



canso

civil air navigation services organisation

Transforming Global ATM Performance

**ADS-B
ASIA –PACIFICO**

Background I

- In 2002, ICAO designated ADS-B as a “Key Priority” for implementation within the Asia/Pacific Region.
- IATA’s policy recognizes ADS-B as “the preferred surveillance technology to replace radar for the air transport industry”. Airlines can expect a return on their equipment investment in terms of safety, efficiency and the increase of airspace capacity.

Background II

- Following the establishment of the CANSO Asia Pacific Office in 2008, CANSO and IATA agreed to establish a working relationship to promote, facilitate and endorse the implementation of ADS-B and the sharing of ADS-B data between ANSPs within the Asia/Pacific region.
- A Memorandum of Understanding for a joint cooperative effort by CANSO and IATA was signed in June 2008.

Focus on High Density Routes

- Initial phase involving two trunk routes over the South China Sea. ADS-B data and VHF communications sharing among the ANSP of Indonesia, Singapore and Vietnam.
- Expansion to other trunk routes over the South China Sea – Philippines & Brunei?
- Potential for ADS-B in Bay of Bengal Area – Myanmar, India etc.?

Objective

- Determine the benefits and costs of ADS-B implementation for the project.
- Provide an example of good governance in developing a business case for the project.
- Promote regional ADS-B collaboration among ANSPs and users.

Cost Benefit Study I

- July 2008 – CANSO joined ICAO ADS-B SEA WG meeting in Kuala Lumpur. Recommended adoption of sharing of DCPC and ADS-B data as regional policy. Subsequently approved by APANPIRG. WG requested CANSO and IATA to develop cost benefit study for the South China Sea project.
- February 2009 - CANSO presented methodology for Cost Benefit Study and Concept of Operations at the ICAO WG meeting in Melbourne.
- May 2009 – CANSO published and presented results of Cost Benefit Study at ICAO Task Force Meeting in Hanoi.

Cost Benefit Study II

- January 2010 - In coordination with CANSO, CAAS (CANSO full member) presented a project milestone paper agreed with Indonesia at ICAO WG meeting in Jakarta.
- August 2010 - Presented outcome of CANSO ADS-B seminar for CAAP at the ICAO SITF meeting in Jakarta. Called for expansion of ADS-B coverage.
- April 2011 – Presented outcome of CANSO ADS-B seminar for DCA Myanmar at ICAO WG meeting in Singapore. Noted potential for ADS-B project over the Bay of Bengal. CAAS tabled latest project milestones agreed with Indonesia and Vietnam.
- The Cost Benefit Study was done in collaboration with IATA and CANSO full members, it was prepared by CANSO and supported by the FAA and CAAS

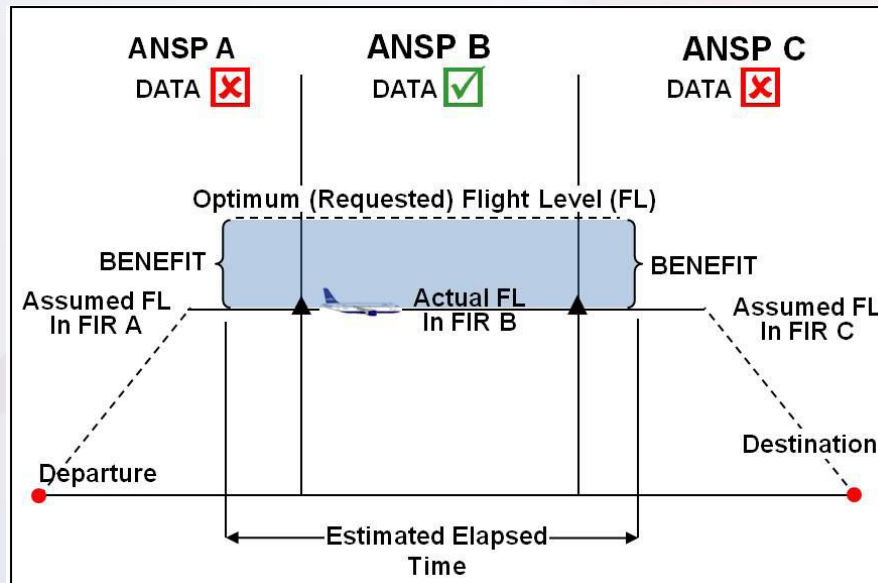
Cost Benefit Study III

➤ Benefits

Optimum Flight Altitudes

Examine fuel savings for flights that currently do not receive optimum altitude

Examine flights that are currently delayed before receiving optimum altitude



Cost Benefit Study IV

➤ Economic Analysis

Business Case

Net Present Value (NPV) [> 0]

Benefit to Cost Ratio (B/C ratio) [> 1]

Internal Rate of Return (IRR) [$> \text{Cost of Capital}$]

Payback Year

METHODOLOGY OF COST BENEFIT STUDY I

- The study commenced with data collection and analysis in the second half of 2008 with the assistance of the FAA and CAAS as CANSO members.
- CAAS provided historical traffic data while FAA did the technical analysis.
- In February 2009, the status, assumptions and methodology of this work was presented and discussed at the 4th ADS-B SEA WG in Melbourne.
- The study is based on the concept of operations established.

METHODOLOGY OF COST BENEFIT STUDY II

- The study made the following assumptions:
 - There is ADS-B data sharing across FIRs and the provision of VHF communications to adjacent States as required.
 - Radar-like separation will be implemented in exclusive airspace for appropriately equipped aircraft
 - 20year life-cycle cost FY 2013-32
 - The analysis is based on extrapolation of traffic data and estimated infrastructure costs.

METHODOLOGY OF COST BENEFIT STUDY III

- In terms of aircraft equipage, information from the first SEA ADS-B WG meeting showed that about 60% of aircraft operating in the area were transmitting ADS-B data.
- A review of aircraft types operating on the air routes within the area during Jul- Oct 2008 reinforced this, where 61.9% were assessed as ADS-B capable. 25% of the remaining was assessed as retrofit ready.
- IATA expects that with on-going fleet renewal and an effective mandate; more than 85% of aircraft would be ADS-B (Out) capable.

METHODOLOGY OF COST BENEFIT STUDY IV

- The benefits that were monetized comprised the following:
 - Savings in aircraft fuel burn arising from availability of optimum flight levels and reduction in airborne and ground delays
 - Reduction in carbon emissions
 - Reduction in flight delays leading to savings in Aircraft Direct Operating Cost (ADOC) and Passenger Value of Time (PVT)

Results of study

- Based on data provided by CAAS for the period Jan 08 to March 08 for flights operating on the airways that would benefit from the ADS-B deployment, the potential savings from improved airborne efficiency and reduction in ground delays
- Assuming ADS-B is 100% effective in overcoming the airborne inefficiencies and ground delays, an important annual savings in fuel and reduction of CO2 emissions will be achieved

Conclusions

- The Cost Benefit Study for the initial phase of ADS-B implementation over the South China Sea showed clearly that there is a strong business case for the project.
- We must understand that the above was specific for the Asia-Pacific project, although, is a guide to perform a study for the LAC region.
- CANSO in collaboration with its members and IATA were able to move ahead with the project.



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