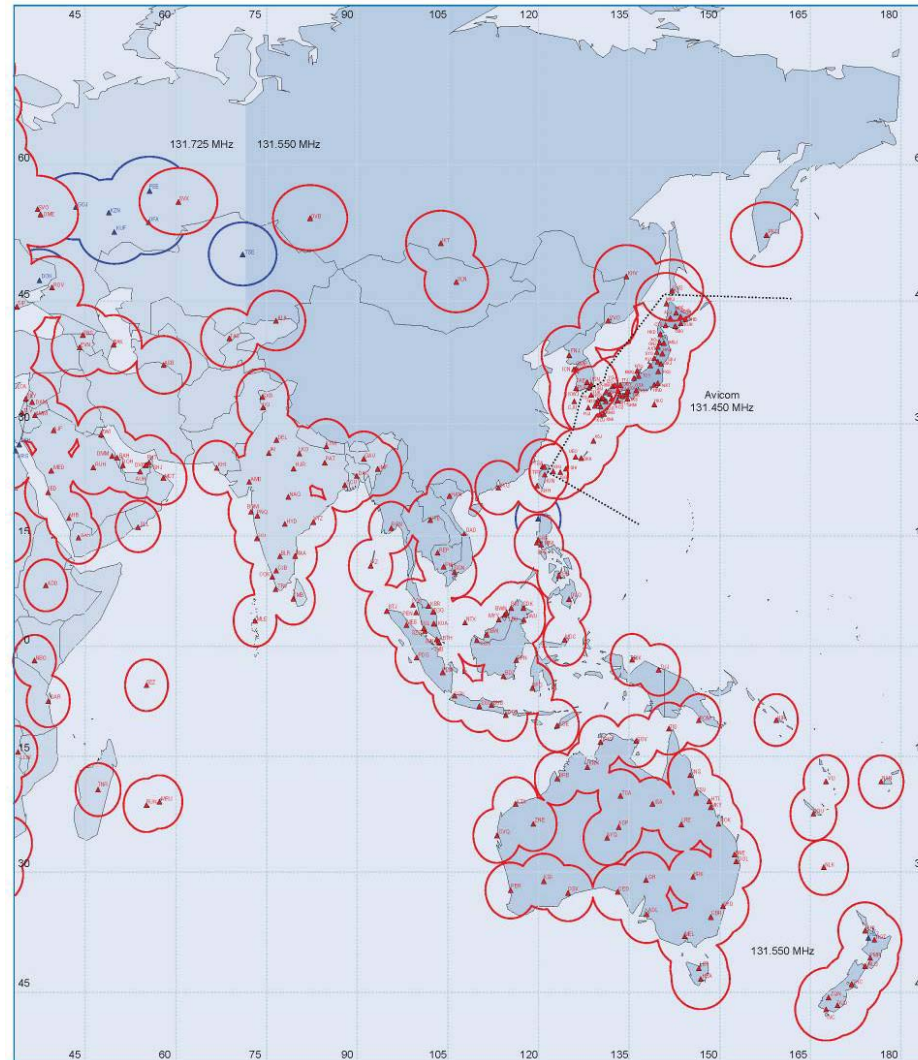


Map as of March 2008, Altitude 30,000 feet-On-line RGS** are in red, planned are in blue.

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

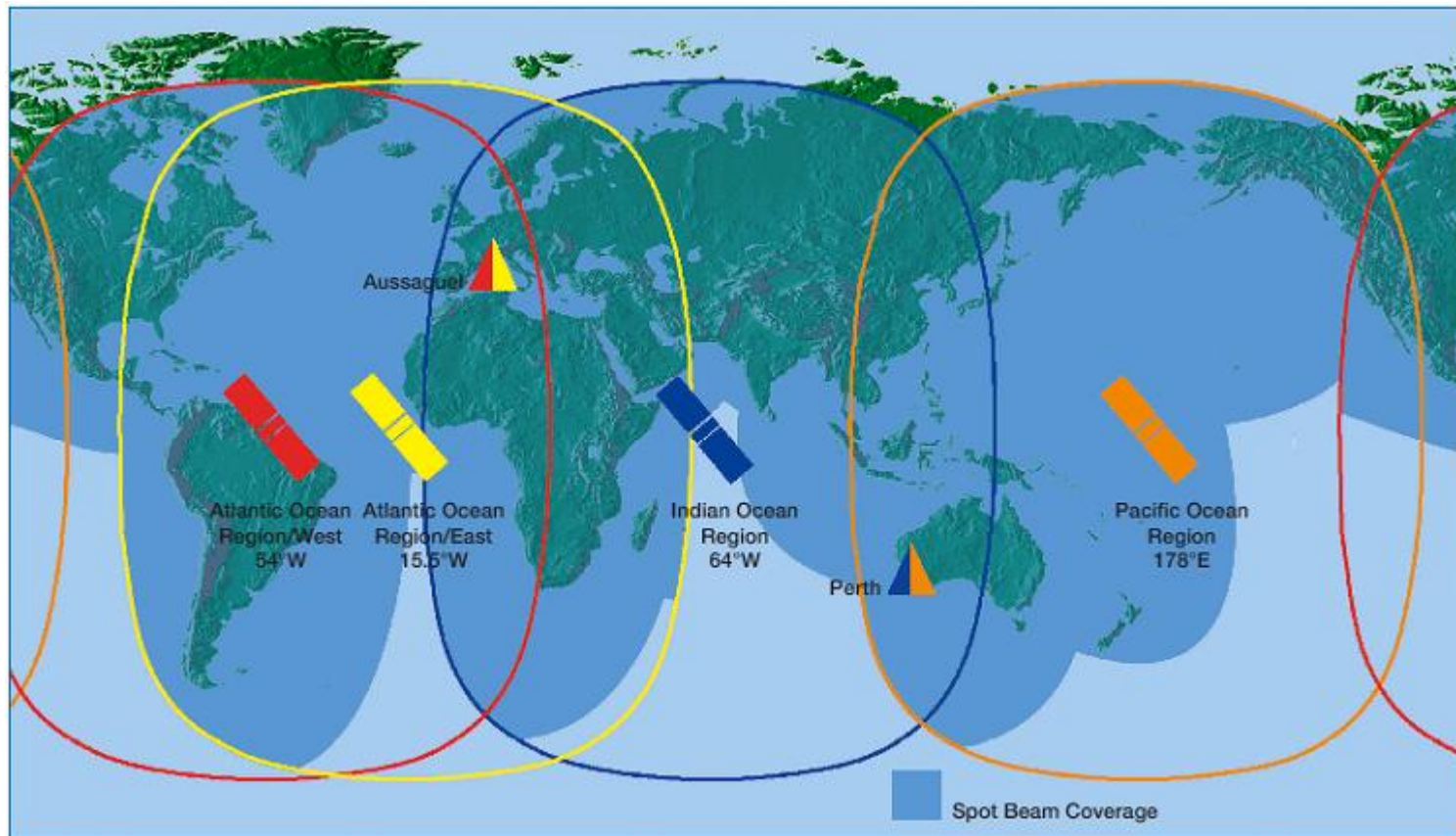
SITA Asia Pacific Coverage*

* Map as of March 2008,
Altitude 30,000 feet-On-
line RGS** are in **red**,
planned are in **blue**.



AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

Worldwide Satellite* AIRCOM Coverage



Inmarsat Ocean

Region Satellite Designator

AOR-W
AOR-E
IOR
POR

SITA Operational GES Designator

AOW2
AOE2
IOR2
POR1

* Map shows Inmarsat-Based Satellite AIRCOM Coverage. SITA also offers Iridium-based Satellite service.

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

SITA AIRCOM Service Support and Monitoring

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

AIRCOM Operations – “Follow the Sun” – First Level Support

- Symmetrical environment in Singapore and Montreal, transparent to internal & external customers
- Homogeneity between the two centers
 - Monitoring interfaces
 - Ticketing tool
 - E-mail database
 - Knowledge databases
 - Phone system
- Handover every 12 hours
- Identical expertise

AIRCOM Specialists-Second Level Support




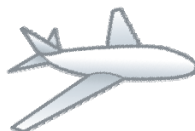
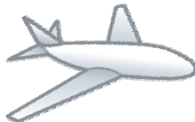


- Customers are assigned an AIRCOM Specialist
 - Airlines and ANSPs (including the FAA)
 - They provide second-level support and act as sounding boards for all kinds of issues
- Provide Monthly Reports showing key parameters
 - Latency
 - Success Rate
 - Availability

AIRCOM Monitoring System (AMOS)

Has the capability to monitor all SITA systems

- Provides web-based access via the secure SITA network
- Is in a fully redundant configuration – hot Standby
- Fully scaleable – additional facilities not a problem
- Generates automatic Alarms and Advisories based on criticality

ACARS Benefits to All Groups: Dispatch, Operations, Maintenance, Engineering, Catering, Customer Service, and Air Traffic Services

Engineering, Customer Service, and Airframe Services							
<div><div>Departure Airport</div><div></div><div></div><div></div><div></div><div></div><div></div><div><div>Destination Airport</div><div></div></div></div>							
From Aircraft	Park/Taxi	Take-Off	Depart/Climb	En Route	Approach	Land	Taxi/Park
	D-ATIS Req OUT Link Test Clock Update Delay Reports	OFF	Engine Data	CPDLC, ADS D-ATIS Req Position Repts Weather Repts Delay Info/ETA Voice Req Engine Info Maint Repts	D-ATIS Req Catering Repts Gate Requests ETA Special Requests Engine Info Maint Repts	ON	IN Fuel Info Crew Information Fault Data from CMC
To Aircraft	D-ATIS Report DCL or PDC Wt and Bal Airport Analysis V-Speeds Flight-Plan, Load FMC		Flight Plan Update Weather Repts	CPDLC, ADS D-ATIS Report ATC OCL Weather Repts Reclearance Gnd Voice Req	D-ATIS Report Gate Assignment Connecting Gates Pax and Crew		

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

AIRCOM datalink traffic : An Increasing Demand

	VHF ACARS	VDL AOA	Satellite ACARS
Number of users			
05Q1	6,377	112	1,795
06Q1	7,400	190	2,080
07Q1	8,343	146	2,215
08Q1	9,030	167	2,560
<i>Variance (07-08)</i>	+8%		+16%

Daily traffic (kb)			
05Q1	527,000	13,000	125,000
06Q1	778,000	26,000	164,000
07Q1	891,000	8,300	165,000
08Q1	1,043,000	14,700	190,000
<i>Variance (07-08)</i>	+17%		+15%

Daily traffic per aircraft (kb)			
05Q1	83	116	70
06Q1	105	137	79
07Q1	107	57	74
08Q1	116	88	74
<i>Variance (07-08)</i>	+8%		0%

AIRCOM Datalink service is used by over 185 airlines and 50 ANSPs

AIR-TO-GROUND COMMUNICATIONS KNOW-HOW

Conclusion

- SITA is a **key partner** for the aeronautical community in the region
- SITA network growth is driven by airlines requirements and now also by ATC
- SITA datalink services is enabling airlines and CAAs to improve their services, comply with ICAO recommendations, reduce costs and CO2 emissions



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Thank you for your attention



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