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## **CASE STUDY: RoIP AIRPORT SYSTEM**

**Enhancing flight-crew to ground-crew  
communications for faster turn-around**

### **Scandinavian Airlines Systems (SAS)**

#### **Objective:**

Reduce aircraft turn-around time by improving communications between ground-crews and flight-crew

#### **Solution:**

Enable flight-crews to patch their mobile telephones into the ground-crew two-way radio system via GSM-to-Radio RoIP Interface Units (RIU)

## 1 Stockholm Arlanda Airport, Sweden

Scandinavian Airlines Systems (SAS) had a project called Pit Stop. Pit Stop's objective is to shorten the time the aeroplanes are on the ground, in other words reduce turn-around at an airport. One of the issues SAS realised during the project was that the flight crew simply could not communicate via voice with the gate and the ground crew. You may have seen this yourself when boarding an aircraft: A member of the ground-staff at the gate with a portable two-way radio. While every airport and airline has its own specific operations, most (if not all) do not have the same radio-systems on the plane as they do for ground-staff.

SAS decided to trial a new system that would address this issue at Stockholm's Arlanda Airport. Arlanda uses a Motorola SmartNet trunked system for ground-crews and personnel. Each gate has a specific talk-group: All the staff working on the plane during the turn-around, catering, baggage, refuelling, ticketing, etc., set the talk group on their radio to the talk-group for that gate, e.g. Gate 19. Yet this left the flight- and cabin-crew without voice-communications as they did not carry the correct portable radio for this system. Indeed, that is the key problem: Flight-crews can simply not carry all the different radios needed to communicate with ground-staff at all the airports they fly to. Not to mention having to carry the radios, charge them and the logistics involved in ensuring they have the right radio for the flight-plans. It just doesn't make sense. The flight- and cabin-crew need a simple and above all, one way of communicating with ground-personnel.

The solution was to give the cabin crew GSM-phones. GSM phones work in many parts of the world. For Scandinavia, our partners in Sweden worked together with Fjord Network to set up dedicated conference-numbers on the GSM-network at the airport. Each conference-call number represents a gate at the airport, e.g. Gate 19. At the airport, RoIP Interface Unit (RIU) Phone-to-Radio interfaces were installed with the two-way radio network. These patch the GSM conference call(ers) into the two-way radio network.

During turnaround when the cabin- or flight-crew needs to talk to ground-personnel, they simply use their GSM phone to call the conference-call number allocated for the gate they are at. When the first GSM phone has called the GSM-conference for the gate, the GSM-network automatically calls up the appropriate Phone to Radio Interface via a PSTN line. The interface sets the radio-base it is connected to, to Gate e.g. 19 and then all GSM users are connected into the same talk group as the ordinary radio users at Arlanda. At Arlanda, 20 RIU Phone to Radio interfaces were installed together with 20 Motorola System Spectra radios, placed at two different sites for redundancy.

## 2 Other Swedish Airports

SAS wanted to have the same functionality at all airports they use in Sweden, yet as these regional airports are small compared to Stockholm, they use smaller one or two channel UHF-systems for ground traffic. Our partners in Sweden built a new version of the RIU Phone to Radio interface specifically for the Motorola GM380 analogue radio. The functionality is the same as the Arlanda system, simply tailored to the smaller analogue two-radio networks at these smaller airports.

## 3 Norwegian Airports

Our partner expanded on this concept and installed it at regional Norwegian airports. The difference here was that no GSM-conference calls were used to connect to the gate talk-groups. Instead the standard RIU for the Motorola GM380 was used. Instead of connecting via PSTN lines from the GSM-network, ADSL and VoIP is used. VoIP provides the conference call functionality. After the success at the regional airports, Oslo's Gardermoen Airport wanted the solution. Gardermoen uses Tetra rather than analogue and the RIU's used were of the type supporting Motorola MTM800 Tetra radios.

## 4 More RoIP airport/ground-to-air possibilities

Using RoIP opens up a whole range of possibilities. Not only can cabin and ground crew communicate more efficiently, but the whole ground two-way radio communications can now be accessed via an IP-Network, e.g. for dispatch and operational needs within the airport and for smaller airport, even over large distances, e.g. from a central command centre. It also allows e.g. external operators such as the caterers to communicate directly with their staff on their portable radios. This approach can be expanded to include ground to air radio, enabling operators to communicate with aircraft e.g. in flying into remote areas with having to have personnel on-site, or simply to monitor ground-to air radio-traffic.