



**Rising to the IATA
Challenge - A window of
opportunity for optimising
ADS-B cost/benefits for
airspace users**

IATA CEO – Address to CANSO ANSP Co-operation Workshop 1/2/05

- “We need a meaningful reduction in the cost base. You need to get much tougher on costs....”
- “Airservices Australia is implementing ADS-B with the full support of the airline community including QANTAS—its largest customer. It is a model for other providers to follow.....”
- “Now we must deliver concrete results. We can shape some of the future by learning from our achievements and experiences. I challenge you, your regulators and your governments to put together our collective experiences in gaining real efficiencies
- “This should lead us to a future ATM system with
 - Fewer borders
 - Improved safety, efficiency and environmental performance
 - Reduced costs
 - Common technology, standards and procedures”
- “Harmonisation is the first and most critical step. Overall, today's ANSP level of cost efficiency is not acceptable.”

Significant ADS-B Developments

- ICAO 11th Air Navigation Conference – 2003
 - Recommended Mode S Extended Squitter be the enabling technology for ADS-B
- European Mandate for:
 - Mode S Elementary Surveillance – latest 31 March 2005
 - Requires aircraft operators to equip with Mode S transponders with Surveillance Identifier (SI) code capability and the automatic reporting of aircraft identification
 - Provides controller with Position, Altitude, Aircraft ID
 - Mode S Enhanced Surveillance – latest 30 March 2007
 - Provides controller with Heading, Speed, Vertical Intention
- Aircraft manufacturers (Boeing, AIRBUS) making the “ADS-B Out” capability via “Extended Squitter” available with new aircraft and Mode-S transponder retrofits as a part of the upgrade to comply with the European Mandate
- ICAO Asia/Pac APANPIRG decision to implement ADS-B out in the region from January 2006
- Avionics for smaller aircraft/retro-fit under development
- Australian Government considering subsidising smaller aircraft with ADS-B fit
- Airservices Upper Airspace Programme scheduled for operations early 2006

The Problem

- Safety and operational efficiency issues arising from Air Traffic Management surveillance shortcomings in the region:
 - Reliability (ageing radars)
 - Surveillance is simply not available in large parts of the airspace
 - Limited cross border surveillance data sharing
- ANS Providers faced with high costs for upgrades, replacement and maintenance of surveillance infrastructure
- ANS Providers track record demonstrates lengthy delays in securing funding for CNS/ATM systems
- ANS Providers working individually could result in fragmented and duplicated ADS-B deployment.
- Resulting airspace User penalties
 - Efficiency/Capacity – non-optimal routes
 - Safety compromises
 - Inappropriate investment in radar
 - Unnecessary duplication of expensive facilities near FIR boundaries
 - Increased user charges without corresponding benefits

IATA Global Roadmap

“The Track Record for New ATM System Implementation is Not Perfect”

9.3.11 “The number of failures in the delivery of major ATM systems over recent years is high when measured from the perspective of achieved cost, delivery on time, and delivered versus requested functionality. The reasons for such failures are many but among those that directly impact the implementation of the future ATM system are:

- Specification creep
- Lack of understanding of end-user requirements by the supplier
- Lack of integrated operational/functional concepts from the end-users:
 - Sometimes reflected in an un-integrated “shopping spree” attitude on the part of the customer
 - Sometimes manifesting itself as a major mid-term change of direction or redefinition
- Underestimation of software development required
- Lack of clear transition planning”

The Airservices/SITA Response to the IATA Challenge

- **Promotion of a regional ADS-B service model whereby ANSPs contract with “ASA/SITA” for:**
 - ADS-B data feed covering their FIR & parts of adjacent FIRs
 - Consultancy, training on ATM system upgrade, procedure development etc
- **Common customers/shareholders**
- **Initiative endorsed at ASA and SITA CEO level**
- **Unique complementary strengths**
 - Airservices Upper Airspace ADS-B Programme
 - SITA AIRCOM Data Link Service Provision
- **Jointly believe that ADS-B technology represents a unique opportunity for a paradigm shift in CNS service from national to regional provision**

The complementary strengths.....

■ Airservices :

- ADS-B evaluation (Bundaberg trial)
- Operational implementation underway
- Lower airspace programme
- Procedure Development
- Controller Training
- Safety Case development
- Certification experience
- ATM Upgrades –systems integration
- ADS-B avionics R&D

■ SITA

- Neutrality
- Experience in delivery, monitoring and delivery of global/regional services
- Regional data communications capability
- Existing VHF data link sites throughout the region
- Existing relationships with all potential customers:
 - ANSPs
 - Airlines

Regional Service Objectives

- **To facilitate the early, uniform and optimal deployment of ADS-B in the Asia/Pac region to:**
 - **Improve safety**
 - **Avoid fragmented and sub-optimal ground infrastructure deployment**
 - **Avoid cost of radar installations and upgrades**
 - **Reduce en-route charges**
 - **Improve operational efficiency and capacity**
 - **Reduce separation minima**
 - **Encourage cross border data sharing**

Benefits of Regional ADS-B Service ?

- **Uniform, co-ordinated, accelerated and timely deployment**
 - Cross FIR border data sharing
 - “Immediate” operational and safety benefits
- **Minimises ANSP capital expenditure**
 - Therefore minimises increases in user charges
- **Minimises risk of ANSPs being sold “boxes” by industry that deliver no operational benefits**
- **Catalyst for CNS infrastructure rationalisation in the region**
- **Serve as a model for other parts of the world**

SITA ADS-B Customer Survey – Summary of Feedback

- **Responses received from:**
 - GA, SK, BA, NZ, SQ, CX, QF
- **Avionics upgrade to support ADS-B out ?**
 - majority of long haul aircraft will be equipped by 2008/9
- **ADS-B Service Coverage ?**
 - Wherever radar coverage is lacking, wherever ADS-B can limit the installation of new radars, Western Indonesia, South China Sea, Christmas Island.....
- **CDTI Support ?**
 - No plans
- **ADS-B Service to airlines ?**
 - Customers need to evaluate potential benefits for flight operations before deciding whether it is worth paying for
 - No existing requirements to track exact location of aircraft
- **Should SITA get involved in ADS-B Service Provision ?**
 - Yes, overwhelming support
- **SITA continues to seek additional feedback from airlines**

IATA Global Roadmap

Radar Evolution

“IATA supports the progressive replacement of secondary surveillance radar with ADS-B. Primary radar is only supported for provision of terminal area services, and then subject to rigorous justification. IATA recognises that primary radar is a useful device for national security reasons but such radar systems are not generally required for civil aviation services, and if required, should be paid for out of national security budgets and not charged to civil airspace users.”

Radar Replacement with ADS-B - IATA Roadmap

Automatic Dependent Surveillance (ADS)

“ADS is a process that allows relevant aircraft information, including accurate position, height, heading, speed and intent data to be transmitted to the ground, either on a contracted basis (ADS), or on a predetermined free transmission or broadcast basis (ADS-B).

IATA supports the option of replacing existing en-route surveillance systems with ADS and ADS-B, or where there is no radar, installing ADS and ADS-B surveillance. ADS, in conjunction with new ATM applications, can provide a cost effective surveillance solution.”

IATA ROADMAP:minimise transition time to new infrastructure

“PROPER COST RECOVERY MECHANISMS ARE ESSENTIAL TO STATES AND ORGANISATIONS SECURING FINANCING FOR ATM IMPLEMENTATION.”

“Future ATM, and its associated infrastructure, offers great potential for increasing the efficiency of airline operations and for safety enhancement on a global scale, while in the longer term reducing costs overall to the benefit of the stakeholders. However, the financial benefits will only flow if the transition process is kept as short as possible and equipment duplication or redundancy is minimised.”

Global Road Map – Key Message

“In many areas of the world, the partial or complete lack of adequate ground based surveillance is a major safety and capacity issue”

IATA Roadmap – Recognising Regional CNS Providers

8.4.1.3 “ . . . Also to be considered are the institutional issues of ownership and responsibility for such systems. Such issues could be simplified if the responsibility for them was handed to Regional CNS Providers.”

IATA Roadmap – Filling the Black Holes...

9.3.4 “Of course individual service providers will be driven by their own business models and/or State requirements. This may mean that if a given provider sees no economic benefit in implementing certain concepts then the industry as a whole must find ways to achieve the desired results without leaving ‘black holes’.

This may mean that it is necessary to have some form of ‘regional business model’ that is subscribed to by a number of providers.”

How?

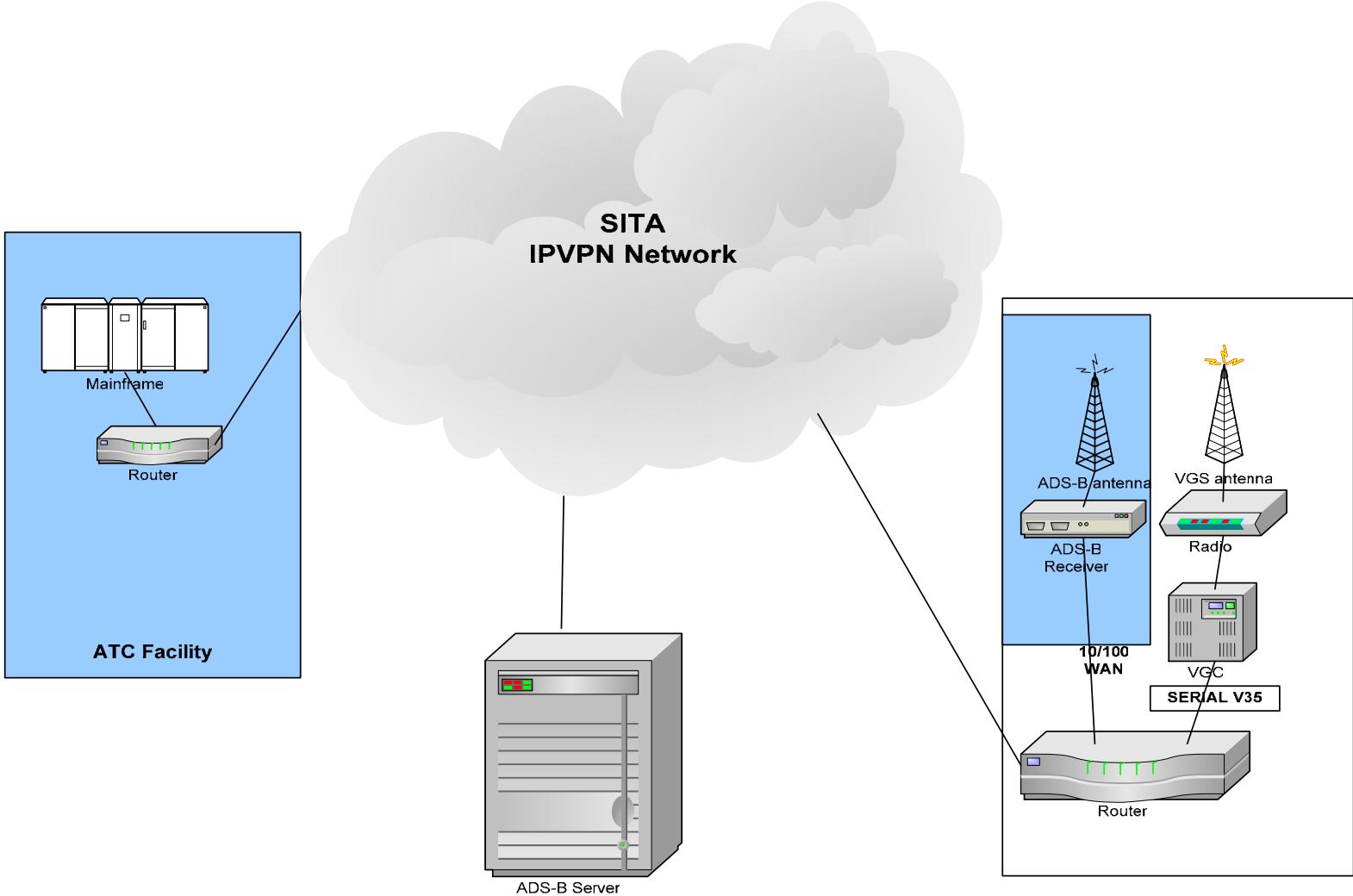
We will:

- **tailor solutions to customer needs**
- **buy, install and maintain ADS-B ground stations**
- **install on existing SITA sites or on ANSP sites**
- **distribute ADS-B data to ATC Centres via the SITA network**
- **assist with integration of ADS-B data into your ATC system.**

Possible Demonstration Sites

- **Denpasar/Bali**
 - SITA VHF site
 - Existing connection to SITA network
- **Noumea**
 - SITA VHF site
 - Existing connection to SITA network
 - French territory in Nadi FIR
- **Natuna Island**
 - Indonesian territory in Singapore Oceanic FIR
- **Christmas Island**
 - Australian territory in Jakarta FIR

Demo Architecture



Current activities

- **Working with IATA ASPAC office**
 - “Difficult & sensitive” locations for sub-regional solutions
 - Minimise ANSP capital costs and charges
- **Talking to ANSPs**
- **Preparing demonstrations**
- **Preparing quotations for service for a number of potential customers**

What Next?

- **We need to work together with you to ensure that:**
 - ***ANSPs*** provide better aircraft surveillance and ATM services with lower capital investment;
 - ***Airlines*** can operate more safely with improved operational efficiency; and
 - ***Our economies*** benefit from vastly improved safe and efficient national and regional aviation transport systems

Summary

- **The regional ADS-B service provision model is a practical example of how the industry can meet today's challenge**
- "This should lead us to a future ATM system with
 - ✓ Fewer borders
 - ✓ Improved safety, efficiency and environmental performance
 - ✓ Reduced costs
 - ✓ Common technology, standards and procedures
- **This service model will accelerate the regional deployment of infrastructure to enhance**
 - Safety
 - Efficiency
- **Window of opportunity exists at this point in time**
 - This industry cannot afford to miss it !

QUESTIONS??

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