Agenda Item 3: Implementation of Air Traffic Flow Management (ATFM)
a) Procedures for coordination between FMP/FMP
b) Analysis of the use of RPL

SKYFUSION

(Presented by IATA & Harris Corporation)

SUMMARY

This information paper presents a service named SkyFusion developed from a strategic cooperation between IATA and Harris. This tool offers an ideal solution that leverages Air Traffic Flow Management (ATFM), Collaborative Decision Making (CDM) and System Wide Information Management (SWIM) concepts. SkyFusion enables the benefits of heightened situational awareness, explores ways to proactively manage capacity issues, and provides access to the technology that enables seamless communication across air traffic borders, in a single platform.

REFERENCES:

- SAM/IG meetings reports
- Bogota Declaration

ICAO Strategic Objectives:	*A - Safety* *E - Environmental protection*

1. Introduction

1.1 The ICAO Global Air Navigation Plan (GANP) and associated Aviation System Block Upgrades (ASBUs) introduce System-Wide Information Management (SWIM) as an essential enabler for ATM applications. SWIM provides an appropriate infrastructure and ensures the availability of the information needed by the applications run by the members of the ATM community. The related geo-referenced/time-stamped, seamless and open interoperable data exchange relies on the use of common methodology and the use of a suitable technology and compliant system interfaces.

1.2 The availability of SWIM will make possible the deployment of advance end-user applications as it will provide extensive information-sharing and the capability to find the right information wherever the provider is.

1.3 The benefits of SWIM are referenced in ICAO documentation and have been demonstrated through research and development activities in the United States and Europe. Such activities have showcased the technical interoperability of SWIM systems and validated the Global SWIM concept. However, for much of the world, the development and implementation of SWIM and Global SWIM is considered complicated and nebulous. Commercial information-based services offer the

opportunity for stakeholders to take advantage of lessons learned by SWIM implementers and to leap frog in technological advancement.

1.4 As the exchange and participation of aeronautical information becomes critical to improving throughput and efficiency, the importance of SWIM will be undeniable. Operational services will be offered by some SWIM pioneer implementations over IP, surveillance data distribution and MET data will also be distributed over IP.

1.5 While B0-DATM is establishing the framework for information management and began to look at domains, the Standards and Recommended Practices (SARPs) are still being developed for full SWIM implementation. Based on the implementation of B0-DATM SARPs and the work on SWIM SARPs, 3rd Party Online SWIM solutions are beginning to appear. These solutions provide an easy to use system that provides users access to relevant and mutually understood information in an interoperable manner.

1.6 SkyFusion is a commercial offering envisioned by IATA and delivered through cloud technology. This system offers an ideal solution that brings together Air Traffic Flow Management (ATFM), Collaborative Decision Making (CDM) and System Wide Information Management (SWIM) in a single platform. The SkyFusion platform features CDM tools to drive practical improvements and bottom-line efficiencies. SkyFusion works with Airlines, ANSPs and Airports to facilitate the exchange of both raw data and information, translating the raw data into common global formats (e.g. AIXM, FIXM, WXXM), and providing visualization tools to contextualize the information in an easy to use format.

1.7 Specifically SkyFusion is designed to: Provide for cloud-based information exchange; deliver visibility and common communications for users; support the industry ATFM and CDM initiatives and enhance situational awareness; ensure better real-time cooperation, alignment and decision-making. Together, these contribute to operational efficiency, allowing users to: increase performance and usage of resources through strategic and pre-tactical planning; reduce carbon emissions, uncertainty and costs through performance and usage of resources.

1.8 This paper seeks to explain the current features of SkyFusion and its capabilities. To most countries SWIM is still very conceptual and benefits will not be realized until sometime in the future. However, with the platform operationally available now, many States who may have been hesitant to develop these capabilities have the opportunity to leap forward in technical capability.

2. Background

2.1 SkyFusion is a software as a service (SaaS) developed to support ATFM, CDM and SWIM from a strategic cooperation between IATA and Harris that can be an option to fulfil the States/ANSPs information management needs through utilizing cloud secured technologies.

2.2 SkyFusion enables the benefits of heightened situational awareness, explores ways to proactively manage capacity issues, and provides access to the technology that enables seamless communication across air traffic borders, in a single platform. There are four core applications in SkyFusion, 2 focused on situational awareness (Traffic Display and Traffic Monitor) and 2 focused on CDM (Information System and Chart Hub).

2.2.1 **The Traffic Display** tool provides users with a map view of airborne air traffic, as well as quick view insights into airport status, enabling users to: filter and observe select traffic flows (e.g., by airport and airline and many other filters); rapidly visualize airport congestion status from each

stakeholders perspective into the future; overlay a graphical view of the route and other flight information for individual flights.

2.2.2 **The Traffic Monitor** provides predicted information for airport arrivals and departures, enabling users to: monitor predicted air traffic demand and capacity over time for airports and airspace elements (ANSP's, airports or airlines); examine flights that constitute the air traffic demand for an airport. Information includes modelled arrival times for each flight, providing essential input into the CDM process and allowing users to proactively (strategically) develop traffic management measures to balance demand and capacity.

2.2.3 **The Information System** provides communications capabilities for airspace and airport status, facilitating the sharing of traffic management plans globally and for an entire Region, enabling users to understand and communicate: current and expected average airport delays, by arrivals and departures; information on current or planned traffic management measures; equipment outages and runway closures; miscellaneous notifications, including route availability, special operations and volcanic ash activity.

2.2.4 **The Chat Hub** provides a central application for communications which brings together domestic and international users as well as both internal and external users for an organization. Chat Hub imports advisories from the Information System and provides a forum for users to make operational decision collaboratively. Forums for communicating within the application can be made either public or private, allowing users to control and define the flow of information. Chat Hub provides cross-border access to other stakeholders in a way that no application before it has, positioning it as a foundational piece of the future global aviation environment.

2.3 **Open Applications Environment**: In addition to the initial applications provided on the SkyFusion platform the open architecture allows unlimited additions of new and value-added application services to the platform. Given this scalability, ANSP's, Airlines, Airports and other applications developers can provide additional relevant functionality to the platform, increasing user benefits. This is the basis of a truly open architecture.

2.4 **System-to-System data sharing**: Stakeholders can also opt to utilize this SWIM configured platform as an efficient and cost effective method of sharing ANSP-to-ANSP, ANSP-to-airline, and ANSP-to-airport information to use currently integrated tools and avoid costly and laborious point-to-point connections between stakeholders. Most of the ATFM Flight Management Units in South America do not count on an automated system that provides the basic functionalities and supporting tools for a provision of an ATFM Service.

2.5 With borderless information, SkyFusion transforms the landscape of collaborative decision-making and optimization. It provides an integrated view of the ATM system, beginning with four (4) key tools offering valuable information for airlines, airports and ANSPs.

2.6 Reference the aforementioned functionalities it is important to recall, for example, that SAM/ATFM/IG meetings recommended States to hold teleconferences among flow management units/positions as part of the ATFM implementation process in the Region. The SAM/IG/06 and SAM/IG/07 meetings considered that, for different reasons, States were not ready yet to conduct daily teleconferences, but concluded that ATFM teleconferences between flow management units or positions (FMUs/FMPs) should be held on a weekly basis. Likewise, the SAM/IG/08 meeting agreed that e-mail or SKYPE were valid tools that States could use to start handling flow management information. These tools have been considered as the simplest way of disseminating the ATFM philosophy in the Region. Also in SAM/IG/8 meeting, the SAM/ATFM/IG had adopted an ATFM data exchange form that was being used

by some SAM States (Argentina, Bolivia, Chile, Paraguay, Peru and Venezuela) in a more or less regular manner, depending on the State. All attempts to establish, at least, a suitable means of communication among ACCs were unsuccessful, due to lack of an appropriate tool.

2.7 In this sense, the **Information System and combined ChatHub functions** of SkyFusion could fulfil the needs of providing an effective tool enabling States to engage in cross border ATFM and CDM initiatives among FMU´s, taking into consideration that it is a borderless tool.

2.8 More information regarding the SkyFusion is attached as an **Appendix** to this information paper and will be provided by IATA and Harris Corporation through a Powerpoint presentation.

3. **Suggested action:**

a) the Meeting is invited to take note of the information contained in this information paper.

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IATA

SkyFusion

Helping Aviation Connect

MEETING THE NEXT GENERATION OF ATM CHALLENGES

POWERED BY

HARRIS® TECHNOLOGY TO CONNECT, INFORM AND PROTECT™

Helping Aviation Connect

The ever-growing demand for air travel, which is expected to double by 2030, poses unprecedented challenges for the entire aviation industry. As air traffic grows, delays due to system inefficiencies will only escalate and aviation's carbon footprint will continue to expand amid rising environmental pressures.

More than ever before, there is a need for airlines, ANSPs and airports to align to ensure that efficiency improvements keep up with the pace of demand growth. This can only be achieved through a real-time exchange of information and data at the global level.

However, today's information and management systems enable only limited exchange, hampering the much-needed situational awareness and real-time alignment of the three main ATM stakeholders.

SkyFusion was developed to help stakeholders easily overcome the limitations of today's systems and effectively meet the challenges ahead by providing them with the ability to connect, communicate and make collaborative decisions in real-time.

Transforming the Landscape of Collaborative Decision-Making

SkyFusion, born from a strategic cooperation between IATA and Harris, offers an ideal solution that brings together Air Traffic Flow Management (ATFM), Collaborative Decision Making (CDM) and System Wide Information Management (SWIM). The new SWIM-configured platform features CDM tools to drive practical improvements and bottom-line efficiencies.

SkyFusion is designed to:

- Provide a cloud-based information exchange and range of evolving functions;
- Deliver visibility and common communications for users;
- Support the industry ATFM and CDM architectures and enhance situational awareness*;
- Ensure better real-time cooperation, alignment and decision-making;
- Contribute to operational efficiency for all stakeholders, allowing them to:
  - Increase performance and usage of resources through strategic and pre-tactical planning;
  - Reduce carbon emissions, uncertainty and costs through performance and usage of resources.

* The SkyFusion platform heightens situational awareness for ATM Users. It is not a safety tool and is not to be used for aircraft direction or positioning.

Borderless Information, Predictable Skies & Operations

With borderless information, SkyFusion transforms the landscape of collaborative decision-making and optimization. It provides an integrated view of the ATM system, beginning with three key tools offering valuable information for aircraft operators, airports and ANSPs.

TRAFFIC DISPLAY

The Traffic Display tool provides users with a map view of airborne air traffic, as well as quick view insights into airport status, enabling users to:

» Filter and observe select traffic flows (e.g., by airport, sector and airway);

» Rapidly visualize airport congestion status over the next four hours;

» Overlay a graphical view of the route and other flight information for individual flights.

TRAFFIC MONITOR

The Traffic Monitor provides predicted information for airport arrivals and departures, enabling users to:

» Monitor predicted air traffic demand and capacity over time for airports and airspace elements (ANSP's, airports or airlines);

» Examine flights that constitute the air traffic demand for an airport or airspace element. Information includes modeled arrival times for each flight;

» Proactively participate in a CDM process to proactively develop traffic management measures to balance demand and capacity.

INFORMATION SYSTEM

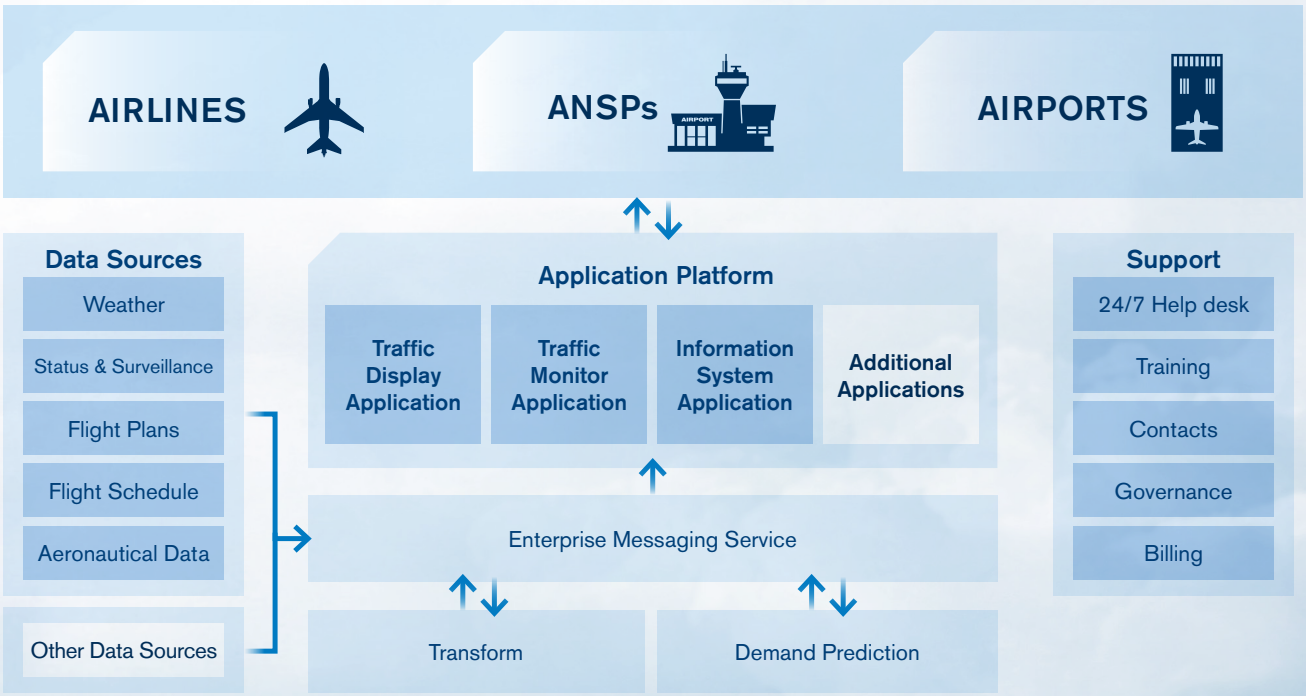
The Information System provides communications capabilities for airspace and airport status, traffic management plans globally and for an entire region, enabling users to:

» Current and expected average airport delays, by arrivals and departures;

» Information on current or planned traffic management measures;

» Equipment outages and runway closures;

» Miscellaneous notifications, including route availability, special operations and volcanic ash activity.



An Ever-Evolving Platform to Increase Industry Performance

Whether you are an airline, ANSP or an airport, SkyFusion enables you to experience the benefits of heightened situational awareness, explore ways to proactively manage capacity issues, and gain access to the technology that enables seamless communication across air traffic borders – all in a single platform!

AIRLINES

Predictable Skies

» Easier, real-time communication with ANSPs

» Greater situational awareness to utilize your airspace

» Reduced pilot flight and duty times

» Improved on-time performance – reduced holding costs

» Better usage of resources

ANSPs

Unlimited Possibilities

» Build awareness of what's happening in your airspace

» Stay in sync with your Airline and Airport partners

» Balance demand with capacity

» Optimise ATC staffing levels

» Move toward building a SWIM-compliant air traffic network

AIRPORTS

Predictable Operations

» Connect to airlines and ANSPs on one application platform

» Access key aviation data, enabling greater situational awareness

» Balance demand with capacity

» Optimise ATC staffing levels

» Better manage capacity

The SkyFusion Advantage

» Common global information exchange

» A constantly growing application platform

– Ability to analyze, customize, and display aviation data

– Core tools provided with more to be added for increased operational benefits

» Subscription-based Software as a Service (SaaS)

– Easy access via Internet browser

– Single sign-on for all applications

– Individual user accounts with controlled permissions

– SWIM configured data for future-proofing in standard data formats

» Training to ensure maximum benefits

» Ongoing updates and maintenance – automatic access to the latest enhancements

Discover how SkyFusion can help your organization build and benefit from a more efficient, interconnected airspace.

Visit **www.iata.org/skyfusion** or email **skyfusion@iata.org**