Changing times demand IT adaptability

Collaborative, cloud-based, and integrated solutions are available, which offer economies of scale and cost to airports

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Airports must adapt to the fast-shifting IT landscape in order to improve operational efficiency and customer service. This has been the case at least since the 1990s, when the need arose to link the disparate software and systems at a typical airport.

"Most airports today now have AODBs [airport operational databases] to provide this common data source," noted John Jarrell, head of airport IT at Amadeus. "However, many of them still need to invest in newer solutions that are easier to integrate with other systems."

Joined-up IT systems at airports should result in a better service for passengers. (PA)
Collaborative decision-making (CDM) tools for airlines, ground-handlers, and air traffic controllers allow increased slot capacity by accurately predicting arrival and departure times, tracking aircraft, and sending alerts about potential disruptions. Rostering and planning tools can improve staff allocation (and hence on-time performance) and real-time tracking software to reduce baggage mishandling can improve customer service.

Single, integrated IT solutions can help airports to optimise resources and keep passengers better informed, while also generating a healthy return on investment (ROI).

Quintiq, for instance, has developed a single software platform that can solve planning puzzles for airports, including for resources such as ground support equipment, check-in counters, and departure gate. According to Sascha Pütz, director of the workforce planning business unit at Quintiq, the platform at airports are to allocate the right number of people and resources available for any given task, ensuring that assets are optimised.

"It is," said Pütz, "very complex to accurately plan resources and people, since there are so many possibilities involved."

Copenhagen Airport is a reference customer for Quintiq, after the company was enlisted to improve the management of resources in the Danish airport's security area, which mainly involved the scheduling of personnel. Having successfully completed this, Quintiq is now looking into ways of upgrading baggage reclaim and gate planning functions. In all, a total of 11 departments are to be overhauled, including apron buses and technical maintenance.

"Copenhagen wanted to be a more productive airport, which meant optimising existing resources. Quintiq was brought in because of the company's ability to address all their planning puzzles. Our approach is both holistic and flexible; nothing is set in stone," said Pütz, who stressed the ability of the company's software package to adapt quickly to any changes to regulatory requirements.

He explained that, when entering a project, Quintiq undertakes an in-depth analysis to understand the challenges confronting the customer. "We then talk to key stakeholders to understand processes, after which we issue a document that explains what it is we have learnt from our consultation.

Copenhagen Airport uses Quintiq to improve resource management and staff rostering in the security area. (Copenhagen Airport)

"Significantly, sometimes the process the customer originally had in mind is not what they really need. However, we can identify this, since we do this type of analysis all the time and have
therefore accumulated a lot of experience, whereas airport management may have implemented revamps just a handful of time. In many cases, we can therefore find ways to help them do what they want to do better."

At Copenhagen, there has been a direct improvement in efficiency of staff. However, this was not an imposed revamp, but rather a process that took into account how personnel actually wanted to be deployed, incorporating personal wishes and job strengths. Pütz noted: "People don't want to be planned simply as resources."

ROI, he emphasised, can be achieved within one year in some projects. Furthermore, if the room for improvement is significant, the cost of Quintiq’s solution is minimal. "However, it is difficult to give a standard ROI, since this depends on each problem. In the airports industry, there is a lot of competition, so any optimisation of resources that we can bring is always appreciated, but this has to be linked to the investment the airport is willing to make."

Pütz added that Quintiq is seeking a long-term relationship with its clients. So while its obvious goal is to sell software licenses, it also offers maintenance linked to the software package and will also sell professional services.

Increasingly, airports must adapt to the role mobile technologies play in everyday life. This means that passengers want to be informed via smartphone or tablet about events that affect them. Simple Way offers one such service by obtaining information directly from the AODB or via other sources.

"Which method they choose to contact passengers is not the issue; the important thing is that relevant information is disseminated," said Simple Way Managing Director Petr Otoupal.

In a last-minute change of departure gate, for example, affected passengers might receive a message on their smartphone, which includes a route map showing where they currently are and where they need to be.

"Using our software, an airport can do multiple things, from showing the route between gates on display panels to broadcasting the gate change message at both the old and new gate, thereby obviating the need for agents to first have to go to the old gate before walking on to the new one. It's all about optimisation of resources," said Otoupal.

He remarked that, whereas competitors have produced systems cobbling together existing legacy systems, Simple Way’s has been designed from scratch and can integrate with any online system.

Any existing hardware can be used, with interfaces already available or new ones easily designed. In the case of smartphones, all operating systems can be accommodated, while owners of legacy handsets can receive the same information through SMS or email.

The integrated nature of the Simple Way solution means that maintenance costs are lower than for other systems. It also offers added features, such as being able to track the position of data display channel boxes on a map, making it easy for staff to trouble shoot the system. Other tools allow remote monitoring of the system, so notifications can be sent out if a problem is flagged up.

"ROI can be calculated through better staff utilisation. Gate staff who are handling a large flight can simply push buttons to relay messages, obviating the need to use microphones. A study undertaken by us showed that they can save up to 20% of their time and therefore work more efficiently, resulting in shorter boarding times on longer flights," Otoupal claimed.
Calgary, Prague and Vancouver international airports have all bought the Simple Way solution, noted Otoupal, who added that the company’s standard paging system can be 15-20% cheaper than those offered by competitors.

Although much existing airport IT software already incorporates wayfinding capabilities, Simple Way is introducing a geolocation option. This comes in the form of an application that allows the user to be guided to any location in the airport using indoor GPS.

Under development is a totally integrated transport solution, which would allow a subscriber to obtain a series of transport options relating to how they would both arrive at the airport and ensure they arrived at the boarding gate on time. "A predictive element ensures they will catch the flight by offering the passenger the best transport alternatives to do so," said Otoupal.

**Breaking the paradigm**

One of the major recent changes in airport IT came in August 2013, when Rockwell Collins acquired ARINC for USD1.39 billion. The deal was completed in December 2013, and in March 2014, ARINC’s airport IT activities were folded into a unified operating division called Rockwell Collins Information Management Services (IMS).

Legacy ARINC technology is already in use at more than 130 airports worldwide including more than 30 of the 50 busiest hubs by passenger volume.

"From an airports point of view, traditionally ARINC focused on the passenger processing part of the airport IT ecosystem," Chris Forrest, staff vice-president for global airports at Rockwell Collins IMS, explained to *IHS Jane’s*. "Our core products were CUTE [Common Use Terminal Equipment] and CUSS [Common Use Self Service] systems. We had some investment in airport operations products, but these are a much smaller sales part than common-use passenger processing; and we've focused on being a systems integrator for other parts of the airport."

Recent contract wins and project milestones reflect this historical focus - these include installation of Common Use Passenger Processing System- (CUPPS-) compliant vMUSE workstations and CUSS equipment for Terminal 1A at Jomo Kenyatta International Airport in the Kenyan capital Nairobi (which now operates 180 CUPPS positions and more than 65 CUSS kiosks with equipment from IMS). In the United Kingdom, IMS won recent deals for Heathrow (CUSS for T2 and vMUSE for all terminals bar T5), as well as for Aberdeen, Cardiff, Edinburgh, and Glasgow airports.
At the time of publication, IMS was about to announce a detailed investment strategy for aviation IT. In March 2014 the head of the unit, Jeff Standerski, said "the environment is ripe for us to come in with new opportunities". No details of the plan have been confirmed, although it seems that the strategy will recognise the trend towards self-service (IMS is carrying out a self bag-drop trial at Hong Kong International Airport).

Strategic progress could be delivered by organic growth or through more acquisitions. "In a very general sense, the airports market has had the same players for a long time, trudging along in a certain direction and at a certain pace," Forrest commented. "So the time is ripe for change - technology is evolving with a greater focus on automation and self-service. It's time for someone to break up the paradigm."

Mike DiGeorge, Rockwell Collins vice-president for international and global airports, described the geographical areas of interest for IMS. "Southeast Asia is a particular focus for us, particularly Australia. We also see huge growth in China, but it's a very difficult market to penetrate. We're looking at expanding our airports footprint with a number of opportunities in South America and southern Africa. We've got a strong strategy in place and once we finalise our investment plan, we'll make more announcements."

The transition into IMS reflects Rockwell's desire for deeper involvement in terms of information management, via airport operational databases (AODBs), resource management and other methods. It aims to blend ARINC's ground-based IT at airports with the onboard aircraft systems provided by Rockwell.
"We've broken the airports market into segments. CUPPS falls into the passenger-processing segment, information management with kiosks, and then you have airport operations [AODBs and CDM]. CUPPS alone is just one ingredient - we also have to consider self bag-tags, automated border control, and so on. There's such a need for automation at airports, it goes beyond CUPPS. The old ARINC would have focused on CUPPS; IMS is looking at a bigger and broader picture."

Asked whether the market is not already well-served by companies on the AODB side, Forrest responded: "A lot of those companies are fairly niche, small operations. A good thing about the airport environment is that technology is constantly evolving, and therefore it needs to be updated and refreshed on a regular basis. Rockwell puts 20% a high proportion of its sales revenue into R&D, dwarfing what ARINC did."

This should enable IMS to outpace its smaller competitors. "We're not looking to match the competition - we're looking to exceed it, and with the combination of the two companies we have the size and the infrastructure to do that. If you look at the AODB providers, they don't have the kind of infrastructure behind them that we do."

**Heading for the cloud**

Shifting data services away from fixed on-site infrastructure to the cloud can deliver economies of scale and cost, particularly to second-tier international or small regional airports.

Migrating common-use airport systems to the cloud removes the need for internally hosted systems (passenger check-in and boarding, for example). The cost of maintaining disparate systems is often inflexible for airport operators, and large airlines may be receptive, as most already work in the cloud with their DCS providers.

However, large hubs appear more reluctant to change, preferring to carry on hosting a dedicated core room. "There's also sometimes a cultural obstacle to integrated IT," said Amadeus' Jarrell. "Some airports are hesitant to adopt new technology until it's thoroughly proven. This conservative stance is absolutely understandable and once a technology such as cloud has been shown to work at one airport, the industry usually then responds quickly."

Aviation IT systems integrators such as Amadeus, IMS, and SITA have developed cloud-based solutions. The Amadeus Airport Common Use Service (ACUS) is CUPPS-compatible, in line with the requirements in most requests for proposals (RfPs), although most airports and airlines still have not built the software architecture for CUPPS.

Delivered in a software as a service solution, ACUS allows airlines and ground handlers to share the physical space and the IT resources of the airport, eliminating the burden of hosting and development.

This marks a departure from previous cloud-based CUTE solutions. These became so expensive, argued Jarrell, that the cost became prohibitive for airports with more than 70 workstations.

"Airports have come to realise the need for joining up externally so that data could be shared with all actors within an airport, such as between airlines, airports and ground handlers," Jarrell noted. This collaborative effort is still in its infancy but ACUS could be a step in the right direction by enabling passenger-processing systems to be accessed and deployed at any location, even outside the terminal. He also cited the Amadeus Sequence Manager, which "provides a common situational awareness in the airport operation".
Are we there yet?

CDM is an effort to achieve this external sharing with a goal of improving the operational efficiency of airports by real-time information sharing between airports, airlines, ground handlers, and air traffic control. The collaboration and centralised database it offers allows for improved passenger experience and benefits all travel providers.

So far, so good - but some obstacles remain in the path towards integrating air transport IT systems. Jarrell mentioned a "reluctance to share data for integrating IT - travel providers often have proprietary information and hesitate to share data unless they see a clear benefit to do so".

He added that systems integrators can help by demonstrating to their airport and airline customers the mutual benefits of further collaboration. "Airports Council International has been working to facilitate such exchanges by establishing standards such as ACRIS [Airport Community Recommended Information Services]."

There are often concerns about data security, particularly regarding technologies such as the cloud. Airlines and airports must choose to share their data with each other and with a cloud provider or other data aggregator. In some cases, they also require authorisation from passengers. There are strict regulations with regard to data sharing, so that data can be managed properly.

"Airports and other travel providers often have the misconception that the information on them is public and unsecure," Jarrell noted. "Security must always be a concern for our industry, especially as we operate critical processes. However, a new generation of cloud-based systems actually offers greater security compared to today's IT systems based at airports. Cloud providers typically have far greater resources and security expertise when compared to an airport's own IT teams and therefore this is an obvious area for airports to look to a trusted partner."

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**SURVEY REVEALS RISING DEMAND FOR WEARABLE IT**

SITA's 2014 World Passenger survey has revealed that 77% of passengers would encourage the use of wearable technology by airline or airport staff to improve their travel experience. With 97% of passengers carrying a smartphone, tablet, or laptop when flying, many are keen to use technology at every stage of their journey. Some 76% of the 6,300 passengers surveyed were already using airline apps, and half of those said an app has made a definitive improvement to their travel. More than half said they would like personalised alerts about delays sent directly to their phones, 57% want airport maps and direction. Half would like to use smartphones for boarding.

SITA CEO Francesco Violante said: "Travel is better with technology. And tech-savvy passengers expect more personalised apps and services consistently delivered on the web, to their phone or tablet."

"As new technologies such as wearable tech, NFC, and iBeacons become commonplace, they present a great opportunity for airlines and airports to engage directly with their passengers to provide efficient services throughout the journey."

In-flight technology demands are also changing with 56% of passengers saying they want connectivity so that they can use their smartphones and other devices for in-flight entertainment. More than half want to be able to send and receive emails and texts, as well as to make and receive phone calls in-flight.

Passengers are more willing than ever before to share their location details with service providers to get more personalised service, with 72% saying they would be willing to share some personal...
or location information. However, passengers remain reluctant to share information to receive commercial offers, with less than a third of passengers interested in this. This was the ninth annual SITA-ATW Passenger survey, which was conducted across 30 airports in 15 countries across the world, representing 76% of total global passenger traffic. Lucy Bullen

GLOBAL STANDARDS ARE DESIRABLE Through IATA and ACI, a number of standards have been adopted globally to enable a safer, more efficient, and secure travel industry. However, since airports are usually local entities, these standards are typically more recommended practices rather than mandates or regulations. "When the benefits are made clear, a global standard can work," Jarrell commented. The Electronic Miscellaneous Document (EMD), for example, enables airlines to account for their ancillary services. "CUPPS is another example of the industry considering a standards-based approach. However, it is a good example of the fact that it can take considerable time for adoption."

A global standard is particularly desirable when it comes to efficiency - hence RFID sensors in baggage handling can optimise the overall process. "However, it is ineffective unless the standard is adopted by all airports since without such adoption, airports and airlines would need to support both barcoded and RFID baggage tags, and this comes at a higher cost."

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