



Adding intelligence to airport transfers

Advantech-DLoG, INFORM GmbH and Cobus Industries GmbH deliver Intel® technology-based Internet of Things solution



Advantech-DLoG, INFORM GmbH and Cobus Industries GmbH are among the leaders in providing solutions to the airport and aviation industries. Their combined offering includes high-quality airport buses, logistics software and computing devices powered by Intel® Atom™ processors. It gives drivers a consolidated view of all bus information, helping improve efficiency and align with airport security.

Challenges

- **Maintain momentum.** Airports need to keep billions of passengers moving every year, while aligning with strict security controls.
- **Improve control.** Airport buses need careful and constant logistical management, with dispatchers tracking operational, capacity and geographic data for each bus.
- **Enhance the journey.** Passengers appreciate being well informed about where to go next, so easily accessible and available details enrich their traveling comfort.

Solutions

- **Connected buses.** Cobus buses are fitted with sensors and cameras that track real-time data about bus conditions, while displays share information with customers.
- **Consolidated devices.** Advantech-DLoG TREK-550* and TREK-306* computing units, powered by Intel Atom processors, provide a single interface for the driver, with dispatch directions, GPS coordinates, passenger information and sensor data.
- **Specialized software.** The INFORM GmbH GroundStar Real-Time* application allows dispatchers to track and manage the bus fleet using real-time sensor data.

Impact

- **Fleet management.** Dispatch teams can identify when a bus is being driven inefficiently or is insecure and immediately contact the driver.
- **Driver efficiency.** Drivers have one easy-to-use interface for all their information, reducing distractions but keeping them fully informed in real time.
- **Customer experience.** Passengers have fewer delays due to more efficient bus management, while on-board displays ensure they know where they need to go.



Intel® technology helps clean up drivers' dashboards for a consolidated view of all bus information



“The idea is to give the driver all the information they need in one place. With a vast range of data coming in from multiple sources, it’s important to have the processing power to handle it all. This is why we felt the Intel® Atom™ processor was such a good fit.”

*Lars Boeddeker,
Sales Manager, Europe,
Advantech-DLoG*

Keeping airports on the move

Air travel is increasingly big business. Data from the World Bank indicates that the global aviation industry carried over 20 billion passenger journeys in 2013, with the International Air Transport Association (IATA) reporting that demand continues to grow every month.

Managing this huge volume of people is a challenge, not only for the airlines that transport them, but also for the airports through which they travel. Each passenger needs to move from the check-in desk, through security and passport control, to the right gate, and onto the right airplane. Upon landing, passengers need to be directed to their baggage carousel or connecting flight quickly and efficiently.

However, it’s not simply a case of crowd control. The customer experience is also a top concern, as is security. In-vehicle computing device manufacturer Advantech-DLoG and logistics software specialist INFORM GmbH have worked with airport bus crews and dispatchers for a number of years, providing on-board solutions to help drivers understand where they need to go and to help dispatch teams keep control of their bus fleets. However, the organizations saw an opportunity to build on their existing offerings to promote greater airport security and efficiency and enhance the customer experience during the bus ride between the terminal and the aircraft.

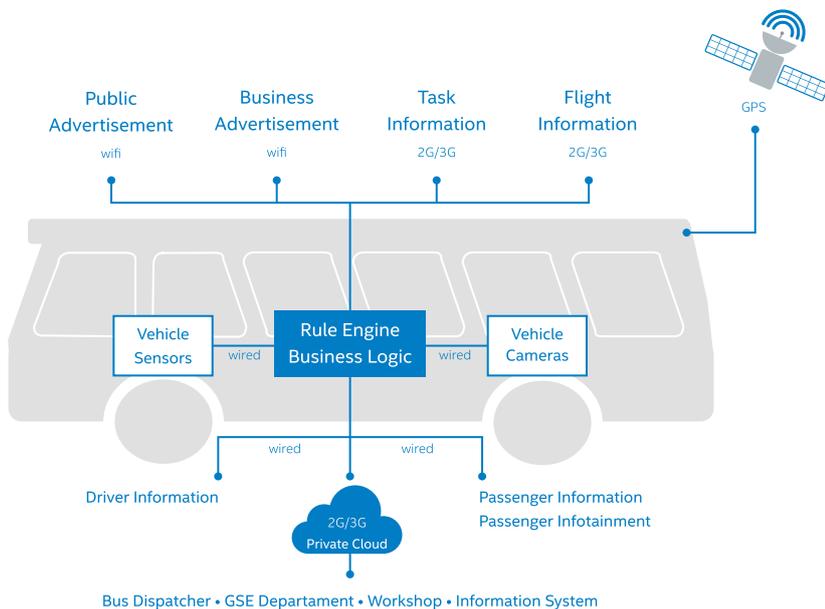
“We wanted to explore the possibility of using the bus journey – which can be dead time for many passengers – to give them useful information that would

make their journey less stressful,” says Alexander Wendorff, solution manager at INFORM GmbH. “Often when you’re disembarking from a plane, you’re in a rush and you want to know which baggage carousel to head for, where your connecting flight is leaving from, or even if there’s a store in the airport where you can quickly pick up a bottle of your sister’s favorite perfume for her birthday. You generally have to wait until you reach the terminal, and then go in search of an information board or a map. We wanted to bring it to passengers proactively, before they need to go and look for it. Our application holds all of this information anyway, so why not share it?”

Cleaning up the driver's dashboard

The two organizations worked with leading airport vehicle manufacturer Cobus Industries GmbH to develop an offering that combined both hardware and software into an industry-leading, tailored bus design.

The solution uses the Advantech-DLoG TREK-550/306 industrial in-vehicle computing box, which is powered by the Intel Atom processor. These devices are designed to be shock-resistant, withstand harsh environments and operate across a temperature range of -30 to 70 degrees centigrade. Installed on the driver’s dashboard, they run INFORM GmbH’s GroundStar Real-Time* software. This application shares task information and directions from the dispatchers with the driver, including which plane to approach at which time, how many passengers to expect, and which gate to take them to.



Drivers use the TREK-550/306 devices to view information from other sources as well, including GPS data to help them navigate around the airport and devices monitoring their fuel consumption and other operational details about the bus. At the same time, the device connects to a number of peripheral devices within the bus, such as cameras, people-counting sensors and display screens. It collates and processes this variety of data feeds, presents them to the driver, and sends them back to the cloud (either private or hosted by INFORM GmbH) for access by fleet managers and other logistics teams around the airport. It also allows the driver to broadcast messages to passengers or to play automatic text-to-speech messages—for example, warning them to stand clear of closing doors or to watch their step as they disembark.

“We call it ‘Clean Up Your Dashboard,’” says Lars Boeddeker, sales manager, Europe, for Advantech-DLoG. “The idea is to give drivers everything they need in one place and reduce the number of devices they need to keep an eye on while driving around the airport. The device gives drivers access to a vast range of data coming in from multiple sources—from camera feeds to help them see behind the bus

while reversing, to checking the latest directions from the dispatch team, to making sure they’re going the right direction using GPS. This means it’s important to have the processing power to handle it all and to run an open and reliable operating system. This is why we felt the Intel Atom processor was such a good fit. It does the hard work behind the scenes and enables the driver to focus on driving the bus and ensuring passengers’ safety.”

There are a number of other potential use cases, which the team anticipates deploying as more airports adopt the solution. “For example, we could help the drivers by providing them with navigation support that responds to real-time events,” says Alexander Wendorff. “If the airport has to close due to extreme weather, it might be necessary to transport passengers to a nearby airport to catch another flight. In this case, the driver would need to take the bus out of the airport and onto public roads, which would previously have meant relying on the driver to enter the new destination details accurately into his navigation system. However, now the solution can automate this step, saving the driver time and enabling him to concentrate on handling the vehicle. He’ll receive

the task information, go to the specified gate and pick up his passengers, then go to the highway. As he leaves airport grounds, the system will switch automatically to the navigation software that will show him the way to the drop-off point at the neighboring airport.”

Ensuring efficiency and security

The software also enables the central dispatch team to keep track of each bus within the airport, see where it is going, and assess how that aligns with the directions given and the airport’s security policies. For example, the first priority for Zurich airport, which deployed a solution based on INFORM GmbH software, was to address the security requirements around the Schengen system in Europe. “Say a plane full of passengers has just arrived from France,” explains Alexander Wendorff. “The Schengen agreement between the two countries means they may be subject to less stringent security measures than a group of passengers arriving from a non-Schengen country like the UK.”

It is essential to ensure that passengers governed by these different restrictions are kept separate. If not, the airport may need to evacuate all passengers and ask them to check in again. So, a dispatcher who sees that a bus full of non-Schengen arrivals has stopped in a Schengen area can immediately contact the driver and ask him to move away from the area. The driver also receives an immediate alert telling them to drive to the correct area. “It was also important at Zurich airport to let passengers know when they boarded a bus that the vehicle may be making more than one stop, but that they need to stay on the bus until instructed to disembark to make sure the Schengen laws were being adhered to,” says Lars Boeddeker. “The buses now use automated announcements to let passengers know when they should get off the bus.”

Passengers save time with enhanced information access during their journey to the terminal



“It’s great that this solution has the flexibility to enable us to fit sensors, cameras and displays to the buses, in line with each operator’s requirements. We work directly with INFORM GmbH, Intel and Advantech-DLoG to build in whichever technology elements are required while the buses are still in the factory.”

*Udo Scheffler,
Project and Development Manager,
Cobus Industries GmbH*

Frankfurt airport has seen additional efficiency improvements, as Alexander Wendorff explains: “During peak times, the dispatcher has to send task information to a different bus about every two seconds, and this wouldn’t be possible without the automated system that our software provides.”

The solution provides fleet managers with the opportunity to keep track of the day-to-day operational details of each bus as well, such as its fuel consumption and maintenance history. “This means that they can identify a driver who perhaps drives too aggressively or leaves his engine idling too much, and ask him to shut down the engine and conserve fuel,” says Alexander Wendorff.

Smoothing the journey

Display screens in the passenger section of the bus let viewers know their whereabouts in the terminal they will be dropped off in, and where they need to go to collect their baggage or make a connection. This enables them to save time by getting the information they need about where to go next, before they reach the terminal.

As a next step in the development of the solution, the organizations are exploring the possibility of offering customers Internet access from the bus as well, using the networks already set up to connect the peripherals and TREK-550 device. “Everyone always wants to get online as soon as they’re off a flight, so we’d like to help them do that,” says Lars Boeddeker. “It’s another way for us to add value and enhance the passenger’s experience.”

Creating revenue and savings

Having the display screens installed in the buses also gives the airport an opportunity to share information about retail opportunities and special offers with passengers. “The airport retail market segment is strong, and growing,” explains Alexander Wendorff. “Today, about 30 percent of airport revenues typically come from retail, but many airports expect to get as much as 60 percent of their revenue from retail in the future.

“By using the buses to share advertisements with passengers, the airports can generate additional revenue opportunities that can help them make the most of this potential,” Alexander Wendorff says. “The advertisements shown can be tailored to specific destinations so, for example, passengers about to board a flight to Malaga may be shown advertisements for the car hire options at Malaga airport.”

Besides driving up revenue opportunities, the solution has the potential to help airports drive down fleet management costs. Frankfurt airport, which also used the INFORM GmbH fleet management system, is planning to include devices in a connected ecosystem of 1,700 devices across the airport. Alexander Wendorff says: “By combining our solution with these devices, we can make fleet use more efficient because it’s easier to know where a particular bus is at any time. This means the airport can reduce the fleet size and cut maintenance costs, as well as running a more efficient fleet by quickly identifying when a vehicle is left idle and wasting fuel or carbon emissions. Based on our calculations we have conducted with

the airport, the results indicate that it will see a return on its investment within the first three months, and that it could save €20 million in the longer term," says Alexander Wendorff.

A further potential benefit is that by sending a vehicle's operational information—such as fuel warnings and oil temperatures—directly to the cloud, the devices dispense with the need to collect this information manually. This not only means dispatches have access to this information faster, but it also relieves the drivers of this responsibility, enabling them to focus on getting their vehicles to the next pick-up point.

Potential for growth

Having showcased the new solution at a large aviation exhibition in Munich to widespread interest, the organizations are excited about the benefits it will bring to drivers, dispatchers, passengers and the airports themselves. Udo Scheffler, project and development manager at Cobus Industries GmbH, says: "It's great that this solution has the flexibility to enable us to fit sensors, cameras and displays in the buses in line with each

customer's requirements. We can work directly with INFORM GmbH, Intel and Advantech-DLoG to build in whichever technology elements are required while the buses are still in the factory, so they're delivered to the airport fully tailored and ready to go."

"We're glad to have Intel's support in this project," says Lars Boeddeker, "not just for the technology, but also for the strong reputation that it brings with it for technology excellence and innovation. There's been a great collaborative approach from all the organizations involved in this initiative, and Intel has played an important role in helping us think about new possibilities and then making them happen. It's always good to have the big picture view when we go and talk to customers, and Intel's command of the cloud and the Internet of Things really helps us with this."

Lessons Learned

One of the most frustrating things about air travel is not being able to find the information you need quickly enough. If you're dashing to make a connection or pick up your bags, any time saving is important. Advantech-DLoG, INFORM GmbH and Cobus Industries GmbH have developed a solution that not only uses Intel® technology to enhance drivers' efficiency and airport security, but also delivers essential information to passengers while they're in transit between plane and terminal.

For more information about Intel® solutions for IoT, visit www.intel.com/iot

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