



International Civil Aviation Organization

**EIGHTH MEETING OF THE ASIA PACIFIC REGIONAL AVIATION SAFETY TEAM
(APRAST/8)**

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Agenda Item 5: Presentations – State / Industry / ICAO

**REGIONAL DATA COLLECTION, ANALYSIS AND
INFORMATION SHARING STATUS REPORT**

*(Presented by Flight Safety Foundation, The MITRE Corporation,
Japan and Singapore)*

SUMMARY

This paper summarizes the status of State coordination of plans to initiate a data collection, analysis and information sharing system in the Asia Pacific (APAC) Region to integrate and analyse operational data from various sources in support of safety awareness and improvements.

Action by the Meeting is at Paragraph 3.

1. INTRODUCTION

1.1 The exchange of safety information at the regional level enables the detection of emerging safety issues and facilitates effective and timely action. ICAO's Global Aviation Safety Plan (GASP) identifies safety information sharing as a safety performance enabler that is required to achieve the objectives of the global plan. As an indication of the importance of safety data usage and its impact on the State Safety Programme, ICAO Annex 19 emphasises safety data collection, analysis and exchange to support States' safety management activities. At the 38th ICAO General Assembly, it was agreed that regional aviation safety groups (RASGs) should be encouraged to develop and implement regional safety data sharing and analysis programmes and systems.

1.2 Flight Safety Foundation (FSF) and MITRE have been collaborating with Asia Pacific States, Authorities, ANSPs, and airlines to initiate a Regional Data Collection, Analysis and Information Sharing for Aviation Safety Demonstration Project in Asia Pacific. A workshop in Singapore in December 2014 was the starting point for developing consensus on guiding principles and overall governance structure. Webinars held early in 2015 contributed to the development of a draft Governance Plan for the Demonstration Project (Version 3.0), which was issued by State Letter to the Asia Pacific Region at the end of May 2015.

1.3 At the APRAST/7 meeting in September 2015, Flight Safety Foundation and MITRE reported that they had received comments on Version 3.0 of the Governance Plan and that they would coordinate with the community to draft a new version of the plan. Proposed changes were discussed at a September webinar, leading to Version 4.0 of the Governance Plan that was distributed in November 2015. Additional comments on Version 4.0 are reflected in the current Version 5.0.

1.3 In parallel with discussions about the plan for governing the Demonstration Project, FSF and MITRE have determined options for regional cost sharing with States that are interested in participating in the Demonstration Project.

2. DISCUSSION

2.1 Version 5.0 of the Governance Plan is included as Annex to this paper and reflects changes that were made in response to comments on Versions 3.0 and 4.0 from various organizations. The key areas of changes include:

- Clarification regarding who is eligible to participate in the Demonstration Project (Section 3.0)
- Note that Governing Board may suspend or terminate a participant's involvement if core principles are violated (Section 3.1 and Appendix B)
- Additional language to reinforce that voluntary safety information should not be used to initiate enforcement investigations or actions (Section 3.3)
- Clarification that ANSPs will work collaboratively with the Secretariat to develop capability to generate metrics that will be integrated with other safety information (Section 3.4)
- Note that Governing Board will coordinate Demonstration Project results with APRAST for regional risks and mitigation needs (Section 7.2)
- Revision to the range of activities and associated costs for the Demonstration Project to align with different levels of participation by States and Administrations (Section 8.0)

2.2 Version 3.0 of the Governance Plan included a description of the Demonstration Project activities that drive overall costs and the distribution of the costs for individual participants. Version 5.0 provides more detailed information about how the scope of analysis and cost of participation vary with the number of participating States and Administrations. This approach provides the flexibility for the Demonstration Project to be initiated with a small set of early adopters and to mature over three years to a full regional activity. Version 5.0 describes how the type and frequency of analysis, meetings and distribution of results is aligned with different levels of participation and stages of maturity. In all scenarios, the contribution from each participating State or Administration is between US\$40,000/year and US\$50,000/year, depending on the number of participating States and Administrations.

2.3 Version 5.0 of the Governance Plan reflects the comments received through December 2015, including additional information about scope and cost of the Demonstration Project. This milestone positions the Demonstration Project to be initiated following RASG-APAC's review, nominally in November 2016.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to note Version 5.0 of the Governance Plan and encourage States to participate in the Regional Data Collection, Analysis and Information Sharing for Aviation Safety Demonstration Project in Asia Pacific.

**Governance Plan for the
Demonstration Project
of
Asia Pacific Regional
Data Collection, Analysis and
Information Sharing
for Aviation Safety**

February 2016

Version 5.0 Draft

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1.0 Background and Initiation of the Demonstration Project

The exchange of safety information is recognized as a fundamental element of long-term improvements in the safety of civil aviation. The International Civil Aviation Organization (ICAO) Global Aviation Safety Plan 2013 and Annex 19 emphasize the importance of exchanging safety information. Efforts to share aviation safety information in the United States and Pan America have been valuable in identifying safety issues and supporting effective and timely action to address safety risks.

Since 2013, the Asia Pacific Regional Aviation Safety Team (APRAST) has supported efforts to understand the potential for data collection, analysis, and information sharing in the Asia Pacific (APAC) region. The Flight Safety Foundation (FSF) and The MITRE Corporation (MITRE) conducted a feasibility study that was completed in August 2014. The study indicated a general consensus that regional data collection, analysis and information sharing would enhance aviation safety and strengthen the ability of State Authorities and service providers to identify safety hazards and develop targeted safety improvements. The feasibility study also identified challenges associated with the implementation of a data sharing system in APAC.

In view of the positive outcome of the feasibility study, APRAST and the Regional Aviation Safety Group-APAC (RASG-APAC) supported a plan to conduct a three-year Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing for Aviation Safety. The intent of this project is to demonstrate the benefits of such a capability and to address issues such as data protection and confidentiality, operating models, and governance structure.

In December 2014, FSF and MITRE hosted a workshop of APAC States and Administrations, Air Navigation Service Providers (ANSPs), airlines and industry organizations in Singapore to discuss the next steps in developing a collaboration environment that would be needed for a Demonstration Project. The workshop resulted in a set of core principles and basic elements of data analysis and information sharing that should be part of the Demonstration Project.

This Governance Plan builds on the feasibility study and workshop to provide more details regarding the Demonstration Project. It describes core principles, roles and responsibilities of participants, and protections that will be applied to data and results. This Governance Plan also describes the types of analysis that will be conducted and the processes for reviewing, distributing and leveraging results.

The duration of the Demonstration Project is expected to be three years. It can be terminated or extended by consensus agreement of the participating organizations.

2.0 Core Principles for the Demonstration Project

A set of core principles for the Demonstration Project was developed at a workshop in December 2014 in Singapore:

- Information is used to advance safety goals only, not punitive or enforcement purposes.

- Results are not misused, in accordance with ICAO Doc 10004, Global Aviation Safety Plan, Appendix 3.
 - Roles and responsibilities are clearly defined.
 - Processes for data handling and analysis are carried out with transparency and use of data in accordance with this governance agreement.
 - The governance process is determined by consensus and is clear to all participants.
- The core principles are reflected throughout this Governance Plan.

3.0 Participation in the Demonstration Project

Participation in the Demonstration Project is open to all government and private sector aviation safety organizations that are involved in Asia Pacific commercial aviation operations and that can collaborate with FSF and MITRE, taking into account relevant legal restrictions. This section describes how an organization enters into or withdraws from the Demonstration Project. It also outlines the responsibilities of the participants.

3.1 Entering and Withdrawing from the Demonstration Project

An organization becomes a Demonstration Project participant by signing the Statement of Intent in Appendix B of this Governance Plan before the Demonstration Project is initiated. The Governing Board (Section 4.1) must approve the entry of any organization seeking to join the Demonstration Project after it is launched.

A participating organization can withdraw from the Demonstration Project at any time. The Governing Board may suspend or terminate participation in the Demonstration Project if it finds that an organization has violated core principles as described in Section 2.0 of this Governance Plan.

3.2 Responsibilities for All Participants

All participants agree to:

- Adhere to the core principles of the Demonstration Project (Section 2.0) and other elements of this Governance Plan.
- Provide subject matter experts, including pilots, controllers, manufacturers, or regulators with deep knowledge of aviation, to support Demonstration Project studies.
- Participate in meetings of the Governing Board (Section 4.1) to make decisions about priorities and governance.
- Communicate Demonstration Project results to their organizations.

3.3 Responsibilities Specific to States and Administrations

States and Administrations will provide the following support in addition to the general responsibilities of Section 3.2:

- Provide insight about local regulatory context that may be helpful in a study or analysis.
- Review results of the Demonstration Project and follow up on State-specific safety issues, while ensuring that these results are not used to initiate enforcement investigations or actions.
- Provide other safety information that might be relevant to a study or analysis, such as accident or incident reports.

3.4 Responsibilities Specific to ANSPs

In addition to the responsibilities listed in Section 3.2, ANSPs will provide summary safety metrics based on data sources and event definitions that will be developed in collaboration with the Secretariat (see Section 4.2). It is anticipated that different ANSPs will have different levels of infrastructure to support the measurement of safety events from air traffic data. The focus of ANSP participation is to develop the capability to generate meaningful metrics that can be integrated with other sources of safety information in the Demonstration Project.

Over the course of the Demonstration Project, the ANSPs will work with the Secretariat to build a capability to:

- Locally extract, archive and process information from radar data, air traffic control information, weather, and other relevant sources.
- Apply Demonstration Project definitions to generate analytical results in the agreed upon format.

3.5 Responsibilities Specific to Airlines

Airlines may participate in the Demonstration Project by signing this Governance Plan and fulfilling all responsibilities as described in Section 3.2 above. Airlines contribute to the Demonstration Project by providing digital flight data and/or pilot safety reports to the International Air Transport Association (IATA) Flight Data Exchange (FDX) and Safety Trend Evaluation Analysis and Data Exchange System (STEADES) programs (through established IATA processes for FDX and STEADES including standard contractual processes). As described in Section 3.6, IATA processes the airline data and provides de-identified analytical results to the Demonstration Project. IATA has offered to process participating airline data through their FDX and STEADES Programs regardless of whether an airline is a member of IATA.

Other methods of providing processed flight data will be evaluated on a case-by-case basis.

Airlines may also provide any other data directly to the Secretariat for inclusion in Demonstration Project analyses under a separate agreement, as appropriate. This category refers to operationally significant data that would be beneficial to an ongoing study. Any data

provided will be treated as proprietary and protected in accordance with all other sensitive data provided for the Demonstration Project.

3.6 Responsibilities Specific to IATA

IATA will develop analytical results suitable for use by the Demonstration Project. These products will be produced in accordance with the definitions and formats specified by the Demonstration Project Secretariat (Section 4.2) based on input from affected Working Groups (Section 4.3) to facilitate integrated analysis across all sources of safety information.

3.7 Responsibilities of Other Organizations

The common responsibilities listed in Section 3.2 apply to all other participating organizations. Other organizations that may participate include Boeing, Airbus, Association of Asia Pacific Airlines (AAPA), International Federation of Air Line Pilots' Associations (IFALPA), Civil Air Navigation Services Organisation (CANSO), etc. Participating organizations may also provide data to the Secretariat under a separate agreement, as appropriate, for inclusion in Demonstration Project analyses.

4.0 Governance Structure for the Demonstration Project

The Demonstration Project will be directed by a Governing Board formed by and consisting of the participants of the Demonstration Project. The Governing Board is supported by the Secretariat. Temporary Working Groups will be formed as needed. The Governing Board will collaborate with RASG-APAC, APRAST, and other regional bodies to carry out its safety mission.

4.1 Governing Board

Organizations that participate in the Demonstration Project provide representatives to the Governing Board, which sets strategic direction and monitors progress. The Governing Board meets twice yearly to re-evaluate strategy and priorities and to receive updates on the progress of data integration and analysis. The Governing Board's primary responsibilities are to:

- Prioritize studies and metrics (numerical measures of safety-related events) and authorize Directed Studies (Section 6.2).
- Review the results of Demonstration Project studies and metrics.
- Make changes, as needed, to this Governance Plan.
- Review requests for participation after the initiation of the Demonstration Project.
- Establish policies and procedures for dissemination of results to Demonstration Project participants and external organizations as appropriate.
- Selects the Secretariat and approves all entities participating on the Secretariat.
- Monitor the activities of the Secretariat to ensure they are in alignment with the direction of the Governing Board and the provisions of this Governance Plan.

- Provide guidance to the Secretariat for interpreting strategic direction from the Governing Board.
- Provide coordination between the Demonstration Project and APRAST on regional risks and mitigation needs.

As a point of first business for the Governing Board, the participants will determine the structure of the Governing Board.

4.2 Secretariat

The Secretariat for the Demonstration Project supports the Governing Board and is responsible for coordinating studies and metrics in alignment with the priorities set by the Governing Board. A key function of the Secretariat is to harmonize inputs from multiple data sources and organizations to enable integrated analysis. The Secretariat is also responsible for managing the data assets and capabilities under its control that are necessary for data sharing and for conducting analysis. In addition, the Secretariat manages the administrative, and project management functions of the Demonstration Project. The Secretariat functions will be performed by FSF and MITRE.

The Secretariat's primary responsibilities are to:

- Provide detailed definitions for any analytical results that will be generated by participating organizations for inclusion in integrated analysis.
- Develop and maintain an efficient, cost effective and secure information technology architecture for storing, integrating, analyzing, protecting, and sharing any safety information that is managed by the Secretariat.
- Acquire data and develop analytical tools for analyzing, visualizing, and sharing results.
- Create Working Groups as needed to support studies and metrics.
- Integrate inputs across various organizations and data sources in support of studies and metrics.
- Implement Governing Board policy on sharing results of studies and metrics with participating organizations.
- Conduct all analysis and information sharing activities in accordance with this Governance Plan.
- Update and maintain this Governance Plan, as directed by the Governing Board.
- Maintain a list of participants in the Demonstration Project.

4.3 Working Groups

When a study or monitoring activity is initiated, the Secretariat establishes a Working Group of members from participating organizations. This Working Group has the following responsibilities:

- Determine the scope of the analysis, the sources of data, the analytical approach and tools, and the form of the result.
- Monitor progress of the study or metric development.
- Interpret the results of analysis.
- Submit results to the Governing Board.

5.0 Data and Information for Demonstration Project Analysis

The data and information needed for the Demonstration Project analyses can be categorized as that provided by airlines, ANSPs, and other sources. Each source is unique in terms of content, format, storage, and processing, as described in the following subsections.

Other than airline data provided to IATA, all data and information provided to the Demonstration Project, regardless of its origin or prior processing, will be stored and accessed using secure information technology capabilities provided by the Secretariat.

5.1 ANSP Data and Information

As described in Section 3.4, ANSPs will work with the Secretariat to develop a capability to provide analytical results based on data, metrics definitions and results formats that align with the capability of the ANSP and the needs of the Demonstration Project. ANSP processing will draw on data sources that are typically available to ANSPs, such as radar tracks, airspace and airport configurations, and weather. The Secretariat will integrate ANSP analytical results with other sources of information.

5.2 Airline Data and Information

The two principal types of airline data used in the Demonstration Project are flight data monitoring (FDM) information and airline safety reports.

FDM data are used to generate quantitative analytical results according to the definitions and format provided by the Secretariat based on input from affected Working Groups. FDM data will be acquired, accessed, and stored according to airline agreements with IATA as part of the airline's participation in IATA's FDX program.

Airline text-based safety reports are used to better characterize safety events and their contributing factors. Airline agreements with IATA under the STEADES will be leveraged so that IATA can provide aggregated input to the Demonstration Project, also in alignment with the guidelines provided by the Secretariat based on input from affected Working Groups. Though STEADES accepts safety events in many languages, English or English-translation reports are preferred.

IATA will process airline FDM and safety report data according to the Demonstration Project definitions and provide de-identified information in a format agreed upon jointly by the Secretariat and IATA to the Secretariat for integration.

Airlines could provide other data through other participating organizations or directly to the Secretariat. Any data provided will be treated as proprietary and protected in accordance with all other sensitive data provided for the Demonstration Project.

5.3 Other Data

As directed by the Governing Board, other data sources may be acquired by the Secretariat to supplement ANSP and airline information. The Secretariat will integrate all relevant data sources in support of Demonstration Project studies and metrics. Protection and use of these other data sources will be in accordance with Section 7.1 of this plan.

6.0 Types of Analysis

Analyses conducted under the Demonstration Project include, but are not restricted to, the following types of studies and monitoring. As this document is an enabling governance plan of possible activities, it does not constitute a detailed implementation plan for the Demonstration Project. During the demonstration period, it is expected that a subset of these analyses are undertaken, recognizing that an incremental approach and a realistic scope will improve the chances of success of the Demonstration Project. The Governing Board will approve annual plans based on a number of factors, including emerging risks, resources, availability of appropriate data, and maturity level of capabilities.

- Known Risk Monitoring
- Directed Studies
- Vulnerability Discovery
- Benchmarks

6.1 Known Risk Monitoring

Known Risk Monitoring metrics are developed and assessed to track identified risks, detect emerging risks, and track the effectiveness of developed safety mitigations. The Secretariat generates these metrics, leveraging analytical results from ANSPs and IATA along with other data sources.

6.2 Directed Studies

Detailed analyses of specific safety issues of interest to the Demonstration Project participants, referred to as Directed Studies, can be authorized by the Governing Board. These Directed Studies leverage Demonstration Project data and resources to develop an in-depth understanding of a safety issue to provide support for effective mitigations.

6.3 Vulnerability Discovery

Vulnerability discovery analysis is conducted to identify and assess previously unknown or unrecognized issues or accident precursors. Demonstration Project vulnerability discovery activities include analysis of new problems, known problems appearing in new places or increasing in frequency or severity, new pathways or precursors to known problems, and new methods to measure and track known problems.

6.4 Benchmarks

Benchmarks are metrics prepared for an individual organization to compare its performance against aggregate performance of similar organizations. Benchmarks are recognized as a valuable tool for an organization to identify risks and prioritize local mitigation activities.

The Demonstration Project may provide benchmarks for individual data providers when there is adequate data to support the analysis using statistically proven methods.

7.0 Information Sharing Protocols

There are two key types of controls applied to Demonstration Project results: (1) processes to remove identifying information from data and results and (2) processes for sharing the results with participants.

ANSP data will be maintained locally by each ANSP and airline flight data and safety reports will be maintained by IATA at a location determined by IATA. The Secretariat intends to establish the necessary servers and analysis platform for integrating these and other data sources at a location to be selected within the region. Data security measures are defined in Appendix A.

7.1 Removing Identifying Information

Data used for the Demonstration Project are maintained in a secure environment that prevents any party other than the Secretariat from accessing sensitive information. Data fields referring to individual employees are masked or removed before storing information for the Demonstration Project. Data that includes flight-identifying information can be stored and used in the Demonstration Project in the secure environment.

Demonstration Project results are always aggregated and de-identified before sharing them with the Governing Board and Working Groups or distributing them to Demonstration Project participants. The details of de-identification will be developed as part of the Demonstration Project, but they will ensure at a minimum that no individual employee, airline or flight is identified in results. Details of de-identification of results can be found in Appendix A.2.

7.2 Sharing Demonstration Project Results

In accordance with Governing Board responsibilities (Section 4.1), policies for sharing of Demonstration Project results with participants will be established by the Governing Board. The Secretariat will distribute results to participants in accordance with Governing Board policy.

The Governing Board will coordinate Demonstration Project results with APRAST for regional risks and mitigation needs. Other coordination of results, if any, must always be authorized by the Governing Board beforehand.

8.0 Cost Sharing Plan

In order to execute the Demonstration Project, there are some necessary activities and work elements that will incur costs. Since there is no single entity that is able to underwrite the entire Demonstration Project, the December 2014 Workshop established that these costs would be shared across the Demonstration Project participants.

Table 8-1 describes the primary cost drivers for the Demonstration Project. These have been identified based on experience with similar programs elsewhere around the globe.

Table 8-1. Demonstration Project Cost Element Descriptions

Element	Description
Safety metrics development and sustainment	Known-Risk Monitoring is a set of analyses continuously performed to scan available data to track known safety risks. The Governing Board will determine the set of Known-Risk Monitoring analyses to be continuously tracked. These approved metrics will identify trends of known risk areas. The findings will be reported to the Governing Board at regular intervals or upon discovery of potential safety issues.
FDM and Safety Report results integration	Metrics definitions will be provided to IATA and de-identified information in a format agreed upon jointly by the Secretariat and IATA will be returned. These results will be integrated with other environmental and contextual data to identify normal and non-normal performance by location, type of operation, and other relevant conditions.
ANSP and other surveillance results integration	Metrics definitions will be provided to each ANSP and de-identified information in a format determined by the Secretariat will be returned. These results will be integrated with other environmental and contextual data to identify normal and non-normal performance by location, type of operation, and other relevant conditions.
Safety dashboard development and risk investigations	Visualization is a key component of understanding and reporting out the results of the Demonstration Project. Visualization capabilities, including density plots, interactive charting capabilities and multi-data source visualization will support risk tracking as well as new risk detection. Commercial Off-The-Shelf (COTS) visualization capabilities will be tailored, if required, for the presentation of data and analytical results. Identified risk will be investigated and reported to the affected Working Group and/or the Governing Board.
Infrastructure development and sustainment	Ensure flexibility, efficiency, and security leading to the implementation of a data infrastructure that provides standards-based, distributed, secure, and efficient mechanisms to allow analysts the ability to access the data they need in the forms that they need it. The architecture will include an infrastructure of hardware, networking and software components both at a central location and at stakeholders' locations supporting both central and distributed data sources, advanced data management processes, and a range of analytic tools for monitoring, trending and visualizing data. The architecture will be developed to enable stakeholders to provide

	<p>data in a secured and de-identified manner while maintaining support for Demonstration Project related analysis efforts.</p> <p>Underlying these objectives is the requirement to assimilate and utilize aviation data from many different sources, stored at many different locations, and subject to many different usage and governance constraints. Each data source also presents a unique set of data quality issues, data model standards and configuration management requirements. In addition, data from different sources must be rationalized to ensure that a data element from one source represents the same underlying entity as a data element from another source.</p>
<p>Integration analysis and program management</p>	<p>The ability to measure and monitor relationships that exist across multiple data sources providing a holistic picture of risk is a primary objective of the Demonstration Project analytic capabilities. The Secretariat will utilize data fusion capabilities include techniques that combine data from multiple sources in order to achieve inferences, which will be more efficient and potentially more accurate than if they were achieved through the assessment of a single data source. The Secretariat will integrate the results from diverse data sources, highlight the potential risk areas detected, work across Working Groups and the Governance Board and manage the Demonstration Project processes to ensure appropriate results are addressed.</p>

Given the likelihood that State and Administration participation rates will vary over time, Table 8-2 provides estimates of work program scope and cost at multiple participation levels. Each column reflects scope estimates for a given participation range. The cost reflected in the last row gives a range driven by the participation rate. Nominally for each column, the lower the participation rate, the higher the unit cost.

Table 8-2. Demonstration Project Cost Sharing Strategy

	Early Adopters	Robust Program	Full Region
Number of Participating States	4-8	9-15	Above 15
Governing Board Meetings	Semi Annual Face-to-Face	Semi Annual Face-to-Face	Quarterly Face-to-Face
Number of Safety Metrics	2	3	4
Number of In Depth Studies	0	1	2
Number of ANSPs Providing Data	0	2	4
Web Portal for Results Sharing	No	Basic document repository	Full results portal
Number of Risk/Metrics Working Group Meetings	Three times per year via Webinar	Quarterly, two face-to-face	Quarterly, all face-to-face
Number of Times Safety Metrics are Generated	Three times per year	Quarterly	Quarterly
Contribution per OEM	US\$50,000	US\$50,000	US\$50,000
Cost per State	US\$50,000 (Minimum number of participants) to US\$40,000 (Maximum number of participants)	US\$50,000 (Minimum number of participants) to US\$40,000 (Maximum number of participants)	US\$50,000 (Minimum number of participants) to US\$40,000 (Maximum number of participants)

Additional contributions to the Demonstration Project will take a variety of forms. In kind support from operators, ANSPs, and trade organizations will be critical to the operation of individual working groups.

It should be noted that infrastructure cost is not included in the cost sharing formula. MITRE is exploring alternative options of addressing this need via leveraging other ongoing (MITRE) lab investments in the region.

9.0 Changes to the Demonstration Project Governance Plan

Revisions to this Demonstration Project Governance Plan can be made with the consensus agreement of the Demonstration Project Governing Board. Changes will be documented in revisions to this Demonstration Project Governance Plan by the Secretariat.

Appendix A: Data Confidentiality Processes

All data used in the Demonstration Project will be managed according to the terms of this Governance Plan. In addition, data provided under the terms of data use agreements with IATA, Flight Safety Foundation or The MITRE Corporation will be handled in accordance with the additional provisions of that agreement. Figure A-I provides an overview of the various processes that will be applied to both input data and results to maintain confidentiality.

Stage of Process	Data Intake	Initial Analysis	Integration	Preliminary Results	Final Results
Responsible Parties	ANSP / IATA / Secretariat	ANSP / IATA / Secretariat	Secretariat	Working Group / Secretariat	Participants / Governing Board
Primary Activity Related to Data and Results	<ul style="list-style-type: none"> Collect data and transform into standard format 	<ul style="list-style-type: none"> Generate analytical results using specified definitions and algorithms 	<ul style="list-style-type: none"> Integrate aggregate analytical results from various sources Generate preliminary metrics or results 	<ul style="list-style-type: none"> Review integrated preliminary results Request additional analysis, as needed 	<ul style="list-style-type: none"> Determine if final results satisfy the requirements of the metric or study
Data Confidentiality Processes	<ul style="list-style-type: none"> Remove or encrypt identifying information as specified in agreements Store and access data as specified in agreements 	<ul style="list-style-type: none"> Aggregate results in the specified format 	<ul style="list-style-type: none"> Apply automated processes to de-identify flights and airlines 	<ul style="list-style-type: none"> Review final results to ensure adequate level of de-identification 	<ul style="list-style-type: none"> Review final results to ensure adequate level of de-identification Determine level of distribution to organizations not participating in the Demonstration Project
Provide information security protections to safeguard data and results <ul style="list-style-type: none"> Control access through authorization, passwords, and periodic reviews Develop and apply processes and controls for routine activities Automatically detect, alert, and prevent intrusions 					

Figure A-I. Data Confidentiality Processes for the Demonstration Project

A.1 Data Intake: Flight De-Identification

Any data that is transferred to the Demonstration Project for use in analysis will be processed to remove references to individuals, including air traffic controllers, pilots, dispatchers, and all other personnel. Additional de-identification of input data will be applied as specified in applicable data use agreements. Information provided by ANSPs will be protected according to individual agreements.

The location for storing Demonstration Project data will vary, depending on the applicable data use agreements with IATA or FSF/MITRE. All data or aggregate results provided to the

Secretariat will be stored and processed at a location to be selected by the Secretariat in the Asia Pacific region.

The Secretariat will provide standard protections at the data intake stage and at every subsequent stage of processing, analysis, and distribution of results, including:

- Controlling personnel access through authorization, passwords, and periodic reviews of the list of people with access.
- Developing and applying processes and controls for routine activities, such as handling requests for access to information or ensuring destruction of data if required by data use agreements.
- Automatically preventing, detecting, and alerting intrusions through physical and logical segregation of networks and data, firewalls, intrusion detection and reporting systems, vulnerability scanning, and penetration testing.

A.2 Initial Analysis, Integration and Review of Results: Airline De-identification

As indicated in Figure A-1, the organization that handles data intake and storage also conducts initial analysis to generate aggregate results for integration. The Secretariat is responsible for integrating the various sources of aggregate results and interacting with the Working Groups to refine the analysis and presentation of results. At the completion of the Working Group activities, the Secretariat applies an additional level of protection to ensure that it is not possible to infer an individual flight or airline from the results. This situation could arise if there is only a single airline flying to an airport or represented in an aircraft group in the aggregate results. In cases where there are not two or more airlines represented (three or more airlines in the case of IATA analysis of FDM data), the results will be masked to prevent inadvertent identification of the airline.

The Secretariat has the responsibility for developing automated processes to ensure that two or more airlines are represented in final aggregate results. In addition, Working Groups that are established to guide activities for a specific metric or analysis will review the final results to ensure that they are adequately de-identified before forwarding the results to the Governing Board. The Governing Board will review the final results as a cross check to ensure that an individual airline is not inadvertently identified by the analysis.

A.3 Distribution of Results

The final results of metrics or studies will be shared with all participants in the Demonstration Project after a thorough review to ensure that the appropriate level of de-identification has been applied. The Governing Board must approve the distribution of any results to parties not participating in the Demonstration Project.

Appendix B: Statements of Intent

Statement of Intent for States and Administrations to Participate in the Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing for Aviation Safety

Statement of Intent for Aircraft Manufacturers to Participate in the Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing for Aviation Safety

Statement of Intent for Industry Participants* in the Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing for Aviation Safety

** Industry Participants include Air Navigation Service Providers, airlines and associations*

**Statement of Intent for
States and Administrations to Participate in the
Demonstration Project of Asia Pacific Regional Data Collection,
Analysis and Information Sharing for Aviation Safety**

This Statement of Intent is made by the State or Administration identified below, hereinafter referred to as “Participant”. The Participant agrees to support the *Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing for Aviation Safety* (hereinafter referred to as “Demonstration Project”), which will collect and analyze data to advance aviation safety.

The Participant agrees to act in accordance with the core principles and responsibilities described in the *Governance Plan for the Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing* (hereinafter referred to as “Governance Plan”) dated October 2015. Core principles are described in Section 2.0 of this document, responsibilities for all participants are detailed in Section 3.0. By signing, Participant agrees to use information gained from the Demonstration Project to advance safety goals only and not for punitive or enforcement purposes.

The Participant agrees to provide subject matter expertise and remit an annual participation fee for each of the three years of the Demonstration Project. Participation fees are set annually by the Governing Board, consistent with the cost sharing strategy in Table 8-2.

The Participant may terminate its involvement in the Demonstration Project at any time and for any reason with written notification to the Secretariat. The Governing Board may suspend or terminate a participant’s involvement in the Demonstration Project if it finds that an organization has violated core principles as described in Section 2.0.

Signed by:

Name _____

Position _____

State or Administration _____

Date _____

Recorded by the Secretariat on _____

**Statement of Intent for
Aircraft Manufacturers to Participate in the
Demonstration Project of Asia Pacific Regional Data Collection,
Analysis and Information Sharing for Aviation Safety**

This Statement of Intent is made by the aircraft manufacturer identified below, hereinafter referred to as “Participant”. The Participant agrees to support the *Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing for Aviation Safety* (hereinafter referred to as “Demonstration Project”), which will collect and analyze data to advance aviation safety.

The Participant agrees to act in accordance with the core principles and responsibilities described in the *Governance Plan for the Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing* (hereinafter referred to as “Governance Plan”) dated October 2015. Core principles are described in Section 2.0 of this document and responsibilities for all participants are detailed in Section 3.0.

The Participant agrees to provide subject matter expertise and remit an annual participation fee of US\$50,000 per year for each of the three years of the Demonstration Project.

The Participant may terminate its involvement in the Demonstration Project at any time and for any reason with written notification to the Secretariat. The Governing Board may suspend or terminate a participant’s involvement in the Demonstration Project if it finds that an organization has violated core principles as described in Section 2.0.

Signed by:

Name _____

Position _____

State or Administration _____

Date _____

Recorded by the Secretariat on _____

Statement of Intent for Industry Participants in the Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing for Aviation Safety

This Statement of Intent is made by the Organization identified below, hereinafter referred to as “Participant”. The Participant agrees to support the *Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing for Aviation Safety* (hereinafter referred to as “Demonstration Project”), which will collect and analyze data to advance aviation safety.

The Participant agrees to act in accordance with the core principles and responsibilities described in the *Governance Plan for the Demonstration Project of Asia Pacific Regional Data Collection, Analysis and Information Sharing* (hereinafter referred to as “Governance Plan”) dated October 2015. Core principles are described in Section 2.0 of this document and responsibilities for all participants are detailed in Section 3.0.

The Participant agrees to contribute de-identified data, results, and/or subject matter expertise during the three years of the Demonstration Project.

The Participant may terminate its involvement in the Demonstration Project at any time and for any reason with written notification to the Secretariat. The Governing Board may suspend or terminate a participant’s involvement in the Demonstration Project if it finds that an organization has violated core principles as described in Section 2.0.

Signed by:

Name _____

Position _____

Organization _____

Date _____

Recorded by the Secretariat on _____