



To SAI Subcommittee **Date** August 15, 2010

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Subject **Draft Circulation: AEEC Technology Plan - Version 01-2010**

Summary The SAI Subcommittee is in the process of developing a Technology Plan for AEEC that will be used to develop work programs for AEEC Subcommittees and Working Groups. The goal is to identify applicable technologies for aircraft today as well as those further-off on the horizon.

The AEEC Technology Plan fully considers the impact of emerging airspace programs NextGen and SESAR in particular. The AEEC Technology Plan is organized in several sections:

Technology Plan Body - Thales Avionics provided this material at the request of the SAI Subcommittee. This material focus on AEEC standards that are likely to result from CNS/ATM evolution, organized by Communication Systems, Navigation Systems and Surveillance Systems.

Attachment 1 – Summary of ARINC Standards in work with proposed evolution of the standard.

Attachment 2 – Example topics for evaluation as future ARINC Standards:

- Digital Audio
- Airport Navigation
- Sensor technologies - EVS/SVS
- Integrated VHF radio
- CVR/DVR evolution and data transfer
- 4D Trajectory Report and Delivery

Attachment 3 – APIM Summary and Status.

Action Please send comments to Paul Prisaznuk before September 27, 2010. Your comments will be considered in the preparation of the next draft.

cc SAI Subcommittee

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AEEC TECHNOLOGY PLAN

DRAFT VERSION 01-2010

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1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to provide a vision of upcoming AEEC standardization activities that will be necessary in the next 5 to 10 years. In particular, this document will highlight new standardization activities that will need to be launched during this time frame.

The plan for AEEC standardization activities in a 5 to 10 years time frame will address:

- Evolution of existing standards
- Creation of new standards

This document is aimed at being a living document, which will need to be periodically reviewed for adjustments or updates on a yearly basis. This may be one of the items to be address in the AEEC advisory session. It is expected that new activities will be launched through the established AEEC APIM process.

1.2 Context

Revised or new standards will be triggered by avionics evolutions.

Today, future avionics evolutions will be mainly driven by:

- CNS/ATM evolutions with new operational capabilities, such as those driven by NextGen in US and SESAR in Europe, for which worldwide interoperability is essential
- Evolution of on-board technologies, as a result of
 - Evolution of aircraft concepts, such as interactivity of the display system
 - New emerging hardware and software technologies which improve the life duration, reduce the cost, and offer new functions, (examples: IMA, ARINC 664 Ethernet, IMA, WDM LAN and other interfaces, etc)
 - Technology obsolescence
- Evolutions required by the airlines to improve and/or evolve the way and efficiency they operate their aircraft. (e.g., EFB Class 2, AOC messages, connectivity, etc)
- Safety enhancements
- Security emphasis
- Environmental considerations
- New cabin concepts and new passenger services improving customer comfort and services

Those evolutions will result in changes of existing or in additional:

- Functions
- Protocols
- Interfaces
- System Architectures

1.0 INTRODUCTION

- Packaging
- Sensors/Antennas

It is expected that new ARINC Standards and Supplements to existing ARINC Standards will be needed in the future. This Technology Plan will focus on those standards currently in-work, as well as those that need to be prepared in the prescribed time frame. Discussions at the AEEC General Session, AEEC Mid-Term Session and within the SAI Subcommittee will influence this document.

This draft only address initially the changes resulting from CNS/ATM evolutions in view of NextGen and SESAR readiness. Other drivers of avionics evolutions will need to be addressed as well in upcoming versions of this document.

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION

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2.1 NextGen and SESAR Programs

CNS/ATM changes will result mainly from the NextGen and SESAR Programs. Those programs, both in the U.S. and in Europe, are aimed at:

- Increasing capacity and flight operations predictability
- Increasing flight operations flexibility and efficiency
- Improving safety and security
- Minimizing environmental impact

In both programs, future CNS/ATM changes are described in terms of Operational Improvements and Enablers. Those are described and planned:

- For SESAR in the SESAR Master Plan
- For NextGen, from an avionics standpoint, in the NextGen Avionics roadmap

2.1.1 NextGen

The NextGen Avionics Roadmap has been built by merging from an aircraft perspective the different improvements described in the following main NextGen documents

- The CONOPS detailing the operational concepts
- The Integrated Work Plan (IWP) detailing the operational improvements and enablers for 2025
- The NextGen Implementation Plan detailing the changes for 2018
- Other documents, e.g., Performance Based Navigation (PBN)

The NextGen Avionics Roadmap describes upcoming operational aircraft capabilities, under the following groups:

- Safety Enhancement
- Published Routes/Procedures
- Negotiated Trajectories
- Delegated Separation
- Low-Visibility Approach/Departure/Taxi
- ATM Efficiencies

2.1.2 SESAR

In Europe, the SESAR ATM Master Plan is the final result of the SESAR definition phase, which occurred from 2006 to 2008. This ATM Master Plan is the SESAR Work Program definition for the implementation of the SESAR concepts.

The ATM Master Plan includes the definition of consistent intermediate “technological and functional steps” towards the long term target concepts, as well as the necessary R&D and Validation activities.

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION

The ATM Master Plan also contains organizational and regulatory actions needed to accommodate the foreseen changes

Following the SESAR definition phase which is completed now, the SESAR program has entered in its development phase which is managed by the SESAR Joint Undertaking (SJU).

The main goal of the SESAR JU is to be in charge of mid-term operational and system development activities up to their validation. The SJU will also maintain the SESAR Master Plan and initiate long-term and innovative research.

Within this Technology Plan, the vision of the upcoming avionics evolutions has taken into account, in addition to the SESAR Master Plan, the R&D developments performed in the SESAR WP 9 concerning aircraft system development activities.

2.2 Upcoming Avionics Change Vision

The vision of the upcoming avionics changes included in this Technology Roadmap document has been derived from those roadmaps, in view of identifying potential new or modified AEEC standards.

Based on both the NextGen Avionics and SESAR roadmaps as well as foreseen SESAR upcoming evolutions, with:

- Concepts and Roadmap reconciliation
- Market perception and inputs
- Interpretation and feelings

The following chapters provide an overview of the planned avionics evolutions.

It should be noted that establishing such a vision was not an obvious exercise due to:

- Subtle variations in operational concepts
- Different terminologies used between US and Europe and even between the different stakeholders involved for a same operational concept
- Different timelines of the foreseen Initial Operational Capability

Avionics evolutions are organized into five parts: the classical Communications, Navigation, Surveillance organized, to which was added a part for Approach and Landing and one for Surface Operations.

Though the evolutions are planned up to 2025, the following sections focus on the mid-term, as the concern here is focused on potential standardization to occur in the next 5 to 10 coming years. This is expected to be updated on an annual basis.

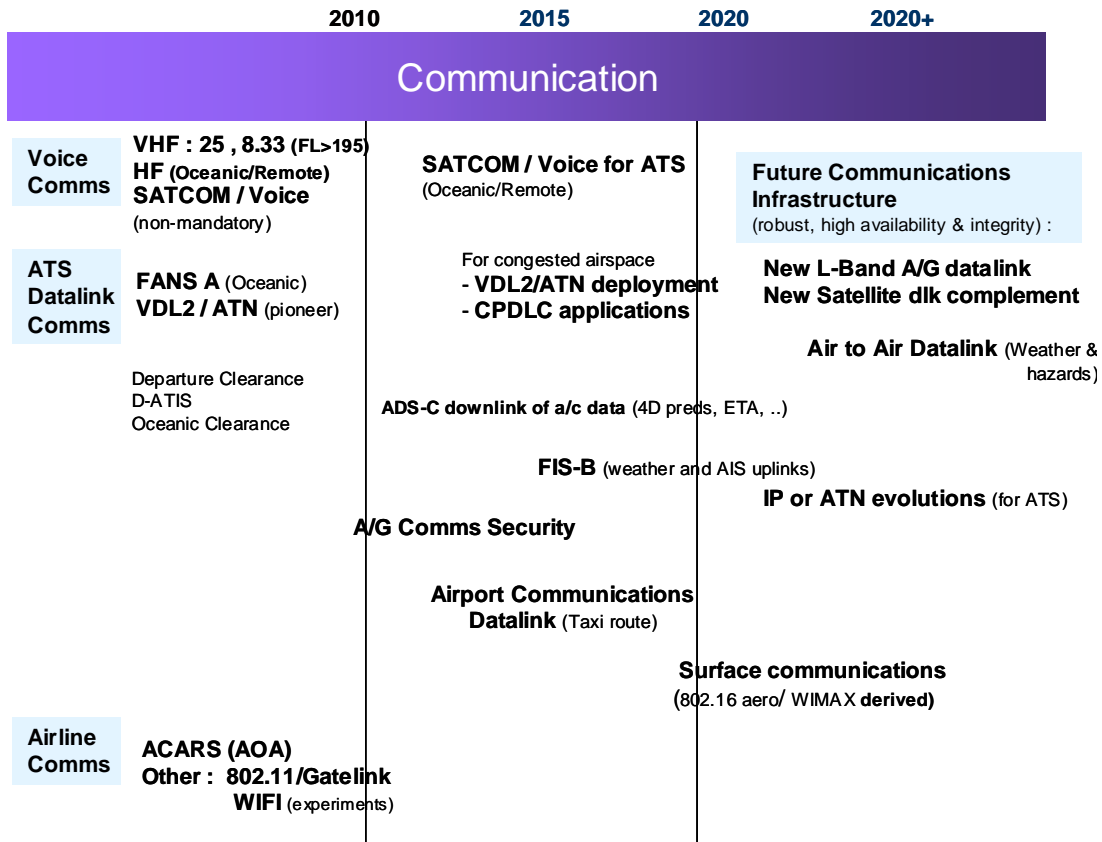
2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION

2.3 Communications

2.3.1 Foreseen evolutions

Communications can be organized into ATC and airline communications (AOC).

Similarly ATC communications can be organized into voice and datalink means and applications.



2.3.2 Foreseen technical enablers

Foreseen upcoming technical enablers:

- New datalinks: L-Band, Satellite, and WiMax on airport
- IP-based communications for AOC, ATC (?)
- Air/Ground Communications Security
- FIS-B for AIS/MET uplinks

2.3.3 Impacted systems

With regard to those foreseen evolutions, impacted systems would obviously be:

- Communication Management (CMU/ATSU)
- Radios (VHF, SATCOM)
- and also Cockpit Displays and Controls

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION

2.3.4 Candidates for new or revised standards

Technological improvements and evolutionary changes will most likely have an impact on existing standards.

These may include:

- New architecture standards for new datalinks
- A revision of existing Communication architecture standards
- Dedicated RF unit standards for those new datalinks
- Additional or revised applications and services standards
- Revised or new antennas standards

Also to be addressed is the issue of usable RF spectrum and security implications.

2.3.5 Standardization activities roadmap

2.3.5.1 Existing standardization activities (already launched)

APIM 10-007: Air/Ground Comm Update to VHF, HF and SatCom System Standards

Others: TBD

2.3.5.2 New standardization needed to be activated in the short or mid-term

For the following activities:

- ARINC 8xx

In line and consistently with following activities:

- RTCA
 - SC-xx
- EUROCAE
 - WG-xx

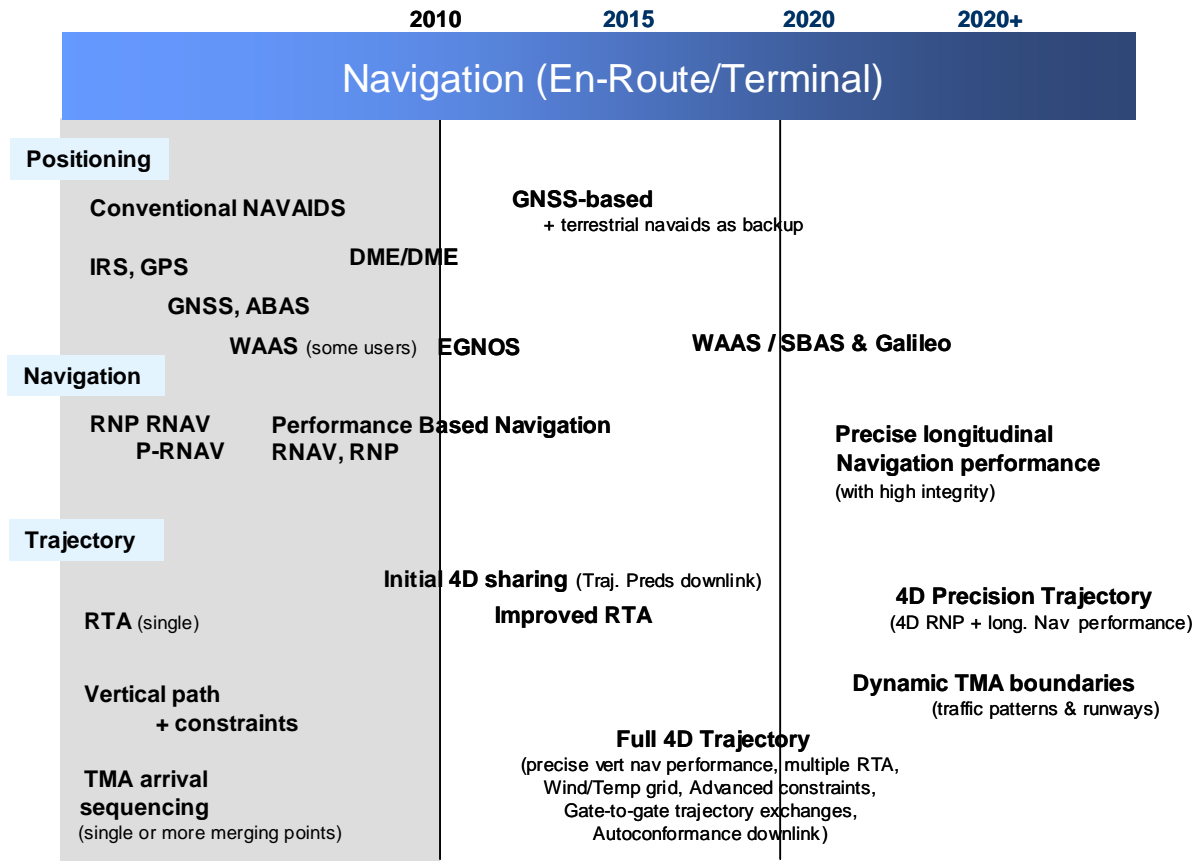
2.4 Navigation

2.4.1 Foreseen evolutions

Foreseen evolutions for Enroute and Terminal Navigation can be organized into 3 parts:

- Positioning
- Navigation
- Trajectory

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION



In the short to mid-term, foreseen upcoming capabilities are mainly:

- RNAV/RNP procedures deployment
- And initial 4D trajectory negotiations

2.4.2 Foreseen technical enablers

TBD

2.4.3 Impacted systems

With regard to those foreseen evolutions, impacted systems would most probably be:

- Navigation Systems (MMR, ADIRS)
- GNSS Receiver
- Flight Management
- Flight guidance and controls
- And Cockpit Displays

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION

2.4.4 Candidates for new or revised standards

Foreseen technical enablers and architectural evolutions will most likely have an impact on existing standards.

Typically will be needed:

- Multi-constellation GNSS receiver (GALILEO capable) standards
- Revised or new antennas standards
- New architecture and interfaces standards for TBO / 4D Trajectories
- And more precisely Flight Management interfaces with CMU and DCDU

2.4.5 Standardization activities roadmap

2.4.5.1 Existing standardization activities (already launched)

TBD

2.4.5.2 New standardization needed to be activated in the short or mid-term

For trajectory management:

- ARINC 619 ACARS
- ARINC 702 FMS
- ARINC 823 ACARS Message Security

In line and consistently with following activities:

- RTCA
 - SC-214 / EUROCAE WG-78
 - ATMAC Trajectory Operations (TOps) WG
- EUROCAE
 - WG85
- ICAO ACP WG-M
- ATA DSWG

For others: TBD

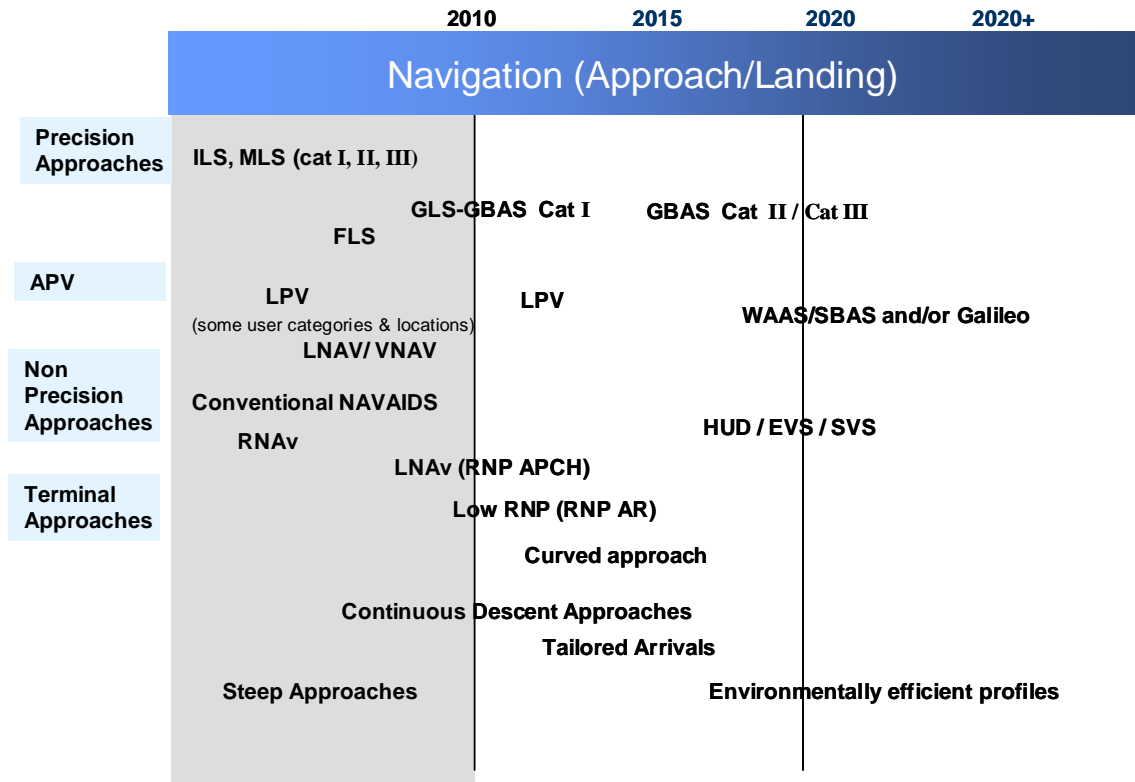
2.5 Approach and Landing Evolutions

2.5.1 Foreseen evolutions

Foreseen evolutions for approach and landing can be organized into 4 parts:

- Precision approaches
- APV approaches
- Non-precision approaches
- Terminal arrivals

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION



In the short to mid-term, foreseen upcoming capabilities will be mainly

- RNP and LPV procedures deployment
- Tailored Arrivals and Continuous Descent Approaches
- GBAS CAT II/III

2.5.2 Foreseen technical enablers

TBD

2.5.3 Impacted systems

From those foreseen evolutions, impacted systems will be:

- GNSS receiver
- Navigation Systems (MMR, ADIRS)
- Flight Management
- Flight guidance and controls
- Cockpit Displays
- Enhanced Vision (HUD / EVS / SVS)

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION

2.5.4 Candidates for new or revised standards

Standards will be needed to support technical enablers and architectural evolutions

As for navigation:

- Multi-constellation GNSS receiver (GALILEO capable) standards
- Revised or new antennas standards

But also

- Revised GNSS and MMR Standards
- New architecture and interfaces standards for Tailored Arrivals and CDA, and more precisely Flight Management interfaces with CMU and Flight Guidance
- Revised displays interfaces to accommodate EVS and SVS

2.5.5 Standardization activities roadmap

2.5.5.1 Existing standardization activities (already launched)

TBD

2.5.5.2 New standardization needed to be activated in the short or mid-term

For Approach management:

- ARINC 755 Multi-Mode Receiver (MMR)

In line and consistently with following activities:

- RTCA
 - SC-159 WG-2C
- EUROCAE
 - WG-28 and WG-62
- Eurocontrol Landing and Take-Off Focus Group
- ICAO NSP/CSG and IFPP, AWO/HWG
- International GBAS Working Group

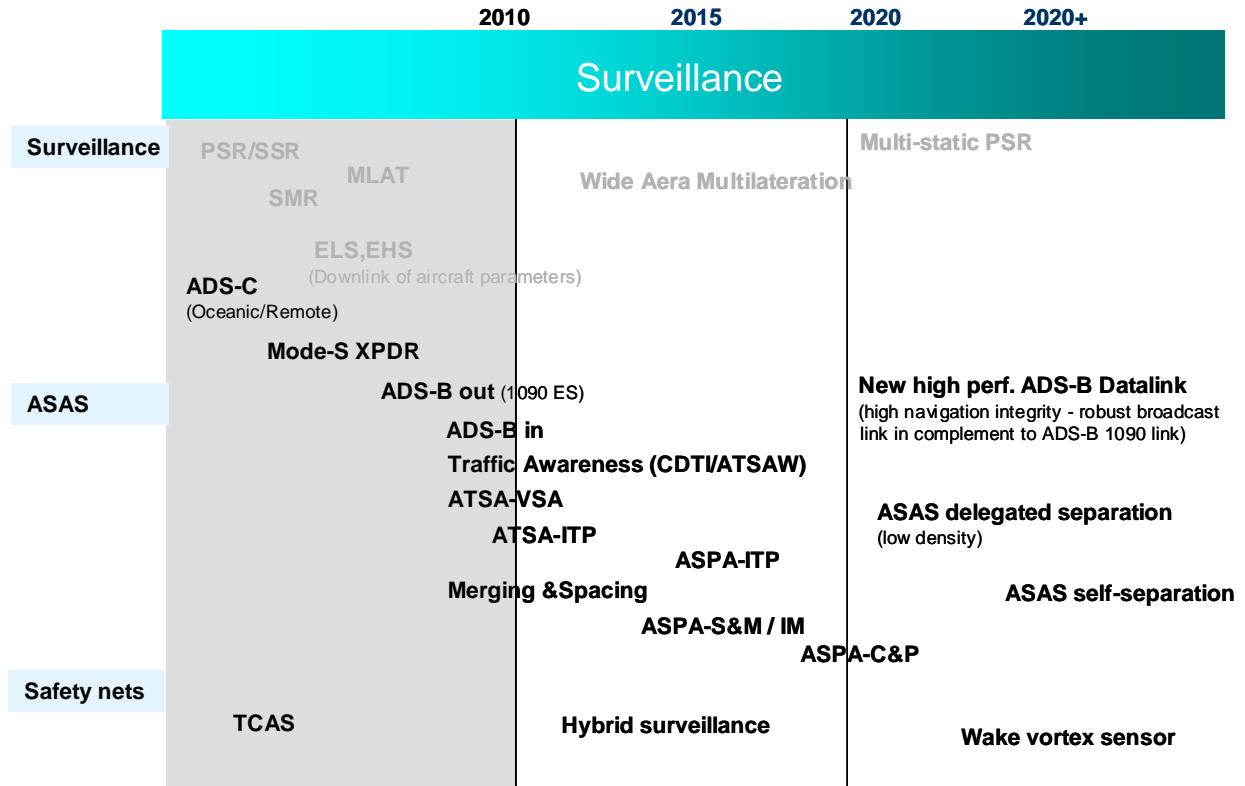
2.6 Surveillance Evolution

2.6.1 Foreseen evolution

Foreseen evolutions for Surveillance can be organized into three parts:

- ATC surveillance
- ASAS often called ADS-B
- Safety nets

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION



In the short to mid-term, foreseen upcoming capabilities will be mainly:

- Situation Awareness (ATSAW) for Visual Separation in Approach Procedure (ATSA-VSA) and In-Trail Procedure (ATSA-ITP)
- Airborne Spacing
- Interval Management procedure (ASPA IM)
- Hybrid Surveillance

2.6.2 Foreseen Technical Enablers

TBD

2.6.3 Impacted Systems

With regard to those foreseen evolutions, impacted systems will be:

- Transponder
- TCAS and Traffic Computer
- Surveillance Datalink (Mode S, UAT)
- Cockpit Displays and Controls
- Flight Management (FMS)
- Flight guidance and controls

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION

2.6.4 Candidates for new or revised standards

Impacted standards will address functional allocation trade-offs and interfaces standards between the Traffic Computer with the FMS and the Flight Guidance Systems for ASAS implementation.

2.6.5 Standardization activities roadmap

2.6.5.1 Existing standardization activities (already launched)

- ARINC 768 (Integrated Surveillance System) : APIM 10-010

2.6.5.2 New standardization needed to be activated in the short or mid-term

For the following activities:

- ARINC 7xx

In line and consistently with following activities:

- RTCA
 - SC-xx
- EUROCAE
 - WG-xx

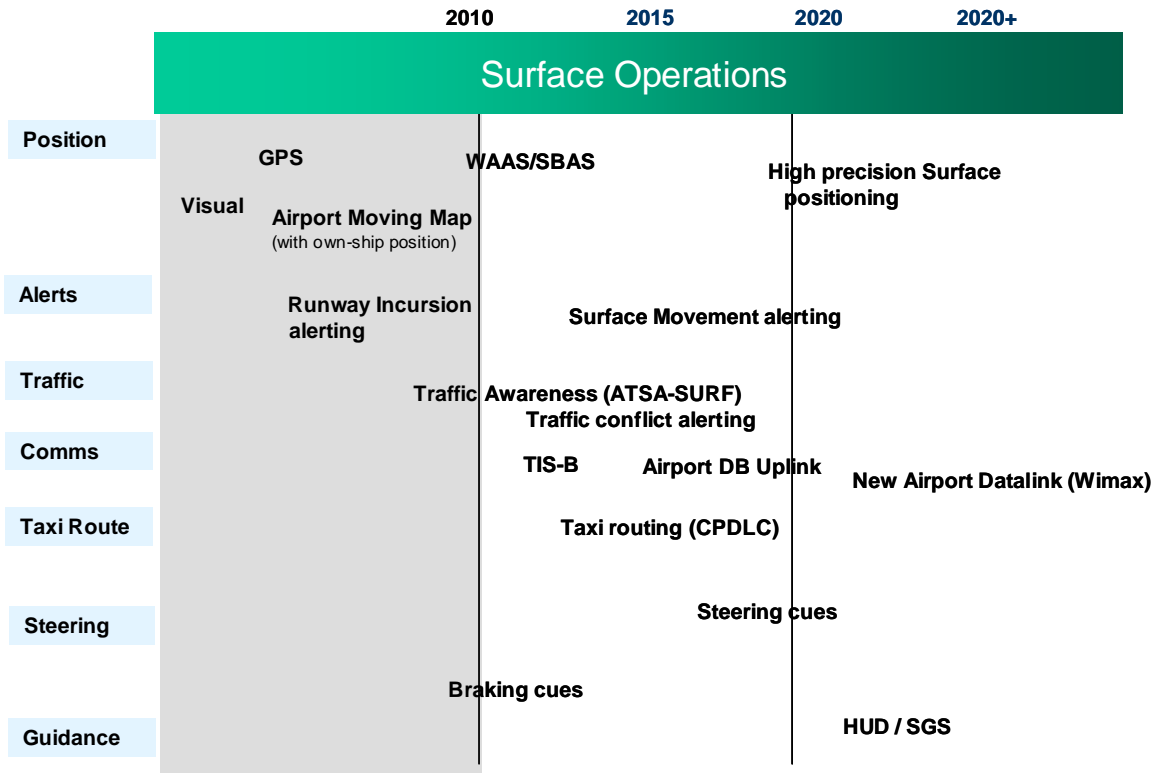
2.7 Surface Operations Evolutions

2.7.1 Foreseen evolutions

Foreseen evolutions for Surface Operations can be organized into several parts:

- Surface positioning
- Alerts
- Traffic
- Communications
- Taxi route
- Steering
- Guidance

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION



In the short to mid-term, foreseen upcoming capabilities will be mainly:

- Surface movement alerting (including Runway Overrun alerting)
- Taxi route clearance uplink (via CPDLC) and display
- Traffic situation awareness and conflict detection
- Braking and steering indications
- Surface guidance

2.7.2 Foreseen technical enablers

TBD

2.7.3 Impacted systems

From those foreseen evolutions, impacted systems will be:

- Airport Moving Maps systems
- Cockpit Displays and Controls
- Traffic surveillance (TCAS, TC)
- Enhanced Vision (HUD, EVS, SVS)
- Communication Management (CMU/ATSU)
- And potentially a Database Server

2.0 STANDARDS THAT ENABLE CNS/ATM EVOLUTION

2.7.4 Candidates for new or revised standards

Technical innovations and architectural evolutions may require new standards.

Standards may be needed for:

- Airport Database connectivity (ARINC 816 extension)
- Taxi clearance CPDLC format
- Interface with a Database Server
- SGS interface with Surface Guidance System on an Head Up Display
- Airport DB uplink interface standard
- WiMax interface

From an architectural standpoint, standards will also be needed to address:

- The move from the current Trends for Moving map on EFBs towards Avionics integrated solutions
- Functional allocation trade-offs between the Traffic Computer and the Airport Navigation Systems
- Functional allocation trade-offs between Airport Navigation, Cockpit displays and FMS

2.7.5 Standardization activities roadmap

2.7.5.1 Existing standardization activities (already launched)

TBD

2.7.5.2 New standardization needed to be activated in the short or mid-term

For the following:

- ARINC 768
- ARINC 8xx

In line and consistently with following activities:

- RTCA
 - SC-xx
- EUROCAE
 - WG-xx

3.0 STANDARDS RELATED TO THE EVOLUTION OF ON BOARD TECHNOLOGIES

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This material to be included in a later version

4.0 STANDARDS RESULTING IN OPERATIONAL IMPROVEMENTS

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5.0 STANDARDS RESULTING IN SAFETY ENHANCEMENTS

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6.0 STANDARDS RESULTING IN IMPROVED INFORMATION SECURITY

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7.0 STANDARDS FOR IMPROVED ENVIRONMENTAL CONSIDERATIONS

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8.0 STANDARDS FOR NEW CABIN CONCEPTS

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**ATTACHMENT 1
TECHNOLOGY PLAN FOR INDUSTRY REVIEW**

ATTACHMENT 1 TECHNOLOGY PLAN FOR INDUSTRY REVIEW

Document	S/C	Title	APIM	Due Date	5yr Plan (in 25 words or less)	Driver for Activity
424A-	NDB	Navigation System Data Base	06-003	10/1/2010	Work will continue next 5 years. (1) Reflect changes to airspace. (2) Fine-tune XML definitions	
600-19	NIC	Air Transport Avionics Equipment Interfaces	10-012	4/1/2011	Update of ARINC 600 may continue as connector technologies evolve.	
618-7	DLK	Air-Ground Character-Oriented Protocol Specification	TBD	4/1/2011	Driver is ACARS optimization. Timer adjustments; potential adaptation for MIAM protocol.	
620-7	DLK	Data Link Ground System Standard and Interface Specification	TBD	4/1/2011	Driver is ACARS enhancement. New ARINC 429 Label Assignments	
628P1-6	CSS	Cabin Equipment Interfaces (CEI), Part 1, Cabin Management and Entertainment System – Peripherals	10-005	3/1/2010	Update to reflect new technology.	
628P2-7	CSS	Cabin Equipment Interfaces (CEI), Part 1, Cabin Management and Entertainment System – Seat Interfaces	10-005	3/1/2010	Update to reflect new technology.	
628P3-2	CSS	Cabin Equipment Interfaces (CEI), Part 3, Cabin Management and Entertainment System - In-Flight Entertainment System to Aircraft	10-005	3/1/2010	Update to reflect new technology.	
628P5-2	CSS	Cabin Equipment Interfaces (CEI), Part 5, Parts Selection, Wire Design and Installation Guidelines	10-005	4/1/2011	Update to reflect new technology.	
628P7-1	CSS	Cabin Equipment Interfaces (CEI), Part 7, Cabin Management and Entertainment System - Cabin Equipment Cooling General Specification	10-005	4/1/2011	Update to reflect new technology.	
631-6	DLK	VHF Digital Link Mode 2 - Implementation Provisions	10-013	4/1/2011	Driver is SESAR/NextGen: availability compliance	
653P1-3	APEX	Avionics Application Software Standard Interface, Part 1, Required Services	08-003	3/1/2010	Update per lessons learned on A380 and 787	Expand the use of ARINC 653 to cover all types of IMA systems

**ATTACHMENT 1
TECHNOLOGY PLAN FOR INDUSTRY REVIEW**

Document	S/C	Title	APIM	Due Date	5yr Plan (in 25 words or less)	Driver for Activity
653P2-2	APEX	Avionics Application Software Standard Interface	08-003	3/1/2010	Extensions needed for new aircraft including A350	
653P3-1	APEX	Avionics Application Software Standard Interface, Part 3, Conformity Test Plan	08-003	4/1/2011	Will update ARINC 653 Test Plan to Support Parts 1 and 2	
653P4	APEX	Avionics Application Software Standard Interface, Part 4, Subset Services	08-003	4/1/2011	Controller-based Minimum OS, plus Supps	
661-5	CDS	Cockpit Display System Interfaces to User Systems	08-004	3/1/2010	CDS Supplier request. Update for Regional, GA and Military	
664-P5-1	NIS	Aircraft Data Network - Network Domain Characteristics	05-022	3/1/2010		
664-P8-1	NIS	Aircraft Data Network - Upper Layer Protocol	TBD	3/1/2010	Add ref to ICAO 9896 ATN/IPS to enable ATN upper layer protocols to operate over IPv6 networks.	
667-1	FLS	Guidance for the Management of Field Loadable Software	07-012	10/1/2010	Supp 1 is expected mid-2010. No future work expected thereafter.	
717-15	DFDR	Flight Acquisition and Recording System	10-003	4/1/2011	Update recording rates	
741P1-14	AGCS	SatCom Installation Provisions	10-007	TBD	Update to reflect Swift broadband capability	
741P2-11	AGCS	SatCom System Design and Functional Description	10-007	TBD	Update to reflect Swift broadband capability	
746-4	CSS	Cabin Communications System (CCS)	10-006	10/1/2010	Payment Card Industry (PCI) compliance	
747-3	DFDR	Flight Data Recorder	10-003	4/1/2011	Update recording rates	
757-5	DFDR	Cockpit Voice Recorder (CVR)	10-003	4/1/2011	Update recording rates	
757A	DFDR	Cockpit Voice Recorder (CVR)	08-013B	3/1/2010	Completion in 2010	
758-3	DLK	Communications Management Unit (CMU) Mark 2	TBD	10/1/2010	Misc changes TBD	
761-5	AGCS	Second Generation Aviation Satellite Communication System, Aircraft Installation Provisions	10-007	3/1/2010	Offer for adoption consideration is planned for Spring of 2010	

**ATTACHMENT 1
TECHNOLOGY PLAN FOR INDUSTRY REVIEW**

Document	S/C	Title	APIM	Due Date	5yr Plan (in 25 words or less)	Driver for Activity
768-2	ISS	Integrated Surveillance System (ISS)	10-010	4/1/2011	Add interface definitions to be RTCA DO-260B compliant for ADS-B	ADS-B compliance
777-2	DFDR	Recorder Independent Power Supply	08-013B	3/1/2010	Completion in 2010	
781-5	AGCS	Mark 3 Aviation Satellite Communication System, Aircraft Installation Provisions	10-007	7/1/2010	See new APIM 10-007.	
791P1-	KU	Ku-band Satellite System, Installation Provisions	07-008A	3/1/2010		
791P2-	KU	Ku-band Satellite System, System Design Guidelines	07-008A	4/1/2011		
800-	CSS	Cabin Connectors and Cables Specification	07-007A	10/1/2010	ARINC 800 update as technologies evolve	
801-2	FOS	Fiber Optic Connectors	09-004	4/1/2011	ARINC 801 will be updated to include new contact requirements and testing procedures. Fiber optic adapters will be defined for the Quadrax sockets.	
802-2	FOS	Fiber Optic Cables	09-004	4/1/2011	ARINC 802 will be updated to accommodate single-mode cable. The group will also document the 900 micron cabling.	
806-4	FOS	Fiber Optic Installation and Maintenance	09-004	4/1/2011	ARINC 806 will be updated to support single-mode fiber.	
807-3	FOS	Fiber Optic Installation and Repair Training	09-004	4/1/2011	ARINC 807 will be updated to support single-mode fiber.	
808-2	CSS	Third Generation Cabin Networks	10-005	10/1/2011		
809-2	CSS	Cabin Equipment interfaces (CEI) 3rd Generation Cabin Management and Entertainment System - Seat Distribution	03-007	3/1/2010	ARINC 809 update as technologies evolve	

**ATTACHMENT 1
TECHNOLOGY PLAN FOR INDUSTRY REVIEW**

Document	S/C	Title	APIM	Due Date	5yr Plan (in 25 words or less)	Driver for Activity
810-3	GAIN	Definition of Standard Interfaces for Galley Insert (GAIN) Equipment, Physical Interfaces	03-009A	4/1/2010		see new APIM 10-014
812-2	GAIN	Definition of Standard Interfaces for Galley Insert (GAIN) Equipment, CAN Communications	03-009A	4/1/2010		see new APIM 10-014
813-	GAIN	Definition of Standard Interfaces for Galley Insert (GAIN) Equipment, Qualification and System-test Guidance	03-009A	4/1/2010		see new APIM 10-014
814-	GAIN	Definition of Standard Interfaces for Galley Insert (GAIN) Equipment, Design and Integration Guidance	03-009A	[TBD]		see new APIM 10-014
815-	GAIN	Definition of Standard Interfaces for Galley Insert (GAIN) Equipment, Maintenance Guidance	03-009A	[TBD]		see new APIM 10-014
816-2	AMDB	Embedded Interchange Format for Airport Mapping Databases	09-008	4/1/2011		
823P1	DSEC	Data Link Security	10-001	4/1/2011	Update ICAO refs	
823P2	DSEC	Data Link Security	10-001	4/1/2011	Update ICAO refs	
825-2	NIS	General Standardization of CAN (Controller Area Network) Bus Protocol for Airborne Use	10-004	4/1/2011		
826-1	SDL	Software Data Loading Using CAN	10-008	4/1/2011		
830-	AMS	Aircraft/Ground Information Exchange	07-010A	3/1/2010	IP infrastructure will evolve at least 5yrs	Multi-server support needed for Gatelink rollout
832-	CSS	4GCN Cabin Distribution System	06-008	10/1/2010	ARINC 832 update as technologies evolve	
833-	CSS	Wireless Distribution	07-002	10/1/2010	ARINC 833 update as technologies evolve	

**ATTACHMENT 1
TECHNOLOGY PLAN FOR INDUSTRY REVIEW**

Document	S/C	Title	APIM	Due Date	5yr Plan (in 25 words or less)	Driver for Activity
835-	SDL	Security of Loadable Software Parts	08-006	4/1/2011	Standard is expected in early 2011, quite possibly evolving through Supps in next 5 years as software and protocol security standards change.	
836-	CSS	Cabin Boxes Mechanical Interfaces Specification	08-011	10/1/2010	ARINC 836 update as technologies evolve	
837-	CSS	Cabin Human Machine Interface (HMI) Report	08-012	3/1/2010	ARINC 837 update as technologies evolve	
838-	SDL	Loadable Software Parts Using XML	08-005	4/1/2011	Standard is expected late 2010, No changes expected in the near future.	
839-	AMS	Manager of Air-Ground Interface Connections (MAGIC)	08-010	3/1/2010	Phase 1 material due April 2010. Phase 2 to follow in 2011.	Support multiple broadband mediums
840-1	EFB	EFB Application Control Interface (ACI)	09-003	3/1/2010	Supp1 following in 2011. Will evolve as EFBs evolve.	EFB implementation plans
841-	DLK	Media Independent Aircraft Messaging (MIAM)	09-001	10/1/2010	Use Cases done; Principles being developed; Awaiting initial Strawman.	Airbus/RCF
859-	WDM	Fiber Optic WDM LAN	09-010	4/1/2011	Work to continue for foreseeable future. Need to refine network definition. Need to prepare standards for network access modules.	Leverage of technology
8xx	NIS	Digital Certificate Usage in the Aircraft Environment	10-002	10/1/2011	Completion in 2011	

**ATTACHMENT 2
APIM DEVELOPMENT – FUTURE STANDARDS**

ATTACHMENT 2 APIM DEVELOPMENT – FUTURE STANDARDS

Data Link Users Forum Recommendations

1. Water Vapor Sensor Installation Provisions/Data Processing

SAI Subcommittee Activities

1. Digital Audio
2. Airport Navigation
3. Sensor Technologies – EVS/SVS
4. Integrated VHF Radio
5. CVR/DVR Evolution and Data Transfer
6. 4D Trajectory Report and Delivery

**ATTACHMENT 3
APIM TRACKING**

ATTACHMENT 3 APIM TRACKING

LEGEND

- White = Completed
- Blue = Approved and Active
- Tan = Proposed

APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
02-001	Integrated Surveillance System (ISS)	9/17/2002	AEEC	Authorized	10/17/02	ISS	768	26-Apr-05	26-Aug-05
02-002	ATN Security	9/17/2002	AEEC	Superseded	6/1/05				
02-003	3 rd Generation Cabin Networks (3GCN)	9/19/2002	AEEC	Authorized	10/13/03	CSS	808 809	22Oct08 22Oct08	15Dec08 15Dec08
02-004	Fiber Optic Connector	9/19/2002	AEEC	Authorized	10/17/02	FOS	801	26-Sep-07	15-Nov-07
02-005	Cyclic Redundancy Check (CRC) Specification	9/19/2002	AEEC	Authorized	10/17/02	SDL	TAB & 665-3	26-Apr-05	12-Aug-05
02-006	Traffic Surveillance Unit (TSU)	9/25/2002	AEEC	Rejected	10/17/02				
03-001	Simple Network Management Protocol (SNMP)	1/7/2003	AMC	Rejected	4/1/03				

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APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
03-002A	Simulator Maintainability and Reliability (SMR) Working Group	8/24/2004	FSEMC	Authorized	8/24/04	SIM	434	23-Nov-05	20-Jan-06
03-003	Materials, Processes and Parts	11/19/2003	AMC	Authorized	11/19/03	FCM	670	18-Apr-05	18-Apr-05
03-004	Simulator Grounding Working Group	2/25/2003	FSEMC	Withdrawn	9/1/04				
03-005	VHF Data Link	3/5/2003	AEEC	Rejected	10/15/03				
03-006	Broadband Antenna, Antenna Subsystem, and Satellite Unit Standards	3/19/2003	AEEC	Withdrawn	10/15/03				
03-007	Additional New Work Scope/SIWG	3/20/2003	AEEC	Authorized	5/5/03	CSS	628P2-4 628P5	10/26/2004 10/26/2004	30May05 24Feb05
03-008	Electronic Data Format Documentation (EDFD) Standard for Recorded Data.	6/13/2003	AEEC	Authorized	6/13/03	DFDR	647A	11-Oct-06	22-Nov-06
03-009A	Standard Interfaces for Galley Insert Equipment (GAIN)	8/21/2003	AEEC	Authorized	10/15/03	GAIN	810 812 PP813 PP814 PP815	18Jan08 11Oct06 PP813 PP814 PP815	28Feb08 29Dec06 PP813 PP814 PP815
03-010	Software Data Loader Using Ethernet Interface	8/26/2003	AEEC	Authorized	10/13/03	SDL	615A	11-Oct-05	20-Jun-06
03-011	Electrostatic Sensitive Device Utilization and Protection	9/10/2003	AMC	Authorized	10/3/03	FCM	606A	28-Jan-04	11-Nov-04

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APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
03-012	Guidance for Soldering, Repair and Rework Processes	9/10/2003	AMC	Authorized	10/3/03	FCM	669	27-Oct-04	12-Nov-04
03-013	Training Device Facility (TDF) Requirements	11/24/2003	FSEMC	Authorized	12/15/03	SIM	437	25-Sep-05	1-Dec-05
04-001A	Mark 3 Aviation Satellite Communication System, Aircraft Installation Provisions	3/5/2004	AEEC	Authorized	4/1/04	AGCS	781	04-Oct-05	9-Feb-09
04-002	Electronic Qualification Test Guide (eQTG)	3/16/2004	FSEMC	Authorized	3/16/04	FCM	436	18-Feb-05	28-Mar-05
04-003	Security User Group	3/16/2004	AEEC	Abandoned	10/15/06				
04-004	Repair, Maintenance, And Configuration Management of Lead-Free Electronics	8/23/2004	AMC	Authorized	8/11/04	FCM	671	20-Jan-06	15-Mar-06
04-005	Fiber Optic Training for Commercial Aircraft Engineers	8/30/2004	AEEC	Authorized	10/25/04	FOS	807	26-Sep-07	15-Nov-07
04-006	Cabin Telecommunication Unit with Ethernet capabilities	8/30/2004	AEEC	Authorized	10/25/04	CCS	746-5	05-Oct-05	12-May-06
04-007	Commercial of the shelf (COTS) Network File Server	8/30/2004	AEEC	Authorized	10/25/04	ANFS	821	22-Oct-08	9-Dec-08
04-008	AOC Message Standardization	8/30/2004	AEEC	Authorized	10/25/04	AOC	633	20-Feb-07	30-Jun-07

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APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
04-009	Digital Audio Communication	8/31/2004	AEEC	Abandoned	10/16/06				
04-010	Avionics Serial Video Interface	8/31/2004	AEEC	Authorized	10/25/04	DVE	817 818	4/4/06 10/11/06	1Jun06 11Oct/06
04-011	Airport Data Base Encoding Structure	8/31/2004	AEEC	Authorized	10/25/04	SAI	816	21-Mar-06	19-Nov-07
04-012	Flight Management Computer Interface Update	8/31/2004	AEEC	Authorized	10/25/04	FMC	702A-3	11-Oct-06	15-Dec-06
04-013	New Generation, Digital HUD	9/20/2004	AEEC	Deferred	10/16/04				
05-001	Flight Simulator Metrics	1/4/2005	FSEMC	Authorized	1/4/05	SIM	433	08-Oct-07	14-Dec-07
05-002	No Fault Found	1/5/2005	AMC	Authorized	1/7/05	FCM	672	13-Apr-08	9-Jun-08
05-003	Develop Maintenance Reporting Standards for Ethernet-Based Aircraft Equipment	1/5/2005	AMC	Rejected	4/1/05				
05-004	Revision of ARINC Report 666: Electronic Distribution of Software	1/20/2005	AMC	Authorized	1/26/05	FCM	PP827	26-Mar-10	
05-005	Simulation Data Solutions for Training Equipment	1/20/2005	FSEMC	Authorized	1/20/05	SIM	440, 441, and 442	05-Oct-05	14-Oct-05

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APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
05-006	Develop Supplement to ARINC Report 625: Quality Management Process for Test Procedure Generation	1/26/2005	AMC	Authorized	1/26/05	FCM	625	20-Aug-07	24-Sep-07
05-007	CANbus Data Loading Protocol	1/19/2005	AEEC	Authorized	4/26/05	SDL	826	13-Oct-08	8-Sep-08
05-008	Wireless Networks	6/7/2005	AEEC	Authorized	6/7/05	ANFS	822	11-Oct-08	19-Feb-07
05-009	ACARS Information Security	6/8/2005	AEEC	Authorized	6/8/05	DLK	823P1 823P2	26Sep07 18Feb08	10Dec07 10Mar08
05-010	New Generation Peripherals for Cabin Distribution System	8/16/2005	AEEC	Withdrawn	10/16/05				
05-011	Update of Seat Interfaces based on New Rules and Guidelines	8/16/2005	AEEC	Withdrawn	10/16/05				
05-012	Extended Capability for the In-Seat 485 Network	8/16/2005	AEEC	Authorized	8/16/05	CSS	485P2-2	15-Apr-08	31-Jul-08
05-013	Voice over Internet Protocol (VoIP) to replace that in the Cabin Communications	8/16/2005	AEEC	Abandoned	10/16/06				
05-014	Recorder Independent Power Supply Activity	8/17/2005	AEEC	Authorized	8/17/05	DFDR	777-1	11-Oct-08	22-Nov-06
05-015	Flight Management Computer Interface Update	9/14/2005	AEEC	Withdrawn	10/16/05				

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APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
05-016	Advanced Fiber Optics Systems	8/25/2005	AEEC	Authorized	8/31/05	FOS	801-807		Completed
05-017	General Standardization of CAN (Controller Area Network) Bus Protocol for Airborne Use	8/31/2005	AEEC	Authorized	8/31/05	NIS	825	25-Sep-07	15-Nov-07
05-018	Update of Cabin Equipment Cooling General Specification (ARINC 628 Part 7)	9/12/2005	AEEC	Withdrawn	10/16/05				
05-019	Aircraft Information Security Forum (SEC Forum)	9/16/2005	AEEC	Abandoned	10/16/06				
05-020	Mobile Phone Networks	10/5/2005	AEEC	Authorized	10/5/05	CSS	PP824	31-Mar-09	29-May-09
05-021	ADN Security	12/29/2005	AEEC	Authorized	10/11/06	NIS	664P5-	26-Jan-05	12-Apr-05
05-022	ADN Mobility (IPv4)	12/29/2005	AEEC	Authorized	10/11/06	NIS			
06-001	Network Server System (NSS) 763 (Supp 4)	2/24/2006	AEEC	Abandoned	10/16/07				
06-002	Digital Video over Ethernet	2/24/2006	AEEC	Withdrawn	4/1/06				
06-003	FMS Navigation Database Open Standard (NDBX)		AEEC	Authorized	10/11/06	NDBX	PP424A		

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APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
06-004	TCAS with ADS-B (Traffic Computer)		AEEC	Authorized	10/11/06	TIF/TC	PP735B	26-Sep-07	14-Dec-07
06-005	Airport-Aircraft Link		AEEC	Deferred	10/16/06				
06-006	Fiber Optic Connector		AEEC	Authorized	10/11/06	NIC	600-17	29-Oct-09	16-Feb-10
06-007	FDR Data Output File		AEEC	Authorized	10/11/06	EAFR/FRE D	PP657	21-Oct-08	9-Feb-09
06-008	4GCN		AEEC	Authorized	10/11/06	CSS	PP832		
07-001	Aircraft-EFB Connector	2/23/2007	AEEC	Authorized	4/3/07	EFB	828	22-Oct-08	10-Dec-08
07-002	Wireless Distribution	8/31/2007	AEEC	Authorized	4/3/07	CSS	PP833		
07-003	EMC Recommended Practice	3/5/2007	AEEC	Superseded	10/21/08				
07-004	Cabin Connectors and Cable	3/27/2007	AEEC	Superseded	10/21/08				
07-005	ARINC 610B Update	8/2/2007	FSEMC	Authorized	7/17/07	FCS	PP610C	20-Jul-09	11-Sep-09
07-006	Prepare new and update existing fiber optic standards	8/28/2007	AEEC	Authorized	4/2/07	FOS	801-807		

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APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
07-007A	Cabin Connectors and Cable	8/28/2007	AEEC	Authorized	10/21/08	CSS	800		
07-008A	Standardization of Ku band Broadband Connectivity Satellite Hardware Installations and Equipment Interfaces.	8/28/2007	AEEC	Authorized	4/2/07	CSS/AGCS	PP791		
07-009	EMC Recommended Practice	8/28/2007	AEEC	Authorized	10/21/08	CSS	PP831	31-Mar-09	29-May-09
07-010A	Air/Ground Information Exchange, Data Delivery Software specification only	8/28/2007	AEEC	Authorized	10/21/08	AGIE	PP830		
07-011A	GPS Landing System Sensor Unit (GLSSU) Definition	8/29/2007	AEEC	Authorized	4/15/08	GPS	743A-5 PP743B	30Mar09 30Mar09	29May09 29May09
07-012	Supplement to ARINC Report 667, Guidelines for the Management of Field Loadable Software	8/21/2008	AMC	Authorized	9/18/07	FCM	667-1		
07-013B	Project Paper 763A: Mark 2 Aircraft Network Components	8/21/2008	AEEC	Authorized	4/15/08	ANFS	763A	22-Oct-08	9-Dec-08
08-001	ARINC 718A - Mode S Transponder Update	8/21/2008	AEEC	Authorized	4/15/08	XPDR	718A-2	21-Oct-08	27-Feb-09
08-002	Supplement 2 to ARINC Characteristic 768, Integrated Surveillance System	8/21/2008	AEEC	Withdrawn	4/1/08				
08-003	ARINC 653: Avionics Application Software Standard Interface	8/21/2008	AEEC	Authorized	7/28/08	APEX	653-		

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APIM TRACKING**

APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
08-004	ARINC 661: Cockpit Display Interface Standard	8/21/2008	AEEC	Authorized	7/23/08	CDS	661-		
08-005	Loadable Software Part Using XML	8/21/2008	AEEC	Authorized	10/21/08	SDL	PP838		
08-006	Security of Aircraft Loadable Software Parts	8/21/2008	AEEC	Authorized	10/21/08	SDL	PP835		
08-007	Security Policies for the Development of New AEEC Documents	8/21/2008	AEEC	Authorized	10/21/08	NIS	TAB	N/A	
08-008	Digital Certificate Usage in the Aircraft Environment	8/21/2008	AEEC	Obsolete	10/21/08				
08-009	Falcon Protocol - Supplement to AFDX ARINC 664 Part 7 or Part 3	8/21/2008	AEEC	Withdrawn	10/15/08				
08-010	Manager of Air-Ground Interface Communications (MAGIC)	8/21/2008	AEEC	Authorized	10/21/08	MAGIC	839		
08-011	Cabin Boxes Mechanical Interfaces	9/11/2008	AEEC	Authorized	10/21/08	CSS	PP836		
08-012	Cabin HMI Style Guide	9/11/2008	AEEC	Authorized	10/21/08	CSS	PP837		
08-013B	CVR interfaces with OMS and RIPS	9/11/2008	AEEC	Authorized	10/21/08	EAFR	757A 757-5 777-2		
08-014	Supplement 4 to ARINC755 MMR	9/11/2008	AEEC	Authorized	10/21/08	GPS	755-4	30-Mar-10	30-Jun-10

**ATTACHMENT 3
APIM TRACKING**

APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
08-015	Interface Guidelines to address RFID Technology for Aircraft Components	10/21/2008	AMC	Authorized	10/21/08	FCM	673	28-Oct-09	2-Dec-09
08-016	Visual Data Base Currency	12/22/2008	FSEMC	Authorized	9/18/08	SIM	443	27-Jan-10	7-Apr-10
09-001	Media Independent ACARS Messaging (MIAM)	3/10/2009	AEEC	Authorized	3/31/09	DLK	841		
09-002	Vehicle Identification Number (VIN)	3/10/2009	AEEC	Rejected	3/30/09				
09-003	Electronic Flight Bag (EFB) Application Control Interface (ACI) Standard.	3/10/2009	AEEC	Authorized	3/31/09	EFB	840		
09-004	Fiber Optics -- Update and Maintain Fiber Optics Standards	8/17/2009	AEEC	Authorized	10/28/09	FOS	801-807		
09-005	Simulator Quality Management System	7/20/2009	FSEMC	Authorized	07/20/09	SQMS			
09-006	Guidance for Simulation of the ATC Environment in Flight Simulators	7/20/2009	FSEMC	Authorized	10/8/09	ATC			
09-007	Supplement 1 to ARINC Report 663 Data Requirements for Avionics Component Maintenance	9/3/2009	AMC	Authorized	10/28/09	LAM	663-1		
09-008	Supplement 2 to ARINC Specification 816 Embedded Interchange Format for Airport Mapping Database	9/9/2009	AEEC	Authorized	10/28/09	AMDB	816-2		

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APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
09-009	EFB Users Group	9/9/2009	AEEC	Authorized	10/28/09	EFB	n/a		
09-010	Fiber Optic WDM Local Area Network	9/11/2009	AEEC	Authorized	10/28/09	WDM	859		
09-011	Supplement 3 to ARINC 718A, ATCRBS Mode S Transponder	9/11/2009	AEEC	Authorized	10/28/09	XPDR	718A-3	30-Mar-10	30-Jun-10
09-012	Guidance for Export Control of Data, Hardware, and associated Intellectual Property (IP)	9/14/2009	FSEMC	Authorized	10/8/09	FCS			
10-001	Datalink Security	1/15/2010	AEEC	Authorized	3/31/10	staff	823		
10-002	Digital Certificate Usage in an Aircraft Environment	1/20/2010	AEEC	Authorized	3/31/10	NIS	8xx		
10-003	DFDR Recorder Bus Speed Update and CVR Alignment	2/1/2010	AEEC	Authorized	3/31/10	DFDR	717		
10-004	Supplement 2 to ARINC Specification 825: General Standardization of CAN (Controller Area Network) for Airborne Use	2/1/2010	AEEC	Authorized	3/31/10	CAN/SDL	825		
10-005	ARINC 628 CSS Multi-Part Update	2/1/2010	AEEC	Authorized	3/31/10	CSS	628		
10-006	ARINC 746 CCS Update for PCI compliance	2/1/2010	AEEC	Authorized	3/31/10	CSS	746		
10-007	ARINC 741, 761, 781, AGCS, Satcom	2/1/2010	AEEC	Authorized	7/1/11	AGCS	781		

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APIM TRACKING**

APIM #	Title	Posted to Tracking	Committee	Action	Action Date	SC Assigned	PP Number Assigned	PP Adoption Date	PP Published Date
10-008	ARINC 826 CAN for Software Data Loading	2/1/2010	AEEC	Authorized	3/31/10	SDL/CAN	826		
10-009	4D Trajectory and Surface Guidance (FMS)	2/25/2010	AEEC	with SAI		SAI			
10-010	Supp 2 to ARINC 768 Integrated Surveillance System (ISS)	2/25/2010	AEEC	Authorized	3/30/10	SAI	768		
10-011	Guideline for Including Contractual Support Issues in Aircraft and Aircraft Modification Purchases	3/2/2010	Joint	drafting		new			
10-012	Supplement 19 to ARINC 600 Fiber Optic Adapters	3/15/2010	AEEC	Authorized	3/31/10	NIC/FOS	600		
10-013	Supplement 6 to ARINC 631 VHF Data Link Mode 2 Implementation	3/15/2010	AEEC	with SAI		DLK			
10-014	Galley Insert Specifications (GAIN) Multi-Doc	6/2/2010	AEEC	with SAI		GAIN			
10-015	Data Gateway Definition	8/5/2010	AEEC	with SAI		CAN/SDL			