



e-Airport

Coordinated e-Passport Proving Trials (e-Check-in)

A New Dimension in Travel

With the advances in new technology, we are on the verge of an era of greater comfort and safety in travel brought on not merely by an extension of conventional methods but a completely new dimension of travel that utilizes biometrics and information technology.

The airport is littered with checkpoints. First, the check on drivers' license or passports at the airport gates. Next, the baggage check at the terminal and the passport check at the airline counter. Then comes the passenger screening and outbound passport control. And finally, another check at the boarding gate. (Not required by some airlines)

The trend in recent years has been to combine and simplify these complex procedures by using biometric technologies, automatic check-in machines and electronic media for storing travel data.

Also, since the September 11 terrorist attacks in the US, airports around the world have had to step up security screening and security systems as well as install hi-tech

devices that use iris, fingerprint recognition and other forms of biometric technologies to prevent terrorists and criminals from boarding aircraft and entering the country.

The numerous Simplifying Passenger Travel (SPT) projects that are underway across the world bring these two lines of development together in simplifying travel procedures and improving security both at the same time.

The e-Check-in project at Narita Airport is the launching pad in Japan for the global SPT drive. We carried out e-Check-in proving trials in fiscal 2002 using iris and facial profile recognition in conjunction with Japan Airlines with the backing of the Ministry of Land, Infrastructure and Transport.

In fiscal 2003, we carried out trials with All Nippon Airways' passengers on advance check-in using mobile telephones, and simplified procedures through the use of facial profile recognition. We broadened the scope of

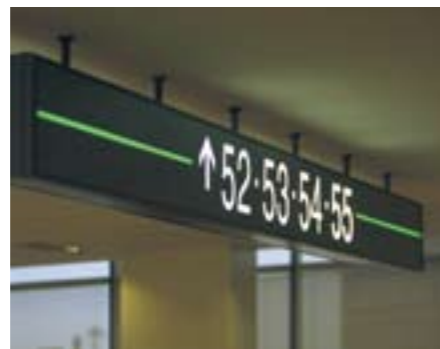
the trials with Japan Airlines and worked with Incheon International Airport in Korea on international trials with non-Japanese participants.

In these trials, priority lanes were set aside for passengers who had pre-registered biometric data, passport information and other personal details. Because of the reliability of these passengers provided by the pre-registered information, automated verification using biometrics simplified the vetting process and streamlined the procedures. The time saved could also be devoted to more lengthy checks on all other passengers, thereby improving security.

However, the scope of these trials only included airline check in, security check and boarding procedures; passengers underwent passport control in the conventional manner.

Then in fiscal 2004, the Japanese government looked at the inclusion of IC chips in passports and related airport procedures based on the e-Japan Strategy II Accelerated Package of February 2004 and set out the parameters for e-Passport proving trials to be conducted jointly by the relevant government ministries headed by the Cabinet Secretariat.

IC passports issued by the Foreign Ministry to diplomatic passport holders for the trials and IC cards (SPT cards) issued by the Ministry of Land, Infrastructure and Transport provide passenger identification and are used in airline check-in and boarding procedures as well as passport control as a means of testing their application for all passenger procedures at international airports. This enabled testing for the simplification of all departure proceedings including check-in, security check, outbound passport control and boarding.



The e-Check-in project conducted by the Ministry of Land, Infrastructure and Transport will be continued, but as part of the coordinated e-Passport proving trials by the Cabinet Secretariat and other related ministries. The SPT drive will undoubtedly gain greater momentum in the years to come as it links up with e-Check in, the Foreign Ministry's e-Passport and the Justice Ministry's passport control automation.

Though proving trials like those in the past were not conducted in fiscal 2005, the ministries and airlines involved continued their deliberations on how to apply the SPT concept in Japan.

Furthermore, with the issuing of IC passports finally set in motion, the Government announced its new IT revolution strategy aimed at creating a society whereby everyone will be able to sense the benefits of IT whenever and wherever they are. The strategy vows to promote SPT in Japan with respect to personal identification and procedural automation to facilitate safe and speedy airport procedures by fiscal 2008.

Although this trial stage is just the beginning, the ultimate goal is the ability to identify people wherever they are in the world and to have on hand at all times necessary information related to travel. Conventionally, this was done by means of the photograph affixed to the passport. However, in this age of terrorism, we must assume that there are people with ill intentions. When biometrics are perfected and made available throughout the world, air travel will enter into a new dimension of safety.

The tragedy of the September 11 damaged the air transport industry severely and the scars still remain. However, the experience triggered the launch of new initiatives. We wait in eager expectation of what technology will do next to make travel safer and more comfortable.

SPT

SPT is the abbreviation for Simplifying Passenger Travel and was first aired in February 2000 with the objective of simplifying the complicated travel procedures endured by passengers. The principal members of the project are the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA), airport founders, operators, airlines, immigration authorities, Customs, and aviation related businesses, etc.

"One Stop Check" is the phrase used to express the vision of the project. The principal component is simplified travel so that all necessary travel information is distributed simultaneously to the relevant organizations during one check-in procedure, thereby allowing all of the procedures to be completed more quickly and efficiently. However, since the terrorist attacks in the US, the spotlight has focused on the security improvements to be had through SPT. Biometric technology, which enables identification using unique physical characteristics of the individual, is a particularly important core element in this project. The perfection and widespread availability is, without a doubt, the key to the success of this project.

e-Tag Program (Hands Free Travel: RFID)

At the moment, paper tags with barcodes are attached to baggage for handling and sorting. But read rates for these barcodes often fall when the tags are soiled, creased, attached incorrectly or are in the wrong position. Consequently, some baggage goes missing. Although Narita Airport maintains a barcode scan rate of over 90%, the figure is only around 70% globally.

RFID tags offer a solution to this problem. These are tags that have been embedded with an IC chip and an antenna. Radio waves from the scanner antenna not only read information written to the IC chip, they also write new information to the chip. Because the data is read by radio waves, it can be recognized even if the tag is creased or soiled, keeping close to a 100% accuracy rate regardless of how the tag was attached, as long as the chip is not damaged. They are able to easily and rapidly store larger amounts of data than barcode systems. It is truly a revolutionary tag.

In recent years, the industry has been driving ahead with the so-called SPT (Simplifying Passenger Travel) initiative aimed at simplifying passenger travel procedures. However, tighter security measures have been introduced since the September 11 US terrorist attacks of 2001 and this has worked against the SPT drive. RFID has, therefore, been seen as a means of improving security while at the same time, realizing the SPT concept. The introduction of RFID tags is envisaged to reduce the incidence of lost baggage, curb baggage sorting costs and improve security. In preparation for full-scale introduction, IATA has designated RP1740C (RP: Recommended Practice) as the standard specification

for RFID tags in its January 2006 issue of the Passenger Service Conference Manual.

RFID tags also open the way for new services. Narita, for example, has launched the Hands-free Travel Project utilizing RFID tags to allow passengers to consign baggage from home so that it can be collected at the destination. When this becomes operational, it will be possible to travel abroad without being weighed down by heavy luggage, and will usher in a new style of travel.

In August 2002, the Next Generation Baggage Management Study Group was founded, with the Ministry of Land, Infrastructure and Transport representing the core of its membership, to look into the introduction of the hands-free travel system. Then in August 2003, the Advanced Airport Systems Technology Research Consortium (ASTREC) was set up with the aim of introducing RFID technology in a wider scope of applications and to establish the fundamental technology for baggage and other advanced airport systems to meet the demands of a sophisticated information society. It is composed of around 70 companies including NAA, airport companies, airlines, delivery companies, RFID technology companies, system vendors, etc., and is carrying out various trials and studies into full-scale introduction.

ASTREC conducted the following three trials in 2004:

- ① Hands-free travel trial
- ② e-tag recognition technology verification test
- ③ Japan-us joint operation verification test using UHF band RFID

(Note: At Narita Airport, the RFID tags used in the trials are called e-tags.)

① Hands-free travel trial

Hands-free travel was operated on a trial basis from March 2004 to March 2005. Participants checked in their baggage with the delivery company in advance, checked in hands-free at Narita without touching their baggage, boarded the plane and collected the baggage at the carousel at their destination airport. The service proved popular and more than 10,000 passengers took part.

② e-tag recognition technology verification test

The e-tag recognition technology verification test was held from April to December 2004. Around 200,000 e-tags were issued at Narita and attached to passenger baggage. Four overseas airports cooperated in this experiment. New York JFK, Vancouver, Frankfurt and Schiphol airports in addition to Narita, installed antennas to check the accuracy rate. On average, the scanners registered a 98.84% accuracy rate in actual operations (ranging from 98.05% to 99.76%). It was also confirmed that the data on the e-tags remained intact during the flight and could be retrieved at overseas airports. These experiments were conducted using a 13.56MHz (HF band) tags. The trial revealed that the use of Japanese RFID technology in actual operation was viable.

③ Japan-US joint operation verification test using UHF band RFID

National laws regulate the frequency bands that can be used in RFID. In Japan, the UHF band was not allocated for RFID use. However, RFID technology utilizing the UHF band received much attention worldwide and in Japan, legislation was amended so that in April 2005, part of the UHF band was allocated for RFID use. In April and May 2004, a scanning trial was held on services between Narita and Honolulu headed by the TSA (US Transport Security Agency) using UHF band RFID tags. Applications were submitted to the Ministry of Internal Affairs and Communications as the UHF band was not allocated for RFID use at the time.

We have been a member of the IATA RFID Working Group (now a sub-group under the Baggage Working Group) since 2001. We reports on efforts at initiatives at Narita to IATA and also offers suggestions based on the results of its tests. We provide positive input in this regard and some of our suggestions have been adopted in IATA's current RFID standardization initiatives.



In fiscal 2005, trials were conducted on a new service model that combined existing hands-free services with travel agency tour packages. The trials were aimed at boosting satisfaction by relieving customers of having to carry baggage from the destination airport to their hotels

as well as on their return journeys. We will continue with our studies into the practical application of e-tags and efforts to promote hands-free travel in pursuit of user convenience and service level improvements.

