

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 12-006

ARINC Project Paper xxx, Embedded Interchange Format for Terrain and Obstacle Databases

1.1 Name of Originator and/or Organization

Airbus, Jeppesen

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Expand scope of AMDB Subcommittee

2.2 Support for the activity (as verified)

Airlines: American, **Delta**, FedEx, Lufthansa, **Southwest**, TAP Portugal, **UPS**, United

Airframe Manufacturers: Airbus, Boeing

Suppliers: Avtech Sweden (TBC), GE (TBC), Jeppesen, Rockwell Collins (TBC), Thales

Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Lufthansa

Airframe Manufacturers: Airbus, Boeing

Suppliers: Jeppesen, Thales (**TBC**)

Others:

2.4 Recommended Coordination with other groups

The following activities are relevant to this topic:

- Systems Architecture and Interfaces (SAI) Subcommittee
- ARINC 816, Embedded Interchange Format for Airport Mapping Database (AMDB)
- ARINC xxx, Embedded Interchange Format for Navigation Database (proposed per APIM 12-005)
- ARINC xxx, XML Encoding and Compression (proposed per APIM 12-007)
- RTCA DO-200A Standards for Processing Aeronautical Data
- RTCA SC-217 / EUROCAE WG44 Terrain and Airport Databases
- RTCA DO-276 User Requirements for Terrain and Obstacle Data
- RTCA DO-291 Interchange Standards for Terrain, Obstacle and Aerodrome Mapping Data
- ICAO Annex 15 supplement 33 (eTOD – electronic Terrain and Obstacle Data)

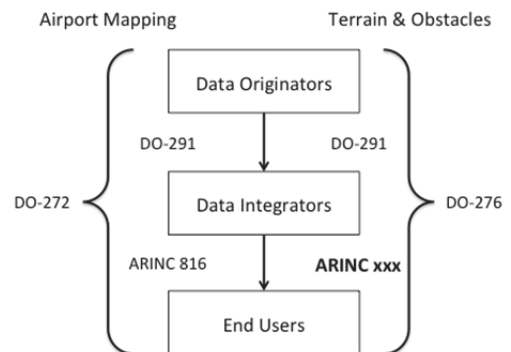
3.0 Project Scope

3.1 Description

Terrain and Obstacle data are used in different systems today like TAWS or Electronic Charting. RTCA and EUROCAE have defined the functional content of these databases in RTCA DO-276/DO-291 (User Requirements / Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data) but not the encoding format.

A standardized format would provide the airlines with freedom of choice in their selection of database provider. A standardized encoding would be agreed between airlines, aircraft manufacturers, system designers and database providers.

Goal of this project is to prepare a standard for an open interchange format for terrain and/or obstacle data in parallel to ARINC 816 for AMDB data.



The project will define a single open encoding format for terrain and obstacles to be directly loaded in airborne systems. In addition, the database processing chain shall be free from any proprietary techniques.

Provision should be made for new features as follows:

- Have provisions to function with an aeronautical database server that could be used for both future and existing databases.
- In order to reduce load time, methods should be implemented to enable loading of complete databases or partial updates if only small fractions are changed or added (called differential loading, delta load, short load, etc.).
- No need for data conversion tools or any additional transformation of the data delivered by the database vendors. This will allow the airlines to load the data themselves in the airborne system.
- Extensible for addition of new data fields if applications or new functions would need those data.
- Recognize that terrain data structure **will may** be different from obstacle data.
- Recognize that terrain data **will may** be updated at a rate that is different from that required of obstacle data.
- Recognize that data could be maintained in multiple files.

3.2 Planned usage of the envisioned specification

Note: New airplane programs must be confirmed by manufacturer prior to completing this section.

Use the following symbol to check yes or no below.

New aircraft developments planned to use this specification yes no
 _____no

Airbus: (aircraft & date)
 Boeing: (aircraft & date)
 Other: (manufacturer, aircraft & date)

Modification/retrofit requirement yes
 no

Specify: (aircraft & date)

To be used with new avionics architectures, i.e. centralized database servers etc.

Needed for airframe manufacturer or airline project yes no
 Specify: (aircraft & date)

Mandate/regulatory requirement yes no
 Program and date: (program & date)

Is the activity defining/changing an infrastructure standard? yes no
 Specify (e.g., ARINC 429)

It is defining a new data specification for terrain and obstacle data.

When is the ARINC Standard required? October 2014

The date is not driven by a specific aircraft program. It is an infrastructure strategic requirement. No mature plan for a new aircraft program exists. Because

Is this a software interface and protocol standard? yes no

Specify: _____

Product offered by more than one supplier yes no

Identify: All ICAO Annex 15 supp. 33 (eTOD) compliant countries

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

- Can choose between database providers.
- Avoid redundant and time consuming data loading

4.2.2 Benefits for Airframe Manufacturers

- Enabler for more integrated avionics architectures, i.e., centralized database servers.
- Avoid redundant storage of similar data, and issues related to systems accessing various data sources

4.2.3 Benefits for Avionics Equipment Suppliers

- Defined foundation for building additional/new applications

5.0 Documents to be Produced and Date of Expected Result

ARINC Project Paper xxx, Terrain and Obstacle Data Base, October 2014.

5.1 Meetings and Expected Document Completion

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

Product/Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
TOTAL AMDB+TDB+ODB	5	20*	Oct 2012	Oct 2014

* Meeting days would be shared between AMDB and **TDB/ODB** standards development activities.

APIM 09-008A for AMDB (816 Supp 3) calls for three 3-day meetings. This APIM calls for two additional meetings. All meetings planned 4 days in length.

Regular web conferences are expected.

6.0 Comments

The AMDB Subcommittee should determine if it is appropriate to prepare one deliverable for TDB+ODB or two deliverables.

6.1 Expiration Date for this APIM

Oct 2014

For IA staff use only

Date Received: _____

IA staff : _____

Potential impact: _____

(**A. Safety** **B. Regulatory** **C. New aircraft/system** **D. Other**)

Resolution: _____

Authorized, Deferred, Withdrawn, More Detail Needed, Rejected)

Assigned to SC/WG: _____

Submit completed form to the AEEC Executive Secretary.