LATEST INFORMATION TECHNOLOGY DEVELOPMENT IN THE AIRLINE INDUSTRY

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Abstract

Civil aviation will soon celebrate its centenary. It emerged as a universal means of transportation, to which the latest technological innovations of many kinds have never ceased to be applied.

Nowadays different vendor companies have developed an extensive range of solutions to improve the passenger's journey, streamline and integrate airline and airport operations, track baggage and cargo, and ensure that the highest levels of maintenance and aircraft safety and security are effectively communicated. Their objective is simple – to assist their customers in delivering the highest quality to the passengers.

This paper provides details on all the latest solutions available at every step of journey for passengers from providing up-to-the-minute fare and flight information, to safe arrival, and everything in between. We have to know that air passengers cannot be served by the airline on an appropriate level having no effective information systems available.

Keywords: air transport, airline, informatics, new technology.

1. Introduction

Flying has become the most popular form of public transportation. Now air transportation is as much a part of life as telephone or computer. Speed, efficiency, comfort and safety – these are the symbols of both modern civilisation and modern air transportation. If you want to get there in a hurry, and most businesses do, because time means money, then fly. Air transportation has enabled employees of business and government organisations to reach any point in the world within hours.

As airports were flooded by more and more passengers it became more and more obvious that only the technology of the integrated information systems can be the way leading to the future.

As airlines look forward, *innovation and a unique relationship* with passengers and the air transport industry will continue to be key to the future. Innovation and partnership will have to play a major role in airlines' strategy, which focuses on Internet Protocol technologies, end-to-end services to the desktop and airport integration [1].

Airlines will have to continue development such as on-line distribution, ticketless travel, self-service ticketing and smart cards. There is a great opportunity for the integration of airport and airline systems, along with new applications for biometric security, electronic passports, wireless bag tracing and much more.

2. New Technological Areas in the Airline Industry

Carriers have been able to add more functionality, especially in customer service areas ranging from check-in desks upwards. Furthermore, airlines have also been able to integrate internal systems. This relatively under-developed area may have the strongest potential for future growth.

The drastic effect in the year 2001 on airline ticket sales forced carriers to reappraise their distribution systems, focusing sharply on e-commerce. Online services can be configured to include specialist applications such as

- content management, for example – to make the site easier to navigate and use;
- business intelligence tools – for in-depth management information;
- and personalization software – that will allow the site to be customized for each individual user.

This kind of solution is increasingly integrated with other processes which, if not underway already, are certainly under development by many airlines today, intending delivering effective online customer services at the lowest cost. For example, online sales can be backed up with streamlined fulfilment procedures that simplify the administration of high-volume, high-value transactions on which the air travel industry increasingly depends. Automating time-consuming manual processes improves efficiency, contains costs and frees staff for more profitable activities. It also plays an important role in enhancing business knowledge, collecting data as transactions are processed and delivering valuable management information that can help airlines shape their marketing strategy.

Other areas of airline operation can also benefit from some of the same processes and e-commerce integration expertise. Airline catering, for instance, requires rapid, streamlined communication with business partners.

2.1. Internet Technology

Internet Technology has become recognized as a major enabler for aviation to work effectively and safely, while achieving substantial cost savings. If Internet Technology plays a critical role in determining how the airlines compete with one another, there is also a need for it to serve common purposes.

At present carriers have two main strategic goals: to get closer to their customers and to reduce costs. And they are looking to Internet Protocol to deliver

both. It is clear that strategy-planning horizons have been falling as the speed of technology change increases.

Nowadays airports are at the very early stages of leveraging the power of the Web. The first initiative airports can take is to improve their websites. Three pieces of information most travellers require are the local weather, the local time and the exchange rate. Few airport websites currently provide this information. The initial stages of using information technology involve attempting to replicate the physical world in cyberspace. Accordingly, airports are trying to move merchandising to the Web but it is highly unlikely that the current variants are proving to be successful. The devil, however, is in the details. The race between VHS and Betamax home video formats showed us that superior technology alone was not enough to get ahead. For example, pre-ordering foreign currency and duty-free items is useful in that it saves the time one might spend browsing at duty free shops. Pre-ordering currency is a valuable service only if the currency one requires is expected to be in short supply. This is unlikely to be an attractive service for those embarking from countries with international currencies. Moreover, consumers will unlikely pay for currency using credit or charge cards due to the high interest rates associated with cash advances.

Through closely monitoring and collecting information on their stakeholders, airports can provide data on the local community to visitors and vice-versa. For example, it is possible for a first time visitor to a particular city to obtain a list of good restaurants from websites. But in order to make it more valuable, that information has to be cross-referenced from other sources to determine if the best restaurants are located within a convenient distance from the hotel they are staying at.

How airports use the Internet is likely to reflect how airports view themselves. A very minimalist view would be that an airport is an infrastructure supplier or a supplier of an intermediate input in providing air transportation services. What else do airports do? They provide some facilities, either themselves or through tenants, for the passengers they serve. The facilities vary considerably with airports, however, most if not all airports have health facilities, currency exchange booths, duty-free shops and restaurants. Other tenants could provide travel-related services such as rental cars, hotel services, tour operators etc. In addition airports provide parking facilities, ground transportation links through cars, taxicabs, buses and rail. Airports also provide a variety of services to airlines, including air-traffic control, baggage and cargo handling, catering, aircraft maintenance and land for cargo handling terminals and hangers. Lastly, they provide facilities to Government departments for immigration, customs and possibly health services.

Although IT has been long at the heart of every airline operation the truth is that now it is time to reorganise the future of the industry. This future will be characterized by three critical success factors – lower costs, increased profitability and improved levels of customer service.

2.2. s-Travel Initiative to Increase Security of Global Aviation

Major air transport organizations have teamed up with world leading smart card and biometrics integration companies to develop and trial a '*secure-travel*' initiative.

The s-Travel project aims to achieve the highest level of identity verification for frequent travellers and to contribute to a secure global air transport system. The European Commission and a Swiss-funded consortium will undertake trials in Europe, with a view to expanding the initiative globally [2].

s-Travel will include digital authentication to enable secure access to airport facilities for frequent air travellers. The project team will develop and implement systems to authenticate passengers at both check-in and boarding stages. The solution will also enable effective control of airport and airline employees' access to restricted areas, as well as electronic access to computer systems.

To ensure the provision of an interoperable global solution, IATA and SITA will lead the agreement of standards. The s-Travel system will combine a certi-fication authority, smart-cards technology and biometrics technology integration. To ensure that the s-Travel system does not infringe upon the privacy of frequent travellers, the consortium will work closely with the EC and relevant data com-missioners to resolve confidentiality issues. Both EC and Swiss funding, subject to final contract negotiations, were awarded as part of their programme to foster research and development on a pan-European scale [2].

2.3. Security Solutions

The most notable change will emerge in the relationship between the passenger and the airline. Travellers will accept new security requirements. But they will also be capable. They'll accept positive bag matching, but increasingly they won't accept lengthy delays and irritations. The air travel industry has to make flying safer while speeding up the process of getting on a flight.

In the near future, we can expect to see secure integrated networks within airports by pulling together existing capabilities, such as baggage reconciliation or border control with third party technology in areas like biometrics and explosive detection devices.

In spite of some improvement at the turn of the year, it has become clear that the air transport industry will not bounce back in terms of growth and profitability as quickly as it fell into trouble.

Improved *security* has become a vital factor in efforts to revive the fortunes of the air transport industry. Vendors have responded to last September's terrorist attacks in the US with the launch of Intelligent Aviation Security Solution – a robust platform for governments, airlines, airports and cargo agents that is available now. Pick up any information technology magazine in the past couple of months and you will see that the emphasis has been firmly on security. Airlines need to know exactly who gets on aircraft and must be sure, that along with their baggage, they

have been properly screened.

Common use security equipment will allow shared biometric devices in airport common use areas to be accessed by different agencies and airlines to serve their own security applications. The resultant shared environment for airport, airline, security and handling agents would be a secure, common platform.

One of the major requirements of the new legislation is *baggage screening*. This effort is designed to prevent the loading of unaccompanied baggage on aircraft. Every checked bag on every flight must be either screened for explosives – by machines, specially trained dogs, or manual searches – or each piece must be matched to a passenger on the plane. The issue is global, and for reasons of costs and time, the best option is the existing technology that matches baggage with passengers, but as procedures for baggage handling – including screening, reconciliation and tracking at the airport – are evaluated, it is important to reassess Positive Passenger Bag Match (PPBM) based on today's environment [3]. PPBM saves airlines millions of dollars in mishandled baggage costs and improves customer service.

Inconvenience to passengers would be minimal to none. The scanning technology knows exactly where bags are loaded on the aircraft, so if a bag must be removed because its owner does not fly, that retrieval can be done in a matter of minutes. Without this technology handlers would need to off-load each bag and inspect the tags to find any orphan luggage, taking almost an hour.

There is no question that airports and airlines can make this an effective solution and avoid long delays searching for unaccompanied baggage.

3. Possible Choices for Improving Air Transport Information Systems

Many vendor companies are currently re-organizing and investing strongly in technologies focused on improving customer service changing – from self-service kiosks to check-in via mobile phone services, to baggage and airport management services, to electronic visas and in-flight e-mail. For the airlines, the prime objective remains: optimising revenues while maximizing customer relationships. What has changed is the variety and scope of channels available for distribution that the airlines want to control. Online electronic ticketing must be integrated with frequent flyer programmes and yield management will continue to develop as passenger demands for price competitiveness and transparency increase.

3.1. Simplify Passenger Check-in

One possible goal is to simplify the check-in process. Through the use of a Common Language Front-end to host check-in systems [4], agents and staff see the same screens no matter what host system they access. Agents sign in only once, after which hosts are accessed by simply entering the flight number associated with that host.

Built around open systems standards, vendors offer a platform for additional integration and customisation. Using system-wide information available from each centralised check-in host and easy-to-use presentation, the staff will have automation that is dedicated to customer service.

Latest Check-in solutions incorporate the latest PC capabilities to help airport staff perform both simple and difficult passenger check-in transactions. For example, graphical windows-style presentations simplify passenger check-in. User prompts, color-coded screens, drop-down menus and dialogue boxes allow agents with minimal training to quickly complete passenger check-in. Edit checks at the PC level prevent wasted typing and considerably reduce transaction costs. Within seconds, data is displayed on the screen, and agents can verify passenger requests for special services. In this way passenger and baggage check-in is quick and requires minimal agent interaction.

3.2. Increase Agent Productivity while Better Serving Customers

Airport staffs are the customer representatives. And a customer's perception of an airport can be strongly influenced by the service they receive. Service that is personalised and efficient wins loyalty for operation and helps recurring business. A good information system enables airport staff to provide the utmost in customer service.

Onscreen user guide, customised workflow design, and other easy-to-use features:

- Allow experienced agents to spend more time to important personal contact with passengers, because routine check-in activity is performed quickly;
- Enable new agents to become proficient quickly, without lengthy on-the-job training;
- Reduce initial and refresher training for new and experienced agents;
- Open new avenues of sales, based on improved customer service and accessibility of pertinent passenger data;

We have to know that improving customer service while increasing staff productivity is impossible without the right tools.

3.3. Empower Airport Staff

Latest Check-in solutions provide staff with much more versatility than ever before. The graphical screens let airport staff customise screens to best fit its check-in and operational environment. Changes can be made quickly and easily and can be adapted to one location or all locations, depending on the needs of each airport.

As an airline, airport operator, or independent company supplying ground handling support for other airlines, wants to provide the best service possible, vendors provide the capability for airport staff to focus on customer service. They no longer need to concentrate on the computer processing aspects of their job, but the system provides additional information, special promotions, and personalised service to customers.

Internet, intranet and e-business solutions play an increasingly crucial role in transportation. Migration to network computing and Internet Protocol solutions are critical to the air transport industry. In this field, vendors have achieved a position as recognized leaders for the industry, providing the infrastructure for IP-based services like e-business and e-commerce, high-speed connectivity and integrated data, voice and video.

As the air transport industry evolves, its applications are increasingly integrated within an IP environment. Vendors' range of integrated industry solutions and applications covers every step of the journey. This includes reservations and bookings; freight movement; airport check-in, departure control and baggage management; flight management and operations; and aircraft maintenance and engineering. Offering IP access, these value-added solutions improve the passenger experience, streamline and integrate airline and airport operations, and enable efficient communications to support aircraft maintenance, safety and security processes.

Airports systems integration capability brings together existing airport products and third-party products in order to provide vendor-independent, best-in-class solutions. These enable airports to benefit from greater efficiency and effectiveness, including improvements in productivity, cash flow and profitability, as well as safety and service.

For catering logistics management, vendors have developed a new solution extending an airline's catering supply applications over an extranet, helping to improve catering management efficiency and reducing costs through the use of Internet technologies.

Vendors provide a range of aircraft data, voice and fax communications solutions for aircrew, systems and passengers as well.

4. Conclusion

The air transport, information and telecommunications industries have come a long way. The airline of 2000 has at its fingertips sophisticated desktop and Internet technology, in the form of powerful personal computers and connection to a wealth of information on corporate intranets, through e-mail and the Internet.

In the airport industry, circumstances have changed in recent years in a way that suggests that now competition is more important. In travel industry, the pressure to provide better customer service has never been greater. Yet the pressure to reduce operating costs is equally strong. Airport automation can play a key role in attaining these goals, and today many innovative solutions are available to assist.

To meet these challenges, there are plenty of software solutions that help airports, airlines and ground handling companies distinguish themselves by making travel both convenient and easy.

A good information technology enables operation to run efficiently, while emphasising customer service. Technology has the potential to answer the demands of politicians and the travelling public – increasing the level of security, without creating excessive time delays and without adding significantly to the cost of travel.

No doubt, the research on these topics will go on as the industry continues to evolve in the future.

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