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| Director, Radiocommunication Bureau |
| GLobal FLIGHT TRACKING AND monitoring of flight data |

This document brings to the attention of the Radiocommunication Advisory Group relevant information concerning the following two meetings that took place recently:

# 1 ICAO special meeting on global flight tracking (Montréal, 12-13 May 2014)

<http://www.icao.int/meetings/GTM/Pages/default.aspx>

The conclusions of this ICAO special meeting were brought to the attention of the 2014 session of the ITU Council, Geneva, 6-15 May 2014, in Document [C14/INF/23](http://www.itu.int/md/S14-CL-INF-0023/en).

Moreover, ITU-R Study Groups 4 and 5 have been working on the subject of global flight tracking for some time. More precisely, Working Parties 4C and 5B have been discussing the issue extensively during the current study period, as shown in the latest liaison statements exchanged between both Working Parties, Documents [4C/248](http://www.itu.int/md/R12-WP4C-C-0248/en) and [5B/504](http://www.itu.int/md/R12-WP5B-C-0504/en).

ITU-R works in close collaboration with ICAO to address the frequency and spectrum management requirements of the civil aviation industry, primarily through Working Party 5B (radars and aeronautical mobile communications) and Working Party 4C (mobile and radiodetermination satellite communications).

# 2 Expert Dialogue on real-time monitoring of flight data (Kuala Lumpur,26-27 May 2014)

<http://www.itu.int/go/flightdata>

The conclusions and recommendations of the ICAO special meeting on global flight tracking can be found in Attachment 1 and the Communiqué of the Expert Dialogue on real-time monitoring of flight data can be found in Attachment 2.

**Attachments:** 2

ATTACHMENT 1

Conclusions and Recommendations

Special Meeting on Global Flight Tracking
Montréal, 12-13 May 2014

The International Civil Aviation Organization (ICAO), upon the completion of this Special Meeting on Global Flight Tracking of Aircraft, forged consensus among its Member States and the international air transport industry sector on the near-term priority to track airline flights, no matter their global location or destination. Furthermore, the meeting established a framework for future efforts in this regard for the medium and long term.

The meeting concluded that:

NEAR-TERM

a) global tracking of airline flights will be pursued as a matter of priority to provide early notice of and response to abnormal flight behaviour;

b) a DRAFT concept of operations on flight tracking will be developed that includes a clear definition of the objectives of flight tracking that ensures that information is provided in a timely fashion to the right people to support search and rescue, recovery and accident investigation activities, as well as, the roles and responsibilities of all stakeholders;

c) under the ICAO framework, the contribution by the industry through an Aircraft Tracking Task Force (ATTF) will help address the near-term needs for flight tracking;

d) ICAO will consider establishing a short term joint ICAO/IATA advisory group to support the global tracking initiative;

e) airlines will be encouraged to use existing equipment and procedures to the extent possible to support flight tracking pending the outcome of the AATF;

f) in partnership with the Task Force, ICAO will develop guidance material, based on available flight tracking best practices;

g) a FINAL high level concept of operations should be delivered to the ICAO High Level Safety Conference (HLSC 2015, February, Montreal);

h) ICAO should increase its resources allocated to the Search and Rescue in order to improve the effectiveness across national and regional boundaries;

i) ICAO should, in collaboration with a pool of search and rescue experts, identify and address operational search and rescue challenges with implementation of existing Annex 12 provisions, and provide assistance to States, including aiding in the setting of priorities for the mid and long term;

j) ICAO should facilitate the sharing of experience and lessons learned from States that were recently involved in accidents where flight tracking could have facilitated search and rescue efforts to all other States;

k) ICAO should strongly encourage States to regularly run practice exercises involving airlines operation centres, air navigation service providers (ANSPs) and rescue coordination centres (RCCs) to test and verify their ability to respond and coordinate together in an integrated manner to abnormal flight behaviour scenarios;

MID-TERM

l) ICAO performance based provisions should be developed, using a multidisciplinary approach, on flight tracking to support the location of an accident site in a timely manner for the purpose of search and rescue and accident investigation;

m) ICAO performance based provisions addressing flight tracking requirements should be sufficiently flexible to accommodate regional needs and be commensurate to operational situations;

n) ICAO should encourage States and International Telecommunication Union (ITU) to take action, at the earliest opportunity, to provide the necessary spectrum allocations as emerging aviation needs are identified. This includes spectrum for satellite and radio services used for safety of life aviation services. ICAO encourages ITU to place this on the Agenda for the upcoming ITU World Radio Conference 2015;

o) COSPAS-SARSAT should be invited to continue to investigate, within its own program and in partnership with the industry, the means of improving the reliability and utility of emergency locator transmitter (ELTs), particularly in the context of flight tracking during a distress event; and

LONG-TERM

p) ICAO should work in coordination with ITU to develop aviation requirements for network communications associated with remote storage of flight information.

ATTACHMENT 2

Expert Dialogue on Real-time Monitoring of Flight Data, including the
Black Box - the Need for International Standards
in the Age of Cloud Computing and Big Data
26-27 May 2014, Kuala Lumpur, Malaysia

**COMMUNIQUÉ**

Industry leaders from the aviation and information and communication technology (ICT) sectors, representatives of international organizations, governments and trade associations followed a call from the Minister of Communications and Multimedia, Malaysia, H.E. Ahmad Shabery Cheek to participate in an Expert Dialogue on Real-time Monitoring of Flight Data facilitated by the International Telecommunication Union (ITU), 26-27 May 2014 in Kuala Lumpur, Malaysia.

The Expert Dialogue was motivated by the events surrounding Malaysia Airlines flight MH370 which highlighted the urgent need to revisit the approach towards the availability of location and other flight data of commercial aircraft in flight.

Global Real-time Flight Tracking

Participants took note of the preliminary report on MH370 by the Chief Inspector of Air Accidents, Ministry of Transport, Malaysia dated 9 April 2014 and its safety recommendation addressed to the International Civil Aviation Organization (ICAO) to examine the safety benefits of introducing a standard for real-time tracking of commercial aircraft.

The Expert Dialogue welcomed the efficient and cohesive approach taken by ICAO to address this aviation problem and the consensus reached at its Special Meeting on Global Flight Tracking, 12-13 May 2014, Montréal on the near-term priority to track airline flights irrespective of their global location or destination. Some participants expressed great interest in contributing to the framework established at this meeting and exploring ways of improving coordination and collaboration between all stakeholders taking part in this dialogue. In addition, as mid and long term actions, it was also agreed that ICAO has begun the Global Tracking standards process in parallel.

Technology and solution providers at the Expert Dialogue presented flight tracking technical solutions that are available or will be soon available on a majority of aircraft on transoceanic routes. It was proposed that, in addition to the development of new technological solutions, a more expansive use of existing ones should be promoted. Also it is essential for the developers of the technologies, that providers of the services, the airlines and the various international bodies come together and agree on the international standards, policies and regulations and harmonized spectrum to ensure worldwide interoperability and compatibility and optimizing costs through economies of scale.

The conclusion was that tracking was underway, and the dialogue moved on to discuss real-time monitoring of flight data as a subject of further study.

Real-time Monitoring of Flight Data

Industry experts provided information on current technological developments and opportunities for future technological enhancements using cloud computing and big data. It was suggested by some participants that if flight data was stored on standards-based aviation clouds interested parties could apply state-of-the-art data analytics and data mining techniques in real-time which could lead to better informed travelers, as well as greater operational and environmental efficiency of commercial aircraft.

Participants agreed that technology that might facilitate in-flight streaming of such data is possible, but that capacity questions still exist. In addition, before in-flight streaming could be adopted, many institutional issues would need to be addressed.

These revolve around: the type of data to be transmitted; periodicity of transmission (continuous streaming; triggered transmission); spectrum requirements; reliability; liability; data security (integrity, availability, authenticity, non-repudiation); potential misuse of flight data; privacy; interoperability; cost and business models; ownership of data and access policies.

A number of satellite operators highlighted recent developments to provide commercial broadband services for passengers, and indicated the possibility of using this for some flight data communications, although safety concerns were raised including implications on the spectrum allocation.

Participants recognized that questions on the use of real-time flight data in an aviation cloud resemble the challenges faced by other industries (e.g., automotive, healthcare, utilities) exploiting cloud computing, big data analytics and other ICT-based solutions.

Proposed Actions

1) Some participants called upon ITU to take action, at the earliest opportunity, to provide the necessary spectrum allocations as emerging aviation needs are identified. This includes spectrum for satellite and radio services used for safety of life aviation services. The meeting encouraged ITU to continue to study and address current and future spectrum requirements for flight tracking and real-time flight data monitoring and make appropriate allocations at upcoming World Radiocommunication Conferences, including the conference in 2015.

2) The Expert Dialogue highlighted the future need for ICAO and ITU to facilitate an open, multidisciplinary, multistakeholder and performance-based approach towards the establishment of international standards for the use of an aviation cloud for real-time monitoring of flight data. It invited the organizations present to co-ordinate and collaborate together according to their respective expertise, roles and responsibilities to avoid duplication of efforts and to make the voices of all relevant stakeholders heard. The Expert Dialogue identified the following long-term tasks, the completion of which would be considered an important contribution to move the discussion forward:

– ICAO to develop and validate an operational need for real-time monitoring of flight data and identify minimum requirements;

– ICAO identify the concept of operations including communications requirements, and work with ITU to determine necessary telecommunication standards including spectrum requirements;

– ICAO and ITU to work together with industry to estimate the associated cost implications and develop appropriate business models to ensure cost-effectiveness;

– ICAO and ITU to identify the necessary standards, policies and regulations that would need to be developed to meet this requirement, including studying requirements on the protection of flight data, information security, privacy, appropriate use of flight data and data ownership for the use of an aviation cloud for real-time monitoring of flight data;

– Establish and maintain a roadmap of events / decision-making meetings leading to its implementation.

3) ITU and ICAO were urged to address the above issues within their remits in the appropriate group or groups in close collaboration, and facilitate participation by all interested parties.

Participation at the Expert Dialogue on Real-time Monitoring of Flight Data

Participants appreciated the constructive discussions, identified future proposed actions, and confirmed a desire to contribute towards the goal of real-time tracking and real-time monitoring of flight data. They expressed their gratitude to the Government of Malaysia for its hospitality and generosity in hosting the event. They thanked the ITU for facilitating the Expert Dialogue and for taking the initiative to give consideration to alternate ways of using ICT for the betterment of aviation, in partnership with ICAO.

The participating organizations were: AirAsia, Axiata Group, Boeing, Celcom, Civil Aviation Authority of Singapore, Department of Civil Aviation Malaysia, Deutsche Lufthansa, DLR, Embraer, EUROCONTROL, Flight Focus, FLYHT Aerospace Solutions, Globalstar, IATA, ICAO, IFALPA, IMPACT, Inmarsat, Intelsat, Iridium, ITU, L-3 Communications, Lufthansa Systems, Malaysia Airlines, Malaysian Communications and Multimedia Commission, Ministry of Communications and Multimedia Malaysia, Panasonic Avionics, Rolls-Royce, SAP, SITA, SkyTrac Systems, Star Navigation Systems, Syphax Airlines, Teledyne Controls, Telnet, Thales, Thales Alenia Space.

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