THE BUSINESS MODEL FOR AERONAUTICAL INFLIGHT INTERNET SERVICE IN BRAZILIAN REGIONAL MARKET

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Abstract. *Nowadays we live in a connected world and being connected became an essential condition in almost all places. The connectivity on board is growing in many airplanes arround the world. However, until now, there isn't an appropriate view of Inflight Internet Service business model for regional aviation. The purpose of this paper is to describe the business model developped in other studies and some models already in use, the players envolved with their functions and to analyse a special case study to be adapted on brazilian market of regional aviation.*

Keywords: *Business Model, Inflight Internet, Regional Aviation, Brazilian Market.*

1. INTRODUCTION

Nowadays, the connectivity is present in every environment, could be a professional environment, domestic, or even an environment for leisure. Being connected today is a trivial situation and sometimes a *sine qua non* condition.

Despite the constant evolution that is happening in the world of aviation due to connectivity onboard, still there isn't a differential treatment for regional aviation.

The service models that exist today can be distinguished at first for a technical transmission issue: Air-to-ground (ATG) and via Satellite, how it's illustrated in Fig.1.

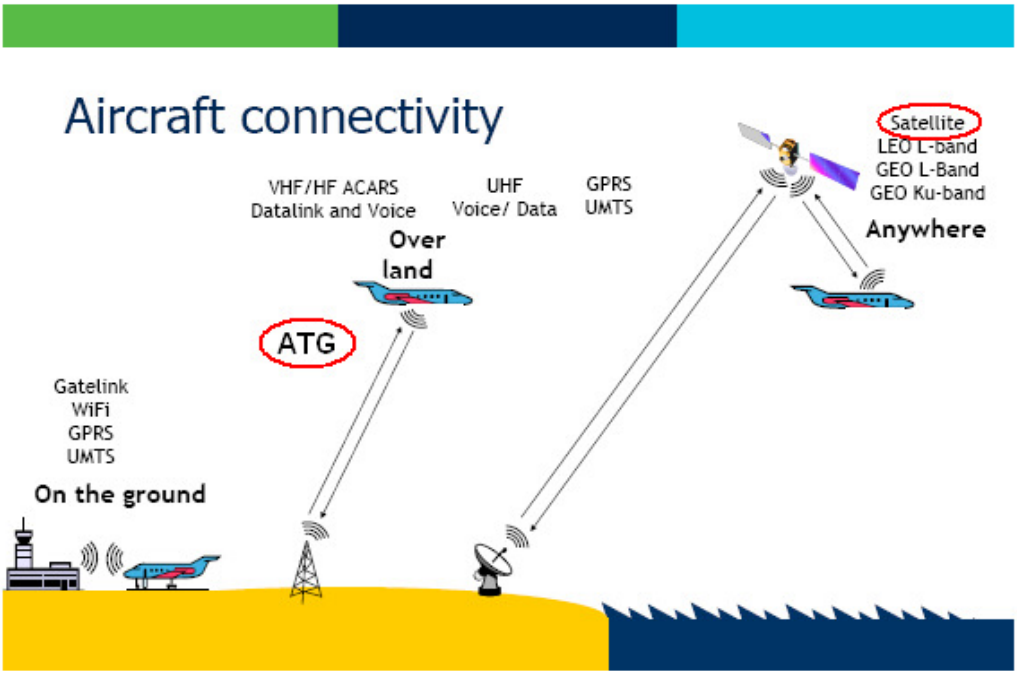

Figure 1. ATG and Satellite Connections

Every model possesses a configuration according to the service offered to the client, and consequently, a business model agreed between the providers, airlines and even several enterprises who believe they benefit from the service as well as content providers and advertisers.

For the Brazilian reality, the scenery focused on this research, regional aviation will be defined by flight times of a 3 hour mean, once there's not a well defined model and centralized of minor route distribution.

Thereby, the article describes the business models proposed for in-flight internet service, an interaction between every agent involved as well as the real application of the models in the systems that exist today. Furthermore, it's presented a study case from the United States whose model introduced an interesting concept in the North-American market. As a conclusion, there is a proposition of the case studied to be adapted and applied in the Brazilian reality from the analysis of the possible threats to the proper operation of the service in Brazil and the future work to be done.

2. BUSINESS MODEL

Before addressing the business model, it is necessary to identify and distinguish the different agents involved in the system. The study (Sanctis *et al*., 2005) proposes a division of these *players* according to the applicability from each one and it analyses their functions comparing the advantages and disadvantages when operating the service. They are the following: the *Airline*, *the Airplane Manufacturer*, the *Satellite Operator* and the *Mobile Network Operator* - MNO.

The passengers, in this case the customers, are the prime members of the value chain according to Jahn *et al.* (2004). The service user also represents a *player* equally relevant and essential to the business model once the final user of the service is where almost always the revenue flow comes from.

The study of Sanctis *et al*. (2005), which only Satellite Transmission is taken into account, proposes two business models identified as Single Model and Split Model. There is an insertion of a new player called AirCom Povider, whose idea approximates of a virtual provider that does not possesses clients of their own, this is why it plays the role of a service provider.

The Figure 2 depicts the Single Model which money flow begins between the existing relationship of the passenger with their ground service provider.

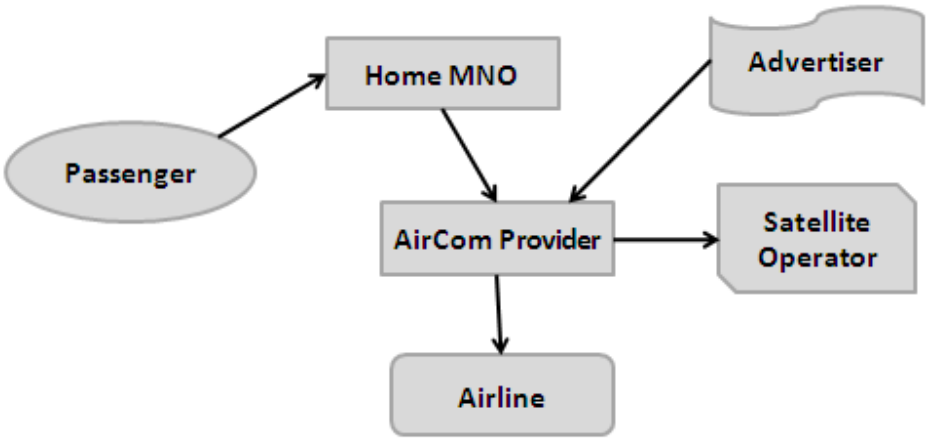

Figure 2. Single Model: Single Passenger relation with Home MNO

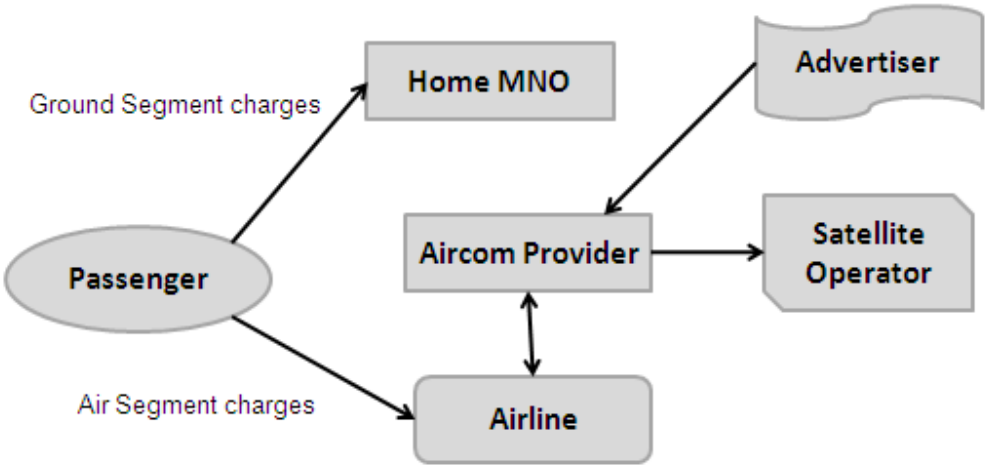

Figure 3. Split Model: Double Passenger relation with Home MNO and Airline

On Split Model, Fig.3, it is based on a double relationship of the passenger with their ground provider and with the airline. In this case a real time onboard billing system would be the most suitable as described in Sanctis and Lorelli, 2004.

For the existing Satellites Internet services, Single Model has been mostly used. The way of charging passenger can change according to the interest of the airline and primarily with the manner in which the service is offered.

Basically there are two connectivity environments offered to the passenger. The service can decide to offer a WiFi Hotspot based on the IEEE 802.11 standards or with a PicoCell based on Mobile Access technologies.

In the GSM/GPRS environment where the user accesses the Internet through their cellular phone, Smartphone, PDA or even through a GPRS mobile card inserted in his own laptop, Single Model illustrated in Fig.2 it is most suitable. Charging the passenger through their old relation with their ground provider has shown to be more advantageous than starting a new relationship between the passenger and the air service provider.

With a WiFi Hotspot onboard, this idea does not makes sense since the system is not related with a mobile telephone network and does not exists a pre-existent relationship. For that, the model used in this case continues to be in a single way, once the passenger pays for the service just for one player. Meanwhile, a difference is which agent receives this money flow, and in this case comes to play the AirCom Provider.

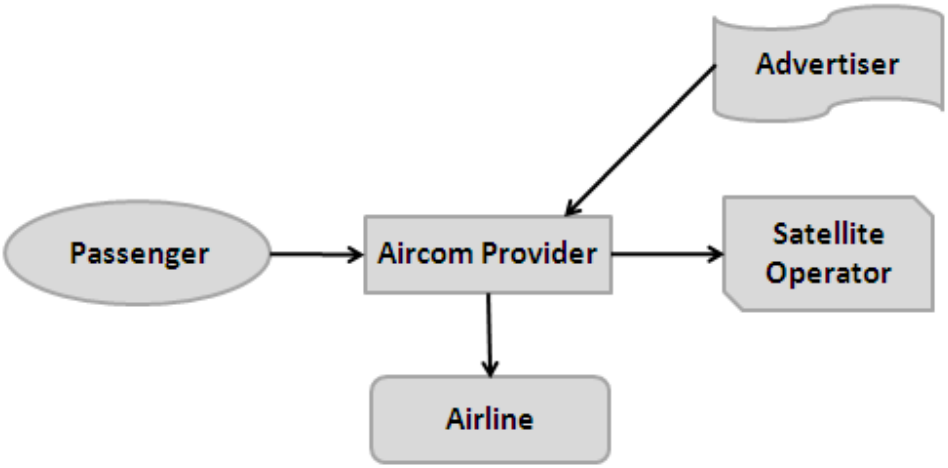

Figure 4. Single Model with a relationship between Passenger and AirCom Provider

Other point to observe is the moment when the charge is made. The use of ground providers implies that the payment will be made in a monthly account or in other way, according to the previous agreement made with the passenger. Anyway, it is always charged after use.

In the case of the AirCom Providers, the payment is done onboard, normally through accessing the home website of the service and using a credit card.

In the case of ATG technologies until now just WiFi environments are available. Nevertheless, not all providers use Single Model, because there are cases in which the service is offered for free. In this case the business model is more complex, there are several enterprises involved and paying for the service with their respective revenues, sometimes it can only be marketing, clients' fidelity or even partnerships.

When the passenger is charged, he follows the same procedure of the Satellite model providing WiFi, it means, the money flow goes from the passenger directly to the AirCom Provider. The difference here is the absence of the Satellite Operator making the business model simpler.

Even though the Split Model presents advantages like the possibility that the service provider can be autonomous in defining charges for passengers (Sanctis *et al*., 2005), this system hasn't been used until nowadays. It has been observed (Buzanovsky, 2008) that charging a passenger in different accounts is not recommended since the user does not feel comfortable when he has more bills to pay.

3. STUDY CASE

The North-American phone operator Aircell, in April 2008, received from the Federal Aviation Administration (FAA from USA) the authorization to offer inflight mobile broadband services. Counting with a terrestrial network of cellular Antennas CDMA EV-DO Rev.A, Aircell developed a service based in ATG transmission, launching Gogo in-flight Internet.

In almost 400 airplanes installed, the Gogo is the inflight internet service that grows the most in the United States, being present in many airlines. At the moment its network is composed by 92 cellular ground stations (Fig.5) being present in all the United States territory, and with the promise of coverage for Canada and Mexico in the next years.

Figure 5. Coverage of Aircell network in the United States

Aircell decided to offer a WiFi environment onboard, allowing the passengers to surf the Web, to send and receive E-mails, instant messaging and access to VPN corporative networks. To avoid congestion in the network and to ensure a minimum quality of service there are some limitations as VoIP and peer to peer services.

The Gogo single model has one interesting peculiarity. The air service provider and the ground network holder are from the same company reducing two players in only one. Besides that, the charging is made by Gogo: when boarding, the passenger recognizes the WiFi signal, opens up their browser, and is redirected to the Gogo's home page, where he completes the payment through a credit card.

The charge is pre-fixated and varies with flight time. If the flight time is more than three hours, (a coast to coast flight from New York to San Francisco for example) the user pays US$12.95 to access with their laptop. For the flights with less than three hours the value charged is US9.95. If the user decides to access through his portable internet device he will pay US$7.95 for any flight time.

This way the Aircell business model is reduced and simplified. The money flow goes from the passenger directly to Gogo, part of the revenue stays with Aircell+Gogo and the other part is directed to the Airline how it's illustrated in the flow of the Fig.6:

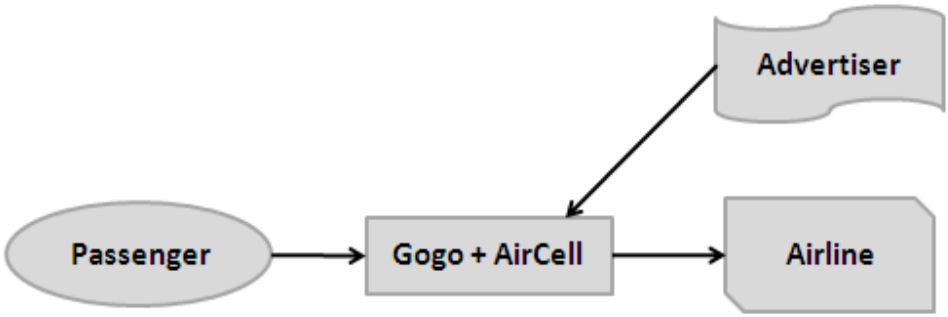

Figure 6. The Aircell Business Model

The simplicity of the model, the charging, the possibility to access the service with different devices and an intuitive way of paying is guaranteeing a bigger and bigger user's adherence to the service.

The ATG transmission and the Satellite one differ from the service cost. It seems that ATG connections are less expensive than Satellite connections. The ground network ATG is normally prepared and ready for this kind of access, dispensing mayor costs in infrastructure and maintenance. Furthermore, the devices that are necessary for Satellite communication are more expensive and robust, having impact in the weight and the drag force of the aircraft in a more aggressive way (Buzanovsky, 2008).

Still in a comparative way, the ATG coverage is limited to the continent, that is, it deals with cellular terrestrial stations in which it is not possible to maintain connection over the oceans. This solution seems to be very interesting for the case of regional routes in countries of large dimensions.

If there's a need of routes to overfly oceans, Satellite transmission is the indicated option. With a global coverage the satellites have a more elaborate technology that can offer access to aircrafts in international flights, for example, any flight between North-America and Europe.

4. CONCLUSION

The Brazilian reality is in a way comparable to the North-American scenario in what is referred to the continental territory and mean of 3 hours flight time. The proposal of analyzing the regional aviation in Brazil is due to fact that the aircrafts are the same size and the flights have the same flight time as in the North-American reality.

The Single Model with direct relationship between the passenger and AirCom Provider introduced to the passenger the concept of an air service provider and step by step it's been winning the trust of their clients and proving their acceptance in the market.

The ATG solution for the Brazilian market seems to be the most appropriate due to the existent of a terrestrial infrastructure from many operators, even that it is not prepared to offer the service immediately.

Nevertheless the Satellite connection wouldn't be inappropriate since Brazil also has satellite coverage and the providers are capable to offer the service. The crucial point here would be the service cost, whose ATG solution presented to be more advantageous. In this point the Brazilian market needs to take into account that the price given to the customer is the most service limiting.

With the entrance of new Airlines, the growing quantity of regional routes can come to justify the future use of a service ATG type. It cannot be forgotten the need of the authorization from the competent organizations (In the case of Brazil, the Anatel) so that the telecommunications service is offered. The bureaucratic aspect can be a threat to the popularization of the service.

For future work, it is necessary to evaluate the economic motivation that justifies for the airlines the investment of that service as well as the factors that will determine the return of investment for aircrafts of the regional segment associated to the profile of the Brazilian passengers that use this means for transport.

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6. RESPONSIBILITY NOTICE

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