

ARINC IA Project Initiation/Modification (APIM)

Name of proposed project

AOC Message Standardization

APIM #: 04-008

Suggested Subcommittee assignment

It is recommended to form a new working group which consists of airline representatives mainly from the following disciplines: Maintenance Operations, IT Networking Services, and Avionics Engineering, pilots, dispatchers and other operationally oriented airline personal.

Project Scope

This project will develop, as a minimum, a set of standardized AOC messages. Messages defined in phase 1 of the project, will exclusively use the ACARS network. In phase 2 of the project, a layer shall be defined which describes how ACARS messages shall be encoded and transported over other networks. More AOC, non ACARS messages, can also be added in this phase. While intended to meet the immediate need for a universal definition for the A380 aircraft, the standard could be used for any aircraft the airline chooses.

Project Benefit

Complex AOC message handling software (e.g. EFB) is usually not developed by airlines themselves; therefore a standard for interchanged messages will help to lower the cost of modifying and maintaining the respective ground system, especially for airlines with mixed fleets.

As airlines have often outsourced ground handling, an AOC message standard enables direct communication between aircrafts and these handling organizations, similar to ATC Datalink communication.

This product is needed because the airlines are about to loose their traditional ability to uniquely determine the format and content of some traditionally “user-defined” AOC messages. Acceptance and utility of the selected AOC messages by airlines will be maximized if the format and content are determined by a combination of airlines rather than a single airframe manufacturer.

A properly executed effort will allow the airlines to define a single cost-effective AOC ACARS message system, consistent across the different airborne and ground systems. In addition, future data requirements - when implemented by the various avionics vendors - can be more easily and economically satisfied.

Airlines supporting effort

Sponsor Airlines:

Lufthansa, United Airlines and FedEx

Immediately Affected Airlines:

Air France, Emirates, Korean Air, Malaysia, Qantas, Qatar, Singapore, Virgin

The airlines will be coordinating with the airframers, avionics suppliers and Datalink service providers.

Issues to be worked

During phase 1:

- Standardization of ACARS air/ground messages used by airframer pre-installed onboard software (most urgently for the A380 OIS/OMS)
- Standardization of air/ground messages used by standard EFB or Cabin applications, offered by OEM
- Standardization of air/ground messages used to connect an aircraft directly (bypassing the airline host) with a service provider system, e.g. a fueling or de-icing company

During phase 2

- Define message definition technology and rules that allow to transport ACARS messages over broadband networks
- TCP/IP based specific means and rules that allow to transport non-ACARS AOC messages over broadband networks
- End-System functional and behavioral guidance

The standardization activity will provide a common framework for AOC messages, which may include: definition of protocols, formats, location, data labels, messages transporting the data and timing of particular data elements. The activity will try to harmonize between ACARS and broadband messages, e.g. by developing an envelope by which messages can be transported over either network.

Recommended Coordination with other groups

The progress and direction of this activity should be reported to the DLK Users Forum where coordination with other groups will be determined.

Timetable for projects/programs

Due to A380 delivery schedules, a mature draft of the new ARINC standard is needed by April 2005. Adoption consideration for phase 1 is projected at the 2005 AEEC Mid-Term.

Adoption consideration for phase 2 is projected at the 2006 AEEC Mid-Term.

Documents to be produced and date of expected result

A new Project Paper is proposed. Tentatively, the number of the new standard could be ARINC Specification 633.

Comments

The A380 comes with a network-server system that hosts the OIS (Onboard Information System). The OIS is split into two parts, the so called “left” or “dark green” part which has a tight connection to the avionics and which can exclusively communicate via ACARS and the “right” or “light green” part which will be able to communicate via other networks like CBB too.

Recently, Airbus has presented its A380 customers with a list of standard applications that will exchange ACARS messages with ground-IT, for example the “OIS Technical Logbook,” the OIS Fuel or the OIS Weight & Balance application. These applications will run on the dark green part of the software.

Traditionally, the ACARS world was split into ATS applications and AOC applications. ATS applications have been standardized in ARINC 622/623 but there was no need for AOC standardization, because the airlines controlled both ends of the communication (basically because the airframe manufacturers did not sell AOC software).

Now we have a new situation. All A380 will be delivered with some AOC applications that cannot be modified by the airlines. In this context, it is better for an airline consensus to determine the message formats and content than an engineer at Airbus.

From the results of phase 1, the working group should synthesize the general requirements for the definition and identification of messages, and the application of communication technologies (such as ACARS over small-/wide-/broadband air/ground network links). For fast communication networks, the TCP/IP specific encoding, transport and decoding technologies rules should be defined as well as the End-System functional and behavioral guidelines.

Meetings

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days
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