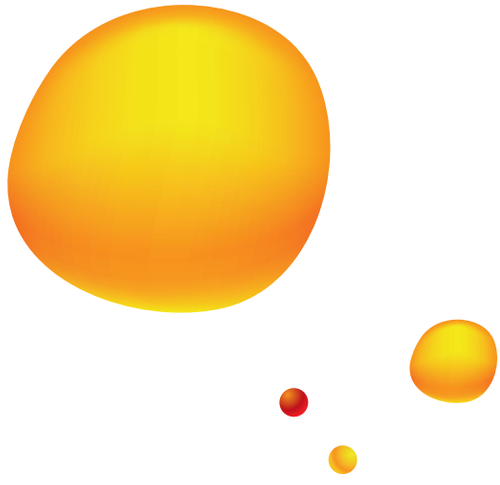
2013

AIR TRANSPORT INDUSTRY INSIGHTS

THE BAGGAGE REPORT



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PREFACE

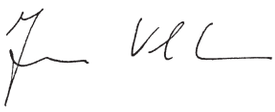
SITA's ninth annual Baggage Report shows a continued improvement in the baggage mishandling rates of the industry. The headline figure has now dropped to 8.83 mishandled bags per 1,000 passengers, down from 8.99 in 2011 and represents a drop of 44.5% in the number of mishandled bags in the last six years. Remarkably, given the nearly three billion passengers using the air transport system last year, it means that for every hundred passengers traveling fewer than one bag was reported as mishandled. For the industry it translates into an annual cost saving of US$2.1 billion for 2012.

We are now seeing the rewards of a concerted collaborative effort to improve the baggage handling operations of the industry and in so doing reducing a major cause of passenger dissatisfaction. Delayed baggage, which was responsible for 82.9% of mishandling, fell 2.4% in 2012 to 5.67 per thousand passengers. The major cause of delayed bags is the transfer between flights which historically has proved to be a critical pinch point in the process. The good news is that we are moving in the right direction with mishandled transfer baggage falling to 48% of delayed baggage from 53% in 2011.

For the first time we have taken a look at baggage performance across the world's top 100 airports by region. Asia, in particular, stands out as performing very well with 1.93 mishandled bags per 1,000 passengers. Looking at the long term trend of airline baggage performance, the improvement is significant across regions, with a mishandling bag rate reduced by 43% in Asia, 56% in North America and 43% in Europe over the last six years.

Looking forward, there will be no let up in the pressure on baggage handling operations. Passenger numbers continue to grow, even in these times of reduced economic activity. There will also be no let up in industry efforts to reduce the mishandling rates. At SITA we are investing in new baggage solutions to ensure the industry has the best tools, based on the latest technologies, to do the job. One such product, BagSmart, provides a predictive warning of missed bags which initial trials indicate could reduce mishandling of transfer bags by up to 60%, as well as help prevent baggage-related flight delays.

There is already a strong momentum to reduce mishandling further. As an industry, we are collaboratively addressing the issues and developing the solutions. IATA's InBag program has set a target to reduce the global baggage mishandling rate to 4.5 mishandled bags per thousand passengers. It is a figure that is nearly half of where we are today, so there is still much work to do. While it is challenging, SITA is working with its industry partners, including IATA and the ACI, to make it happen.



Francesco Violante
Chief Executive Officer, SITA

2012 BAGGAGE FACTS-AT-A GLANCE

2.95 BILLION **ENPLANED PASSENGERS** (UP FROM 2.82BN IN 2011)

26.04 MILLION **MISHANDLED BAGS** (DOWN FROM 46.9M IN 2007)

8.83 **MISHANDLED BAGS PER 1,000 PASSENGERS** (DOWN FROM 8.99 IN 2011)

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HIGHLIGHTS

2011 VERSUS 2012

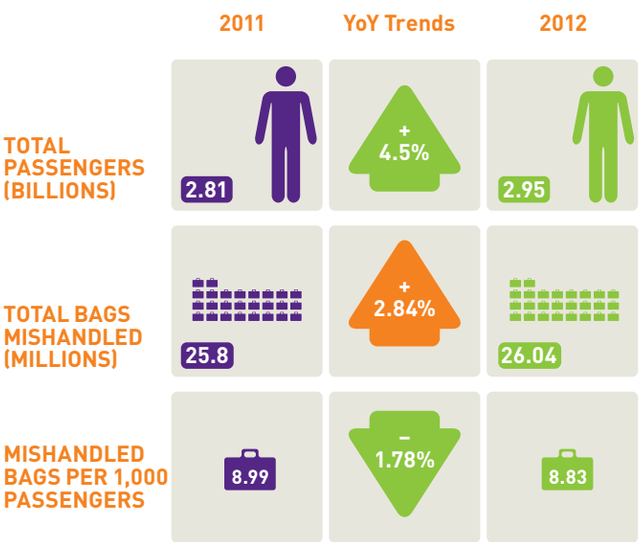
In 2012 the total number of mishandled bags increased slightly to 26.04 million. However this 2.84% increase is against the backdrop of a 4.5% rise in passenger numbers to 2.95 billion. The rate of mishandled bags per thousand passengers continues to diminish, down by 1.78% in 2011, with the cost per passenger showing a 1.61% improvement over the previous year.

Looking at the 2012 detail, delayed bags make up 82.9% of the total mishandled bags, slightly down from 2011. Damaged or pilfered bags account for 12.9% of mishandled bags and 4.2% were declared stolen or lost. Transfer bag performance improved in 2012 and while it is too soon to suggest an industry step change, initiatives are underway to take control of the issue.

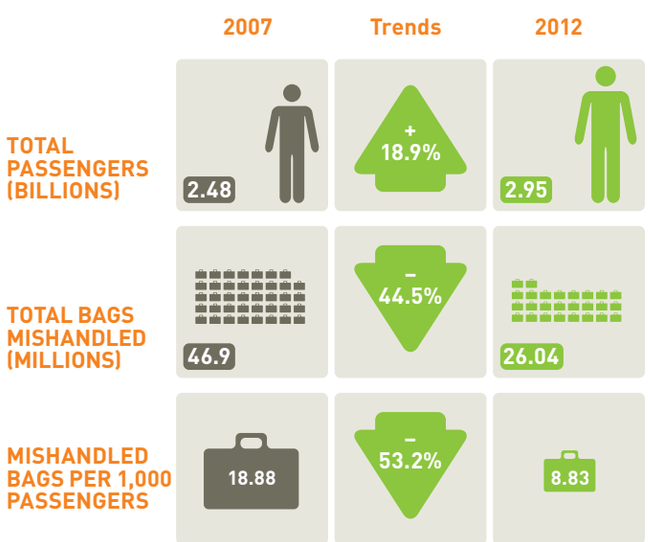
THE SIX YEAR TREND

- Total scheduled passengers carried up 18.9%
- Total bags mishandled down 44.5%
- Total mishandled bags per thousand passengers down 53.2%
- Total cost to the industry down 44.5%

Short term trends for mishandled bags



Long term trends for mishandled bags



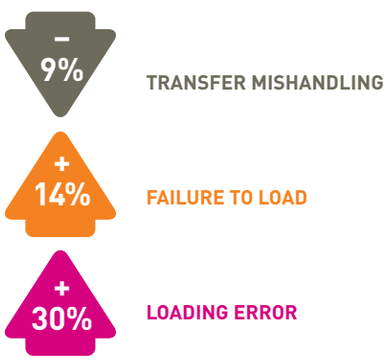
KEY STATISTICS

The air transport industry ended 2012 on a note of guarded optimism. Despite the high fuel prices and gloomy economic situation for much of the year, there was a 4.5% year-on-year increase in passenger numbers. In addition airline load factors were at near record levels of 79.1%.[1]

Reflecting the increase in total number of mishandled bags, the overall cost to the industry has increased US$70 million over 2011.

However a note of cautious optimism can be applied to baggage handling performance in 2012. When you look at the number of mishandled bags per thousand passengers, this decreased 1.78% to 8.83 in 2012. Investigating the detail of these mishandled bags, there is a similarly positive improvement in the rate of delayed bags, which reduced 2.4% to 5.67 mishandled reports per thousand passengers. Equally the overall cost of mishandled bags per customer continues to erode, down 1.61% from 2011 to US$0.88. *(See Appendix 1 for the complete baggage statistics)*

2011-2012 change in reason for delayed bags



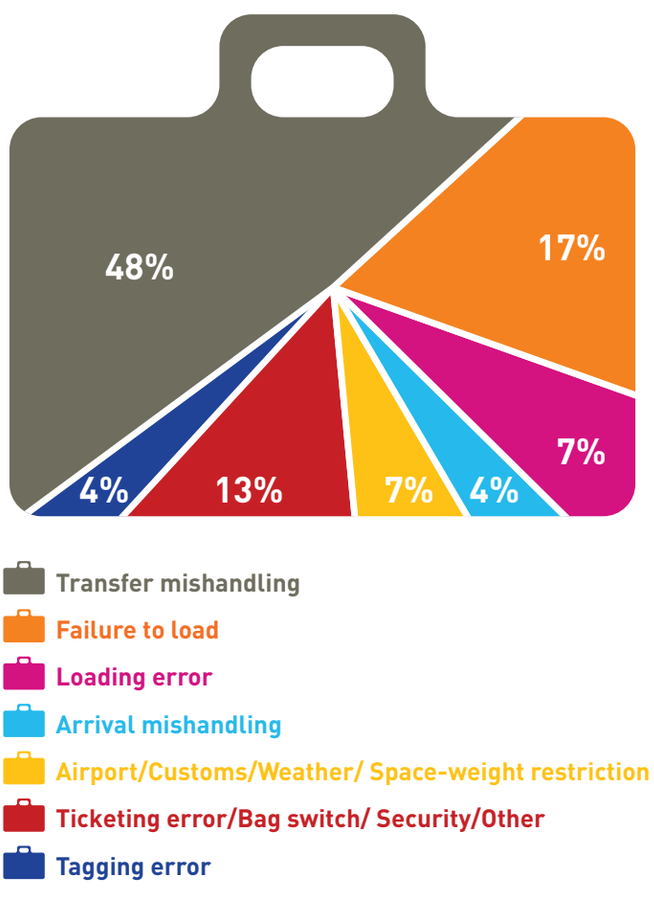
Investigating the reasons for delayed luggage, failure to load and loading errors have increased slightly to 17% (15% in 2011) and 7% (5% in 2011) respectively. However this is counterbalanced by an improvement in the transfer bag rate.

Handling of transfer bags remains the pinch point in the baggage handling process. Not only does increasing air traffic place greater stress on bag operations, delays and unexpected changes to schedules can quickly have a negative impact on transfer bags. Despite the year's rise in passenger traffic, transfer bags accounted for 48% of all delayed bags, down from 53% in 2011.

In real terms, 12.5 million transfer bags were mishandled in 2012, a reduction of 1.17 million on the number of transfer bags mishandled in 2011 (13.67 million bags).

This shows a very positive signal that the problem of transfer bags is being addressed.

The reason for delayed bags



TAKING CONTROL OF TRANSFER BAGS

IBERIA

The transfer of bags between flights continues to be the greatest single cause of delayed luggage. Yet there is room for optimism. Smart and flexible thinking, along with investment in systems and processes drive efficiency and speed up the journey these bags make through the airport. These have been key factors in addressing the transfer bag problem in 2012 and will continue to help into 2013 and beyond.

Iberia's Agora project is speeding up the transfer bag process by giving priority to one type of passenger over another, depending on real-time needs and customer relationship management attributes. At Madrid it sends non-priority baggage in low speed flows, and baggage with tight connections is processed on the fastest belts. The higher speed belts can be eight minutes faster getting bags from the main terminal to the satellite one. Additionally, when connecting baggage is not compromised, the focus is on the prompt delivery of local baggage.

"NO MORE FIXED RULES FOR ALL FLIGHTS. STANDARDIZATION IS GREAT UNDER SOME CIRCUMSTANCES, BUT WE NEED TO BE FLEXIBLE IN OUR OPERATION AND DO WHAT IS BEST FOR THE CUSTOMER WHENEVER POSSIBLE. SHORT CONNECTION BAGGAGE IS THE PRIORITY UNTIL IT EXCEEDS A CERTAIN DELAY THRESHOLD; ONCE IT CANNOT BE CONNECTED, THE FOCUS SHOULD BE ON LOCAL BAGGAGE (BUSINESS AND/OR ECONOMY)."

RODRIGO ZAPARDIEL GENTO
IBERIA'S BAGGAGE HANDLING MANAGER

HELSINKI AIRPORT

The desire to take more control over transfer bags continues into 2013. A key objective in the design of Helsinki Airport's state-of-the-art baggage handling system, the final phase of which came on line at the beginning of March 2013, was being able to achieve a typical transfer time of just 30 minutes. A transfer monitoring tool gives automatic notifications of delays of incoming flights which are carrying transfer baggage, allowing the airport to implement special measures to ensure that these bags reach their connecting flights when time is limited.

"IN 2011 HELSINKI AIRPORT ACHIEVED A RECORD GROWTH OF 15.5%, TAKING PASSENGER NUMBERS TO 15 MILLION AND STRENGTHENING ITS POSITION AS A LEADING LONG-HAUL AIRPORT FOR NORTHERN EUROPE. THE NEW BAGGAGE HANDLING SYSTEM WILL PROVIDE A FOUNDATION ON WHICH HELSINKI AIRPORT CAN ACHIEVE CONTINUED GROWTH BY ENSURING HIGH TERMINAL EFFICIENCY AND AN ULTRA-FAST CONNECTION TIME WHICH WILL MAKE A SIGNIFICANT CONTRIBUTION TO THE OVERALL PASSENGER EXPERIENCE."

ESA SIPONEN
VICE PRESIDENT FOR HELSINKI AIRPORT

REGIONAL OVERVIEWS

THE AIRPORT PERSPECTIVE

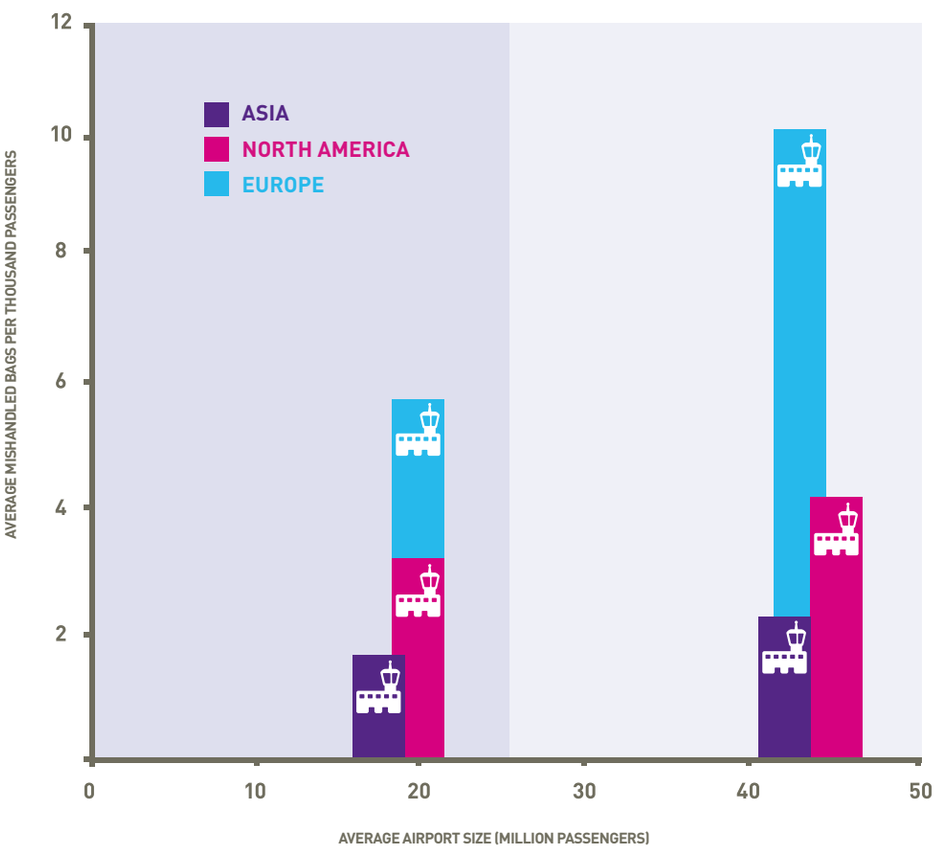
This report considers, for the first time, performance among the world's top 100 airports, which account for about 60% of global passenger traffic.[3] As full airport passenger data for 2012 is not yet available from ACI, the report has examined performance in 2011 when baggage mishandling per thousand passengers was roughly 2 in Asia Pacific, around 5 in North America and about 10 in Europe. Asia, in particular, stands out as performing very well with 1.93 mishandled bags per thousand passengers.

There is distinct correlation between the size of the airport and the level of mishandled bags. Although it should also be noted that greater numbers of passengers inevitably increases pressure on airport baggage operations.

Broadly speaking, across airports in Asia and Europe handling less than 25 million passengers per annum, the number of mishandled bags per thousand passengers is roughly half that of airports managing in excess of 25 million passengers per year. In North America the gap is somewhat closer.

Looking at the detail, the largest airports in Asia had a mishandling rate of 2.28 bags per thousand passengers compared to 0.85 bags per thousand at airports dealing with less than 25 million passengers. North American airports dealing with in excess of 25 million passengers mishandled 4.17 bags per thousand passengers, compared to 3.07 bags per thousand at smaller airports. Across the largest European airports, 10.6 bags per thousand passengers were mishandled versus 5.97 bags per thousand passengers at airports processing less than 25 million passengers each year.

Airport analysis: mishandled bag rate per airport size across regions



THE AIRLINE PERSPECTIVE

Investment in baggage handling technology has been the key to improvements in North America and Asia Pacific. Europe too has made excellent advances in bag handling performance over the past five years, although the Association of European Airlines recognizes that more needs be done to drive competition and service in the ground handling sector.

Looking at the long term trend of baggage performance, the improvement is significant across regions with a mishandling bag rate reduced by 43% in Asia, 56% in North America and 43% in Europe over the last six years. *(See Appendix 2 for complete regional airline association statistics)*

Trends across regions: mishandled bags per thousand passengers

Source: Association of Asia Pacific Airlines, Association of European Airlines, US Department of Transportation

ASIA PACIFIC

The past five years have seen an improvement in mishandled baggage rates of Asia Pacific based carriers, even as passenger volumes continue to grow. This trend was underpinned by increased investment in baggage handling systems, which contributed to greater efficiency in the baggage handling process.

"OVERALL, ON A SYSTEMWIDE BASIS, THE NUMBER OF MISHANDLED AND DAMAGED BAGS PER THOUSAND PASSENGERS HAS DECLINED BY A COMPOUNDED ANNUAL RATE OF 10.6% SINCE THE YEAR 2007, WHILE THE NUMBER OF PASSENGERS CARRIED BY ASIA PACIFIC AIRLINES GREW BY AN AVERAGE OF 4.9% DURING THE SAME PERIOD."

ASSOCIATION OF ASIA PACIFIC AIRLINES

NORTH AMERICA

The baggage mishandling rate reported by Airlines for America in 2012 represents an all-time low for the 18 years that the North America Department of Transportation has been tracking the data.[4] The positive performance in 2012 reflects the investment made by airlines to take control of baggage mishandling according to Airlines for America.

Investment drives improvements

"IT WAS AN EXCELLENT YEAR FOR AIRLINE OPERATIONAL PERFORMANCE AND A RECORD-HIGH SUCCESS RATE FOR BAGGAGE HANDLING. WE ATTRIBUTE THE AIRLINES' STRONG BAGGAGE HANDLING RESULTS TO THE CONTINUED IMPROVEMENTS THE AIRLINES ARE MAKING, INCLUDING INVESTING IN NEW/ADDITIONAL BAGGAGE EQUIPMENT, IMPROVED TECHNOLOGY AND TRAINING."

VICTORIA DAY
MANAGING DIRECTOR, CORPORATE AND MEMBER COMMUNICATIONS, AIRLINES FOR AMERICA

EUROPE

European airlines consolidated their strong performance in 2011 with a further reduction in the rate of mishandled bags per thousand in 2012. Despite an interruption to the rate of improvement in 2010, impacted by a volcanic eruption in Iceland, severe winter weather and labour disputes, the region's carriers have cut the number of mishandled bags by 43.4% since 2007.

Liberalization is the key to further improvements

"THE RATE OF MISHANDLED BAGS HAS ALMOST HALVED IN THE LAST FIVE YEARS, BRINGING BENEFIT TO BOTH CONSUMER AND AIRLINES ALIKE. HOWEVER, A COMPARISON WITH MISHANDLED BAGGAGE RATES IN OTHER PARTS OF THE WORLD SHOWS THAT, EVEN ALLOWING FOR THE SPECIFIC NATURE OF THE EUROPEAN MARKET, WITH ITS HIGH LEVEL OF TRANSFER TRAFFIC, EUROPE NEEDS TO DO MORE.

CURRENT EUROPEAN COMMUNITY RULES ALLOW MEMBER STATES TO LIMIT THE NUMBER OF SERVICE PROVIDER COMPANIES FOR SOME GROUND HANDLING SERVICES, INCLUDING BAGGAGE HANDLING, TO JUST TWO HANDLERS AT EUROPE'S LARGEST AND BUSIEST AIRPORTS. THE GROUND HANDLING MARKET NEEDS FAR-REACHING LIBERALIZATION TO DELIVER ON MORE COMPETITION AND IMPROVED SERVICE QUALITY LEVELS."

ATHAR HUSAIN KHAN
SECRETARY GENERAL (ACTING), ASSOCIATION OF EUROPEAN AIRLINES

IMPROVING THE PASSENGER EXPERIENCE

PASSENGER DEMAND

Airline passengers are keen to take more control over their own journeys by embracing new services that will make processing of their hold luggage easier and less stressful. They are also demanding more information and reassurance that their bags will arrive with them at their destination.

Check-in and bag drop are ranked among the top three most stressful steps in the journey according to travelers interviewed for the SITA-ATW Passenger Self-Service Survey[5], rated most stressful by 12% of passengers. Many passengers are still not using self-service check-in because they need to check-in a bag at a counter.

Unassisted bag-drop can help solve this problem and also help reduce queue times since the passenger can drop off their bag themselves as they check-in. The survey shows that the higher the check-in/bag-drop process was rated as a stress factor, the greater the passenger interest in unassisted bag-drop functionality.

Travelers are keen to adopt technology to overcome the stress of the journey, particularly where it is intuitive and offers convenience. Globally, 68% of the passengers surveyed were interested in using self-printed bag tags and 68% in self-service bag-drop.

68%

OF PASSENGERS INTERESTED IN SELF-PRINTED BAG TAG AND SELF BAG-DROP

Despite the perceived stress around bag processing, most travelers actually have a good experience. IATA's Global Passenger Experience Survey reveals about two thirds of passengers reported satisfaction with the checked bag experience on their most recent flight.[6] The vast majority are also keen to know what's happening to their luggage with 81% interested in tracking their luggage in real time.

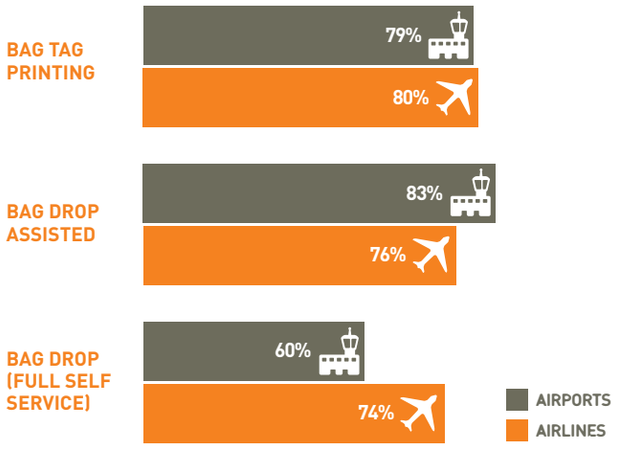
Another key area of stress for passengers, according to the SITA-ATW Passenger Self-Service Survey, is bag claim – ranked the fourth most stressful stage of the journey.[7] If their luggage has gone astray most travelers still want personal support rather than self-service. The IATA study similarly shows an agent is the preferred option for registering a claim for mishandled or misplaced bags.

AIR TRANSPORT INDUSTRY INVESTMENT

So how is the air transport industry investing to meet the concerns and desires of consumers? Both airlines and airports are investing in self-service technology to relieve stress and reduce queues when passengers are checking in hold luggage. Some of these initiatives are in the early stages, but the industry has ambitious plans to ramp up activity over the next three years according to the 2012 Airport and Airline IT Trends surveys.

Many airlines and airports are making head way with the provision of assisted self-service bag drops. Nearly a third of airlines offer a combination of self-printing bag tags at kiosks and assisted bag drops, and this is expected to reach 83% by the end of 2015.[8] Airports are currently further ahead with their implementations of agent-assisted bag-drop locations and, over the same time frame, 79% plan to offer self-service bag tag printing and 82% expect to offer assisted bag drop.[9]

Investment plan for self-service by the industry by end of 2015



And like their customers, the majority of airlines and airports have some way to go before they widely adopt self-service kiosks for reporting missing bags. Nevertheless, about two-thirds of airlines and airports already have plans to provide these services when needed.[10]

CUSTOMER-FACING INNOVATIONS

2012 saw a number of initiatives to give air travelers more control over processing hold baggage. The range of airlines and airports rolling out self-tagging options included British Airways trialing self-service bag-tag kiosks at London's City Airport from March. The success of this project has resulted in the service being extended to two bag-drop podiums, with a view to opening several more throughout 2013.

"THE POSITIVE RESPONSE FROM OUR CUSTOMERS USING THE NEW FACILITY AT LONDON CITY AIRPORT IS FANTASTIC AS THE SPEED AND SIMPLICITY OF THE PROCESS IS VERY POPULAR. THE QUEUE TIMES AT LONDON CITY ARE ALWAYS VERY LOW EVEN AT PEAK TIMES AS WE UNDERSTAND IT IS VERY IMPORTANT FOR OUR CUSTOMERS TO BE ABLE TO CHECK IN AS LATE AS 20 MINUTES BEFORE DEPARTURE. THIS LATEST DEVELOPMENT ONCE AGAIN SUPPORTS THE SPEED, SIMPLICITY AND FLEXIBILITY OF TRAVELING THOUGH LONDON CITY AIRPORT."

LUKE HAYHOE
GENERAL MANAGER COMMERCIAL AND CUSTOMER OF BRITISH AIRWAYS CITYFLYER

A couple of industry front-runners took self-bag tagging a step further in 2012 by allowing their customers to print their bag tags at home or the office. In October Alaska Airlines started working with the US Transportation Security Administration to trial its Streamline Self-Tag Online for passengers traveling from Seattle to Hawaii. During the online check-in process customers have the option of printing their bag tag, which they insert into a Streamline tag holder, then drop off their luggage at a Self-Tag Bag Drop area at the airport. Alaska's goal is to extend the initiative to most of its route system in 2013.

HOME BAG TAG PRINTING TO SPEED UP BAG DROP

Meanwhile, Denmark's Billund Airport has improved the check-in process by giving charter passengers the ability to print their boarding passes and up to nine bag tags at home. The tag numbers are added to the boarding pass so bags can be tracked if they go missing. The tag is simply printed onto standard A4 paper, and folded into a plastic cover.

"IT'S ALL ABOUT CONVENIENCE AND SAVING TIME. WHEN PASSENGERS PRINT OUT BOTH THEIR BOARDING PASSES AND BAGGAGE TAGS AT HOME, THEY CAN AVOID WAITING IN QUEUES AT THE AIRPORT. WE HAVE A DEDICATED CHECK-IN COUNTER FOR PASSENGERS WHO HAVE PRINTED THEIR BOARDING PASSES AND BAG TAGS, AND ALL THEY HAVE TO DO IS PRESENT THEIR BOARDING PASSES AND DROP OFF THEIR PRE-TAGGED LUGGAGE.

WE IMPLEMENTED HOME BAG TAG PRINTING TO IMPROVE PASSENGER SELF-SERVICE AND STREAMLINE BAGGAGE DROP. IT IS WORKING WELL FOR OUR PASSENGERS. THEY CAN CONTROL THE ENTIRE CHECK-IN PROCESS AT HOME, AND BE READY WHEN LEAVING FOR THE AIRPORT.

ON OUR SIDE, HOME BAG TAG PRINTING IS SEAMLESSLY INTEGRATED INTO THE LOCAL DEPARTURE CONTROL SYSTEM, WHICH WE ALREADY USE FOR CHARTER PASSENGERS. THERE WERE NO REAL CHALLENGES TO PUTTING THE PROCESS IN PLACE. ALL WE NEEDED TO DO WAS EXTEND THE DIALOGUE FOR WEB CHECK-IN.

WE HAVE AROUND 20% OF OUR CHARTER PASSENGERS CHECKING IN AT HOME – AND THE NUMBER IS GROWING.

THOMAS COOK WAS USED FOR THE FIRST TEST FLIGHT. HOWEVER HOME BAG TAG PRINTING IS NOW USED FOR ALL OUR CHARTER CARRIERS, AROUND 50 DIFFERENT AIRLINES ON A YEARLY BASIS. THE RESULT IS THAT BAG DROP IS FASTER AND WE ARE NOW PLANNING TO INSTALL SELF-SERVICE BAG DROPS."

ANDERS NIELSEN
VICE PRESIDENT OF DEVELOPMENT FOR BILLUND AIRPORT

AIRPORT-AIRLINE COLLABORATION BEHIND THE SCENES

Increasing numbers of people will be traveling by air in the future. Despite any immediate global economic pressures, the outlook for air travel is positive, with IATA predicting that airlines will carry some 3.6 billion passengers in 2016 – an increase of about 800 million on 2011 passenger numbers.[11]

The consensus is that passenger numbers will grow by an average of 5.3% per annum between 2012 and 2016. This period will see nearly 500 million new passengers traveling on domestic routes and 331 million new passengers on international routes.

The air transport industry is working hard to be ready for this demand by focusing on improvements to its baggage processes and systems to increase capacity and capability. To be truly successful these initiatives also require greater collaboration between all stakeholders.

Iberia's Agora project to give customers a world-class passenger experience at its Madrid Airport hub has included several initiatives to improve bag handling over the past year or more, including multimedia service points to speed resolution of lost luggage incidents, proactive texting to passengers about any baggage-related incidents, extra-large trays that allow up to 70% of over-sized luggage to be delivered on regular reclaim belts and a dedicated reclaim belt at arrivals for any contingency or incident recovery.

The airline has driven down mishandling at its Madrid hub by around 40% since 2009 and since the Agora project started in mid-2011 the mishandling rate has decreased 12 percentage points.

Behind the scenes, the airline has upgraded baggage handling software and made continuous improvements to operational procedures at the hub and stations. Close collaboration and teamwork with Spain's airport operator AENA has been a key challenge. However, one of the fruits of this collaboration is that, since 2012, Iberia can now interact with Madrid's baggage handling system and segregate baggage at any time, with the autonomy to remotely open/close any carousel.

"UNDERSTANDING THE POSITIVE BENEFITS THAT A MUTUAL COLLABORATION CAN HAVE TO MAKE THE PASSENGER HAVE A SEAMLESS EXPERIENCE THROUGH THE AIRPORT IS PRICELESS AND STARTS GIVING BENEFITS FROM THE VERY BEGINNING ONCE BOTH PARTIES ARE ALIGNED AND READY TO WORK TOGETHER."

ALEJANDRO RIVERA GIL
AIRPORT DEVELOPMENT PROJECT MANAGER FOR IBERIA

SCALING FOR EXPANSION

India's Bangalore Airport, a greenfield project that opened for business in 2008, spent 2012 focused on its upcoming terminal expansion. This has included preparing to upgrade its baggage handling and baggage reconciliation systems to ensure they cope with the extra passengers and extra front-of-house services such as luggage carousels.

Moving to an IP-based baggage handling system will provide a real-time feed of bag process messages from airline departure control systems, plus resource allocation updates from its airport operational database. Upscaling its baggage reconciliation system (BRS) with site redundancy and high availability will ensure business continuity management and SITA's BRS application version will add in more functionality and new scanners to make it easier for stakeholders to handle transfer bags.

On the baggage delivery side, the airport is already measuring first and last bags, sharing the data with all stakeholders and reviewing results with its airlines and ground handlers. The plan for 2013 is to introduce a mobility solution to capture the "Status & Event Management" milestones, from the time aircraft lands to its turn around and departure, so as to ensure proactive intervention and enhance the on-time performance of flights, which is a win-win proposition for all stakeholders.

From April 2013 secured WiFi will be enabled on the airside, allowing ground handlers to scan bags before loading into the belly of the aircraft, thereby effectively reconciling bags at the final stages of flight readiness. The next step, in May, will be to scale up to a mobile-based solution to track baggage processes in real time and assess against performance targets.

"THE INTENT IS TO PRO-ACTIVELY INTERVENE AND REALLOCATE RESOURCES IF THERE IS A DEVIATION TO STANDARDS. THE ENDEAVOUR IS TO TAKE THE PASSENGER EXPERIENCE TO THE NEXT LEVEL BY ENSURING ALL THE TOUCH POINTS OF SERVICES ARE WORKING ON HIGH PERFORMANCE MODE AND TO GET THE BEST POSSIBLE ON TIME PERFORMANCE. A WIN-WIN FOR ALL STAKEHOLDERS."

FRANCIS RAJAN
VICE PRESIDENT IT , BANGALORE AIRPORT

THE RIGHT BAG AT THE RIGHT TIME

Another innovative project has involved a new approach to baggage handling. At London's Heathrow Airport the vision will create an integrated baggage hub over the next five years. This 'bag factory' will instil a 'Production Management' practice across the entire baggage process. By implementing a 'Plan-Do-Check-Act' approach, Heathrow will encourage a behavior of performance management, continuously driving quality, efficiency and effectiveness.

Over £700m is being invested in the airport's Western Baggage system, which will include a 1.2km baggage tunnel and the new Terminal 3 facility. Foundations for the Terminal 3 Integrated Baggage(T3IB) system facility construction began in May 2011 and by 2014, transfer bags will use the facility, with phased implementation to be completed by 2016.

A fundamental process within T3IB is batch building, which relies on the logistics of empty baggage cans being moved into the facility using 'just-in-time' methodology. It also requires the use of an early bag store allowing bags to be sorted by flight and weight. It sorts bags into batches of approximately 25-30 bags, which are sent down to the lateral conveyor or to early assembly area for automated loading into containers.

Along with greater efficiency and accuracy, the bag factory will reduce the time taken to process transfer baggage – an important characteristic of a busy hub airport – and cut van movements driving bags around the airport, creating environmental improvements.

"THE COMPLETION OF THE NEW T3 BAGGAGE SYSTEM AND ITS INTEGRATION WITH THE TRANSFER BAGGAGE TUNNEL TO T5 WILL BE A SIGNIFICANT STEP IN OUR PROGRESSION TOWARDS A FULLY INTEGRATED HEATHROW BAGGAGE PRODUCT. WORKING IN COLLABORATION WITH THE AIRLINES AND HANDLERS, WE WILL BE ABLE TO TAILOR THE DAILY OPERATIONAL PLANS MUCH MORE PRECISELY TO THE EXPECTED DEMAND AS WE USE THE BAG STORE TO MANAGE THE FLOW OF BAGS TO THE HANDLERS IN PRE-SEGREGATED BATCHES.

THE AUTOMATED BAG STORAGE SYSTEM WILL ALSO ALLOW PASSENGERS TO CHECK-IN THEIR BAGS EARLY SO THEY CAN GO THROUGH TO THE DEPARTURE LOUNGE TO RELAX OR SHOP. THIS HAS AN ADDED BENEFIT FOR THE BAGGAGE OPERATION BECAUSE, IF SUFFICIENT BAGS ARE RECEIVED EARLY, THE FLIGHT CONTAINERS CAN BE LOADED AND STORED, REDUCING THE PEAK WORKLOAD IN THE BAGGAGE FACTORY PRIOR TO FLIGHT DEPARTURE.

WE ALSO EXPECT TO SEE A REDUCTION IN BAGGAGE MIS-CONNECT RATES AND AN IMPROVEMENT IN TRANSFER TIMES AS THE T3 AND T5 BAGGAGE SYSTEMS WILL BE LINKED, AND THE BAGS TRACKED THROUGHOUT THEIR END-TO-END JOURNEY. IN INSTANCES WHERE PASSENGERS MISS THEIR CONNECTING FLIGHT, THE BAGGAGE SYSTEM WILL AUTOMATICALLY RE-FLIGHT THEIR BAGS ONTO THE NEW FLIGHT TO ENSURE THEY TRAVEL WITH THEIR OWNER."

JOHN BEASLEY
HEAD OF BAGGAGE STRATEGY, HEATHROW AIRPORT

SHAPING THE FUTURE

INBAG: REDUCING MISHANDLING, IMPROVING EFFICIENCY AND ENABLING INNOVATION

According to IATA, 2012 was a remarkable year for baggage handling. It has seen a further decline in the baggage mishandling rate per thousand passengers, which both airlines and passengers can be pleased about. It also marked the last of the airport diagnosis visits undertaken as part of the Baggage Improvement Program (BIP), and the birth of a brand new industry-wide program aimed at continuing the downward trend in mishandling: the InBag Program.

Whereas BIP focused on visiting airports and recommending ad hoc improvements to baggage handling processes, InBag focuses on a set of industry-wide initiatives that can be implemented by all airlines and at all airports. Some of these initiatives are voluntary, such as adopting exception-based ground handling procedures, while others, for example, transmitting baggage messages in their 10-digit form, are mandatory.

The InBag Program has three objectives:

- To reduce baggage mishandling
- To improve the efficiency of baggage operations
- To enable baggage handling innovation

IATA will continue to reduce baggage mishandling with a target of 4.5 mishandled bags per thousand passengers – about half of the current figure. It will be a challenge for some airlines to reach this number, but others are comfortably below it. The differences in performance are only partly due to the mix of transfer and direct flights, and the characteristics of the passenger mix. The main differences in performance come from the attention paid to baggage handling process planning and available information for the execution of baggage handling. The industry is beginning to see training and tools to promote best practice in these areas.

The second InBag objective is to improve the efficiency of baggage operations. The tiny fraction of bags that are mishandled is estimated to cost US$100 per bag. This amount not only includes compensation paid to passengers, but also covers the costs of mishandling rectification, i.e. the claims office at the airport, staff, transport and delivery. If a small number of bags is costing the industry US$2.60 billion, it is easy to imagine that the cost of the 99.5% of bags handled correctly must also be very high.

IATA's BIP recorded details of bags being sent to the reclaim carousel due to bag tag reading and sortation system errors, and arrival bags going to transfer areas and even cargo warehouses instead of the carousels in the arrivals hall. Improvements can be made in these areas as well as in the check-in area, where the introduction of both the home-printed baggage tag and the electronic claims receipt will drive efficiencies in equipment and time.

IATA is also looking at how double handling can be reduced, and at new methods for sharing security screening data between countries and agencies. These can help make the transfer process faster and drive minimum connecting time improvements, increased aircraft utilization. These two last areas will take longer than the simple introduction of reading baggage labels on arrival. Scanning and matching labels to arrival messages will be the first step which will eliminate the opportunity for baggage fraud and complete the bags journey formally.

The final InBag objective is to enable baggage handling innovation. Baggage is a complex area, and specialist knowledge is required to implement new baggage ideas. Complexity is a barrier to innovation, and a simplification of the infrastructure is needed to overcome obstacles. The first step toward simplification is to introduce a baggage model and XML schema for baggage operations. This is already well underway and was recently reviewed by the Passenger and Airport Data Interchange Standards Board in Nice.

This year, IATA is also producing a specification for a baggage broker that maps where data may be found and interfaces between systems and the broker itself. This will allow baggage processes to request missing information that is preventing the process from completing correctly. The broker will log all requests so that the issues that cause the problems can be addressed at their root cause.

A number of new recommended practices and resolutions are being introduced in the baggage area to support the InBag Program. Resolution 751 is the first of these: it mandates that all baggage messages are sent in their 10-digit form. This ensures that the baggage data and physical tag remain aligned. A further resolution will introduce mechanisms to enable an electronic baggage receipt to be provided to the passenger. Sticky glue marks on the back of passports will become a memory, and at the same time self-tagging will be made easier too.

InBag is an exciting new program that will fundamentally change the infrastructure that supports baggage processing. The program is scheduled to run for five years, and while every aspect of the program will not be mandated, the entire industry will be taking part in InBag. This makes the future of baggage very interesting indeed!

ANDREW PRICE
HEAD OF BAGGAGE, IATA

BAGGAGE CONTINUES TO BE A TOP PRIORITY FOR AIRPORT OPERATORS

The Airports Council International (ACI) supports a number of important initiatives to improve the efficiency of the baggage processes and systems, and increase passenger satisfaction.

In terms of providing a framework to exchange baggage information among different systems and stakeholders, the ACI Aviation Community Recommended Information Services (ACRIS) Working Group developed a joint core-group and work program with the IATA Common Use Working Group, that aims to release recommended definitions and communication protocols in the coming months to enable Common-Use Self-Service Baggage drop-off solutions.

In addition, through the ACI Airport Service Quality (ASQ) initiatives, ACI airports are monitoring passengers' requirements and expected service levels relative to the airport experience, including the baggage processes.

In 2013, ACI airport members, through the ACI World Facilitation and Services Standing Committee, will continue to strengthen cooperation with airlines and other stakeholders to support efficiency and innovation of baggage handling processes, while maintaining and improving the required security standards, including home printed tagging, home baggage pick-up and delivery, baggage sortation systems integration, and self-service mishandled baggage reporting.

"WE HAVE DETECTED GROWING INTEREST FROM ALL AVIATION STAKEHOLDERS IN ALTERNATIVE AND INNOVATIVE WAYS OF PROCESSING BAGGAGE, AWAY FROM THE AIRPORT, WHICH WOULD PROVIDE ADDITIONAL CHOICE FOR PASSENGERS AND NEW OPPORTUNITIES FOR SPACE DISTRIBUTION AND AIRPORT TERMINAL DESIGN. IN THIS DYNAMIC ENVIRONMENT, AIRPORTS AND STAKEHOLDERS FOCUS CONSTANTLY ON IMPROVING THE SECURITY AND RESILIENCE OF BAGGAGE PROCESSING SYSTEMS, WHILE BALANCING COST EFFICIENCY, FLEXIBILITY AND ADAPTABILITY TO THE PASSENGERS' EVOLVING NEEDS AND EXPECTATIONS."

ARTURO GARCIA-ALONSO
ASSISTANT DIRECTOR, FACILITATION AND AIRPORT IT, ACI WORLD

THE IMPACT OF SELF-SERVICE ON BAGGAGE HANDLING SYSTEMS

Self-service check-in and bag-drop initiatives can produce large cost savings for airports and airlines by deferring expensive capital expenditure projects and lowering operational costs, while also offering passengers more control over their journey.

However, the improvements from implementing common-use assisted and automated bag drops can be easily lost as they may add congestion into the baggage handling system to the point that self-service throughput efficiency gains are negated or indeed not realized.

For example, many check-in systems use windowing software to prioritize bag acceptance. If the check-in conveyor line is exclusively automatic bag drop or a mix of automated and conventional, a new application may be needed to avoid conflicts and delays in the acceptance process. Another issue is that baggage handling systems with conventional check-in desks generally run at slower conveyor belt speeds. Self-service and automated processes will require higher conveyor speeds to prevent the system from stopping due to congestion.

However it is the in-line security machines that often present the most challenging constraint given that they cannot process more than 25-30 bags per minute, best case. As many devices were originally designed to handle bags from multiple conventional check-in rows with much lower peak input rates, adding self-service initiatives will cause bottlenecks unless the flow inputs are modeled carefully and the screening device capacity adjusted accordingly. Similarly, typical sortation devices in the baggage handling system that are used to divert bags to the correct aircraft loading lateral may not be fast enough to cope with peak baggage flows.

The solutions will involve modeling and simulation tools to identify capacity constraints and provide risk mitigation at the front end of the self-service project. Typically these tools will also allow users to model the baggage handling system inputs by check-in opening times, average number of bags per passenger, type of aircraft, projected load factors, flight schedule and other variables to simulate as close to real time loadings as possible and identify all possible constraints.

Improvements to self-service check-in and bag drop will therefore need to go hand-in-hand with careful analysis of their impact on the baggage handling system. Doing this will allow the industry to gauge the changes required to ensure that the project is delivering a sustainable and efficient end-to-end process for the airport, airlines and passengers.

MARC MICHEL
GENERAL MANAGER SERVICES & SOLUTIONS, BCS

ENABLING SMARTER TRANSFER BAG DECISION MAKING

Smarter decision making and pre-emptive action is at the heart of SITA's initiatives to improve transfer bag mishandling.

The strategy has been to develop a precise early-warning system that will highlight those pinch points in the real-time movement of transfer bags that may cause flight delays, mishandled bags and therefore unnecessary costs – both financial and reputational – for airlines.

The BagSmart system uses existing data sources and logically maps each airport's infrastructure and baggage-handling processes, thereby providing information on locations and processes familiar to users.

By categorizing warnings by criticality and providing handling recommendations on how to avoid the problems, the system allows baggage decision-makers to make more efficient use of their limited resources.

The system is able to predict, with a high degree of accuracy, when bags are at risk of missing their departure flight. Early testing at Istanbul Airport in 2012 has demonstrated that BagSmart had an accuracy of 83% in predicting mishandled bags. Furthermore 63% of mishandled transfer bags at Istanbul were deemed to be preventable.

Today the focus is on transfer bags, but BagSmart also offers the possibility of creating global baggage monitoring in a single tool and becoming a core element of the industry-wide effort to further reduce bag mishandling.

NICK GATES
HEAD OF BAGGAGE SERVICES, SITA

APPENDIX

WHAT IS A MISHANDLED BAG?

A mishandled bag is a report of a delayed, damaged or pilfered bag which is recorded by either an airline or its handling company on behalf of the passenger and that is handled as a claim.

SCOPE OF THE 2013 BAGGAGE REPORT

SITA has produced an annual baggage report since 2005. It is designed to offer all air transport industry stakeholders the latest facts, figures and trends related to global baggage processing and management.

In this report, global data for 2012 on mishandled bags from SITA's WorldTracer system is complemented by data and commentary from the US Department of Transportation, the Association of European Airlines and the Association of Asia Pacific Airlines.

In preparing this report, SITA works in close collaboration with industry partners to ensure its facts, figures and analysis are as complete and accurate as possible.

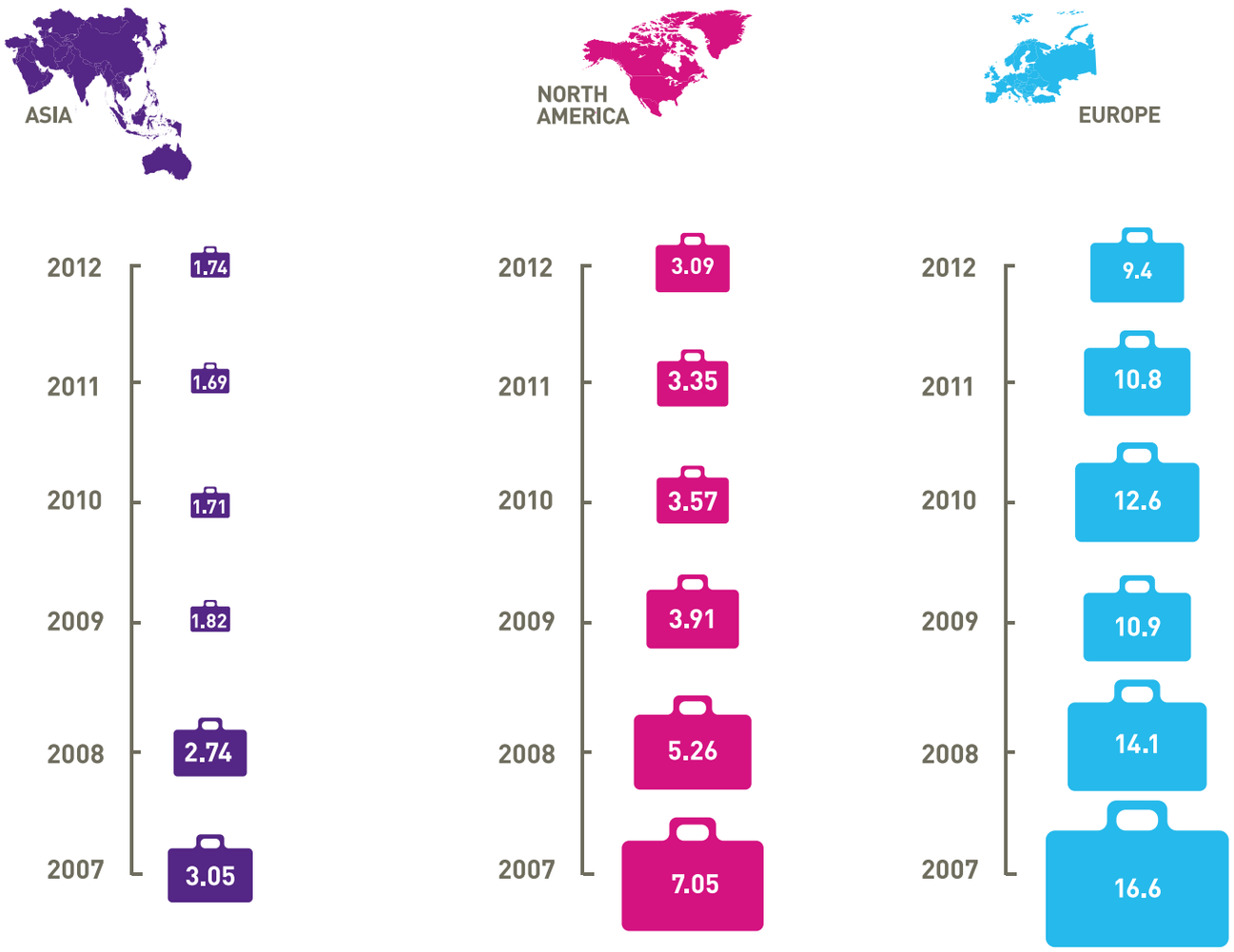
These essential insights aim to assist air transport industry stakeholders as they work together to improve baggage management all around the world – generating savings for the industry, while improving the overall passenger experience.

Baggage statistics since 2007

	2007	2008	2009	2010	2011	2012
TOTAL PASSENGERS (BILLIONS)	2.48	2.51 +0.88%	2.48 -1.11%	2.68 +8.15%	2.82 +4.8%	2.95 +4.5%
TOTAL BAGS MISHANDLED (MILLIONS)	46.9	36.8 -21.47%	28.2 -23.36%	32.3 +14.57%	25.32 -21%	26.04 +2.84%
MISHANDLED BAGS PER 1,000 PASSENGERS	18.88	14.70 -22.16%	11.39 -22.5%	12.07 +5.94%	8.99 -25.52%	8.83 -1.78%
TOTAL COST TO THE INDUSTRY (BILLION US$)	4.69	3.32 -29.33%	2.82 -14.84%	3.23 +14.57%	2.53 -21.6%	2.60 +2.92%
COST OF MISHANDLED BAGS PER PASSENGER (US$)	1.89	1.32 -29.94%	1.14 -13.89%	1.21 +5.94%	0.89 -26.4%	0.88 -1.61%

Note that the data for 2011 has been adjusted to reflect final industry data released by IATA after the publication of the 2012 baggage report.

Mishandled bags per thousand passengers across regions



Source: Association of Asia Pacific Airlines, Association of European Airlines, US Department of Transportation

NOTES AND REFERENCES

Note 1 International Air Transport Association Full-Year Traffic Data for 2012, issued 31 January 2013
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Note 2 IATA Industry Financial Outlook for 2012, issued 13 December 2012
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Note 3 Passenger traffic is based on the Airports Council International definition, namely passengers enplaned plus passengers deplaned, plus direct-transit passengers.
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Note 4 US Department of Transportation Air Travel Consumer Report, issued February 2013 and DOT Bulletin 15-13, issued 12 February 2013. N.B. Data is based on all US airlines with at least 1% of total domestic scheduled service passenger revenues, plus other carriers that report voluntarily. Virgin America was ranked in this table for the first time in January 2012. Effective January 2012, data of the merged operations of United Airlines and Continental Airlines are combined, and appear only as United Airlines data; data of the merged operations of ExpressJet Airlines and Atlantic Southeast Airlines are combined, and appear only as ExpressJet Airlines data.
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Note 5 2012 Passenger Self-Service Survey, issued by SITA and Air Transport World, 9 October 2012
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Note 6 2012 Global Passenger Experience Survey, issued by IATA, 16 October 2012, 67% are satisfied with their checked baggage experience for most recent flight.
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Note 7 2012 SITA-ATW Passenger Self-Service Survey – 9% of respondents rated bag claim the most stressful step of the journey.
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Note 8 Airline IT Trends Survey 2012, issued by SITA and Airline Business, Summer 2012 – 28% of airlines have already deployed assisted bag drop and self-printed bag tags.
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Note 9 Airport IT Trends Survey 2012, issued by SITA and Airline Business, Autumn 2012 – 40% of airports already offer self-printing of bag tags and 45% offer assisted bag drop.
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Note 10 Airline IT Trends Survey 2012: 46% of airlines are expecting to increase the number of self-service kiosks to report lost bags; Airport IT Trends Survey 2012: 42% of airports are planning to offer self-service kiosks to report lost bags by the end of 2015.
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Note 11 IATA Airline Industry Forecast 2012-2016 issued 6 December 2012.
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SITA AT A GLANCE

The air transport industry is the most dynamic and exciting community on earth – and SITA is its heart.

- Our vision is to be the chosen technology partner of the industry, a position we will attain through flawless customer service and a unique portfolio of IT and communications solutions that covers the industry's every need 24/7.
- We are the innovators of the industry. Our experts and developers keep it fuelled with a constant stream of ground-breaking products and solutions. We are the ones who see the potential in the latest technology and put it to work.
- Our customers include airlines, airports, GDSs and governments. We work with around 500 air transport industry members and 2,800 customers in over 200 countries and territories.
- We are open, energetic and committed. We work in collaboration with our partners and customers to ensure we are always delivering the most effective, most efficient solutions.
- We own and operate the world's most extensive communications network. It's the vital asset that keeps the global air transport industry connected.
- We are 100% owned by the air transport industry – a unique status that enables us to understand and respond to its needs better than anyone.
- Our annual IT surveys for airlines, airports and passenger self-service are industry-renowned and the only ones of their kind.
- We sponsor .aero, the top-level internet domain reserved exclusively for aviation.
- In 2011, we had consolidated revenues of US$1.517 billion (€1.09 billion).

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