

AIRLINE PASSENGER MANAGEMENT SYSTEM

Overview and Functional Specification

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Airline Passenger Management System

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BRIEF OVERVIEW OF THE APMS SYSTEM

Purpose of the APMS

The Airline Passenger Management System (APMS) is a system designed to manage, control, and monitor the activity and movement of passengers within the aircraft cabin during flight. In some cases the APMS can restrain the activity of passengers.

The main purpose of the system is to protect the passengers from an on board terrorist attack but it also can function as a safety system during other aircraft emergencies caused by mechanical failures. The information provided to the crew also contributes to increased productivity and efficiency during flight.

The nature of the APMS has resulted in the identification of other value added services that can optionally be delivered to passengers in flight. For example, the small console located above the passenger tray directly in front of each passenger might also be used for checking/sending electronic mail, gate number of connecting flights, weather information, flight schedules, and most of the same services currently provided by internet service providers such as AOL, Microsoft etc. On longer flights educational and investment services along with entertainment may be provided. There also appears to be an opportunity to market goods and services to passengers via the same system.

APMS System Overview

The APMS consists of a microprocessor-based computer located in the cockpit. Appropriate database and networking software is hard wired to each passenger seat belt. The redesigned seat belt, or smart belt, contains a latch assembly in the belt buckle. This latch assembly, when actuated (by the computer), locks the belt so the passenger cannot unfasten his seat belt. The computer also receives signals from the belt indicating whether the seat belt is fastened, unfastened, or loosely fastened. A sensor in the passenger seat also provides the computer with data as to whether the seat is occupied, or unoccupied, by an adult or child.

The small flat screen console, above the seat tray reflects flight and seatbelt locking information so the passenger is kept informed. When passengers desire to move around the passenger compartment, they can inform the computer by simply pressing a button on the console. The computer will grant permission to move about, or indicate when it will be possible to do so using a text message, or orally, in one or more languages.

Since we have a data base management system operating the APMS, the computer can make value judgments on each passenger request so that more than one high risk passenger is not moving around the passenger compartment at the same time. The kind and scope of profiling done by the system will be determined by security conditions in effect at the time of the flight. All data regarding passengers will be loaded into the computer by ground operations when plane is loaded and ready for take off. It is

important to remember that under normal conditions of threat the locking feature of the smart belt would not be used. However, passengers may still be asked to request permission to leave their seat for their own comfort and convenience.

The system also provides wireless hand held devices for the flight attendants to use in monitoring passengers and for communications with ground operations and the cockpit crew. All database information regarding the passengers will be available to the flight attendants so that they may better understand the behavior of the passengers.

The passenger compartment will also contain large flat screen panel(s) which will be color coded to reflect the status of each passenger and his belt. This will make it easy to monitor safety during take off and landing and movement of passengers during flight. Additional safety and security monitoring is provided of the lavatories.

Four Potential Security Modes

1. **Normal Condition (or Normal Mode):** The APMS monitors and reports passenger seat belt fastening status and passenger seat occupancy. This information is shown on the FAPU, FDPBSD&CP, and PCSDP displays.
2. **Low Risk Mode:** The APMS seat belt locking device is turned to lock during specific phases of the flight that have higher risk to the safety of the flight and possibly structures near the aircraft, such as during takeoff or landing. This mode might be selected when operating in airspace that is in close proximity to important buildings. Washington D.C.'s Reagan Washington National Airport and a large section of airspace around it is an example of where this mode might be used. The seat belt locks are unlocked after the aircraft leaves this airspace after takeoff. The seat belt locks are locked again during the approach and landing phase of flight, and are unlocked once the aircraft is on the ground.
3. **Moderate Risk Mode:** The APMS manages seated and unseated passengers during the cruise or straight and level part of the flight. Seat belt locks are turned on for the duration of the cruise part of flight, unless a passenger requests to get up. The APMS looks at its database to see how many people are already up and what the risk level is for the passenger requesting a seat lock unlock. The APMS will either unlock the seat belt lock or request that the passenger wait in line until other passengers return to their seats. A passenger who is denied a seat lock unlock can also request the immediate attention of a flight attendant.
4. **High Risk Mode:** During any phase of flight the APMS monitors the activity of the high risk level passengers and does not allow two or more of high risk level passengers to have unlocked seatbelts at the same time. The APMS using artificial intelligence programming and its database analyzes the threat level of individual passengers. If two high risk level passengers request to get up within a prescribed or programmed time frame, or at the exact same time, the APMS will only let one passenger up. The passenger denied the seat lock unlock will be shown a wait message. This passenger can also call the flight attendant to request a seat lock unlock.