

## ATTACHMENT C

### Asia/Pacific ANS System Life-Cycle Management Survey

#### Introduction

This survey is conducted as part of Asia/Pacific ANSPs Committees (AAC) Workstream 1 Task 7 which focuses on encouraging ANSPs to share experiences and best practices in ANS systems planning, procurement, implementation, maintenance, and whole-life management.

This questionnaires consist of 8 section as follows

Section 1: General Information

Section 2: Planning

Section 3: Procurement Experience

Section 4: Procurement Target

Section 5: Implementation

Section 6: Maintenance

Section 7: Whole-Life Management

Section 8: Additional Insights

The responses collected from this survey will be compiled and analyzed to identify key takeaway, challenges, and best practices among ANSPs. Summary report will be recorded in the AAC e-Library of guidance materials and shared during AAC/5.

Please submit your responses to the survey by sending them to [aacws1@aerothermal.co.th](mailto:aacws1@aerothermal.co.th) . We appreciate your time and valuable input and kindly request your response by **31 Oct 2025**. Your insights are highly valuable in shaping future collaborative efforts and guiding regional developments in air navigation services.

#### Section 1 General Information

1.	Name of the ANSP:
2.	Country:
3.	Contact Person: (Name, Position)
4.	Email:

## Section 2 Planning

5. Please rate the level of challenge each factor presents during the planning phase of ANS systems in your organization by checking (✓) **one box per row** that best represents the level of difficulty. (1 = Least Challenging, 8 = Most Challenging)

Challenges	1	2	3	4	5	6	7	8
Budget Constraints								
Changing Regulations/Policies								
Availability of COTS Products for each new technology								
ATC Lack of Confidence in New System								
Maintenance Engineer Lack of Confidence in New System								
Inadequate Risk Management								
Integration with Legacy Systems								
Vendor/Service Provider Readiness								
Coordination Complexity								
Lack of Planning Tools								
Lack of Knowledge Management (KM)								
Other (Please specify): _____								

6. Please rate the importance of the following factors by checking (✓) **one box per row** that best represents the level of importance each factor contributes to the success of the ANS planning process in your organization. (1 = Least Important, 8 = Most Important)

Factors	1	2	3	4	5	6	7	8
Requirement Gathering								
Technology Readiness								
Clear & Achievable Objectives								
Resource Allocation								
Risk Analysis								
Environmental Impact Assessment								
Cost-Benefit Analysis								
Stakeholder Engagement								
Integration with Existing Systems								
Contingency & Backup Planning								
Project Management								
CAA certification								
Other (Please specify): _____								

7.	<p>Could you share the best practices that you identified for effective ANS systems planning?</p> <p><b>Expected Answer:</b> Provide details on methodologies, tools, frameworks, or collaborative approaches that have proven successful.</p>
8.	<p>Could you share your organization's approach to ensuring system resilience in CNS/ATM operations, such as using of backup sites or alternative strategies?</p> <p><b>Expected Answer:</b> Describe how your organization ensures operational continuity, addressing aspect such as:</p> <ul style="list-style-type: none"> <li>- Whether the backup equipment matches the brand, supplier or same specifications of active equipment.</li> <li>- The percentage of usage or operational dependency on the backup site compared to active systems.</li> <li>- Any alternative strategies implemented instead of a backup site (e.g., layered redundancy, distributed systems solutions).</li> </ul>

### Section 3: Procurement Experience

9. Please rate the importance of each of the following factors in contributing to the success of the ANS procurement process in your organization. Check (✓) **one box per row** that best represents the level of importance. (1 = Least Important, 8 = Most Important)

Factors	1	2	3	4	5	6	7	8
Vendor Experience								
Cost-Quality Comparison								
Documentation & Agreement Management								
Transparency & Governance								
Contract Clarification								
Compliance with International Standards								
Vendor Risk Assessment								
System Demonstration and Evaluation								
Timely Delivery & Scheduling								
Warranty & Post-Procurement Support								
Sustainability in Procurement								
Conflict Management in Procurement								
Technology Readiness								
Life-Cycle Cost Analysis								
Other (Please specify): _____								

10. Which procurement approach(es) does your organization use for ANS systems? (You may select more than one option.)
- ☐ Open Tender
  - ☐ Selective Procurement
  - ☐ Direct Negotiation
  - ☐ Other (Please specify): \_\_\_\_\_

11.	<p>Could you share strategies for enhancing a transparent and fair procurement process?</p> <p><b>Expected Answer:</b> For instance, practices like competitive bidding, clear evaluation criteria, conflict-of-interest management, and stakeholder or regulator involve</p>
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#### Section 4: Procurement Target

12. If AAC members are to perform a group procurement for CNS/ATM systems, please match the name of the system, with the group procurement models considered suitable for the APAC region:
- 1) Collective purchase to enhance bargaining power (AAC member states pooling their demand for a particular CNS/ATM system to negotiate a better price or more favorable terms from suppliers than they might achieve individually).
  - 2) Coordinating the leasing of shared locations for multiple installations (AAC member states consolidating their systems at a shared location to streamline maintenance processes and perform them simultaneously).
  - 3) Investing in service-based models on a regional scale (AAC member states engaging in group procurement for specific CNS/ATM services in APAC region, such as operation, maintenance, training, or warranty.)
  - 4) Other solutions:

**Expected answer:** Match CNS/ATM system name with group procurement models

No.	Technology/ System name	Recommended Group procurement model				Reason
		1	2	3	4	

13.	<p>From AN-CONF/14 Recommendation 3.2/1, "Phasing out and/or optimizing the use of legacy systems," it is suggested that while transitioning to modernized systems is important, legacy systems still have certain use cases. Therefore, the expansion of legacy systems, if necessary, should be minimized. In the context of the APAC region, which legacy systems do you believe remain essential, and which ones are no longer necessary? Why?</p> <p><b>Expected answer:</b> List the legacy systems that are necessary (or not) for the APAC region and provide reasons</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Legacy system</th> <th>Necessary or Not (Y/N)</th> <th>Reason</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	No.	Legacy system	Necessary or Not (Y/N)	Reason																				
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### Section 5: Implementation

14.	<p>Please rate the level of challenges for each of the following factors in the implementation phase of the ANS process within your organization. Check (✓) <b>one box per row</b> that best represents the level of challenges. (1 = Least Challenging, 8 = Most Challenging)</p> <table border="1"> <thead> <tr> <th>Challenges</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr><td>Personnel Training</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>System Testing/Validation/Acceptance/Approval</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Time and Resource Management</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Change Management</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Internal Communication</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Operational/Safety Risk Management/Compliance</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Vendor/Service Provider Support</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Product Delivery / Readiness</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Performance Monitoring &amp; Evaluation</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Stakeholder engagement</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Quality assurance practices</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td>Other (Please specify): _____</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Challenges	1	2	3	4	5	6	7	8	Personnel Training									System Testing/Validation/Acceptance/Approval									Time and Resource Management									Change Management									Internal Communication									Operational/Safety Risk Management/Compliance									Vendor/Service Provider Support									Product Delivery / Readiness									Performance Monitoring & Evaluation									Stakeholder engagement									Quality assurance practices									Other (Please specify): _____								
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#### Section 6: Maintenance

16.	<p>Could you share how you manage and plan to improve the maintenance process of ANS systems?</p> <p><b>Expected Answer:</b> Explain your process, including best practices for preventive, corrective, predictive, or prescriptive maintenance of ANS equipment.</p>
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17.	<p>Please rate the level of challenge for each common maintenance issue that occurs in your organization's ANS system by checking (✓) one box per row that best represents the level of difficulty. (1 = Least Challenging, 8 = Most Challenging)</p> <table border="1"> <thead> <tr> <th>Challenges</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Human resource shortages</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Lack of skill</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Vendor support issues</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Equipment malfunctions</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Spare parts shortages</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Inconsistent maintenance schedules</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Obsolete technology</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Budget constraints</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Communication gaps</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Software or firmware compatibility issues</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Environmental factors (flood, lightning, temperature, humidity, etc.)</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Other (Please specify): _____</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>	Challenges	1	2	3	4	5	6	7	8	Human resource shortages									Lack of skill									Vendor support issues									Equipment malfunctions									Spare parts shortages									Inconsistent maintenance schedules									Obsolete technology									Budget constraints									Communication gaps									Software or firmware compatibility issues									Environmental factors (flood, lightning, temperature, humidity, etc.)									Other (Please specify): _____								
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18.	<p>Could you share experiences or best practices with processes or procedures that facilitate effective maintenance to ensure minimal operational disruption during routine maintenance, corrective maintenance or software upgrades?</p> <p><b>Expected Answer:</b> Provide examples of practices that improve coordination among maintenance engineers, ATC, and vendors during software upgrades or routine maintenance.</p>																																																																																																																					

## Section 7: Whole-Life Management

19. Could you share your approach to the whole-life management of ANS systems?  
**Expected Answer:** Include lifecycle phases such as initial deployment, regular updates, mid-life upgrades, and end-of-life decommissioning.
20. Do you have knowledge management (KM) processes or tools in place for the whole life cycle of ANS systems? If so, could you provide examples, such as ISO 55001 Asset Management?  
**Expected Answer:** Describe knowledge management tools or processes used, such as ISO 55001 standards, for effective asset management and lifecycle improvements.

21.	<p>What communication strategies have been most effective in collaboration between ANSPs and vendors throughout the whole life cycle of a CNS/ATM system? Please share any successful examples or strategies.</p> <p><b>Expected Answer:</b> Provide examples or strategies that have proven successful in fostering collaboration between ANSPs and vendors.</p>
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#### Section 8: Additional Insights

22.	<p>Are there any additional insights or experiences you would like to share?</p> <p><b>Expected Answer:</b> This can include case studies, innovative solutions, or unique challenges specific to your region or organization.</p>
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23.	<p>The ICAO APAC – <a href="#">Guidance for Procurement and Certification of CNS/ATM Services and Systems, Edition 1.0</a> (September 2019 prepared by CNS SG of APANPIRG), and the ICAO <a href="#">Air Traffic Management Automation System Implementation and Guidance Document, Edition 1.3</a> (June 2023 prepared by ATMAS TF of APANPIRG), are best practice guidance materials available for AAC members to follow. In your opinion, should there be some mechanisms to capture comments, additional requirements, experiences, or any other feedbacks from AAC members to facilitate updates to these two guidance documents and how?</p>
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## **CONFIDENTIALITY POLICY**

### **Purpose:**

This confidentiality policy outlines the terms and conditions regarding the use and distribution of the questionnaires provided for the fulfillment of Task 7 of AAC Workstream 1 : “To encourage ANSPs to share experiences and best practices in ANS systems planning, procurement, implementation, maintenance, and whole-life management.” The responses and insights gathered from these questionnaires will be used to summarize the answers and opinions, with the objective augmenting the existing best practices guide for AAC Workstream 1 members. Relevant parties will adhere strictly to the following guidelines.

### **Confidential Use:**

1. The questionnaires are to be used exclusively for the purpose of completing Task 7 of AAC Workstream 1 and creating a summary of responses, opinions, and best practices for AAC Workstream 1 members.

2. These questionnaires, including all responses, data, and insights derived from them, are to remain confidential and must not be disclosed, shared, or distributed outside of the authorized team or committee responsible for Task 7 without explicit written permission.

3. Any external distribution of the questionnaire, or sharing of its contents, whether intentional or unintentional, will be considered a breach of this policy.

### **Data Protection:**

1. All responses received from AAC members through these questionnaires shall be handled with the utmost discretion and confidentiality.

2. Information shared within the questionnaire will not be used for any purpose other than fulfilling the objectives of Task 7. This includes the development of the best practices guide for AAC Workstream 1 members. It shall not be used for commercial or personal advantage, and no part of it may be made public.