Total Airport Management System

A comprehensive IT solution for sustainable and efficient airport processes

“The only thing constant in life is change,” said 17th century French noble and writer François de la Rochefoucauld. The same can be said for airports where operations are complex due to a large number of processes, constraints and dependencies as well as stakeholder interests and responsibilities. Ever-changing variables such as weather add to the complications. “Each airport – and even each flight – have to be seen in the context of a worldwide system,” adds Christoph Meier, head of Siemens Aviation IT. With all of these factors it should come as no surprise that for a given day events often take a much different direction than

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Dear Readers,

Over seven billion call planet Earth home. And these seven billion want to be entertained. The special atmosphere of big events attracts more and more people who enjoy celebrating, cheering and rejoicing with like-minded. Sports events draw larger and larger crowds. To synchronize their arrival and departure, proper infrastructure has to be in place around the venue. This is where Siemens comes in: whether at the UEFA Euro 2004 in Lisbon, the 2006 Olympic Winter Games in Turin, the 2006 Asian Games in Qatar, the 2008 Olympic Games in Beijing or the 2010 World Cup in South Africa – Siemens has always been a dependable partner for the airports on location and even temporary airport terminals. At this year’s UEFA Euro in Poland and Ukraine, and at the Olympic Games in London, Siemens is also part of the team. Read more on pages 8 to 9.

Sincerely,
Dr. Stefan Keh
President and CEO,
Infrastructure Logistics

what was originally planned. Delays are usually the result. In fact, in Europe alone delays cost some €1.5 billion yearly according to the Performance Review Report from Eurocontrol, the European Organisation for the Safety of Air Navigation. While the first impulse might be to try to gain more leeway through expansions, adding a new runway is usually prohibitively expensive, and extending nighttime flight schedules is never popular with people living near an airport. So, operators need to make efficient use of existing resources. An important, holistic solution approach is the Total Airport Management System (TAMS). “TAMS acts an interface that integrates electronic information within an airport. And the more information operators have, the better their decisions,” comments Meier.

A true integrator

With TAMS, both land- and airside operations can be optimally coordinated, which in turn increases efficiency and sustainability. TAMS is a valuable tool for operators to maintain situational awareness, proactively anticipate the impact of new constraints in due time, and collaboratively find joint solution strategies on the fly. Different visualization technologies – from smart phones and desktop monitors to large display walls – are supported to deliver relevant information to the various parties involved. Furthermore, TAMS covers what-if scenarios throughout all phases of flight handling and airport operations. The system also aids seasonal flight planning, daily flight plan deployment, and execution during the day of operations. Post-operation statistical analysis helps operators refine their reactions for the future.

The decision support offered by TAMS has great potential to provide significant reductions in delays, fuel consumption and the resulting emissions. For example, with the help of TAMS operators can keep planes at their gates with landside energy supply shortly until it is time for takeoff. As such, engines are not left running idly, with the effect that costly kerosene is not wasted and less CO₂ is emitted. Siemens together with its partners showcased how all the different TAMS subsystems can be integrated into an Airport Control Center (APOC). Curious to learn more? Visitors to the Siemens stand at Passenger Terminal Expo can experience TAMS; a control room will be equipped with a video wall on which one flying day will be simulated.

Large display walls like this one at Munich Airport are supported by TAMS.

TAMS goes beyond airport collaborative decision-making by:

• providing balanced consideration of both airside and landside processes and their dependencies
• extending the time horizon to a pre-tactical range of several hours
• introducing new concept elements like Airport Operations Plan and Airport Operations Control Center

TAMS is a joint research project that started in December 2010 and will come to a close at a ceremony in May 2012, where the final results will be presented. Five partner organizations are involved in TAMS: Barco contributes with its expertise in control room solutions. Inform adds its substantial experience with ground handling processes. The German Aerospace Center (DLR) provides its simulation facilities in Braunschweig, and the Stuttgart Airport serves as a TAMS test and validation site. The associated partner ATRICS supports the project with innovative surface movement and guidance control solutions. Siemens, the project leader, provides its IT product Siamos consisting of Airport Operational Data-
International sales conferences
Siemens airport experts from all over the world recently met in Fürth and Lisbon

Fürth
In February 2012, the Logistics and Airport Solutions (LS) business of Siemens Infra-structure Logistics (IL) hosted the Interna-tional Sales Conference for airport experts. Over 50 sales professionals – for example from the United States, China and Dubai as well as from Italy, Spain and Portugal – attended the event at the Siemens Airport Center in Fürth, Germany. The participants got to know more about the current business activities of the LS segment, and were presented with an overview of the market situation and the most important competitors. Speeches from customers and consultants who articulated their expectations toward Siemens were a conference highlight. The primary focus, however, was on challenges in sales. LS sales head Boris Weber: “Our most important goal, of course, is to offer excellent products and solutions in order to remain the preferred partner for airports and airlines. For this we have to take care of relationships with existing customers, and to work at high pressure to establish new relationships.” To fulfill customer needs even better, the worldwide sales network has to be strength-ened further, says Weber. The global setup also needs to be used more intensively in regard to project management.

Lisbon
The 5th IL Customer Services Conference that took place on February 29 and March 1, 2012, in Lisbon, Portugal, brought to-gether participants from 17 regional com-panies and headquarters in Germany. The conference focused on business development and inter-regional coopera-tion, and provided a platform for attend-ees to exchange their experiences. During two intense days a broad spectrum of top-ics were addressed, including strategy and targets as well as business development in focus regions China, India and the United States. Furthermore, innovative solutions were discussed, such as Capacity-Plus, Siemens’ solution for temporary terminals, and technology-driven mod-ernization for the parcel and distribution industry. Combining existing offerings with smart financing solutions and thus allowing for totally new business models was another major subject during the con-ference. In this regard the participation of Siemens Financial Services in the event was of particular value. Rui Veres, member of the board of directors of the Portuguese airport operator ANA, gave an impressive keynote speech on customer value and genuine partner-ship with Siemens. He conveyed his sincere appreciation for the valuable contribution Siemens has made to ANA’s success, which was a direct result of our customer services colleagues’ presence at ANA airports.

Siemens at Passenger Terminal Expo in Vienna
All-encompassing information from April 18 to 20, hall B, stand 5005

Under the motto “Green, safe and effi-cient airports,” Siemens is showing its comprehensive airport portfolio at Passen-ger Terminal Expo 2012 in Vienna. Topics addressed at the Siemens booth include capacity and security issues, in-creasing competition and new environ-mental regulations. Among the innova-tive exhibits is Sichotel, the automatic self-check-in and baggage drop-off. Another highlight is Siatoms, the airport management and operations suite that is part of the airport operation center at the trade fair. The modular IFS system helps airports maintain better opera-tions control and improves decision making. Siatoms also hosts flight plan-nings, resource management and ground-handling facilities. Also on dis-play is the Total Airport Management Suite (TAMS), a joint research project of five partners, led by Siemens.

Bangalore Airport grows
Scope of supply for Siemens includes complete airfield and electrical package

In September 2011, Taiwan Air Cargo Terminals Ltd. (TACT) commissioned Siemens to extend its cargo handling facilities at Taiwan Taoyuan International Airport. The original system was installed by Siemens between 2008 and 2011. Worth roughly €13 million, this follow-up project is set for completion at the beginning of 2014. At that point the system will be able to handle about 500,000 tons of airfreight cargo per year. The scope of delivery covers planning, design and delivery of con-veyors, cargo hoists and elevating transfer vehicles as well as control systems. TACT is one of the largest cargo service providers at Taiwan Taoyuan International Airport.

As of January 2013, the expected increase in passenger capacity will be handled in the extended building.

Cargo handling extended

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Siemens won an order from Larsen & Toubro Limited to extend Bangalore International Airport in India. Worth €6.87 million, the order includes the de-sign, detailed engineering, installation and commissioning of the complete airfield and electrical package, including enabling works. When the expansion is finished in January 2013, the airport will increase its yearly passenger capacity from today’s 10.6 million to 17 million. Bangalore Air-port first opened in 2008 as a greenfield project set up in a public-private partner-ship; Siemens was one of the partners.

Airport security: OSCAR comes to Frankfurt Airport
In accordance with current security regulations, individual passenger pro cesses must be separated. To meet these requirements, the new intelligent empty-space monitoring system OSCAR (Object Scan in Clean Areas) is to be installed in the elevators at Frankfurt Airport. The OSCAR system analyzes the elevator every time it is used and checks whether people or objects are still present in the cabin. Only after this check has been carried out can the elevator be moved from a “non-clean” to a “clean” status. OSCAR is capable of recognizing even the smallest items, which makes it particularly suitable for empty-space monitoring.
Challenge accepted – and mastered

No chance to stop operations during an extension and refurbishment at Budapest Airport

Siemens has just finished extending and refurbishing the baggage handling system of Terminal 2 at Budapest Airport in Hungary. Airport Logistics spoke about project highlights with Budapest Airport Development Director Stephan Schattney and Security Director Johan Merten, who was formerly the airport’s Chief Operations Officer and Deputy Director of Aviation.

Why did you choose Siemens as your partner for this project?
Stephan Schattney: Siemens implemented the baggage handling system in Terminal 1 and has been a reliable partner for Budapest Airport for years. When our main contractor proposed Siemens for the new project, the company became the obvious choice. Siemens is one of the very few companies that not just builds belt conveyors but also implements the appropriate baggage tracking and security systems.

What was special about the project?
Johan Merten: We built the new facilities while the airport was under full operation. We had to dramatically reduce our check-in capacity for one year and we had no technical back-up for a number of weeks. We closed off certain areas of the airport and performed testing at night. Siemens accepted this challenge – and mastered it.

Stephan Schattney: In this situation, Siemens demonstrated a high level of flexibility. Your company was very solution-minded and a good partner. Your people were there when we needed them and they were very committed to the job. The airline community and the ground handlers always felt very comfortable during the complete construction phase.

SkyCourt, Terminal 2’s new passenger hall, was officially opened one year ago. What has been your experience to date with the new facility? Johan Merten: The Sky Court building is really fantastic. The environment is open, transparent and spacious. People working there are very impressed and pleased with the new facilities. Our staff feels really comfortable and that spreads to passengers.

Stephan Schattney: And what is most important for us as airport operators: our passenger rating has improved dramatically as a result of SkyCourt.

The Budapest Airport extension project at a glance

In March this year, Siemens finished extending and refurbishing the existing baggage handling system of Terminal 2 at Budapest Airport. A completely new system was implemented in SkyCourt, the impressive new hall that connects Terminals 2A and 2B. Siemens worked in a consortium with evopro Informatics and Automations Ltd. for the general contractor KÉSZ Building and Construction Ltd. In the framework of the project Siemens also provided the fire safety systems and building automation for Budapest Airport. The customer benefited from Siemens’ regional presence: the Hungarian staff works up to Siemens’ technical and quality standards – and naturally speaks the customer’s mother tongue.

The project in numbers:
- 2.6 km belt conveyors
- 58 check-ins
- 2 departure make-up carousels
- 4 arrival carousels
- 8.8 million passengers/year
- max. 4,400 bags/hour for departure

1. Passengers enjoy SkyCourt’s open, transparent and spacious atmosphere.
2. Budapest Airport Development Director Stephan Schattney (left) and Security Director Johan Merten.
3. Budapest Airport has ample parking facilities for increased customer convenience.
Infrastructure that can cope

This summer, two mega events already have sports fans sitting on the edges of their seats: the European Football Championship in Ukraine and Poland, and the Summer Olympic Games in London. For both events, optimized infrastructure is essential.

Tragedies, struggles and victories – the Olympic Games in London will serve as a giant stage for great emotions. Over the course of 19 days, some 10,500 athletes will prove to themselves and the world what they are capable of. And fans in the hundreds of thousands will experience their battles up close. According to the organizers, the games consist of 302 events and 26 sport forms, held across 20 venues. In short, an organizational wonder. Equally remarkable are the efforts over the past years to get London’s infrastructure ready for the mega event. The planned budget: around €12 billion. Poland alone, some €30 billion have been spent to date to modernize the country’s infrastructure. To help get Ukraine ready to deal with the invasion of sports fans, Siemens installs baggage handling systems at airports in Donetsk and Lviv.

Investments that pay off
All organizers of mega events have one thing in common: the hope that their investments will positively impact their image and regional economic development. That is why regions in particular make such large investment to improve infrastructure. For years, Siemens has served as a trusted partner. For example, in the run-up to the Beijing Olympic Games, the company installed high-speed tracks between Beijing and Tianjin, which allow trains to race along at speeds of 350 km/h. Other projects were also completed for the Beijing games, like the power supply for Beijing Airport, and the baggage handling facility in Terminal 3. And right now, Siemens is supporting the organizers of this year’s big events with measures to modernize infrastructure.

The fact that these activities preceding a mega event have a positive impact was confirmed in a study by PwC, a leading auditing and consulting company. The authors list a number of examples that demonstrate the long-term impact of modernizations of airports, roads and public transportation. Furthermore, they name success factors. Decisive is that planning begins far before the actual event, and particularly for structurally weak regions a lead of ten years or more is often necessary.

Ready, set, London
Organizers in London are expecting up to 600,000 domestic visitors and around 300,000 fans from abroad who will stay in the city for several days to witness the Olympic events live. Although London is known for its good public transport system, much was undertaken to ensure that the crowds can get to the events comfortably. For example, the East London Underground line was expanded and the suburban railway line way modernized. And of course, the airports are also receiving attention.

With around 65 million passengers per year, Heathrow International is among the world’s largest airports. And after Heathrow, Gatwick is the second-largest airport in London, where 30 million travelers are processed every year. Despite the size and capacity of the airports, the Olympics are set to strain resources – as was the case in Lisbon for the 2004 European Football Championship and in South Africa during the 2010 World Cup. In both cases, Siemens contributed temporary terminals to process the influx of soccer fans traveling to the events. The operators of London’s airports, however, are putting more attention on the modernization and expansion of existing infrastructure.

Siemens know-how in demand
Siemens is now involved in projects at Heathrow and Gatwick. Currently, construction is underway on the baggage handling facilities for Heathrow’s new Terminal 2, which will be inaugurated in December 2013 and will be able to handle around 20 million passengers per year. In Gatwick’s north and South Terminals Siemens together with Logan Teleflex is installing a new baggage handling facility. Siemens, which is responsible for the control architecture and electrical design, will also provide the programmable logic controllers and software programming expertise to control and optimize the baggage handling system and integrate it into the existing control infrastructure at the terminals. Siemens’ expertise is also in demand in other areas. For Heathrow Terminal 5, Siemens developed the Car Finder solution as part of a security scheme designed for operator BAA airports. Incidentally, the solution received the Best Innovation Award at the 2009 annual Airport Operators Association conference. The judging panel commended Siemens for showcasing “particular excellence and dedication” in their field. The innovative Car Finder solution means air travelers using the short-term parking area can see exactly where they left their vehicle simply by inserting their parking ticket into a Car Finder machine with a screen and 3-D interactive map. Heathrow is the first airport in the world to use this smart technology. Not all of the planned measures will be completed in time for the Olympic Games. Since London is expecting a strong uptake in tourism – national tourism association VisitBritain expects 1.1 million additional tourists in the five years after the Olympic Games – the measures to improve infrastructure for the metropolis on the Thames will quickly pay off. «
A team effort
Madrid Barajas Airport operation & maintenance contract – a joint success story

During several years of successful cooperation, Siemens as the service partner for the baggage handling system has contributed significantly to making Madrid Airport one of the best European airports in regard to baggage process reliability. Recently AENA and Siemens came together to realign the service deliverables so that they reflect current and future operational requirements. Along with continuing to ensure the required high levels of system availability and reliability, the Siemens team will also increasingly focus on continuous system and process improvement, especially regarding energy efficiency and environmental sustainability.

An added bonus
Going beyond the scope of traditional operation and maintenance, the Siemens team implemented system and process improvements that resulted in a significant reduction of energy consumption. AENA officially recognized these achievements in the 2011 supplier contest by awarding Siemens first prize for Best Environmental Compliant Behavior. Furthermore, Siemens received the Energy Management System Certificate according to the UNE-EN ISO 50001:2011 standard for the activities at Madrid Airport. The certificate was issued by AENOR, the Spanish Association for Standardization and Certification.

In the next years Siemens will execute several modernization projects, such as migrating legacy control systems to Siemens PLC S7 in order to implement one consistent standard across the whole baggage handling system. These measures will improve system reliability even further and are deemed to be an important step to keeping the baggage handling system at Madrid Barajas Airport fit for the future.

New contract based on years of cooperation
Operation and maintenance at Kuala Lumpur International Airport

Siemens and Kuala Lumpur International Airport (KLIA) have been cooperating successfully for years. In November 2011, Siemens received a letter of acceptance from Malaysia Airport Holding Berhad (MAHB) for an operations and maintenance (O&M) contract. While this contract may be new, the events that led up to it took their start six years ago: In 2006 the Malaysian Ministry of Transport commissioned Siemens to extend the existing baggage handling system at KLIA from the satellite building to the Express Rail Link (ERL) platform in the main terminal building. At the core of the upgrade was the Siemens High-Speed Tray System. The project was successfully completed and handed over to MAHB in March of 2008.

Subsequently, in 2010 MAHB awarded Siemens with the Arrival Improvement Project, which consisted of modifications to link the High-Speed Tray System to the airport’s existing belt conveyor system. Completed in September 2011, this project meant reduced waiting time for arriving passengers. The new O&M contract is precisely for this system.

The contract covers the full spectrum, from on-site services and spare parts logistics up to continuous lifecycle support. In fact, just a few days after the letter of acceptance arrived, Siemens started with the work. Siemens is proud to be part of the team that ensures successful operation at KLIA.

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Phone +49 7531 86 01
Editor in chief:
Insa Sigl, Siemens AG airportlogistics.mobility@siemens.com
Responsible for content:
Dr. Gerhard Ehler, Siemens AG, Konstanz
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