|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| C:\Program Files\Default Company Name\ICAOMainMenuSetup\Icons\icaologo.jpg  | International Civil Aviation Organization**WORKING PAPER** |

|  |
| --- |
| ACP-WG S Web Meeting-5 / WP-022/05/14 |
|  |

 |

**AERONAUTICAL COMMUNICATIONS PANEL (ACP)**

**6Th MAY WEBMEETING OF THE WORKING GROUP S (SURFACE)**

|  |  |
| --- | --- |
| **Agenda Item1(b)** |  |

Descriptions of Aircraft Domains

(Proposed by Aloke Roy)

|  |
| --- |
| **SUMMARY** |
| This document provides the definitions of various aircraft information domains as defined by the AEEC. It is proposed that these same definitions be used by Working Group S to ensure consistency with the industry standards.  |
| **ACTION** |
| See Section  |

1. INTRODUCTION

Section 4.6, Security Service of the draft AeroMACS SARPS makes reference to various aircraft information domains. Definitions are required for these domains. The AEEC has already developed definitions for various aircraft information domains. These are provided in the attachment. It is proposed that these be used for the SARPS and Guidance Material for AeroMACS.

1. ACTION BY THE MEETING

ACP WG-S is invited to;

1. Review and comment on the material given in the attachment and
2. Approve the modified material for inclusion in the AeroMACS Guidance Material.

**Attachment 1 – Aircraft Domain Definitions as per the AEEC**

While an almost infinite number of network configurations can be created in an aircraft, all of them should contain elements of network interconnection services, properties and characteristics that can be categorized in a domain reference model.

Aircraft domains primarily emphasize safety and security characteristics. Each of the domains requires connectivity with ground-based computing networks. These off-board links can be shared with appropriate attention to regulatory and other considerations.

**Aircraft Control Domain (ACD)**

The ACD consists of systems and networks whose primary functions are to support the safe operation of the aircraft. The justification for most of these systems is traceable to safety of flight. When these systems perform non-safety related functions, it should be demonstrated that there is no interference with safety related functions. The ACD is focused on digital data networks.

The ACD connects to high-priority air traffic control (ATC) and some aircraft operational control (AOC) communication, but devices providing these air-ground links could still be accessed on a priority and secure basis through other domains. The ACD may also provide services and connectivity between independent aircraft domains such as the Aircraft Information Service Domain (AISD), the Passenger Information and Entertainment Services Domain **(**PIESD), the cabin distribution network and any connected off-board networks. The AISD provides a security perimeter, incorporating network routing and security functions and services between the AISD and less critical domains and any connected wireless networks.

The ACD may impose requirements on lower-criticality domains, but may not rely on them. In general, systems within the ACD should always protect themselves. Off-board communications for the ACD aligns with the safety related characteristics of the domain in general. ATC and some AOC communications are considered high priority and other uses are based on non-interference with high-priority usage. Currently, ACD off-board communication links are almost exclusively either analog or non-IP digital. However, an off-board IP link may be a reasonable possibility in future airborne network architecture.

A complicating factor for the ACD is that, while all air transport aircraft may be assumed to have an ACD, there is a tremendous variety of systems and network architectures used in avionics. This means that characteristics internal to the domain can only be described in general terms. With appropriate assumptions, characteristics of data flows in and out of the domain can be described in more detail.

The ACD can be divided into two Sub-domains:

* Flight and Embedded Control System Sub-domain, where the aircraft is controlled from the flight-deck; and
* Cabin Core Sub-domain, which provides environmental functions dedicated to cabin operations, such as environmental control, passenger address, smoke detection, etc.

**Airline Information Services Domain (AISD)**

The AISD may provide services and connectivity between independent aircraft domains such as avionics, in-flight entertainment, cabin distribution and any connected off-board networks. The AISD provides a security perimeter, incorporating network routing and security functions or services between AISD and less critical domains and any connected wireless networks. Other domains may impose requirements on lower-criticality domains, but cannot rely on them. In general, systems within the AISD should protect themselves from other domains and networks.

The AISD provides general purpose routing, computing, data storage and communications services for non-essential applications. The AISD may be comprised of one or more computing platforms for third party applications and content. AISD platforms may be used to support applications and content for either cabin or flight crew use.

The AISD can be subdivided into two sub-domains:

* Administrative Sub-domain, which provides operational and airline administrative information to both the flight deck and cabin; and
* Passenger Support Sub-domain, which provides information to support the Passengers.

**Passenger Information and Entertainment Services Domain (PIESD)**

The PIESD is characterized by the need to provide passenger entertainment and network services. An analogy used many times is that the airline passenger should be able to enjoy the same services as being in a hotel room. The functionality of this domain is the most dynamic in that passenger demands follow the rapid progress of the commercial home and office markets.

The PIESD is defined to include more than traditional IFE systems; that is, any device or function of a device that provides services to passengers. It may contain multiple systems from different vendors which may or may not be interconnected to one another, and its borders may not necessarily follow physical device borders. Beyond traditional IFE systems, it may also include passenger device connectivity systems, Passenger Flight Information Systems (PFIS), broadband television or connectivity systems, seat actuator or message system and controls, and functions of an information server device providing services to passengers via the IFE devices.

**Passenger Owned Devices Domain (PODD)**

The PODD is defined to include only those devices that passengers may bring on board. They may connect to the airplane network or to one another. Its connectivity to the airplane network is defined to be provided by the PIESD.

Until they connect via the PIESD, the PODs should be considered external to the airplane network. They may connect to one other or directly off-aircraft to ground systems without involving the airplane network.