

ARINC IA Project Initiation/Modification (APIM)

Name of proposed project

APIM#: 03-007

Additional New Seat Integration Work Scope to be initiated in 2003

Suggested Subcommittee assignment

The Seat Integration Working Group (SIWG) of the Cabin Electronic Interface subcommittee (CEI) of AEEC is the existing forum that is tasked to address the integration of electronics into airline passenger seats.

The working group consists of members that are representative of all stakeholders in the process of integrating electronic systems with airline passenger seats.

Project Scope

1. This project expands the investigation of seat integration items to address additional standardization opportunities raised by the airlines at the June 2002 SIWG meeting (Action Item GEN 09):
 - a. Maintenance friendly installation – Develop standards for installation design that will result in reduced time to troubleshoot, repair, or remove and replace seat electronic equipment.
 - b. Documentation requirements – Make the documentation, ARINC 628 Part 5, comprehensive and accessible to enable the maintenance technician to maintain the seat equipment and wiring configuration.
2. Additionally, this project expands the investigation of seat integration items and issues to encompass the full agenda for seat integration issues as defined by the WAEA Seat Integration Working Group initiative. Currently the SIWG working plan is focused on the issues raised by Standardization and Wiring Practices Team one of the three working group teams formed to support the WAEA initiative. The New Design Development Integration Process and Communication Team and Certification team issues have not yet been fully addressed and we wish to include these within our work scope.

This project addresses the problem statement developed by the New Design Development Integration Process Team: “The current process does not produce an elegant, high quality seat with integrated electronics that is easily maintainable, at reasonable expense in a timely manner.”

3. This project addresses the items in accordance with the problem statement of the New Design Development Integration Team that were raised by the airlines and other participants at the June 2002 SIWG meeting in the following areas:

- a. Communication – Develop standard methods and milestones for integration program information flow between all stakeholders.
 - b. System Integrator Function – Define the role and responsibility of the integrator and who that should be.
 - c. Contractual Guidelines – Identify standard seat integration requirements and language for the roles and responsibilities of each party in a seat integration program that could be used to develop contracts.
 - d. Program Flow – Develop standardized milestones and requirements for design coordination from Initial Technical Coordination to the closure of First Article Inspection discrepancies to improve the flow, timing, and product of seat integration programs.
 - e. Seat Integration Metrics - Establish grading criteria for candidate seat/IFE integration methods.
4. Additionally, this project investigates options for off-seat SEB form factor and installation guidelines.
 5. This activity also investigates the seat integration issues related to ARINC 628 Part 2 and Part 5 as it relates to the 3rd Generation Cabin Network (3GCN) as directed by CEI (ref. APIM 02-003).

Project Benefit

The SIWG is currently completing work that includes updating standards that comprise ARINC 628 such as: seat LRU electrical and mechanical interfaces and integration (SEB, SVD, PCU, SAC, ISPSU, remote jacks, etc.); electrical system requirements (ISPSS, grounding); cable design and installation; and guidelines for the acoustical and thermal requirements of seat equipment.

These current activities provide a significant benefit to the airlines in the selection, procurement, and implementation of IFE equipment and seats. Additionally they provide guidance to the suppliers of seating and IFE equipment as well as the airframe manufacturer and/or system integrator. To fully realize the objectives of the SIWG it is necessary to address the additional opportunities for standardization of seat integration design and documentation as well as the process of seat and IFE integration as brought forth by the airlines and other SIWG participants.

Benefits to airlines

1. Lower IFE/seat program development costs – Standardization of requirements for documentation, communication, responsibilities, program milestones and methods

will improve the efficiency of IFE/seat integration by streamlining the engineering task for the airline customer.

2. Lower IFE/Seat recurring maintenance costs – Design standards for maintainability will reduce the lifetime cost of ownership. Standardized documentation will make the data requirements of 628 Part 5 accessible to the AMT or seat maintenance provider.
3. Higher quality of seat installation – Standard methods, documentation, milestones, and metrics for IFE/seat integration will result in an improved product design and implementation that will better meet the airlines' expectations.
4. Reduced program flow time – More effective communication and coordination meetings, clearly defined roles, responsibilities, and requirements will promote more efficient integration activity. This will increase productivity to reduce program duration and improve the quality of installation.
5. Greater opportunity for design options – Improved program flow time may be used to provide the airline a larger window of opportunity to implement custom options.
6. Improved system reliability – Maintenance friendly installations supported by documentation that assures proper and repeatable installations will improve system availability at the seat.

Benefits to Airframers/System Integrators

1. Reduce production cycle time – Seat/IFE integration time is currently a pacing factor in aircraft production and modification cycles. Improved communication, standardized expectations and requirements for suppliers along with metrics for integration effectiveness will support reduction in cycle times.
2. Lower IFE/seat program development costs – Standardization of requirements for documentation, communication, responsibilities, program milestones and methods will improve the efficiency of IFE/seat integration by streamlining the engineering task for the airframe manufacturer/system integrator.

Benefits to Suppliers

1. Lower IFE/seat program development costs – Standardization of requirements for documentation, communication, responsibilities, program milestones and methods will improve the efficiency of IFE/seat integration by streamlining the engineering task for the seat and IFE suppliers.
2. Lower IFE/Seat warranty costs – Design standards for improved maintainability will reduce the incidence and cost of warranty repairs.

3. Higher quality seat installations – Standard methods, documentation, milestones, and metrics for IFE/seat integration will result in improvements in product design and methods of working with other suppliers that will increase customer satisfaction.
4. Improved system reliability – Maintenance friendly installations supported by documentation that assures proper and repeatable installations will improve system availability at the seat.

Airlines supporting effort

Delta, Northwest, United, KLM, Lufthansa, American, Air Canada, Swiss, Emirates, South African, Cathay Pacific, US Airways, Finnair, SAS, and Virgin have promoted these issues in the SIWG under AEEC and/or WAEA.

Issues to be worked

The primary theme of this project is to standardize the process of seat/IFE integration. There are no contingent issues that are a prerequisite to the development of such a process. One open issue that must be resolved is to identify the specification that will contain these standards. It is recommended that they be included in Specification 628.

Recommended Coordination with other groups

The SIWG will coordinate with the CEI subcommittee, 3GCN Working Group, and FOWG during the development of seat associated standards.

Projects/programs supported by work

This project will directly support the recent activity by Airbus for improvement of Seat/IFE integration for the A380. The benefits will certainly be useful to all airline line fit or retrofit seat/IFE integration programs.

Timetable for this project/ programs

It is recommended that this activity commence at the next SIWG meeting following approval by the AEEC. In consideration of the current meeting schedule and work load, it is anticipated that a preliminary draft of the standards will not be available before the end of 2004.

Documents to be produced and date of expected result

1. Supplements to ARINC 628 Parts 2 and 5. Expected time to complete: 12-15 months
2. A preliminary draft of a best practices guidelines document. Expected time to complete is 18-24 months.

Comments

This project is a necessary extension to the work plan of the SIWG in order to achieve its goal to improve the process of IFE/Seat integration. The integration of seats and IFE equipment is regarded as a critical factor in the success of any IFE program. The SIWG provides a unique opportunity for ARINC to streamline the integration of IFE and Seats into aircraft. No other organization is better suited to act as the facilitator to the diverse group of stakeholders involved in this process.

Meetings

The SIWG currently meets consecutively with the CEI. In order to accomplish this expanded work load it is suggested to expand the meeting length from two to three days. It will need to be determined if this will be feasible by overlapping or extending the length of the SIWG/CEI meeting schedule.

| ACTIVITY | MEETINGS | MEETING DAYS |
|------------|---------------|-------------------|
| Document A | # of meetings | # of meeting days |
| Document B | # of meetings | # of meeting days |

For IA staff use

IA staff assigned: _____

Forward to committee(s) (AEEC, AMC, FSEMC): _____

Potential impact: ____

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

Committee resolution: ____

(1. Authorized 2. Deferred 3. More detail needed 4. Rejected)

Assigned Priority: ____

A. – High (execute first) B. – Normal (may be deferred for A.)