



INFLIGHT  
CANADA

The logo for Inflight Canada features a stylized graphic of three white, curved lines that intersect to form a shape reminiscent of a wing or a stylized 'X'. Below this graphic, the word "INFLIGHT" is written in a white, serif, all-caps font. Underneath "INFLIGHT", the word "CANADA" is written in a smaller, white, sans-serif, all-caps font.

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### **PREPAID ACCESS \$ECURE \$YSTEM**

This document is a discussion about a new design, Trade Marked **PA\$\$**, which provides airlines with advance revenues that are typically realized from sales, within the passenger cabin, for goods and services.

Advance revenues are derived by the passengers making an on-line purchase of 'time units' or credits, simultaneously with ticket purchase, which are then exchanged on-board the aircraft for goods and services.

The services can include access to the audio signals from the Over-Head IFE or In-Seat AVOD systems, ISPS systems, USB Ports, off-aircraft communications systems, etc, and the goods can include items such as beverages, food, duty free, blankets, pillows, etc.

Extra items such as baggage, seat selection, fuel charges, etc can also be processed using this system at check-in and prior to boarding the aircraft.of any mishap.

## Background

Many commercial airlines are searching for a positive and sure means to collect revenues for amenities, goods and services provided in the passenger cabin and which have traditionally been provided at no extra charge to their passengers.

Some airlines, with the legacy Over-Head IFE systems, can use **PA\$\$** to prevent the passenger from accessing the audio signal, unless paid for, no matter if they use their own headsets or an airline provided headset. Which could also be sold.

Other airlines are also up-grading their passenger cabins by the installation of various passenger amenity systems at each individual seat.

These amenities, such as Inflight Entertainment (IFE) and In Seat Power Systems (ISPS), are at the individual seat level and can be typically defined as Audio & Video On Demand (AVOD) systems with seat mounted 'smart' video monitors used for the delivery of video, audio and gaming entertainment, Power Universal Serial Bus (USB) Ports that provide the passengers with both a means of access to the AVOD system for games and internet access and very low voltage dc electrical power that can be used to operate small PED's, (Personal Electronic Devices), such as an iPod and 110vac

electrical Power Outlets that provide passengers with power for personal devices such as laptop computers.

In most cases these systems can now be accessed at no charge to the passenger.

In some cases, access to the only the AVOD system must be paid for by using a personal credit card, with personal data, which is entered via a credit card reader or by touch screen.

Because of the current financial outlook, the airlines are actively engaged in a process to determine ways and means of creating a sustainable and viable revenue stream derived from these cabin systems.

However the extra equipment installed on each aircraft and at each seat place, the software that must be created and purchased, the constant maintenance of the equipment on each aircraft, the efforts required to put into place and maintain a means of collecting and processing, in a secure manner, the credit card data from each aircraft, and the infrastructure required to administer the collections, and pay out refunds when system failures occur, offset much of the revenue.

This traditional approach has not met expectations and has many disadvantages and recurring costs such as;

- A) The Card Swipe device must be purchased, installed and maintained by the airline.
- B) The Card Swipe device or AVOD system must have a program which will recognize those Credit/Debit Cards used and transfer the data to a central file server on board the aircraft where a Secure Program must reside to check validity of the individual card.
- C) The Secure Program must be frequently loaded into the File Server on each aircraft so that updates on expirations and limits can be kept current.
- D) The personal data stored on each aircraft must be securely retrieved, processed and transmitted so that the airline can receive the revenue.
- E) The payment system on the aircraft must be highly secure and reliable to avoid compromise of the passenger data.
- F) Passenger confusion or inability to access the features of their choice after making a payment creates frustration.
- G) Passenger frustration and Cabin Crew workload increases substantially when services paid for are not received due to a system failure.

Besides the issues listed above, before the airline can even hope to receive fair and legitimate payment for services provided, it must be assumed that each step can be accomplished without any disruptions such as typical system power interruptions that frequently occur on any aircraft during data offload procedures and the availability of each aircraft at a location where the offload can take place.

In addition, the airline will, due to real or alleged failures or shortcomings of the various, IFE, AVOD or ISPS systems, be faced with refund demands which may, or may not, be legitimate but will have to be addressed and/or processed.

In the end, and when all the various parts of the total process are considered, the airline will not receive fair and reasonable compensation for the amenities, services and goods that it provides to the passengers and for which the airline purchases and pays for the installation in advance of any possible returns.

**PA\$\$** reverses this trend.



## IFC Background

IFC has been engaged in the business of designing aircraft modifications and fabricating the Mod Kits required for the installations of many passenger systems and provides certification, facilities, logistics and labour to complete their installation. IFC also maintains these systems, both on board the aircraft and in a repair shop environment and performs the installation of the various software programs they require to operate. IFC also performs the off-loading and handling of the data

from these systems and the loading of content. During this work, IFC has been exposed to the many and varied issues surrounding the operation and handling of these systems and is therefore well versed in their requirements. IFC is also the holder of over 350 Certificated (STC) designs for various cabin systems on over 500 aircraft and multiple types of aircraft.



**General Description:**

In order to provide the airlines with “advance” payments for amenities, services and goods and to streamline the collecting of revenue by eliminating the many variables that can interrupt this revenue stream, IFC has used it’s extensive experience to design its **PA\$\$** system.

The **PA\$\$** system can be used to purchase amenities, services or goods, is very light-weight, simple to install, use and maintain and provides the airlines with an “up-front” revenue source that is not tied to the availability or reliability of the amenities, services or goods.

On board the aircraft, the passengers use the **PA\$\$** system to pay for any amenity they use and only for how long they use it. Any passenger can discontinue their use of any cabin system at any time for any reason. This avoids refunds.

Also on board the aircraft, the passengers use the **PA\$\$** system to pay for any goods purchased. This avoids cash transactions and eliminates currency exchange confusion on international flights.

At the check-in counter, the passenger can use the **PA\$\$** system to pay for any surcharges such as extra baggage, seat selection, fuel, etc.

## Application Of The **PA\$\$** System On Board The Aircraft

The airline can select and impose various levels of access allowed to the passenger for any of the amenity systems available at the individual seat or for the sale of goods such as beverages, food, duty free items, etc.

The installation and use of the **PA\$\$** system does not require the participation, involvement of, nor the integration to, any IFE and/or AVOD and/or ISPS system Vendors however, should the airline desire the **PA\$\$** system to integrate with any other system on the aircraft then IFC is capable, on behalf of the airline to accomplish this integration with any Vendor's existing system.

Application of the **PA\$\$** system for the payment of amenities and if there is a requirement or non-requirement of system Vendor integration are as follows:

1. Prepaid Power the ISPS system.  
Isolated to only the seat assembly. Does not involve the ISPS Vendor.  
In this case, electrical power to the ISPS system is controlled by the **PA\$\$** system. The ISPS system remains OFF until the passenger desires to pay for power.
2. Prepaid Power for both the AVOD and ISPS systems.  
Isolated to only the seat assembly. Does not involve either the AVOD or the ISPS Vendors.  
In this case, electrical power to both the AVOD and the ISPS systems is controlled by the **PA\$\$** system. The AVOD and ISPS systems remain OFF until the passenger desires to pay for power.
3. Prepaid Access to the AVOD and Power to the ISPS systems.  
Isolated to only the seat assembly. Does not involve the ISPS Vendor but does involve the AVOD Vendor.  
In this case, electrical power to the ISPS system is controlled by the **PA\$\$** system. The ISPS system remains OFF until the passenger desires to pay for power.  
The AVOD system is powered but remains in "broadcast" mode until the passenger desires to pay for access to the AVOD features by the **PA\$\$** system. This allows the AVOD system to be used for airline LOGO, Welcome Aboard messages, for pre-flight briefings and for revenue generating commercials.

## Application Of The **PA\$\$** System On Board The Aircraft

Application of the **PA\$\$** system for the payment of goods on board the aircraft are as follows:

### 1. Prepaid Purchase of Goods.

The passenger is able to use the **PA\$\$** system for the purchase of any goods sold on board the aircraft such as beverages, food, duty free items, etc.

This avoids cash transactions between the passenger and the crew and eliminates errors and confusion regarding currency fluctuations.

### Free Amenities, Services and Goods:

While all of the discussion, up to this point, only considers the ability of the airline to pre-charge the passenger for amenities, services and goods that the passenger may want to obtain while on board the aircraft, there may be a situation where the airline may not want to charge the passenger for any one or all of these items such as in a delay or cancellation of a flight or in a situation where competition warrants free amenities, services and goods.

In these cases, the airline may want the option to 'over-ride' the Application of the **PA\$\$** system on board the aircraft.

This can be accomplished by use of the optional Secured Master Control Unit in one of two ways;

#### A) No ISPS or AVOD Vendor involvement.

Airframe wiring and Secured Master Control Unit are required.

In this case, the Cabin Crew can over-ride the **PA\$\$** system by one control switch.

#### B) No ISPS Vendor but AVOD Vendor Involvement Required.

No airframe wiring or Secured Master Control Unit are required.

In this case, the Cabin Crew can over-ride the **PA\$\$** system in the entire aircraft or at specific seat(s) by utilizing the AVOD system which already has this feature.

## Application of the **PA\$\$** System At The Check-In Counter

Application of the **PA\$\$** system for the payment of services received at the Check-In Counter are as follows:

### 1. Prepaid Purchase of Services.

The passenger is able to use the **PA\$\$** system to purchase any services sold at the Check-In Counter.

This can include additional payments for baggage, seat selection, up-grades, fuel, etc, and avoids any cash or credit card transactions and allows the airline the flexibility to change surcharges at any time.

### The **PA\$\$** System Components:

- A) USB flash drive, (USB Stick), embossed with the airline LOGO, and can only be loaded, with pre-paid 'time units' by the passenger using a PIN or by the airline using an airline specific code. The USB Stick has a Read Only Memory which will only react to the airline specific SCU and contains a pre-paid quantity of 'time units'. This device may be purchased at any commercial outlet, at the airline ticket counters or on board the aircraft. It is also possible for the passenger to access an airline web site to re-load additional pre-paid 'time units' at will in the same manner as ticket sales.
- B) A USB Port, with or without, an optional LED Window that displays, in real time, the quantity of 'time units' available on the USB Stick and the continuous count down of the pre-paid 'time units' as they are used. It is also possible to have the information displayed on the AVOD monitor.
- C) A very small Seat Control Unit, (SCU), fits into the ash tray cavity.
- D) Very small and light weight seat wiring.
- E) IFC proprietary software.
- F) An optional Secured Master Control Unit.
- G) An optional ATLAS -style Galley Carrier Unit with a USB Stick Dispenser.
- H) An optional wireless transceiver for the USB Port.
- I) A Hand-Held device for use by the Cabin Crew and the Check-In counter staff.

## The Installation of the **PA\$\$** System Components

The **PA\$\$** system can be installed prior to, simultaneously with or after the installation of any other cabin amenity system, thus avoiding maintenance scheduling or conflicts with other work in progress.

It can be as a stand-alone STC or combined with the STC for any one or multiple system installations and is small and light enough to qualify for the FAA 3% rule on 16g seat assemblies thereby avoiding substantial seat recertification costs.

The very small USB Port, with or without, an optional LED Window is installed into the seat back or any other suitable location in proximity to the passenger with a very simple flanged barrel and pawl lock.

The very small SCU is installed at floor level and interrupts the power flow to the systems in the seat and can be installed on the seat assemblies or other convenient location.

A very light weight 22 to 26 awg wire harness is routed from the USB Port to the optional LED Window and to the SCU or a very low powered wireless signal is used.

An optional Master Control Unit is installed in the VCC area and either connected to the SCU's via a standard data network or through the existing AVOD 'system'.

## The Operation of the **PA\$\$** System Components

- A) The passenger purchases, in advance and during the time of ticket sale from the airline Web Site, a specific quantity of 'time units' which are down-loaded into the USB Stick in a standard fashion.
- B) Once the passenger is seated and the onboard systems have been powered by the Cabin Crew, should the passenger desire to access any one or all of the systems the passenger must insert the USB Stick into the USB Port.
- C) The optional LED Window, if fitted, will show the 'time units' remaining on the USB Stick and will show the continuous count down of 'time units' as the passenger accesses and uses the various in-seat systems.
- D) The passenger may stop the utilization of the and in-seat system at any time by removing the USB Stick from the USB Port. After a three minute delay, the in-seat systems will stop operating.
- E) Should the optional Master Control Unit be installed, the Cabin Crew can override the **PA\$\$** system at will and in the event the airline wants all passengers to have access to the in-seat systems at no charge for route specific reasons or operational reasons such as delays.
- F) Should the passenger elect to purchase any goods on board the aircraft such as beverages, food, duty free items, etc, the Cabin Crew insets the USB Stick into the Hand-Held device, reads the 'time units' available, selects the desired item to be purchased from a menu and deducts the indicated quantity of 'time units' from the USB Stick.
- G) At the end of each duty cycle the Cabin Crews can download the data on the Hand-Held devices into the airline's computer system and receive a commission payment if the airline desires this arrangement to encourage sales.

## Features and Advantages of the PA\$\$ System Components

- A) Advance revenue.
- B) Possibility of establishing a Carbon Offset Point system.
- C) Eliminates after sale collections and refunds.
- D) Utilizes existing procedures and logistics for catering and alcohol handling.
- E) Software can be changed at predetermined intervals.
- F) Integrates with AVOD systems if desired.
- G) Can be overridden by Cabin Crew when required using the Secured Master Control Unit.
- H) No extra external wires or power source outside of seat assemblies are required
- I) Can control power to any passenger amenity system.
- J) Can be purchased by the passenger either on or off the aircraft and the sale can be controlled by the airline.
- K) 'Time units' remaining can be checked by the passenger on the aircraft or off the aircraft and additional 'time units' can be easily purchased by accessing the airline website.
- L) Eliminates the security hazard of having multiple copies of the passenger's credit card information maintained on board the aircraft fleet or transmitted to and from a central server, all of which open the possibility of data compromise. It will also eliminate the possible visual compromise of credit card number and PIN while this private information is entered into a 'touch screen' system at the seat.
- M) Allows the airline to avoid the administrative workload of collecting, transmitting and collecting the "per use" charge information. Instead, a single purchase transaction will be recorded and processed at the time the USB Stick is either purchased or additional 'time units' loaded.
- N) Airlines in an operating alliance could cooperate and set the software to allow a USB Stick purchased on one airline in the alliance to be used on any or all of the others.

## Security Features of the PA\$\$ System

IFC understands the concerns surrounding security against fraud, duplication and identity theft and the familiarity and availability of USB Sticks to the average person.

The airline or its passengers will have access to “proprietary” IFC USB sticks (or common “proprietary” IFC USB sticks between code sharing partners of the airline industry).

Typically, these “proprietary” IFC USB sticks can be made available for approximately \$2ea at high volumes.

The first time a passenger purchases a “proprietary” IFC USB stick, they will pay, for example, \$20 to purchase the “proprietary” IFC USB Stick that will already have the equivalent of \$20 of Time Units embedded.

In this manner the cost of \$2 is absorbed and they can either use the Time Units or re-use the same “proprietary” IFC USB Stick to immediately purchase additional Time Units by Credit Card, (web based) or cash at airline counter.

The “proprietary” IFC USB Sticks make use of an encrypted code saved within them and are authenticated when purchasing Time Units from the URL site which the airline passenger would use.

With this understanding in broad terms, IFC can answer some typical questions as listed below;

A) What is the availability of the USB Stick to all passengers.

The first time the “proprietary” IFC USB Stick is purchased, (or given away free), it can be acquired on the aircraft or at a typical airport kiosk or at the check-in counter and can be paid for by credit card or cash.

B) What is the security of the software against duplication.

The “proprietary” IFC USB Sticks will have high level encryption algorithm used to ensure the security of the software and the time units. This security could be built at the time of manufacturing itself such that it is tamper proof to a level of five 9's. Hence practically, nobody will be able to hack the USB stick and have access to the software.

**END**



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