SITA’s eighth annual Baggage Report shows the air transport industry recording its best ever year for baggage handling since our report first started. Over 99 per cent of checked baggage was delivered on time to passengers in 2011. For passengers, this is excellent news. For the air transport industry, it represents a critical US$650 million worth of savings over 2010.

What’s more encouraging is the five year trend: the mishandled rate has more than halved since 2007. Even though passenger numbers rose to 2.87 billion during this time, the industry mishandled 6.5 million fewer bags than in 2010. This has benefited millions of passengers and directly delivered improvements to airline earnings. The great news for the industry is that we are back on track compared to 2010 when adverse weather and volcanic ash clouds caused major disruption.

Clearly, the results are thanks to the concerted efforts of airlines, airports and ground handlers combined with IATA’s Baggage Improvement Program (BIP) and the Airports Council International’s increased focus on standards and best practices. Such improvements rest on investments in baggage handling automation and the use of sophisticated baggage management solutions, such as SITA BagManager.

But our Baggage Report still delivers a message of caution. Transfer bags remain the largest contributor to mishandling, accounting for 53 per cent of all delayed luggage. It costs the industry at least $1.36bn a year. This report, like SITA, is focused on this issue.

So while the results are encouraging, we still have work to do. We need to come together as an industry to make additional breakthroughs. For one thing this means adhering to standards. But it also means adopting a culture of openness – bringing about more proactive data sharing between all industry stakeholders. Only then can we gain clear visibility of the bag’s journey, combining our insights to find new ways to prevent mishandling.

Francesco Violante
Chief Executive Officer, SITA

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

ABOUT SITA’S BAGGAGE REPORT 2012
Since 2005, SITA has produced an annual baggage report, which is designed to offer all air transport industry stakeholders the latest facts, figures and trends related to global baggage processing and management. In preparing this report, SITA works in close collaboration with industry associations to ensure its facts, figures and analysis are as complete and accurate as possible.

Global data on mishandled bags from SITA’s WorldTracer system is complemented by perspectives from the US Department of Transportation, the Association of European Airlines and the Association of Asia Pacific Airlines.

With help from these essential insights, air transport industry stakeholders can better work together to improve baggage management all around the world – generating savings for the industry, while improving the overall passenger experience.

2011 BAGGAGE FACTS-AT-A-GLANCE

<table>
<thead>
<tr>
<th>Category</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enplaned passengers</td>
<td>2.87 billion</td>
<td>(up from 2.68bn in 2010)</td>
</tr>
<tr>
<td>Mishandled bags</td>
<td>25.8 million</td>
<td>(down from 32.3m in 2010)</td>
</tr>
<tr>
<td>Mishandled bags per 1,000 passengers</td>
<td>8.99</td>
<td>(down from 12.07 in 2010)</td>
</tr>
<tr>
<td>Reduction in cost of mishandled baggage to the industry</td>
<td>650 million US$</td>
<td></td>
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</table>

FIVE-YEAR STATS: INDUSTRY IMPROVEMENTS SINCE 2007

<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total scheduled passengers carried up</td>
<td>15.3%</td>
<td>2.87 billion</td>
</tr>
<tr>
<td>Total bags mishandled down</td>
<td>45.1%</td>
<td>25.8 million</td>
</tr>
<tr>
<td>Annual cost to the industry per passenger carried down</td>
<td>52.4%</td>
<td></td>
</tr>
</tbody>
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HIGHLIGHTS

In 2011, the total number of mishandled bags decreased 20.3% globally, leading to the best ever annual baggage handling performance and achieving a 52.4% improvement in costs per passenger carried over the past 5 years.

But transfer bags continue to be the pinch point in the overall process. As a percentage of the total, the number of mishandled transfer bags is growing. This problem is set to account for an increasing proportion of the mishandling costs.

To continue to deliver such good rates of improvement, the industry must work together to tackle the transfer issue from an IT perspective. Performance could be improved by the sharing of data with stakeholders along the bag journey.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Passengers (Billions)</th>
<th>Total Bags Mishandled (Millions)</th>
<th>Mishandled Bags Per 1,000 Passengers</th>
<th>Total Cost to the Industry (Billion US$)</th>
<th>Cost of Mishandled Bags Per Passenger (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2.48</td>
<td>46.9</td>
<td>18.88</td>
<td>4.69</td>
<td>1.89</td>
</tr>
<tr>
<td>2008</td>
<td>2.51 (0.88%)</td>
<td>36.8 (-21.47%)</td>
<td>14.7 (-22.16%)</td>
<td>3.32 (-29.33%)</td>
<td>1.32 (-29.94%)</td>
</tr>
<tr>
<td>2009</td>
<td>2.48 (-1.11%)</td>
<td>28.2 (-23.36%)</td>
<td>11.39 (-22.5%)</td>
<td>2.82 (-14.84%)</td>
<td>1.14 (-13.89%)</td>
</tr>
<tr>
<td>2010</td>
<td>2.68 (8.15%)</td>
<td>32.3 (14.57%)</td>
<td>12.07 (+5.94%)</td>
<td>3.23 (+14.57%)</td>
<td>1.21 (+5.94%)</td>
</tr>
<tr>
<td>2011</td>
<td>2.87 (6.9%)</td>
<td>25.8 (-20.3%)</td>
<td>8.99 (-25.52%)</td>
<td>2.58 (-20.3%)</td>
<td>0.9 (-25.5%)</td>
</tr>
</tbody>
</table>
**KEY STATISTICS**

Demand for air travel proved more robust than might have been expected in 2011, with about 2.9bn people traveling by air during the year, up 6.9% on 2010. This growth in passenger traffic helped airlines achieve net profits of some $7.9bn, despite the weakness of western economies and an overall increase in aviation fuel costs of around 40%.

This resilience was buoyed by a healthy reduction in the total number of lost and mishandled bags to 25.8 million globally, a decrease of 20.3% on 2010. With each mishandled bag costing an airline $100, the overall bill has slimmed down to an estimated $2.58bn from $3.23bn in 2010. Nevertheless, even at the lower figure, this overhead is equivalent to a lost profit opportunity of 33%.

Looking at the number of mishandled bags per 1,000 passengers, this went down to 8.99, a fall of 25.5%. Similarly there has been a very healthy 26% reduction – to 1.3 days – in the time it takes to resolve a delayed bag incident compared to performance in 2010.

Further good news includes major reductions in lost or stolen bags per 1000 passengers – down 48.4%, and an 18.4% reduction in the number of damaged or pilfered bags. In 2011, therefore, 85.6% of all mishandled bags were delayed, 11.9% were damaged or pilfered, and 2.5% were claimed stolen or lost.

But levels of mishandling need to be improved further. Airlines pay a high price if bags go astray, or are damaged. There are real, significant costs to reunite passengers with their bag and that does not include the loss of customer good will and loyalty.

In terms of delayed luggage, transfer bags continue to be problematic, accounting for 53% of all mishandled bags in 2011 rising slowly year on year from 49% in 2008. Transfer traffic is growing, with rationalization of routes into more hub and spoke operations among the contributing factors. This increase in traffic clearly places greater stress on bag handling operations.
TRANSFER BAGS REMAIN THE NUMBER ONE CONCERN

In terms of the reasons for delays in baggage handling, the trends are subtle. Tagging continues to be a small contributor, as do loading errors — and both are reducing as contributory factors. But mishandling at arrival, the failure to load a bag, and issues at transfer are all slowly increasing. Together ‘Not Loaded’ and ‘Transfer’ make up 68% of all problem bags today.

Delayed Bags 2011

The main contributor by far to the mishandling problem remains the transfer bag. Typically, these bags go astray when passengers and their luggage are moving from one aircraft to another, and often from one carrier to another, to reach their final destination.

If this trend continues, by 2020 transfer bags will represent over 60% of all delayed bags. This is an issue that point-to-point carriers (the majority of low cost carriers) tend not to have, and is perhaps one reason why they can boast lower losses than the hub-and-spoke network carriers.

The good news is that initiatives are underway in the air transport community to target the transfer bag problem. For example, Star Alliance is working on the baggage processes between its member airlines. But there is still a long way for the industry to go.
LOOKING AHEAD

The long-term decline in the number of lost and mishandled bags over the past seven years is thanks to concerted effort and investment by the air transport industry. Investments in technology, new skills and processes have converged to drive these improvements.

And the future looks optimistic. The IT investment outlook is upbeat for the coming year, with 54% of airlines and 49% of airports confident of increased IT budgets in 2012. Passenger operations are the number one investment area for airlines and airports alike. And to address future passenger demand for greater control over their journey the majority are planning further investments in self-service, such as self-bag tagging.

In addition, nearly half of the airlines questioned in the 2011 Airline IT Trends Survey are looking at unassisted bag drop over the next three years. Baggage processing and management is considered a priority investment area for 65% of airports taking part in the Airport IT Trends Survey 2011. One in five flagged this as a high priority. Providing staff with data on the move is a key issue for airports, with 52% of respondents planning to implement wireless devices for airside bag handling and management by the end of 2014.

And following on from its Baggage Improvement Program (BIP) which comes to a close this year, IATA proposes to launch the Baggage Quality Program in 2013. An initiative to expedite the journey of passengers and their luggage, it aims to ensure that everyone in the air transport ecosystem has a minimum and standardized set of data, regardless of where they operate.

Billions of messages are exchanged every year between airline, airport, and ground handler systems to process baggage handling. Making more efficient use of this data is the key to successful operations at airports. Yet, at the moment, the air transport industry is failing to fully exploit this information.

With improved data sharing, and new and innovative IT services, SITA believes that the industry can continue to reduce mishandling rates and improve the efficiency of baggage operations at airports. Not only that, it can also provide new services to keep passengers better informed about their bags, including the journey through the airport, onto the aircraft and arrival at their destination.

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9 Reasons for delay are generally reported using IATA’s Irregularity Codes P10 to P70 (Recommended Practice 1743e) – These codes correlate to WorldTracer codes RL10 to RL70 respectively
STAR ALLIANCE TARGETS TRANSIT BAGS

“Connecting baggage performance is a top priority for Star Alliance Services. We have been working to align baggage processes between member carriers to achieve a level of performance that enhances the connecting passengers’ travel experience. We have developed our own standard for baggage handling that has become mandatory for members and regular audits are performed.

“Today, we continue to seek new ways to improve our baggage handling processes with a Star Alliance connecting baggage IT system that identifies transfer baggage under threat of misconnecting.

“We are also developing a Star Alliance proprietary baggage performance metric; reporting RFL (reason for loss) codes assigned to specific failures and communicating these by airport and Star Alliance carrier; and reporting mishandling between inbound and outbound flight pairs.

“We are establishing baggage goals for each Star Alliance connecting airport and have formed Star Alliance Connection Centers at key airports, with baggage experts from each member carrier working cooperatively to specifically support connecting baggage initiatives at these airports. Within Star Alliance Services we have also formed a baggage services team to focus on all aspects of baggage from check-in to delivery.

“These efforts have helped us achieve significant performance improvements, with the Star Alliance mishandling ratios dropping by two thirds from early 2004 to the end of 2011. All of the performance improvements were realized against an increase in membership from five to 27 carriers over the almost 15 years since the Alliance was formed. Connecting baggage performance is expected to improve even further.”

LEE HOCK LYE
VICE PRESIDENT PRODUCT & SERVICES,
STAR ALLIANCE SERVICES
REGIONAL PERSPECTIVES

Looking across the regions at the rates of improvement in mishandled bags, year-on-year, Europe performed strongly in 2011. This goes some way to compensate for the difficulties it experienced in 2010.

In the US and Asia, after some great strides forward, particularly in 2008 and 2009, the rate of improvement is still positive but is slowing down.

Year On Year Percentage Change In Mishandling Bag Rate

Sources: US Department of Transportation, Air Travel Consumer Reports; Association of European Airlines; and Association of Asia Pacific Airlines

In Europe, the rate of mishandled bags system-wide (Europe – domestic and international flights) decreased 21.4% to 9.9 bags per 1,000 passengers in 2011. It appears that the air transport sector in the region has bounced back from the 2010 anomaly caused by disruption from the volcanic eruption in Iceland, severe winter weather and labour disputes, with the overall trend recovering strongly in 2011.

Domestic flights in the US broadly mirror the global trend in that there have been improvements in the numbers of delayed and missing bags per 1,000 passengers even though passenger numbers rose. However, this data is based on domestic traffic and does not include passengers connecting over international gateways traveling into the US. This means US statistics cannot be directly compared with the other regions\(^1\).

System-wide, Asian airlines have seen the total number of mishandled bags per 1,000 passengers decline by an average of 14% per year since 2007. Within the same period, the region recorded an average annual increase of 2.3% in the number of international passengers. The fall in mishandled baggage rates underscores the continuous improvements made in baggage handling efficiency over the past four years.

In 2011, the region registered a 1.1% fall in the total number of mishandled bags per 1,000 passengers, despite disruptions caused by the Japanese earthquake and severe flooding in Thailand.

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\(^1\) US Department of Transportation, Air Travel Consumer Report, February 2012. Data is based on all US airlines with at least 1% total domestic scheduled service revenues, plus other carriers that report voluntarily. Effective January 2011, Pinnacle and Comair are no longer ranked in the table, so totals for Jan- Dec 2010 reflect the deletion of Comair and Pinnacle data.
**OPPORTUNITIES TO DELIVER BETTER SERVICES**

The always-connected passenger is a reality. About 95% of passengers are carrying a mobile phone when they travel, giving airlines and airports, at the very least, a potential opportunity to contact them via SMS notifications. However, the empowerment offered by access to greater levels of information and functionality is proving irresistible to consumers – the number of passengers who carry smart phones jumped to 54% in 2011, up from 28% in 2010 and 16% in 2008\(^1\). In the US alone, according to a TripAdvisor study, six out of ten of mobile phone users had downloaded a smart phone travel App\(^2\).

Passengers are eager to embrace greater levels of self-service and now that self check-in is becoming the norm, they have baggage processing firmly in their sights, with:

- 62% willing to tag their own bag
- 65% keen to use self-service bag drop
- 63% interested in tracking the location of their bag via their mobile phone\(^3\)

The air transport industry is increasingly deploying more automated systems to keep up with this demand. Nearly a quarter of the world’s airlines offer bag-tag printing at kiosks which is expected to reach 64% by the end of 2014. This may accelerate further given that the US government has since authorized self-service bag tagging. Globally, self-service bag drop is expected to grow from 10% currently to 49% in the same period\(^4\). Similarly about a fifth of airports already offer bag-tag printing at kiosks, and this is expected to reach 68% by the close of 2014\(^5\).

Adoption of self-service missing luggage reporting will be slower. Only a small percentage of airlines and airports offered this in 2011, but by the end of 2014, 44% of airlines and 41% of airports are expected to have implemented this facility.

The unabated love affair consumers have with mobile technology, be it smart phone or tablet, offers a real opportunity for airlines and airports to improve customer service and respond to passenger demand by providing timely and accurate information. But doing so will effectively require a step change in data sharing, both within and between air transport stakeholders.

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**IMPROVING THE PASSENGER EXPERIENCE**

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**Airline and Airport Plans Versus Passenger Interest**

**Self bag tagging**

<table>
<thead>
<tr>
<th>Airlines Rollout</th>
<th>Airports Rollout</th>
<th>Passenger Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>23%</td>
<td>21%</td>
<td>62%</td>
</tr>
</tbody>
</table>

**Reporting of mislaid bags via kiosk**

<table>
<thead>
<tr>
<th>Airlines Rollout</th>
<th>Airports Rollout</th>
<th>Passenger Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>4%</td>
<td>0%</td>
<td>54%</td>
</tr>
</tbody>
</table>

**Self-service bag drop**

<table>
<thead>
<tr>
<th>Airlines Rollout</th>
<th>Passenger Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>65%</td>
</tr>
</tbody>
</table>
IT'S ALREADY GETTING BETTER FOR PASSENGERS

SELF-SERVICE IS EXTENDING FROM CHECK-IN TO BAG DROP AND PASSENGERS ARE CLEARLY RELISHING THE EXTRA TIME THIS SAVES. MORE INITIATIVES ARE ON THE HORIZON TO IMPROVE THE EXPERIENCE FOR PASSENGERS – AND TO HELP THEM KEEP TRACK OF THEIR LUGGAGE.

Giving passengers more information and control over their journey reduces stress and helps make the journey more enjoyable. However, greater autonomy and passenger self-processing through the various stages – from booking to gate and arrivals hall to final destination – is only half of this empowerment story. The other half is having clear, pertinent information on demand17. Pulling together these two halves of this empowerment equation will be a key element in transforming baggage processing and handling.

Information sharing is rapidly becoming part of the fabric of consumers’ lives, thanks to smart, mobile devices and an increasing readiness to embrace social media. The travel industry is also becoming more comfortable and creative in sharing information with customers, whether it is travel status alerts or commercial initiatives. And over the next decade, transparency with passengers regarding mishandled baggage issues will be a given.

12 SITA-Air Transport World Passenger Self-Service Survey 2011, Charts 12 & 13
13 Six out of ten mobile users now downloading travel apps, reported by TNooz, 27 May, 2011
14 SITA-ATW 2011 Passenger Self-Service Survey Highlights, Chart 11
15 Airline IT Trends Survey 2011 (Full Report), p.102
16 Airport IT Trends Survey 2011 (Full Report), p.65
17 SITA-ATW 2011 Passenger Self-Service Survey
A vision for a more passenger-centric bag-handling scenario is taking shape. In the future, as part of the online check-in process, passengers will be able to print their own bag tags off-airport. Or they may use radio frequency identification bag tags for example, frequent flyers of carriers like Qantas offers Q Bag Tags. At the airport, a self-service bag drop machine will scan the printed tags or read the RFID tags to match bags with the passenger’s flight details, weigh the luggage and process any charges for overweight or oversized items. It may even take a picture of the bags and send it to the passengers’ mobile phone as a receipt of acceptance.

Behind the scenes, more and more airport baggage handling and reconciliation systems will send automated updates on the bag’s progress from screening to being loaded into containers, with additional updates once loaded onto the plane to all the service stakeholders.

Where appropriate, information will also be sent to the passenger’s mobile device (phone, smartphone, or tablet). Having access to this information enables passengers to eliminate stress about their baggage, enabling them to enjoy their travel experience so much better. On arrival, another message on their mobile device will direct them to the baggage carousel for collection.

In the near future, if a bag is mishandled and is not on the same plane as the passenger, the system will alert the ground handlers at the originating airport, who will then initiate the bag recovery and process it in the WorldTracer system. On the other hand the baggage handling system may automatically route the bag onto the next available flight to the destination airport, and generate an advisory message to the airline. Or the airline cabin crew may be updated via air-ground communication links so they can inform the passenger and perhaps offer an in-flight travel voucher or frequent flyer miles as compensation.

In the event of a mishandling incident, passengers will also be alerted via their mobile devices, eliminating unnecessary wait time at the baggage carousel on arrival. They simply choose to return to the airport to collect their delayed bag or have it forwarded straight to their final destination. Ground staff will have access to the detailed baggage information via mobile devices and will be available to offer assistance to any arriving passenger requiring it.
Elements of this collaborative, passenger-centric vision are in place today. The big push, particularly over the past year, has been self-tagging of luggage with implementations by a number of airlines and airports in Australia, New Zealand, Canada and Europe. In March 2011, American Airlines joined forces with Austin-Bergstrom International Airport to stage the first US self-bag tag customer trial. Self-tagging is offered at kiosks, allowing customers to check in and label their luggage before taking the bags to the counter to be scanned into the tracking system and placed onto luggage conveyors.

This initiative was prompted by customer demand. According to American Airlines, bag tagging is one of the areas in the travel process that customers have been asking AA to streamline, providing them with better control. A year on, in March 2012, after this and other trials, the Transportation Security Administration approved self-tagging in the US.

From self-tagging, bag drop is rapidly becoming the next self-service milestone. In Europe, Amsterdam Airport Schiphol pioneered the self-service tagging and bag drop process, initially adopting it in 2008. Following a successful trial period in collaboration with KLM and BagDrop Systems BV, the airport implemented self-service baggage drop-off. Since August 2011 latest-generation bag drop units have been introduced for KLM and its SkyTeam partners.

Self-service automated bag drop potentially shaves a significant amount of time off the passengers’ journey through the airport terminal. The system introduced at Terminal Ouest of Paris-Orly Airport by Aéroports de Paris in November 2011 enables passengers to check in their baggage in just 30 seconds. The machine can scan either a boarding pass printed at home or from a kiosk. It verifies the name of the passenger, weighs their bag when entered into the machine, then transmits the information to the airline and automatically delivers a baggage receipt to the passenger.

An upcoming trend is the introduction of common-use self-service bag drops, allowing passengers to use the same machines regardless of the airline they are traveling with. This development has its challenges. Common-use machines need to be able to interact with multiple airline check-in and departure control systems. On the plus side, there is the potential to share costs and optimize space in the terminal.

Responding to passengers’ desire for self-service, as well as a growing need to speed up services, increase productivity and reduce costs, Bologna’s Marconi Airport in Italy is piloting self-service automated check-in and bag drop devices from September 2012.

**SELF-SERVICE BAG DROP 24X7**

“The big advantage of a self-service drop-off unit is that it is always available. This means that more capacity is available, resulting in higher efficiency for passengers, the airline and the airport. In addition, passengers are in control of their own process and can check-in their baggage in very little time.”

**ROEL HELLEMONDS**
DIRECTOR OPERATIONS, SCHIPHOL GROUP
IF IT SAVES ME TIME – I WILL GLADLY DO IT

Feedback from Air New Zealand’s self-service check-in and bag drop, introduced on domestic routes in 2008, reveals a dramatic reduction in check-in time to less than five minutes from typically 30 minutes previously.

Air New Zealand simplified its bag tag to make it more intuitive. In return passengers have embraced the responsibility. **Air New Zealand Strategy Manager for Airports, Todd Grace** reports that, if anything, there has been a slight improvement in the quality of tagging – and customers seem to enjoy taking ownership.

However, as passengers realize that self-service check-in and bag drop are consistently quicker, instead of smoothing out the peaks and troughs of passenger flow, they now tend to check in much closer to the departure time. This, combined with the increased speed of bag drop, is increasing the pressure on baggage handling systems. They must stay in step, or congestion behind the scenes could counter the benefits on the passenger side and potentially lead to an increase in mishandled bags.

Air New Zealand reports that although the implementation of self-bag drop did not result in immediate reductions in staff or cost, it generated efficiencies ranging from 10-20% depending on route. Over the last three years it has enabled the growth in passengers to be managed without increasing resources at the same rate. Today the airline strongly believes that a self-service value proposition needs to include self-bag drop, which it plans to deploy on any new routes where it introduces self-service check-in.

The airline is also rolling out self-service bag drop for international routes, having started with Australia, and the Pacific Islands, where it has seen strong uptake. There is a general view in the industry that travelers in Asia are less accepting of self-service, preferring full customer service. Even so, rapid growth in air traffic within Asia, pressures on capacity at airports and the practicalities of passenger flow may ultimately change this attitude.
The ability to share experiences, track events or gather information on the move is quickly gaining acceptance among today’s always-connected passengers. And just as they expect to track the progress of a purchase ordered on Amazon, so consumers are keen to receive status updates about their journey – and their luggage.

Keeping passengers informed about their bags in real-time is already a reality at Delta Air Lines. The carrier launched a website service in April 2011 allowing its customers to input their bag tag number to see where their luggage is on its journey. It works just like tracking a parcel. By October 2011, this functionality was added into Delta’s smart phone application. Users tap in the number of their bag tag receipt, or iPhone users can scan the barcode, and watch the bag’s journey from departure to arrival and all points in between. Plus the application will report which carousel the bag will arrive on.

Airlines are increasingly keen to integrate systems to enable interactive dialogue with passengers and provide solutions to problems before passengers have to contact the airline. After trials in 2010 and 2011, Air France rolled out its Air France Connect service across the Air France-KLM network in February 2012. It updates customers via telephone, text or email of any cancellation, even a delay or change of boarding gate or, after departure, of delayed baggage delivery.

The service collates data from various airport sources and brings it together within Air France’s operations systems. The airline then sends personalized messages, depending on the event, to customers automatically, free of charge and without them having to subscribe to the service. If a bag is missing at their final destination, the passenger receives an apology and a request to contact the baggage desk where a staff member will handle the report. As soon as the missing luggage is located, the customer is updated by text message or e-mail confirming when and where delivery will take place.

“With this new tool, customers can be sitting at 30,000 feet in the air, log-in using their laptop, tablet or mobile device and verify that their bags were loaded on the plane. In the unlikely case the system shows that their bags were delayed, customers would have the information they need when they arrive at their destination to be reunited with their baggage quickly. Customer response to this tool has been outstanding and in February 2012, more than 8,000 customers a day used the Fly Delta App to track their bags.”

Paul Skrbec
Delta Air Lines Spokesperson

Looking ahead, as self-service bag drop becomes the norm, and passengers increasingly take advantage of the time-savings benefits they offer, there is a danger that bag handling systems behind the scenes become a major constraint.

The air transport industry needs to ensure that it has sufficient capacity in its bag handling systems to support the appetite for self-service and to cope with surges in demand. If not addressed, this may lead to more mishandled bags, or log-jams with queues building up at the bag drop stations, negatively impacting the passenger experience.

It will require further integration of systems. It will also demand proactive and timely sharing of data between ground handlers, airports and airlines in a way that is much more complete than has happened previously. All the stakeholders have to be part of the collaborative process to ensure customer satisfaction.

What’s Happening to My Bags?

Can Bag-Handling Systems Keep Pace with Passengers?
IMPROVED INTEGRATION AND GREATER AVAILABILITY OF DATA FROM BAGGAGE HANDLING SYSTEMS IS ON THE WAY. EFFECTIVE MANAGEMENT OF THIS DATA WILL BE THE CRITICAL NEXT STEP IN SUSTAINING ENHANCEMENTS TO THE PASSENGER EXPERIENCE.

Behind the scenes, baggage handling technology is becoming highly automated and smarter, bringing greater efficiency and accuracy into the whole baggage ecosystem. There is a clear trend towards improving data integration so that baggage applications communicate with airline departure control systems. Ultimately, this collaboration and data sharing will help generate timely business intelligence among the baggage-handling players. It is the real-time tracking and alert initiatives for stakeholders (both at outbound and inbound airports), combined with proactive customer care, that will play a critical role in reducing mishandled luggage in the future.

Intelligent automation is at the heart of Amsterdam Airport Schiphol’s South Baggage Hall, which opened in March 2011. It features an interconnected, synchronized system that allows every single bag to be located at any point in its journey through the airport.

From check-in, bags go directly into the automated 4,200-bag-capacity store, waiting to be loaded. Robots pull bags from the store on-demand, releasing baggage on the conveyor belt only when needed to prevent overload of the system. This way, the airport can handle more bags in less time, at a reduced cost and in a more energy and space efficient manner. The 21km transport conveyor utilizes Destination Coded Vehicles (DCV) whereby each bag is loaded into a cart that intelligently routes it at high speed to the correct area of the airport. Six robot cells automate the loading of bags into containers and carts for delivery to the aircraft. Ultimately, the airport expects up to 60% of all baggage in the South Hall to be handled by robots.

The baggage control system is integrated with passenger check-in information, which streamlines the process of bag tracking and reconciling passengers with their bags for airlines. Linking the baggage system into real-time flight information allows for quick off-loading of bags when a passenger misses his flight and for redirection of bags on alternative flights when connections are missed. The integrated system also provides accurate, up-to-date information and metrics to monitor baggage handling performance.

INTELLIGENT TECHNOLOGY POISED TO TAKE THE LEAD BEHIND THE SCENES

These highly automated, intelligent systems represent a significant outlay. But there are signs that other airports around the world are investing in similar technologies as part of new developments. For example, positioning itself as an intermodal hub, King Abdulaziz International Airport in Jeddah, Saudi Arabia is opening a new terminal in 2014, with automated, early bag storage and retrieval. Bags will be retrieved individually according to priority and a DCV bag transportation system will transport and sort arriving as well as out-bound luggage.

Kunming Airport is installing what is believed to be China’s first intelligent DCV system capable of speeds of 10m/s, and 2,840 bags an hour, which will work in conjunction with a tilt-tray sorter. From the main bag hall, after sorting, the system will automatically route bags to the appropriate terminal pier, with DCVs discharging bags to the correct chute before returning at high speed to the main bag hall to be reloaded. This local direct delivery of bags to the flight stands is aimed at achieving the minimum connection time goals for the new airport, which is the main hub for southern China and a gateway to Southeast Asia.

These intelligent systems inevitably generate more reporting of the bag status, whether it is: Communicating security clearance or flagging up potential risks at screening; Exchanging information between robots and human bag handlers in the make-up area to ensure bag containers are filled; Or scanning bags on arrival.

While new systems are generating baggage processed messages at various stages of the bag’s journey, as yet few airlines are fully exploiting these baggage processed messages to their full potential.
END-TO-END QUALITY IS A MUST – BUT IT DEPENDS ON GOOD DATA

Effective management of data is the critical next step in sustaining improvements to the passenger experience and reducing mishandled luggage, particularly transfer bags.

Widespread baggage tracking information and worldwide baggage reconciliation is in the sights of global distribution system and travel technology specialists Amadeus and SITA. Together they are working to integrate SITA BagMessage – the comprehensive source of information on bag movements globally – with the passenger and baggage servicing capabilities of the Amadeus Altéa Departure Control.

The vision is one of collaboration and data sharing between all the relevant parties, including airlines, airports and ground handlers. Within a single integrated environment, airlines will be able to provide passengers with real-time status updates via multiple channels. At the same time the initiative will enable operational improvements for the air transport community.

The first phase, initiated in September 2011, involves working with 54 airports worldwide to integrate the systems that will allow bags to be tracked from check-in throughout their journey. Phase two will go on to provide precise information on the baggage for weight and balance, and loading purposes. Over the longer term, the aim is to work with airport operators to connect more airport systems worldwide to SITA BagMessage.

The trend to greater integration of baggage systems with airline departure control systems and WorldTracer data will not only speed up recovery of mishandled bags. It will also create a better customer service proposition for airlines. The frustration that today’s passengers experience when they have to report facts about their missing bags to an airline, who they believe should already know all about their luggage, will be a thing of the past.
SHAPING THE FUTURE OF BAGGAGE HANDLING

INDUSTRY INITIATIVES ARE NEEDED TO STANDARDIZE DATA, SUPPORT SHARING OF INFORMATION AND SYSTEMS, WHILE ALSO USING EXISTING DATA MORE INTELLIGENTLY

IATA BAGGAGE QUALITY PROGRAM – STANDARDIZING THE DATA

From 2013, IATA proposes to focus its efforts to improve baggage handling ensuring that everyone has a minimum set of data to manage baggage processes, regardless of where they are operating. This Baggage Quality Program (BQP) will build on the success of BIP that has been running since 2007, during which time the industry achieved a 52.4% reduction in the rate of missing bags per 1,000 passengers.

The new initiative aims to standardize the availability and use of information around baggage handling operations. One of the first things to address is the way bags are identified. Many are still identified by their airline two-letter code and baggage tag number, for example, DL 123456. However, this misses the leading digit of the baggage tag. Using the full 10-digit licence plate, as recommended by IATA, removes this issue.

A second factor is the need to know when a bag is at the airport. Despite the simplicity of this, few airports actually make definite baggage identifications when the aircraft arrives. IATA aims to introduce standard points of baggage tracking at every airport: on aircraft load, transfer inject, and arrivals inject. This will enable the location of bags to be known.

Every baggage loader knows that at the end of the load process some bags may be shown as missing, but it is not certain that these missing bags are actually at the airport. Introducing these standard scanning locations will close that gap, helping to ensure every bag is onboard and helping find the bag when things do go wrong.

Modern travel also demands some changes from the baggage world. IATA is introducing an XML schema in baggage that facilitates integration between baggage systems as well as fixing versioning issues with current messaging. The actual licence plate will be changed to allow the use of longer baggage identification numbers so that these are no longer reused every few days. This will help to identify mishandled bags and also allow the introduction of a permanent luggage tag for a bag.

It is this last phase, the permanent baggage licence plate, which IATA expects to make the greatest difference to the way people travel. With a permanent identification passengers can let the airline know which bags they are bringing to the airport and the whole process of tagging bags can be removed. A simple scan and weight check are all that would be needed to allow bags to be accepted, dramatically reducing handling time and queues.

By the end of 2012, under the BIP initiative, IATA will have visited 80 airports conducting diagnosis visits to identify the causes of baggage mishandling and recommend solutions to resolve them. The team will also have received over 120 self-help reports completed at airports and sent feedback and toolkits to all participants in the program. In effect, these activities will have identified and recommended solutions to at least 50% of the world’s baggage mishandling issues.

Looking to the future, the IATA Baggage Quality Program will help to keep baggage mishandling rates as low as possible.

IATA, 2012
The Airports Council International (ACI) is working with airports, airlines, vendors and IATA to develop Airport Community Recommended Information Services (ACRIS) for baggage processes. This will help to ensure standard interfaces are used to determine what baggage data is available and how it can be shared and integrated with other key systems at the airport. For instance, the new data format BSM XML will be leveraged for the self-service baggage process webservice. Implementing such services will help to reduce costs, streamline baggage handling procedures and maximize utilization of baggage assets at the airport. It will also improve the overall passenger travel experience.

“Specifically we are working with ACI airports around the world to implement best practices when it comes to baggage management: from sortation systems to flexible bag drop solutions, and resource requirements to improved processes – all while adhering to strict security regulations. For instance, at airports such as Lisbon in Portugal, the focus has been on improving service for arriving passengers through the installation of common-use mishandled baggage kiosks. So while the contractual responsibility of transporting a passenger’s bag may be with the airline, airports are often taking the lead to improve the baggage infrastructure onsite.

“Each airport terminal is different so finding the right complement of technology, processes and resources is often challenging. But together with our industry partners we are working hard to ensure all baggage is handled in an efficient and secure manner.”

ARTURO GARCIA-ALONSO
MANAGER FACILITATION AND AIRPORT IT, ACI WORLD
SITA – ENABLING VISIBILITY THROUGH MORE INTELLIGENT USE OF DATA

Historically baggage data provisioning has focused on the originating airport baggage handling process, with little or no data about actual outbound loading, transfer or arrival activities. For instance, there is often no advanced intelligence that confirms individual bags are actually on a flight, let alone onboard the transfer flight. Equally, on flight arrival, bags are generally not scanned or verified – being simply loaded onto the carousel and carried off by passengers. SITA’s bag messaging strategy is to ensure that the data is available at each stage of the bag journey and is in sync with IATA’s BQP vision for bag status monitoring throughout the process.

If data about the actual number of bags, their onward destinations and connection times were known by the receiving airport and ground handling teams, this would enable more pro-active planning and preparation for outbound bag loading. That includes the resources required to move bags around the airport quickly. The ability to cross check received bags versus expected bags would also enable mishandled bag alerts to be generated.

Technically this is not difficult to achieve as the baggage information messages already generated by airline and airport systems, contain the data required but this data still needs to be actioned and processed by the transfer airport. The challenge is to ensure all involved systems: airline departure control systems, airport baggage handling systems, baggage reconciliation systems and other tracking/management systems are consistently integrated to ensure optimum levels of data exchange and sharing.

To reduce off-loading and transfer bag mishandlings, this fundamental tracking and reconciliation data needs to be made available to all stakeholders in real time. This will have a major impact on resolving transfer bag issues while ensuring that agents are informed with the latest status to provide good customer service, including communications to passengers’ mobile devices.

Enhanced baggage data generation, distribution and integration will help the air transport industry to continue to make additional improvements to the baggage process, along with more intelligent use of the information.

Baggage source messages (BSMs) already contain information about bags checked-in and can also pre-advice about what should be expected at an airport (inbound baggage), while baggage manifest and processed messages (BMMs and BPMs) already indicate which bags were loaded, and into which container (ULD) – data which would be highly valuable at the arrival/transfer airport.
The record achievement in baggage handling performance in 2011 is built on the great strides made by the air transport industry to improve mishandling over the last few years. But the main – and growing – contributor to the problem is transfer bags. Within the total, mishandled transfer bags cost the industry at least $1.36bn a year.

The rapid consumer uptake of online and mobile is creating greater demand among passengers for timely and accurate information on the move. And this same consumer technology provides airlines and airports with the tools to deliver even more effective customer services around baggage.

Clearly, passengers’ desire for self-service is driving the roll-out of self-service bag tagging and self-service bag drop. But, the industry will not be able to deliver on the self-service promise of more information and control to passengers, without synchronicity of data flow behind the scenes. All the stakeholders – ground handlers, airlines and airports – have to be part of the collaborative process.

A concerted effort by the air transport community to address the big issues behind the scenes – particularly for transfer bags – is likely to deliver greater cost savings in the future. Importantly, this would keep the industry in step with passenger expectations for a more enjoyable travel experience.

**CONCLUSIONS**

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SITA AT-A-GLANCE

SITA has been the recognized leader in total baggage management solutions, including tracking and tracing solutions, for over 20 years and our solutions are used by more than 100 airports and 450 airlines worldwide. By facilitating communications between airlines, airports, and local baggage handling and reconciliation systems, SITA helps ensure that bags reach their correct destination. WorldTracer, BagMessage and BagManager solutions deliver billions of messages between stakeholders, delivering on our commitment to enable the industry to manage and share data ever more effectively.

OTHER KEY FACTS ABOUT SITA

• 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 SITA members and 2,700 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.

FOR FURTHER INFORMATION GO TO: WWW.SITA.AERO