

# ARINC Project Initiation/Modification (APIM)

**1.0 Name of Proposed Project APIM 13-009**

Fiber Optic Mechanical Transfer Technology

Prepare Project Paper 8XX. Develop new industry standard for addition of multi-fiber ferrule, (based on Mechanical Transfer (MT) technology), fiber optic contacts for use in aerospace applications.

**1.1 Name of Originator and/or Organization**

AEEC Fiber Optics Subcommittee (via Robert Nye, Boeing)

**2.0 Subcommittee Assignment and Project Support**

**2.1 Suggested AEEC Group and Chairman**

Fiber Optics Subcommittee – Robert Nye, Boeing

**2.2 Support for the activity (as verified)**

Airlines: American Airlines

Airframe Manufacturers: Airbus, Boeing, Gulfstream, Dassault

Suppliers:

Amphenol	Luciol
Aurora	OFS Specialty Photonics
Carlisle IT	Radiall
Cinch	Sabritec/Rosenberger OSI
Glenair	Souriau
Greenlee Communications	TE/Deutsch
ITT-Cannon	Winchester
KITCO Fiber Optics	

Others: TBD

**2.3 Commitment for Drafting and Meeting Participation (as verified)**

Airlines: American Airlines

Airframe Manufacturers: Boeing, Airbus

Suppliers: See above (Section 2.2)

Others: TBD

**2.4 Recommended Coordination with other groups**

CSS, NIC, and SAI

**3.0 Project Scope (why and when standard is needed)**

**3.1 Description**

This project will define a new fiber optic contacts, connectors, and cables using Mechanical Transfer (MT) technology for use in high density fiber optic applications.

The MT type connectors allow for smaller packaging of fiber optics.

NOTE: The Cabin Systems Subcommittee is also documenting interface

definitions for MT Type (and hybrid derivatives) contacts installed in EN 4165 connectors. These are intended to be installed in cabin interface equipment for use in cabin applications, and not for avionics equipment installations.

### 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

Airbus:   (aircraft & date)

Boeing:                                        (aircraft & date)

Other:   (manufacturer, aircraft & date)

Modification/retrofit requirement    yes  no

Specify:                                       (aircraft & date)

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)

When is the ARINC Standard required?

\_\_\_\_\_ (TBD) \_\_\_\_\_

What is driving this date? \_\_\_\_\_ (state reason) \_\_\_\_\_

Are 18 months (min) available for standardization work?                                yes  no

If NO please specify solution: \_\_\_\_\_

Are Patent(s) involved?    yes  no

If YES please describe, identify patent holder: \_\_\_\_\_

### 3.3 **Issues to be worked**

- (a) Subcommittee to define scope of project and provide a preliminary project schedule. The group will identify the sections of each fiber optic standard set (ARINC 801-807) that will require modification to define the MT technology connectors (specifications, system design considerations, installation, inspection, maintenance, and training). This should take 1 meeting at the most.
- (b) Define requirements for a standardized MT termini, connector, and cable. Research data for performance tests, determine selection of best design. Establish performance levels and requirements for use in aerospace environments. Define intermateability standards for use by different suppliers and users.
- (c) Develop termini design in conjunction with termini suppliers, connector suppliers and various industry committees.

## 4.0 Benefits

### 4.1 Basic benefits

Operational enhancements yes  no

For equipment standards:

a. Is this a hardware characteristic? yes  no

b. Is this a software characteristic? yes  no

c. Interchangeable interface definition? yes  no

d. Interchangeable function definition? yes  no

If not fully interchangeable, please explain: \_\_\_\_\_

Is this a software interface and protocol standard? yes  no

Specify: \_\_\_\_\_

Product offered by more than one supplier yes  no

Identify: Termini and/or connector suppliers

### 4.2 Specific project benefits (Describe overall project benefits.)

The project will utilize the existing MT technology to provide a high density, smaller footprint connector.

#### 4.2.1 Benefits for Airlines

A smaller and lighter connector allows airlines to reduce the space and weight occupied by avionics equipment. Lower weight reduces fuel cost.

#### 4.2.2 Benefits for Airframe Manufacturers

Same as 4.2.1 above.

#### 4.2.3 Benefits for Avionics Equipment Suppliers

This project provides equipment suppliers the option to use a high density fiber optic connector for equipment when required, lower maintenance cost, and the intermateability requirements would provide a clear industry standard.

## 5.0 Documents to be Produced and Date of Expected Result

This project is intended to create a new **ARINC Specification 8XX** similar to **ARINC Specification 801: Fiber Optic Connectors**. The MT technology project is separate and distinct from the material currently in ARINC Specification 801.

### Other ARINC Documents affected by the MT project:

- **ARINC Specification 801: Fiber Optic Connectors**
  - o Reference the high density, low weight uses for MT technology
- **ARINC Specification 802: Fiber Optic Cables**
  - o Add cable definitions and testing requirements
- **ARINC Report 803: Fiber Optic System Design Guidelines**
  - o MT technology considerations in system design
- **ARINC Report 805: Fiber Optic Test Procedures**
  - o MT termini and connector specific test procedures and inspection criteria
- **ARINC Report 806: Fiber Optic Installation and Maintenance**
  - o MT termini and connector specific installation and

maintenance processes

- **ARINC Report 807: Fiber Optic Training Requirements**
  - o MT Termini and connector specific training requirements

### 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.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
<i>Project Scope Definition</i>	<i>3 three-day meetings per year</i>	<i>27 (3 year total)</i>	<i>5/2013</i>	<i>5/2016</i>
<i>Project Schedule</i>				
<i>Connector Specification</i>				
<i>Termini Specification</i>				
<i>Design Guide</i>				

- Notes: 1. Additional web conferences will be organized on an "as needed" basis.  
2. Meeting schedule includes work from APIM 09-004A, and APIM 13-XXX: Expanded Beam Technology termini (definition/guidance)  
3. Existing ARINC Standards to be modified noted in Section 5.0 above*

The ARINC Industry Activities staff will support all meetings and facilitate web/teleconferences as needed as scheduling permits.

### 6.0 Comments

This proposal extends the activity of the FOS Subcommittee for three years. Two APIMs are being submitted at the 2013 AEEC. If both APIMs are approved, this project will be worked simultaneously with APIM 13-xxx: Expanded Beam Technology connectors.

### 6.1 Expiration Date for this APIM

October 2016

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.***