SYDNEY AIRPORT COMMUNITY FORUM

Thirty-Third Meeting
11th Floor, 70 Phillip Street, Sydney
Friday, 20 September 2002
9.00am to 12 noon

Draft

SUMMARY RECORD

Agenda Item 1 - Opening Remarks and Adoption of Provisional Agenda

- The Chair opened the meeting at 9.00 am and welcomed members to the meeting and noted the following apologies from

    – Cr Vince Badalati, Mayor of Hurstville
    – The Hon Bruce Baird MP, Federal Member for Cook
    – Cr Phil Blight, Mayor of Sutherland shire
    – Cr Mark Bonanno, Mayor of Ashfield
    – The Hon Kerry Chikarovski MLA, State Member for Lane Cove
    – The Hon Joe Hockey MP, Federal Member
    – Mr Trevor Jensen, Qantas Airways
    – Mr Robert McClelland MP, Federal Member
    – Ms Sandra Nori, State Member for Port Jackson
    – Cr Anthony Roberts, Mayor of Lane Cove
    – Ms Fiona Sinclair King, Representative for the Wentworth Community.

The Chair welcomed proxies who were representing members unable to attend the meeting. Refer Attachment A *Attendance List.*

The Chair invited Airservices Australia to sit at the table for meetings.

Members adopted the provisional agenda without any changes to the order of the agenda items. There were no additional items for other Business.

Mr Clarke congratulated the Department for the presentation of the Agenda Papers.

Agenda Item 2 - Confirmation of the Summary Record of the 32nd Meeting

The Draft Summary Record of the last SACF meeting was confirmed subject to the amendments requested by John Clarke, John Murphy MP and Ken McLean, Airservices.

Actions arising were noted and would be addressed at specific Agenda Items

> ***Agenda Item 2 Action 33/1*** *The Summary Record from the 32nd meeting to be amended to reflect Member's revisions.*

Agenda Item 3 - Matters Arising and/or Outstanding from Previous Meeting

3.1 Correspondence

The Minister's response of 16 September was tabled at the meeting.

Messrs Clarke and Murphy objected to comments concerning three targets out of four that have been achieved under LTOP.

3.2 Sydney Airport

Mr Murphy expressed concern that the LTOP Roadshow video was not provided. The meeting was advised that the video was not easily obtainable. Airservices Australia was asked to try and locate the video and supporting papers.

> ***Agenda Item 3 Action 33/2***. *SACF again requested a copy of the LTOP Road Show Video and supporting papers.*

3.3 Sydney Airport Slot Management Scheme

The members considered the paper provided by the Department [SACF 2002/069]. Mr Clarke expressed concern that the Department had not suggested any improvements to the Slots Management system. The Chair suggested that maybe the issues of managing departures could be looked at again.

3.4 Environmental issues raised as a result of the Precision Runway Monitor Trial

It was noted that the Environment Australia (EA) had not responded to the Secretariat's letter of 19 August 2002. [DOTARS advised that EA were waiting on advice from the Acoustic Consultant.]

> ***Agenda Item 3 Action 33/3*** *The Department to contact Environment Australia for the response to the Secretariat's letter of 19 August 2002 concerning environmental issues associated with the Precision Runway Monitor.*

3.5   Noise Insulation for residences in the Kurnell Community

Mr Hill indicated that this may take some time as the formulation of a response to DOTARS requires some community discussions. He hopes to report back to SACF at the next meeting on this issue.

The meeting concurred that this issue needs to be included as a standing item for future meetings.

> ***Agenda Item 3 Action 33/4***   *The Secretariat to place Noise Insulation for Kurnell as a standing item on future agendas.*

3.6   Airservices issues to be addressed under Agenda Item 4

The Chair indicated that these items will be addressed later during the meeting.

3.7   Curfew Issues

Cr Hoopman indicated that Council had received the Department's response.

Agenda Item 4 - Report from the LTOP Implementation and Monitoring Committee and associated Airservices Issues

A special meeting of the IMC was held on 17 September 2002.

Hand Held Noise Monitoring

Airservices Australia advised that they had contracted an environmental consultant to undertake a Special Noise Monitoring Program using hand held noise monitoring equipment at a number of residential properties. This project was carried out from 10 September 2001 to 10 December 2001 and between 1 April 2002 and 30 April 2002.

The environmental consultant provided Members with an outline of the project highlighting the significant benefits to both Airservices and the Community. Members were advised that the Project had produced some meaningful feedback and was a particularly beneficial project in terms of ascertaining community information about aircraft noise concerns.

A copy of the Reports *Special Noise Monitoring Program* dated 14 December 2001 [SACF 2002/077] and *Special Noise Monitoring Program Continuation* dated 30 April 2002 [SACF 2002/078] were tabled at the meeting. Airservices indicated that they will provide copies to interested stakeholders. SACF Members who wish to have a copy can contact the Secretariat.

Members of SACF had been asked to provide Airservices with locations where they would like noise monitoring conducted. There had been a substantial number of nominated sites for noise monitoring. Mr McClelland MP had provided Airservices with a list of addresses.

> ***Agenda Item 4 Action 33/5***   *The Secretariat to place Noise Monitoring on agenda for next meeting.*

Mr Hill then provided members with feedback on the issues discussed at the last IMC meetings.

Airspace Redesign

IMC has established a task force to assist in the Airspace Redesign and it is expected to report by November 2002. Members were advised that the community members on the IMC will participate in all activities of the Task Force as required.

Mr Murphy was reconsidering rejoining the Task Force but indicated that he may have to nominate his Senior Electorate Officer to represent him at meetings. Members accepted this proposal.

Mr Derek Frere's considerable effort in providing input to the Task Force was duly acknowledged.

The Task Force including the nominated community representatives will dedicate around two months effort to progress 'High and Wide'. The terms of reference have been agreed. Community Representatives on the Taskforce are Maria Patrinos Canterbury Residents Against Aircraft Noise, Senior Electorate Officer representing John Murphy MP, Member for Lowe, and Derek Frere.

Members requested that future meetings include a Report from the Airspace Redesign Taskforce as a standing item for the IMC representative to report on.

> ***Agenda Item 4 Action 33/6***   *The Secretariat to place as a standing item in LTOP IMC Agenda Item the Report from Airspace Redesign Taskforce.*

IMC Minutes

It was raised that the IMC minutes are not issued promptly. It was agreed that the minutes would be issued within a three week turnaround.

> ***Agenda Item 4 Action 33/7***   *Airservices and the Secretariat to ensure that IMC minutes are issued within three weeks.*

Community Representation on IMC

The Members were asked to give some consideration to increasing the community representation on the IMC. The issue was raised that some areas of Sydney are not covered under the community representation but the meeting was advised the representatives address concerns of all Sydney Residents. SACF will give consideration to an increase in community Membership on IMC.

The representation of industry was also raised but SACF's industry member's view was that the industry was not over represented.

SACF Community Representative on the IMC invited community members to attend IMC meetings as observers.

> ***Agenda Item 4 Action 33/8***   *SACF to give consideration to increasing the community representation on the IMC.*

Terminal Control Unit (TCU) Consolidation

Airservices gave a slide presentation on TCU consolidation. Refer to the *Attachment B – TCU Consolidation Program* [SACF 2002/076] for the slide presentation which was tabled at the meeting. Issues raised during discussion were the impact on LTOP procedures and the Traffic Management role in the future.

The final report is expected to be completed by end October 2002 and will be presented to the Airservices Board by end of November.

SACF Members were advised to provide feedback to Airservices by middle of October.

The Taskforce Report will report by end of November 2002. The Report will then be considered by the Airspace Redesign Working Group.

Presentation on Emerging Technologies

Airservices gave a slide presentation on Emerging Technologies which provided a general overview of technology and how it will apply to Sydney Airport. It addressed the types of technology and likely availability of such technology. Refer to *Attachment* C – *Emerging Aviation Technologies* [SACF 2002/075] for the slide presentation which was tabled at the meeting. Airservices advised that Trident may not be feasible due to current technology.

In summary, there are many emerging technologies that are likely to provide substantial benefits and that GPS technology appears to be the primary technology currently considered even though there may some limitations concerning its augmentation. GPS is considered as having potential possibility for spreading aircraft and for noise sharing.

The Chair thanked Airservices' representative for the presentation.

The following was proposed with the Member's agreement that

1. Emerging Technologies be placed on future agendas as a standing item

2. Airservices undertake another slide presentation on GPS [Global Positioning System]

> ***Agenda Item 4 Action 33/9*** *SACF to place Emerging Aviation Technology on the agendas for future meetings.*

> ***Agenda Item 4 Action 33/10*** *Airservices to show a promotional video on GPS technology at the next meeting.*

Mode 6A

Mode 6 [Departures from Runway 07 to the east and Arrivals onto Runway 34 Left and Right] was not an LTOP mode and it was considered too complex for operational reasons. Airservices advised that Mode 6A [arrivals from the south onto Runway 34 left and Departures to the East from Runway 07) was a variation of Mode 6 and was developed by IMC. Mode 6A as well as Mode 8 were designed to be a respite mode for Mode 9 under north-easterly conditions and north westerly conditions respectively.

Airservices indicated that there were only small environmental benefits to the north but increased movements to the east with greater concentration over certain areas. On a safety issue, there would be increased complexity on the ground with many crossings of active runways and its use would be limited. The risk of runway incursion would be high.

Members acknowledged the limited benefits in using the Mode and proposed that the introduction of Mode 6A no longer proceed at the present time. Airservices suggested that Mode 6A be put on

hold until runway incursion monitors are more advanced. Airservices advised that all other modes had been introduced.

Mr Clarke stated that Mode 6A breaches the LTOP principle of non-reciprocity and moved the following motion which was seconded by Sue Hoopman

That Mode 6A be held in abeyance at the present time.

Noise Enquiry Unit Statistics

Airservices provided feedback on the Noise Enquiry Service and circulated a graph of *Average Incoming Call by Day of Week* [SACF 2002/079] (Refer Attachment D) and the Table of *Complaints by Complainants ranked 1 May 2002 to 31 July 2001 and 1 May 2002 and 31 July 2002* [SACF 2002/080] (Refer Attachment E).

Members viewed a freecall number for lodging noise complaints as having worthwhile community benefits. A major issue to overcome with a freecall service is the abuse by some persistent callers whose numerous complaints inflate the statistics for some suburbs. Persistent callers create blockages that prevent many genuine complainants from lodging a complaint. Airservices suggested that the cost of the call may deter some genuine complainants. It was also mentioned that the reduced number of movements since the demise of Ansett was also a contributing factor in the reduction in the statistics.

The Chair asked Airservices to consider its position concerning Member's viewpoints on the noise enquiry service and present its recommendation at the next meeting. The Chair asked the Secretariat to advise John Murphy MP of this discussion and seek his input.

The Chair indicated that the noise complaints will be placed on the agenda for resolution following a recommendation from Airservices.

> ***Agenda Item 4 Action 33/11*** *Airservices was asked to consider its position concerning Member's* viewpoints *on the noise enquiry service and present its recommendation at the next meeting.*

> ***Agenda Item 4 Action 33/12*** *The Secretariat to contact John Murphy MP and seek his input on the Forum's discussion on noise enquiry service.*

> ***Agenda Item 4 Action 33/13*** *The Secretariat to place this issue on the agenda for resolution following a recommendation from Airservices.*

Review of the LTOP

The Chair advised that she met with Minister Anderson on 17 September 2002.

The outcome from the meeting was that the Minister acknowledged this issue was proposed in mid 2001 and that he indicated his in-principle support for SACF to proceed with considering a review of LTOP but that there were obvious mechanics and processes to be resolved. The Minister is prepared to favourably consider an independent consultant. Issues to consider are the determination of budgetary allocation and where the level of independence and expertise is obtained.

The Chair suggested that SACF write to the Minister formally to pursue this issue using as the basis the DOTARS paper on the scoping study prepared in July 2001. The letter will be finalised

in consultation with sub committee members. The Chair indicated that the Minister needs to consult with the Prime Minister and other Parliamentary colleagues.

Members discussed this issue at length indicating that the process was to use the operating experience of LTOP to optimise noise sharing benefits and make LTOP more effective.

The Chair highlighted that the community consultation process was an important component of the whole process.

> ***Agenda Item 4 Action 33/14*** *The Chair to write to the Minister in formal terms to pursue the review of LTOP.*

Agenda Item 5 – Sydney Airport Corporations Ltd Report on Developments

Ms Smith expressed the Airport Management's gratitude through SACF to the community for their understanding and patience during the recent bomb hoax at the International Terminal Building. She indicated that a number of curfew dispensations were given as result of the hoax. Airport Management was pleased with how the process was assessed and handled by relevant authorities.

The Master Planning Process is underway but awaiting traffic forecasts. SACL is aiming for the three month consultation period around the middle of next year.

Agenda Item 6 – Standing Operational Reports

Members noted these reports.

Agenda Item 7 - SACF Correspondence and Issues raised by the Public

The Chair indicated that Environment Australia had not responded to the Secretariat's letter of 19 August 2002 but would be pursued.

The Chair summarised the correspondence received and issues.

Regarding the Noise Enquiry Unit 'Have Your Say' Community Submissions it was noted that the detail varied in the comments received. It was raised whether there is any analysis undertaken of these comments to determine if there is any pattern emerging. The Forum requested that these submissions be subjected to examination to determine any trends. Airservices advised that they would provide further information regarding trends at the next meeting.

> ***Agenda Item 7 Action 33/15*** *Airservices to examine the Community Submissions to determine if there are any trends.*

Agenda Item 8 - Other Business

There was no other business introduced to the meeting.

Agenda Item 9 - Date of Next Meeting

- Members adopted the date of the next meeting as 29 November 2002.

The meeting was closed at 11.07 am.

Action Items from the SACF Meeting on 20 September 2002

Agenda Item 2 Action 33/1   The Summary Record from the 32nd meeting be amended to reflect Member's revisions.

Agenda Item 3 Action 33/2   SACF again requested a copy of the LTOP Road Show video and supporting papers.

Agenda Item 3 Action 33/3   The Department to contact Environment Australia for the response to the Secretariat's letter of 19 August 2002 concerning environmental issues under Precision Runway Monitor.

Agenda Item 3 Action 33/4 The Secretariat to place Noise Insulation for Kurnell as a standing item on future agendas.

Agenda Item 4 Action 33/5 The Secretariat to place Noise Monitoring on agenda for next meeting.

Agenda Item 4 Action 33/6   The Secretariat to place as a standing item in LTOP IMC Agenda Item the Report from Airspace Redesign Taskforce.

Agenda Item 4 Action 33/7   Airservices and the Secretariat to ensure that IMC minutes are issued within three weeks.

Agenda Item 4 Action 33/8   SACF to give consideration to increasing the community representation on the IMC.

Agenda Item 4 Action 33/9   SACF to place Emerging Aviation Technology on the agendas for future meetings.

Agenda Item 4 Action 33/10   Airservices to show a promotional video on GPS technology at the next meeting.

Agenda Item 4 Action 33/11 Agenda Item 4 Action 33/11   Airservices was asked to consider its position concerning Member's viewpoints on the noise enquiry service and present its recommendation at the next meeting.

Agenda Item 4 Action 33/12   The Secretariat to contact Mr Murphy and seek his input on the Forum's discussion on noise enquiry service.

Agenda Item 4 Action 33/13   The Secretariat to place this issue on the agenda for resolution following a recommendation from Airservices.

Agenda Item 4 Action 33/14   The Chair to write to the Minister in formal terms to pursue this review of LTOP.

Agenda Item 7 Action 33/15   Airservices to examine the Community Submissions to determine if there are any trends.

ATTACHMENT A: Attendance

Members

M	Payne	Senator for New South Wales, Chair
E	Armstrong	Mayor of Lane Cove
C	Barnes	Proxy representing Kerry Chikarovski MLA, State Member for Lane Cove
J	Clarke	Representing the Upper North Shore Community
C	Connolly	Representing Robert McClelland MP, Federal Member for Barton
M	Coure	Representing Joe Hockey MP, Federal Member for North Sydney
K	Hill	Representing the Kurnell Community
S	Holroyd	Representing Rockdale Council
S	Hoopmann	Representing the Bennelong Community
M	Lynch	Mayor of Hurstville
K	McDonell	Representing Mayor of Sutherland Shire Council
M	Megna	Representing the Inner West Community
T	Mumford	Representing Bruce Baird MP, Federal Member for Cook
J	Murphy MP	Member for Lowe (part of the meeting)
D	Niven	Proxy representing Mayor of Ashfield
M	Patrinos	Canterbury Residents Against Aircraft Noise
D	Robinson	Proxy representing Qantas Airways
L	Smith	Sydney Airport Corporations Ltd

Advisers/Secretariat

L Addison	Dept of Transport and Regional Services
D Savage	Dept of Transport and Regional Services
C Hutton	Dept of Transport and Regional Services
G Kelly	Dept of Transport and Regional Services
A Joseph	Senator Payne's Office
K McLean	Airservices Australia
C Dahl	Airservices Australia
P Carroll	Airservices Australia
K Owusu	Airservices Australia
B Moerth	Airservices Australia
D Keene	Airservices Australia
K Allcot	SACL

Observers

J Jones	For Clover Moore MP
P Lingard	North West Residents Airport Group

Airservices

Terminal Control Unit

Presentation

Airservices Australia

Terminal Control Unit Consolidation Program

Attachment B

AIRSERVICES AUSTRALIA

Airspace Management Transition

1991

6 FIRS
5 Centres
3 Terminal Control Units
5 FSCs
31 Towers

1998

2 FIRS
2 Flight Data Regions
2 Centres
4 Terminal Control Units
26 Towers

TODAY

•The Australian Advanced Air Traffic System commissioned
•Business Transformation completed resulting in $100m in on-going savings to industry
•Location Specific Pricing introduced

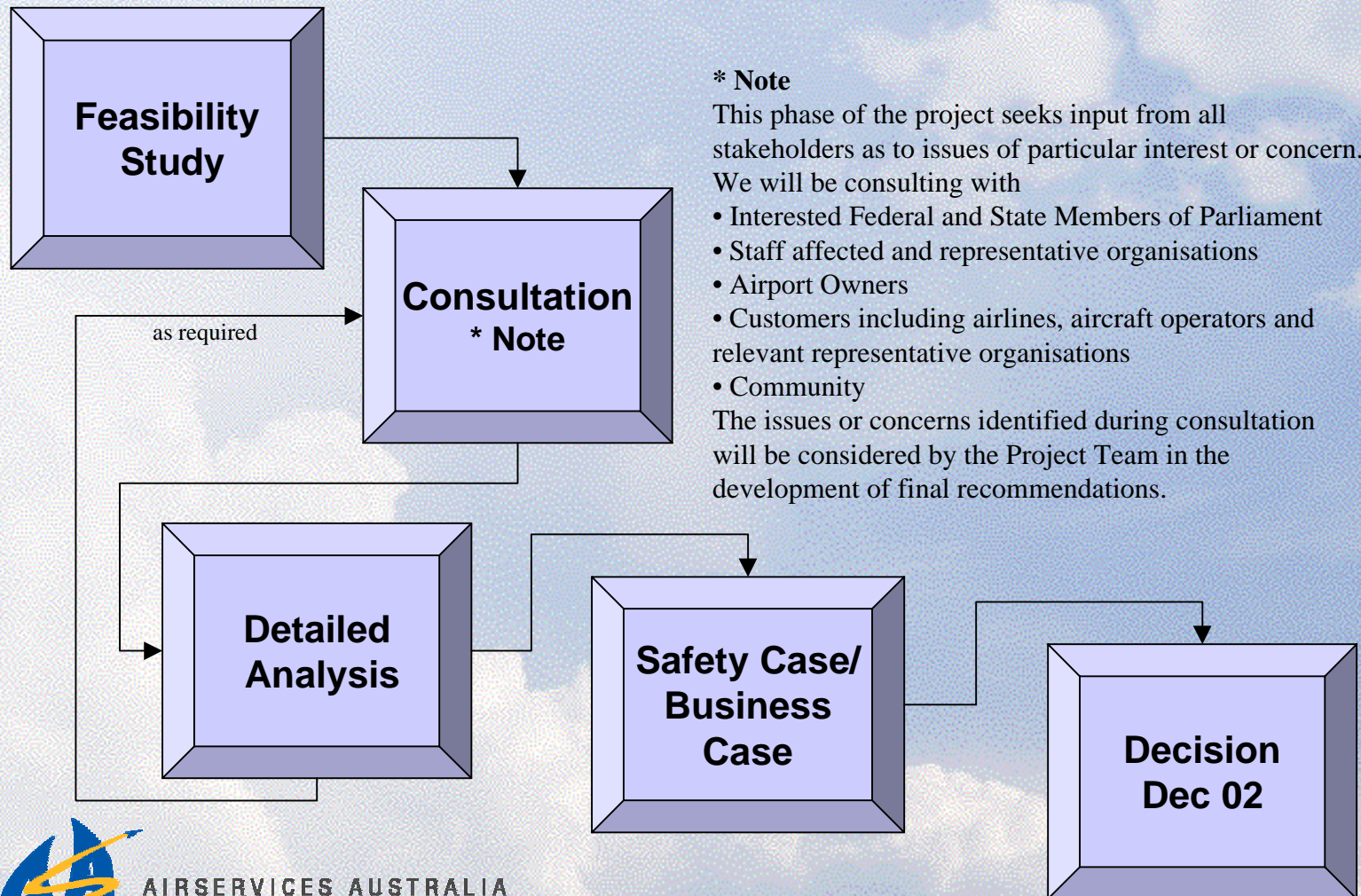AIRSERVICES AUSTRALIA

Background

- **Overview of Tower, Terminal and Enroute operational environments**
  - Tower - 5-10 nautical miles radius around airport. Responsible for Traffic on runways and immediate airport airspace.
  - Terminal Control Units - Airspace management up to 45 nautical miles around major airports
  - Enroute. The airspace between major airports.

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Following The Process

Feasibility Study

Consultation * Note

as required

Detailed Analysis

Safety Case/ Business Case

Decision Dec 02

* Note
This phase of the project seeks input from all stakeholders as to issues of particular interest or concern. We will be consulting with
• Interested Federal and State Members of Parliament
• Staff affected and representative organisations
• Airport Owners
• Customers including airlines, aircraft operators and relevant representative organisations
• Community
The issues or concerns identified during consultation will be considered by the Project Team in the development of final recommendations.

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Background

- **Terminal Control Unit Consolidation Process**

  - No decision has been made

  - Process explores conclusions reached in initial feasibility study

  - Currently in consultation phase

  - Simultaneous cost / benefit analysis

  - Sequential transition staged over 2 – 3 years

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Background

- **Issues**
  - Safety
    - Safety case preparation
  - Operational integrity
  - System redundancy
  - Technical viability
  - Human resource issues
  - Cost / benefit

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Staff Impact

| Location | Air Traffic Controllers | | Management / Support Staff Potentially Surplus |
	Indicated Willing to Relocate (if consolidation proceeds)	Potentially Surplus	
Sydney	40	25	25
Adelaide	5 (10 Temporary Transfers)	15	2
Perth	10 (8 Temporary Transfers)	12	2

Melbourne or Brisbane Technical Support to increase by 2 people

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FEEDBACK

- **All Stakeholders**

    - Staff

    - Industry

- **by end of August 2002**

AIRSERVICES AUSTRALIA

Airservices

Emerging Aviation Technologies

Presentation

Emerging

Aviation

Technologies

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Surveillance

✈Multilateration

✈ADS

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Traffic Management Tools

✈ A-SMGCS

✈ Collaborative Decision Making (CDM)

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Navigation/Landing Systems

✈GNSS

✈Augmentation Systems

✈Developments in GPS Avionics

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Surveillance...Multilateration

✈ Uses TDOA to determine aircraft location

- Min 3 Rx Stations (Surface Movement)

- Min 4 Rx Stations (TMA)

✈ Uses existing aircraft SSR technology

- Need Mode-S for surface surveillance

- TCAS Equipped Aircraft have Mode-S

✈ No intruder detection

- Enhancement to Primary SMR

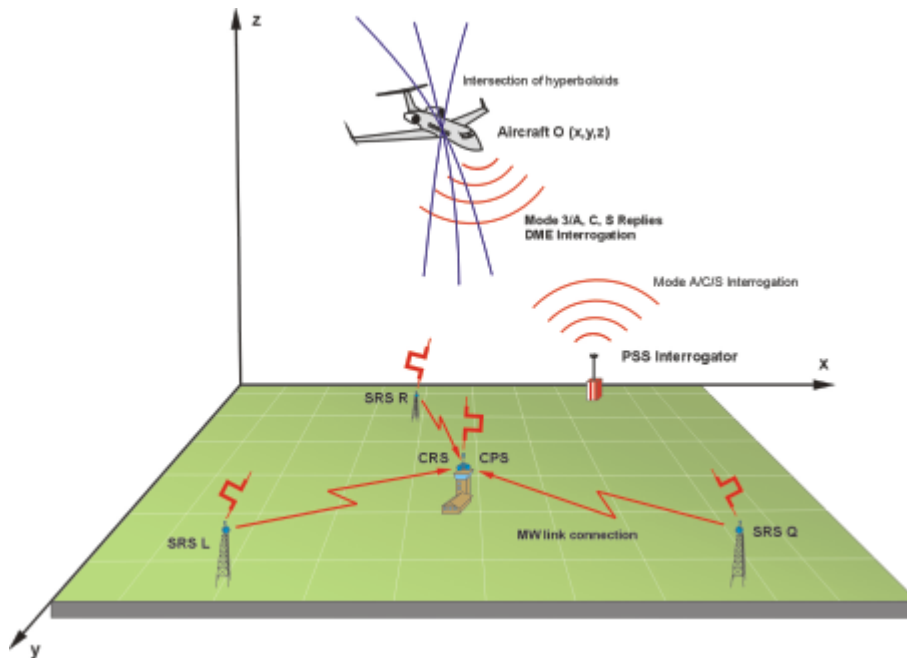**AIRSERVICES AUSTRALIA**

Multilateration - Principle of Operation

Fig. 1 Principle of Operation

$$\tau_L = \frac{1}{c} \cdot \left(\overline{OL} + \overline{LC} - \overline{OC}\right) = f(x, y, z, ...)$$

$$\tau_R = \frac{1}{c} \cdot \left(\overline{OR} + \overline{RC} - \overline{OC}\right) = g(x, y, z, ...)$$

$$\tau_Q = \frac{1}{c} \cdot \left(\overline{OQ} + \overline{QC} - \overline{OC}\right) = h(x, y, z, ...)$$

$$\tau_{L,R,Q} = \text{hyperbolic delays}$$

Math 1

Multilateration is the process of determining a source of signal location in two (respectively three) dimensions by solving for the mathematical intersection of multiple hyperbolas (or hyperboloids) based on the Time Difference Of Arrival (TDOA) between the signal reception at multiple sensors.

Hyperboloid is defined as the surface, which has constant distance difference from the two points (in our case receivers). Using two hyperbolas (three receivers) we can obtain 2D target position, while using at minimum three hyperboloids (four receivers) we can reach full 3D position.

In some areas, additional receivers can serve for the position accuracy improvement.

Fig. 1 shows principle of operation of multilateration system. The signal transmitted from the target is received at receiving station L,R,Q,C and the time information is concentrated at one point, where the TDOA is evaluated and hyperbolas or hyperboloids intersection is computed.

The set of equations **Math 1** defines the mathematical problem to be solved in real time.

The values x,y,z are the unknown coordinates of the targets. The other values are given by the system configuration, or are measured by the central processing station.

Run AVI Animation

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ERA
RADAR TECHNOLOGY

Multilateration...

✈ Accuracy is dependent on:

- Timing

- Geometry

✈ Coverage is dependent on Rx Stations

- Heathrow - 15

- Frankfurt - 19

Sensis Trial DFW

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Multilateration… Applications

✈ Applications

- Improved Surveillance

  – Enhancement to SMR

  – Positive Identification of Aircraft and Vehicles on the surface

- PRM Sensor

- Ramp Management

- Statistical Data

  – Analysis of traffic patterns

  – Billing

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Surveillance... ADS-B
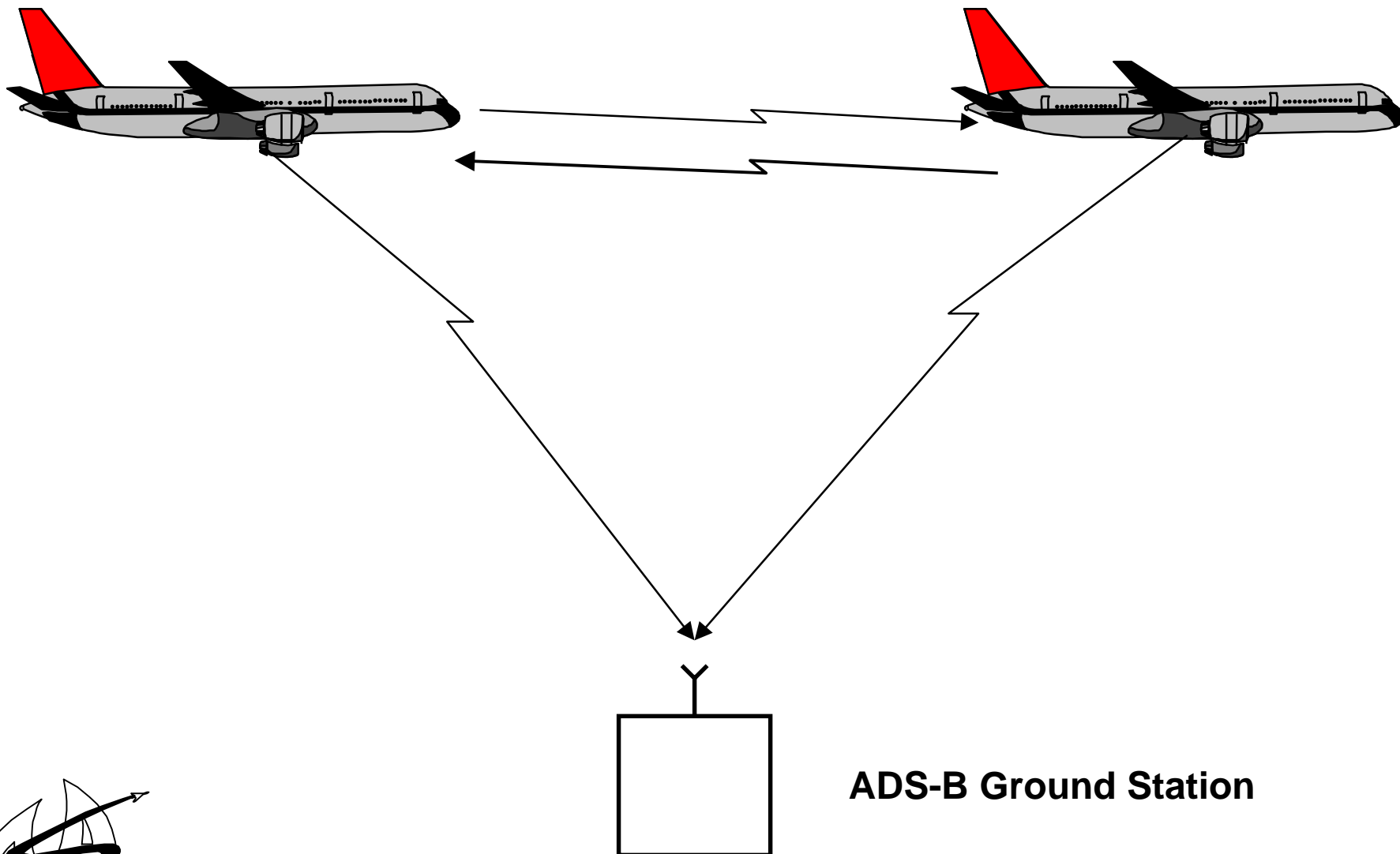
Automatic Dependent Surveillance - Broadcast

✈ Automatic Position Reporting

- Uses aircraft's navigation system (e.g. GPS)

✈ Aircraft applications as well as Ground applications

ADS-Broadcast

ADS-B Ground Station

ADS-B …

✈ Airservices Operational Trial

- Burnett Basin (Bundaberg Qld.)

- To demonstrate potential benefits to customer base

- Build operational & industry knowledge/support

- To foreshadow & understand implications of extensive deployment

- Lower risks of future decisions

  - eg: Radar replacement strategy

ADS-B Trial Wilmington

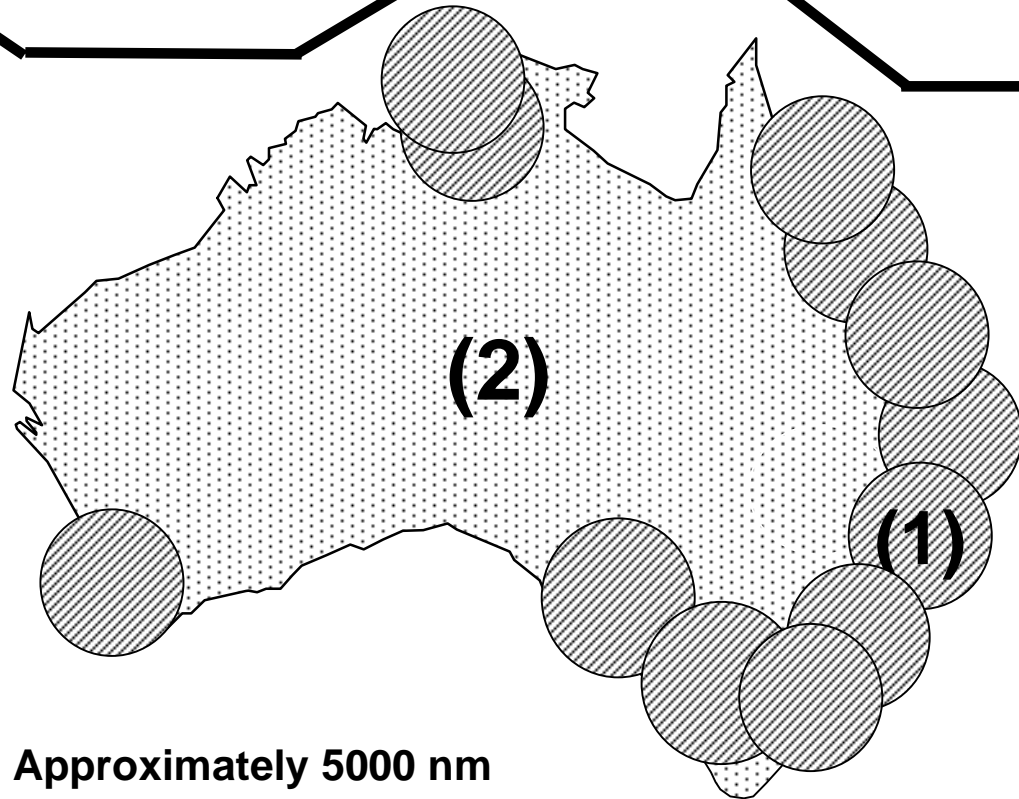**AIRSERVICES AUSTRALIA**

Existing Australian Environment

2S

ATC Environments

(1) **Radar control**
- radar + VHF

(2) **Non radar continental**
- ADS + VHF
- CPDLC
- Pilot reports

(2)

(1)

Approximately 5000 nm

TAAATS integrates Radar, ADS and Flight Plan Tracks to provide a common ATC system for all environments   - FANS 1 is available everywhere

75E

163E

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ADS-B…Applications

✈ Applications

- Low Cost Surveillance

  – Replacement for En-route Radar

  – Possibility of Australia wide surveillance

- Automation (STCA; MSAW; RAM; CLAM)

- Airborne Applications

  – CDTI

  – FIS/TIS

- Requires Aircraft Equipage

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Traffic Management Tools

✈ A-SMGCS

✈ Collaborative Decision Making (CDM)
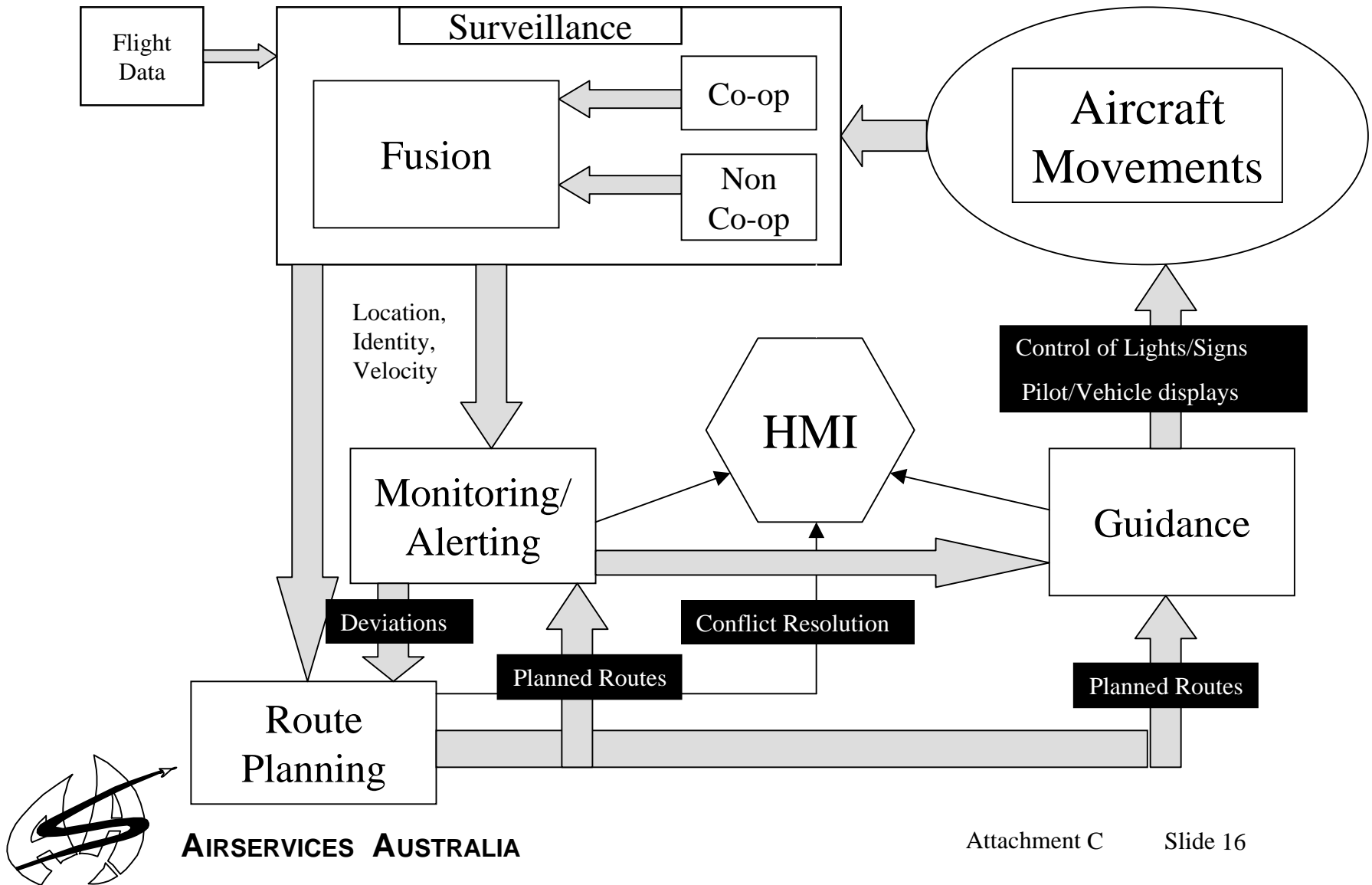
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Traffic Management... A-SMGCS

Advanced Surface Movement Guidance and Control Systems

✈ Integrated Surveillance, Monitoring, Route Planning, and Guidance System

- Modular and Evolutionary

✈ Improve Safety

✈ Maintain capacity during poor weather

✈ Improve Efficiency

- Reduce cost to operators (less holding)

Traffic Management... A-SMGCS Concept

Traffic Management… CDM Concept

Airlines

Airports

Information
Exchange

ATS Provider

Common
Situational
Awareness

Airlines

Airports

ATS Provider

Other NAS Users

Other NAS Users

AIRSERVICES AUSTRALIA
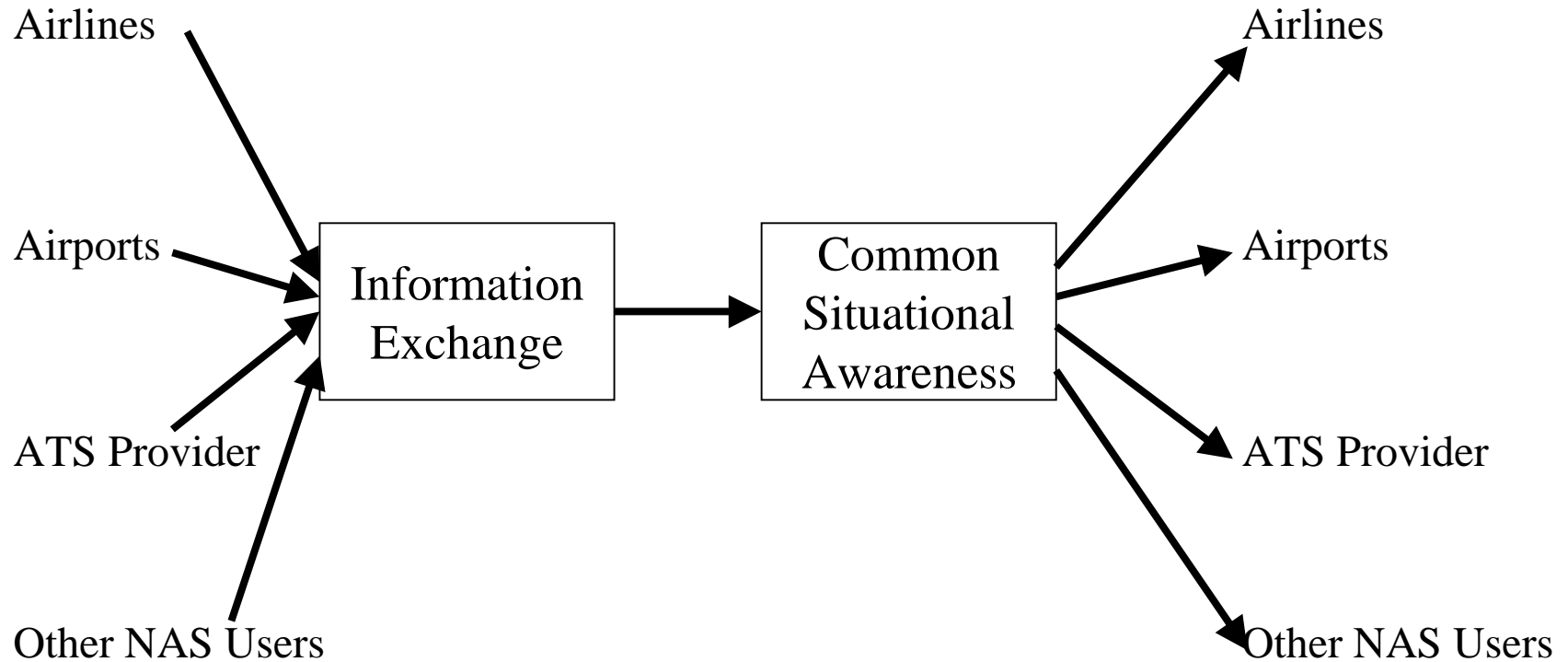
Traffic Management… CDM Concept

- Improve the way ATS providers, Airlines, and Airports work at an operational level.

- Provide decision makers with common picture by allowing access to same data.

- Information sharing to ensure decisions are made by those best placed to do so.

- Applies for all phases of flight (gate to gate).

- Result: More efficient traffic flow management decisions since each decision is made by the right person with current information and with the input from others.

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Navigation/Landing Systems

✈ GNSS

✈ Augmentation Systems

✈ Developments in GPS Avionics

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Navigation/Landing Systems

✈ GNSS

- ICAO term for collective global satellite navigation capability for civil aviation applications

- GPS, GLONASS, GALILEO (not yet operational)

✈ GPS

- SPS Position Accuracy
  (Previously 100m - H, 150m - V; SA on)
  (Now 22m - H, 33m - V; SA off from May 2000)

- Availability - 99%

- Timing - 40ns

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Navigation/Landing Systems

✈ Navigation System Requirements

- Accuracy, Availability, Integrity, Continuity

✈ Augmentation

- Improve performance to support precision approach operations

✈ Augmentation Systems

- Space Based Augmentation System (SBAS)

- Ground Based Augmentation System (GBAS)

- Aircraft Based Augmentation System (ABAS)

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Navigation/Landing Systems

✈ Augmentation

- Reference stations used to collect information on satellite signals.

- Information is relayed to Master Stations.

- Master Stations determine errors and calculate correction information.

- Correction message with integrity information is broadcast to the aircraft (SBAS - satellite; GBAS - VHF Data Link) on the GPS frequency to receivers in the coverage region.

- SBAS satellites also broadcast ranging signals improving the availability of the system.

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Navigation/Landing Systems
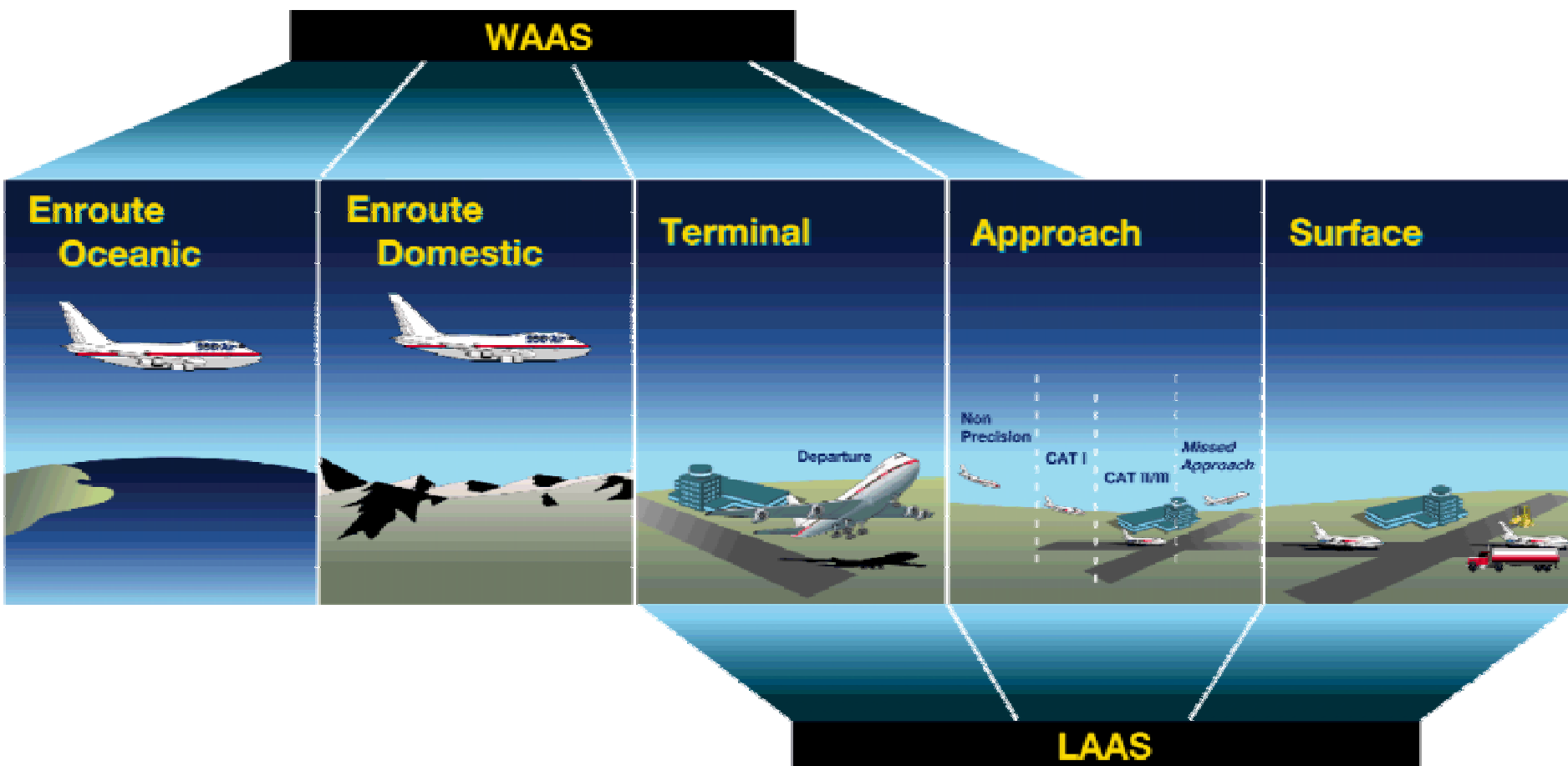
Navigation/Landing Systems

→ GPS Avionics

- Receiver Autonomous Integrity Monitor (RAIM)

- Fault Detection & Exclusion (FDE)

- FDE with SBAS Capability

→ FAA Radionavigation Plan

- First public use of LAAS (Cat I) - 2003

- Final Operational Capability 2011

- Begin phase down of terrestrial navaids (except Loran-C) - 2010

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Navigation/Landing Systems

✈ GNSS Applications

- Flexible Routing

- Curved Approaches to Runway

- Reduction in terrestrial navigation aids

- ICAO SARPs have been developed

- Requires CASA authorisation

- Procedures will need to be developed

- Aircraft need to be equipped

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The End

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Attachment D

Complaints by Complainant Ranked

1 May 2001 to 31 July 2001

Attachment D

Complaints by Complainant Ranked

1 May 2001 to 31 July 2001

Rank	Suburb	Calls Made
1	ASHFIELD	1254
2	SUMMER HILL	1055
3	HUNTERS HILL	696
4	SUMMER HILL	640
5	STANMORE	317
6	KINGSFORD	263
7	WINSTON HILLS	192
8	LINDFIELD WEST	160
9	MAROUBRA	80
10	PADDINGTON	67

1 May 2002 to 31 July 2002

Rank	Suburb	Calls Made
1	SUMMER HILL	80
2	SUMMER HILL	78
3	SUMMER HILL	62
4	PENSHURST	56
5	SUMMER HILL	56
6	PARRAMATTA	53
7	MASCOT	32
8	KINGSFORD	28
9	BUNDEENA	27
10	MAROUBRA	22

Airservices Australia

20 September 2002

Attachment E

Noise Enquiry Service

Noise Enquiry Profile

Average Incoming Calls by Day of Week

**Noise Enquiry Service
Average Incoming Calls by Day of Week
(May - July 2001 vs May - July 2002)
During Service Hours vs. Outside Service Hours**

Legend:
- During Service Hours 2001
- Out of Service Hours 2001
- During Service Hours 2002
- Out of Service Hours 2002

Day	During Service Hours 2001	Out of Service Hours 2001	During Service Hours 2002	Out of Service Hours 2002
Mon	54	30	17	5
Tue	48	30	14	3
Wed	54	31	14	4
Thu	52	46	12	3
Fri	44	35	15	3
Sat	75	23	13	3
Sun		100	0	11

Attachment E