

## RELIABLE TRACEABILITY UNDER EXTREME ENVIRONMENTAL CONDITIONS THANKS TO RFID

**SSAB Swedish Steel AB, or simply SSAB is a Swedish company, formed in 1978 and specialised in processing raw material to steel.**

**SSAB Merox AB is a wholly-owned subsidiary of SSAB EMEA AB. Merox's function is to optimise handling of SSAB EMEAS's byproducts, scrap and waste.**

When SSAB EMEA manufacture steel products, approx 3,5 million tons per year, about 1,5 million tons of by-products are created. Merox develops and utilises these products, which have diverse and often quite unique characteristics. Merox has been working for more than 30 years with the development and production of its unique products. The development and production is integrated with SSAB's pro-

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duction of high quality steel. Merox's company motto can be expressed in the following sentence:  
Recently Merox needed to upgrade

### WE KNOW EXACTLY WHAT GOES INTO OUR PRODUCTION - AND WHAT COMES OUT.

an existing weighbridgesystem, since payloads have increased over the years. After the upgrade, the weighbridge now can handle trucks with a total weight of 120 tons.

The RFID system is based on UHF Gen2 tags in the form of a credit card. Each type of material to be handled by the truck has its unique ID-card. Each driver has a booklet with Alu-covers where all different cards are kept. This guarantees that only the card connected to the actual payload will be read by the system.

The stationary reader is a Scirocco type 610 with a built-in heater, to guarantee safe readings down to -40 °C.

"There are two main reasons why we selected the Scirocco reader" say Bob and Roland. "First, the system has an outstanding performance, a multitude of options and is easy to get up and running. Secondly, we had a very good support from the

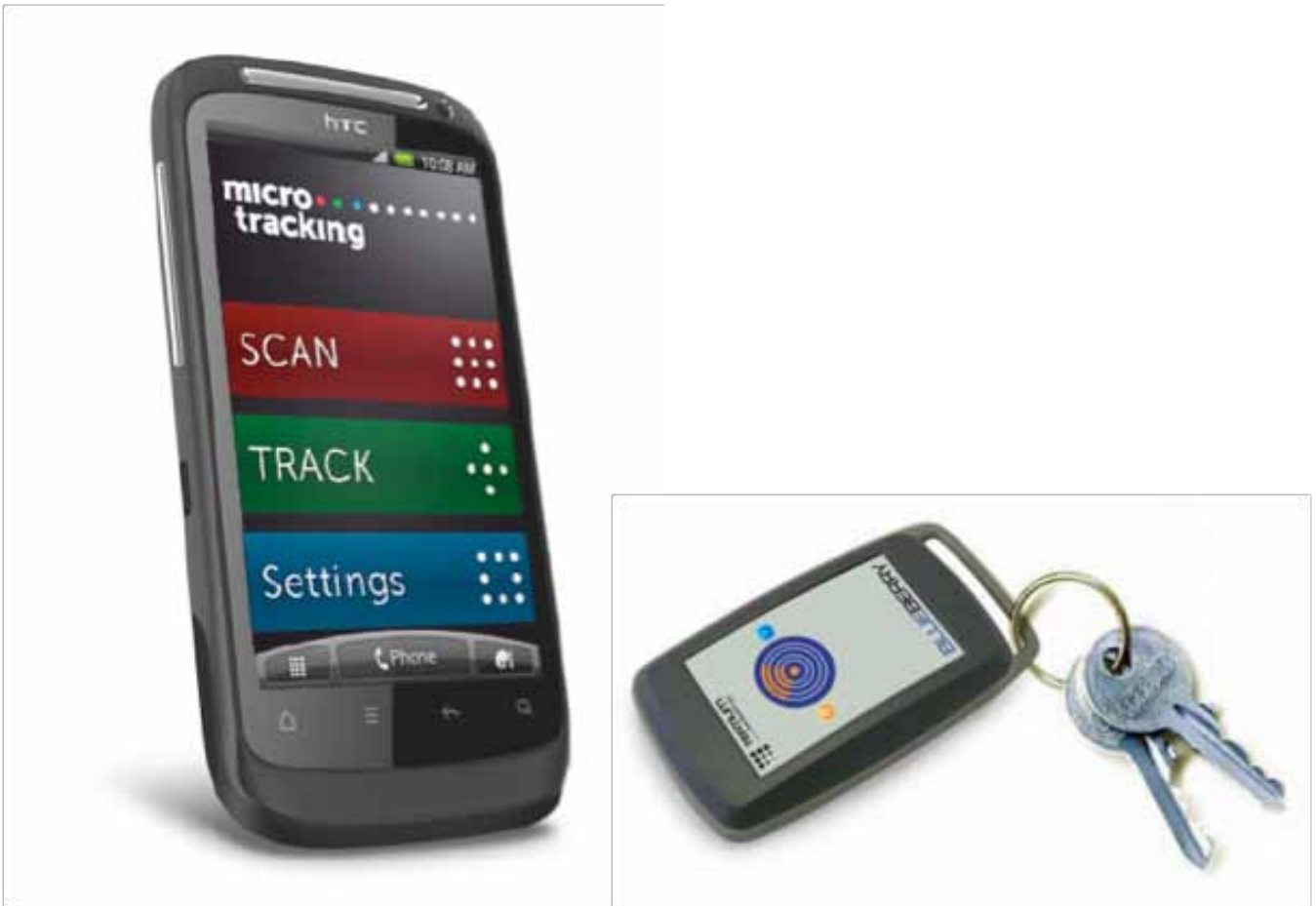
whole Scirocco crew."

The wide span in length and height of the various trucks and haulers, made it necessary to utilise two separate antennas in order to cover all possible positions where the ID-card could be during the identification process.

In the picture above we can see how the driver just holds the ID-card close to the side window. As soon as the weighbridge has caught the weight, the computer system fetches the RFIDcode of the ID-card from a pre-defined system port. All data is sent via Ethernet to the office computer, where the operator now has full control over the entire process.

As soon as the driver sees the red stoplight at the end of the weighbridge change to green, he is cleared to drive off to complete his mission. Thanks to the RFID-based system, Merox now can be sure that their motto **We know exactly what goes into our production - and what comes out** is fulfilled, with no exception.

For further information:  
Bob Forslund, [bob@amc-hb.se](mailto:bob@amc-hb.se).  
Roland Karlsson, [info@identservice.se](mailto:info@identservice.se)



# RFID AS A SERVICE, ON YOUR MOBILE PHONE

For many years the RFID industry has been struggling with hardware and software development, chip and antenna design as well as standardisation issues from tag data, protocol, frequency to integration, traceability, authentication and much more.

Today we can see so many cases rolling out from global companies, government projects, industry projects down to small cases at local SME's.

We see projects in transportation,

logistics, supply chain, food, pharma, aviation etc.

Most projects are being designed and built from scratch, case by case, which comes with cost and time for the customer.

Microtracking is the first rfid service on the market, covering the global standards, running on your mobile phone in your pocket.

With a small reader connected to your phone, it let you scan rfid tags,

get them decoded on your phone display and send the event in EPCIS format to a web-server, for system integrators to handle thousands of users by one simple API.

The service is really easy to get started with; get the reader, download the app and start reading tags, the monthly fee for the service start at €10

*For more information:  
[www.microtracking.se](http://www.microtracking.se)  
 or [niklas@microtracking.se](mailto:niklas@microtracking.se)*



# THE SWEDISH TRANSPORT ADMINISTRATION WON “THE GOLDEN TAG AWARD” 2010!

**Trafikverket (The Swedish Transport Administration) and its on-going RFID project was one of five nominated RFID project in Europe for the annual Gold Tag Award. It was the second time in a year that Trafikverket won a prestigious prize for its RFID efforts. In September 2010 they won GS1's global award as the world's best project, all categories.**

The award ceremony took place on the 6th of October 2011 in connection with the Technical Fair in Stockholm. RFID Nordic established the prize, The Golden Tag Award, in 2005. The award consists of two parts, “THE GOLDEN TAG” and “THE MINI TAG”. The GOLDEN TAG is assigned to the project that utilizes RFID technology best with a focus on innovation and customer value. Trafikverket with Mr Lennart Andersson, being the project manager, became the lucky winner of the GOLDEN TAG prize 2010. The MINI TAG is assigned to the consultant who significantly contributed to the successes of its customer. LearningWell AB with their Senior Consultant Mr Gunnar Ivansson was the proud winner of the MINI TAG of the same year.



“After a number of successful pilot projects, the Swedish Railway will now take the next step to build an infrastructure of RFID readers around the country”, Mr Ivansson says. Overall, it may be more than 600 installations over the country. “This means that we can follow and track RFID-tagged railway wagons/vehicles in a very dense network throughout Sweden”, Mr Ivansson continues. Railway traffic is international and the ambition is to get to a European standard for RFID in the transport sector together with GS1 in Sweden, which is a standardisation organization for RFID standards (and other areas such as barcodes, e-commerce etc).

There are great opportunities for all involved parties! Trafikverket will gain substantial savings in infrastructure maintenance thanks to individual RFID tagged vehicles. Freight companies see great opportunities in its logistics management, to know exactly where in a train set a wagon is located, exact arrival of a destination and all this will simplify loading/unloading dramatically. The railway companies will be able to reduce

their administrative burden and will get a better control of their “rolling stock”. Rescue services agencies will get increased opportunities to keep track of wagons with dangerous goods. The list is long when it comes to increased

efficiency and security.

LearningWell was involved in Trafikverket's project in 2009 with its RFID expertise and has, as stated in the nomination to Minitaggen, “significantly contributed to the success”. “It's amazing to follow the development in Europe, but also railway applications in countries outside the EU are in contact with us as Sweden is considered to be a front-runner for use of RFID on the railways”, says Gunnar Ivansson. Trafikverket has already begun to look at the next challenge; how best to support intermodal transport, interaction between different modes of transport. , “Of course we hope to take part of that trip, too” Björn Wide adds, being the CEO at LearningWell in Stockholm.

*For further information, please contact:  
Gunnar Ivansson +46 70 3328470  
gunnar.ivansson@learningwell.se  
Björn Wide +46 730 630160 bjorn.wide@learningwell.se  
Lennart Andersson + 46 70 756 56  
lennart.andersson@trafikverket.se*

# RFID FOR BETTER HEALTH IN DENMARK!

## BACKGROUND

In Denmark campaigns like “We ride our bicycles to work” or “All kids bicycle” have shown that both children and adults bicycle more when prizes can be won. Tedious manual input of data and time delays however make it impossible to get an updated view of how many people actually do ride their bikes and it might also discourage some from participating in the campaigns at all.

Experiences from the United States have however shown that with automatic registration a long term concept can be found which stimulates to more bicycling.

## THE PROJECT

This American concept, based on RFID readers and tags on the bicycles, was adapted to the Fredericia municipality in Denmark. The registration should occur at the destination of the bike ride and readers have consequently been offered to schools and employers in Fredericia.

The involved SW house developed a database and an associated website that receives all registrations, i.e. location, time and ID. This information is transferred from the readers to the database in two ways:

1. Directly in the MS SQL database. Logics in the reader determine when the transfer shall occur.

2. Via Internet through a web gateway. The client determines when the transfer shall occur.

The reader will only transfer one registration per day per tag ID. The basic data is the tag ID, the reader ID and the timestamp.



The reader, the antenna and all the equipment for communicating over WiFi and GPRS are integrated in one box that is ready to be plugged in and configured for the local network. This means that the installation costs are minimised and the RFID-box is universal and can be used for other similar purposes.

The tags were after extensive testing successfully mounted on the wheel spokes. The required reading distance for the project was 4m, but verifications confirmed reading distances of 6-9m with all readers, as Troels Andersen, the project manager of Fredericia Cyclecity, was delighted to find out. Other tests showed that several bicycles together passing at high speed (for bicycles) were correctly read as well. Prizes to be won were ranging from little children gifts, e.g. tattoos and bracelets, to dinners in local restaurants and even bicycles. This bicycle project, Cykelscore.dk, was presented during a bicycle conference in Fredericia on 27 October 2011. It is actually

planned as a pilot project, which after proven success will be introduced in other parts of Denmark as well. This is expected to take place in the coming year, with the support of Kræftens Bekæmpelse, the Danish organisation for the prevention of cancer, which has shown substantial interest in it.

*For further information please contact:  
christer.lidgard@scirocco.se*

Several suppliers of RFID were invited to respond to the RFP from Fredericia. One of them, Scirocco AB together with its local partner, RFID Specialisten, was chosen to initially supply:

- R610 readers with integrated support for WiFi and GPRS, as well as movement sensors.
- A100 antennas with linear polarisation.
- Several hundreds of tags for each reading site.

# FAD ADOPTS RFID TO MANAGE THEIR ART COLLECTIONS

*THE SPANISH ASSOCIATION FOR THE FOSTERING OF ARTS AND DESIGN (FAD) ADOPTS RFID TO MANAGE THEIR ART COLLECTIONS.*

**Thanks to a new system introduced by TRAZA, a valued partner of Nordic ID, the Spanish association for the fostering of arts and design (FAD) witnesses significant reductions in labor hours as well as improvements in inventory control. The new system now allows FAD an easy access to their more than 4,500 references as well as information related to the items. The system has been developed in order to serve FAD with managing their inventory, registering the loaning of materials and to assist with technical consultations.**

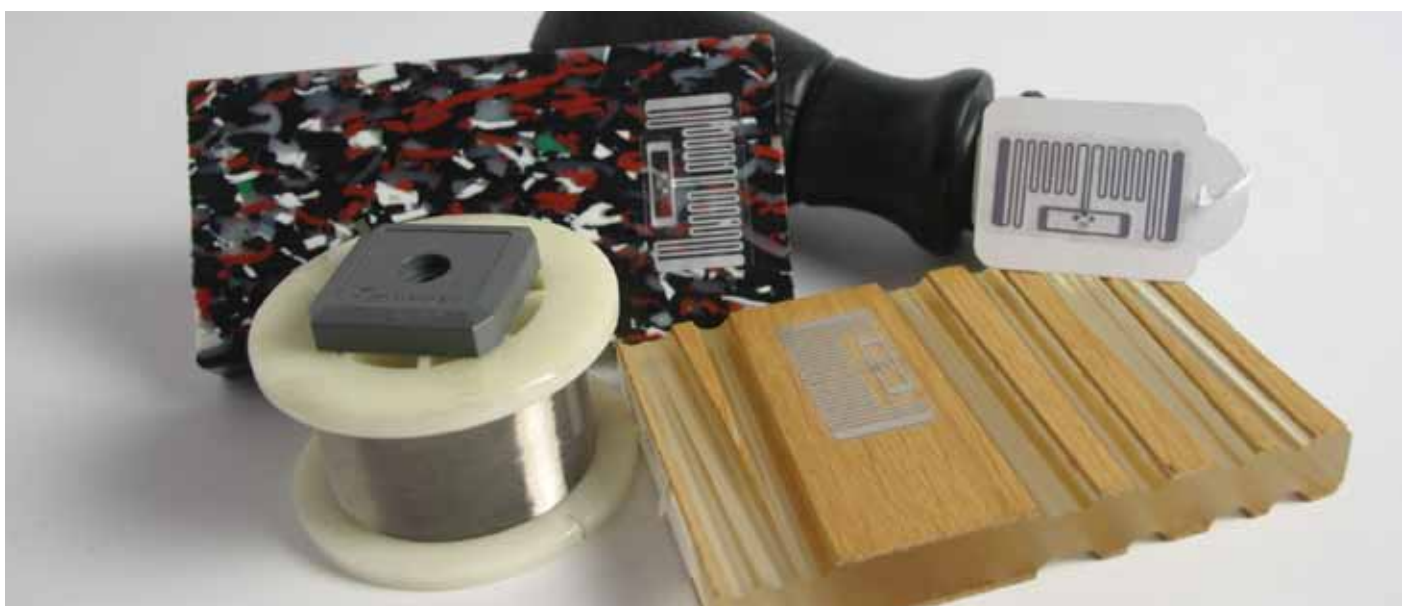
TRAZA set out to develop an existing legacy system based on barcodes. One of the reasons for going RFID was the problematics related to barcodes: each barcode needs to be read individually in order to recognize individual items. Such a set up would not allow easy searches among samples similar to each other nor an agile enough loan management. And a stock take of all items would take one person several days.

FAD chose TRAZA to carry out the analysis and implementation of the system that would respond to the needs expressed by FAD. TRAZA are experts in engineering, specializing in the development of solutions related to the automatic identification and

traceability of goods, which made them the ideal partner for the FAD project.

TRAZA selected Nordic ID Merlin UHF RFID Cross Dipole mobile computer, as the device is known for its robust platform, intuitive use, and superior service record. TRAZA in collaboration with FAD, a system of identification and traceability was designed and implemented for the art works using ultra-high frequency (UHF) RFID. Unlike bar codes, RFID technology enables the reading of the information contained on the chip of an RFID TAG without having sight of it. RFID tags can also be read several at the same time, which is not possible with traditional barcodes.

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## PROJECT OBJECTIVES

At the outset of the project, FAD outlined a number of objectives with the RFID system. Among them were to improve inventory-processing times, allow improved web access to information regarding art samples to consultation partners, expedite the search for samples, development of a system to monitor loans and detect sample lending.

The conditions and requirements for TRAZA were to integrate the existing sample MySQL database with a database created for managing loans. The use of tags with small size and

strong performance at long distances were also a requirement for the FAD project.

## IMPLEMENTATION

The implementation of the project involved the identification of samples with two different types of tags, which varied depending on the nature of the material to identify. A Nordic ID Merlin UHF RFID Cross Dipole mobile computer equipped with a UHF RFID reader is used for reading RFID tags. A separate system for the detection of unauthorized sample releases consists of an RFID reader with integrated antenna connected to a PC panel

to manage the system as well as the software needed for both the terminal and the server.

## RESULTS

Today FAD can easily search for samples and perform an inventory count in hours rather than days. Additionally their internal operations related to sample management has been simplified and the consultation to their partners is far easier. This thanks to better control over loans and easier access to information, which should increase their partners' satisfaction and that of the employee's as well.

## ABOUT FAD

The Arts and Design Promotion (FAD, also known as Fostering of Art and Design) is a private, independent and not-for-profit association that has the objective of promoting design and architecture in the country's cultural and economic life. The FAD is articulated via six associations that represent the different disciplines of design:

ADI-FAD (industrial design) ADG-FAD (graphic design and visual communication) ARQUIN-FAD (architecture and interior design) A-FAD (art and craftwork) ORFEBRES-FAD (contemporary jewellery) MODA-FAD (image and fashion)

Founded in the year 1903, the FAD has become the first centre of reference for design and architecture in Catalonia and Spain thanks to its commitment to the ongoing task of promoting creative culture through exhibitions, professional talks, prizes and events.

*For more information: [www.fad.cat](http://www.fad.cat)*

## ABOUT TRAZA

TRAZA is a company specializing in product development and projects within the field of automatic identification of goods and people. TRAZA is part of the business group Datopack ID, a Spanish company with over 30 years experience in the market of automatic identification and traceability.

TRAZA currently have over 70 professionals dedicated to developing products, services and turnkey projects. TRAZA is organized into 4 business areas: Mobility and traceability (AIDC - Auto Identification & Data Capture), ID Cards, Security and access control, and industrial coding and marking. TRAZA operates primarily in Spain and France.

*For more information: [www.traza.com](http://www.traza.com)*

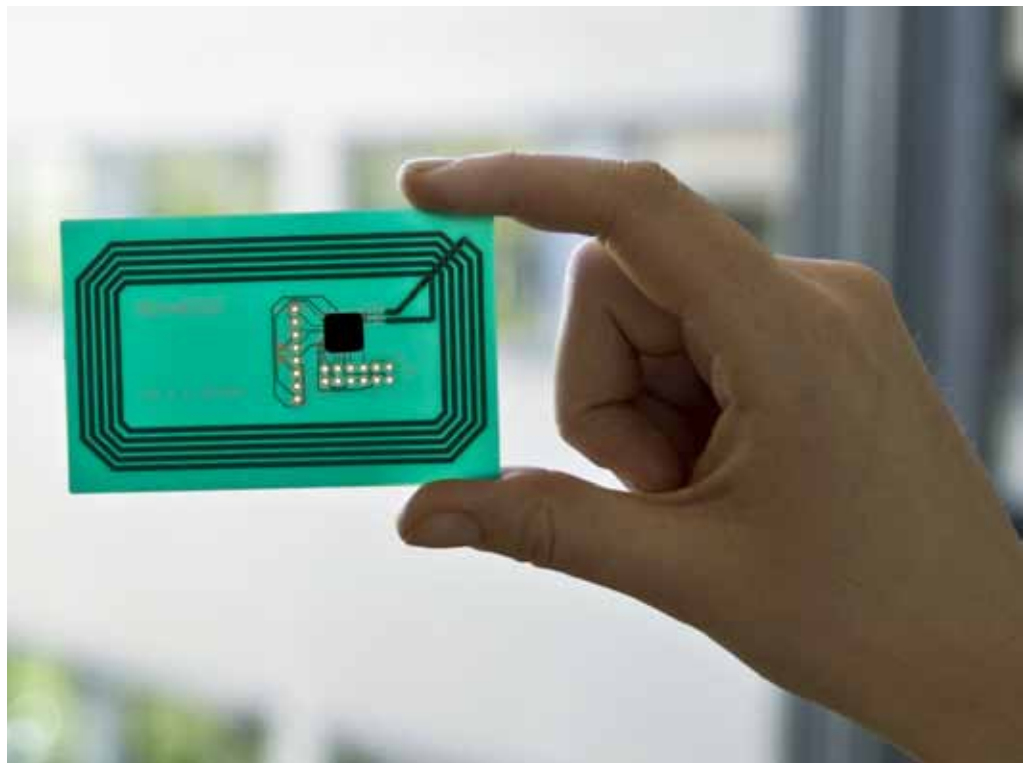
# FAST DEVELOPMENT OF TAILORED RFID CHIPS

**A secure development platform and fast development processes give delivery times of six months for a tailored RFID chip – DELTA Microelectronics calls it FAST-RFID!**

It may sound like science fiction, but The FAST-RFID product is based on the already developed analogue front-end IPs for RFID. This gives short development times and a very precise development flow securing right-first-time chips for new active tags – typically with built-in CPU, sensors and memory, which means additional options such as monitoring, protection, logistics systems and much more. Since DELTA's FAST-RFID chips follow the ISO 14443 or ISO 15693 and ISO 18000-6C standards, you can use the standard RFID readers generally available on the market.

## **RFID CAN NOW BE USED FOR SENSOR SYSTEMS, LOGISTICS AND MONITORING**

RFID was previously used for identification and has simply been used an electronic barcode for this purpose. Today the RFID technology can also be used for intelligent sensor systems with or without battery (active or passive). By using RFID technology to send energy to the tag, it is possible to add any electronic system. You can receive tags in the form of labels, credit cards or other, which are then used for sensor systems, logistics or monitoring.



*Example of PCB with RFID chip and aerial*

## **WHICH FREQUENCY MUST I CHOOSE?**

RFID systems are grouped into three types: LF, HF and UHF, which is why a few things have to be considered before you get started. LF is 30-300 kHz, HF is 3-30 MHz and UHF is 300 MHz – 3 GHz.

The difference is not only the frequency. The type of coupling (how energy and data is exchanged) and thus the range are also different. Sometimes a long reading distance is an advantage (if you want to include a storage area), other times a short reading distance is

preferred (e.g. for payment purposes where you do not want to be intercepted).

A third parameter that is important to investigate is how much information has to be transferred and at which speed (bandwidth)? This can also be a problem if there are many units that must/can be read at once. We therefore recommend that you speak with someone who has experience with RFID. FAST-RFID chips from DELTA follow the ISO 14443, ISO 15693 and ISO18000-6C standards, so they can be used with RFID readers generally available on the market.



ISO standard	Range	Connection type	Frequency
ISO 14443	5-15 cm	B-field (magnetic)	13.6 MHz
ISO 15693	up to 50 cm	B-field (magnetic)	13.6 MHz
ISO 18000-6C	5-10 metres	E-field (field strength)	900 MHz

Figure 2: DELTA has developed front-end IPs for these standards

### CLOSE COOPERATION GIVES THE BEST SOLUTION

We want the customer to be an integrated part of the development flow. We typically start with a kick-off meeting where we create an overview in cooperation with the customer. The main purpose is to distinguish between hardware and software as well as ensuring that this interaction works. DELTA can of course undertake the entire development process for less experienced companies, however we focus on educating and building technological knowledge with our customers so that the following project can be completed faster, cheaper and more securely.

As a development platform, DELTA provides a fully functional PCB for development use that consists of three parts: Aerials, analogue front-end and an FPGA. The aerial system supplied is a physical implementation of a reference design with a standard aerial. It is possible to optimise the aerial design so its size and efficiency is suitable for the desired application. The analogue front-end ensures that

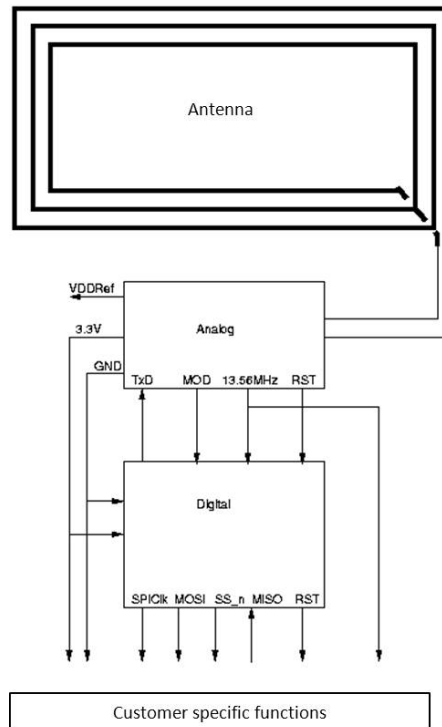


Figure 3: A typical block diagram for a passive RFID chip with aerial, analogue front-end IP, digital SERDES and customer-specific functions

most readers can communicate with the chip. Our analogue front-end IPs

therefore fulfil the requirements specified in the ISO standard (see Figure 2) which is highly important in a set-up like this one.

At DELTA we have developed and tested all analogue front-ends, created proof of concepts and used the IPs in several customer projects in collaboration with different foundries. Our website [madebydelta.com/rfid](http://madebydelta.com/rfid) contains more technical information on the analogue IPs.

The customer has a major influence in the programming of the FPGA where the customer develops and verifies their VHDL code themselves while they develop their system concept. We can offer a number of standard IP cores from DELTA for the application of the FPGA: Processor, encryption (HAS or triple DES), SPI interface, etc. In addition to the digital area, DELTA can also offer to add analogue circuits in the form of e.g. converters. In this way the customer has the option of creating a prototype, as well as verifying and optimising the electronic tag by creating a proof of concept on all the system based areas, before they make any major investments.

For further information please contact:  
Claus Meyer Reenberg,  
Delta Microelectronics  
Cell +45 24 44 11 86  
CMR@delta.dk

## REALISATION OF SELF-DEVELOPED RFID-ASIC

When the development has been completed at the customer's end, the VHDL code is passed on to DELTA for chip realisation. Our ASIC engineers combine the analogue front-end with the VHDL realisation of the customer's digital part.

We use Cadence tools for the generation of RTL code and the back-end part (i.e. place-and-route, simulations

for timing, electricity consumption, etc.). Finally the GDS-II tape is sent to mask set production and the first prototype wafers are manufactured at the chosen foundry.

When the prototype wafers arrive at DELTA, we will cut up a wafer, pack and bond a few prototypes within a few days, which can then be tested by the customer.

Based on our great experience, we can promise right-first-time which means that we will cover the costs for a new prototype wafer if we are to blame an error in the first one.

### FAST AND SECURE TO PROTOTYPES WITH FAST-RFID

The entire process with DELTA only takes 6 months from complete VHDL code until the prototypes are ready.

Phase	Time	Price	Activity
Specification	3-4 months	DKK 300,000	VHDL code and contract
Development	6-9 months	DKK 2 million	100 prototype chips
Prototypes	3-6 months	DKK 1 million	5,000 pilot chips
Full production	1-2 months	-	Project dependent

Figure 4: Development flow divided into phases with typical times and prices for FAST-RFID

Once the customer has verified the prototype and seen that everything is as it should be, the final development can begin. We will then develop a tailored chip, and the volume delivery can start within 9-12 months from the start of the project.

In addition to the tailored functionality, a self-developed chip allows us to achieve the smallest chip possible. Some RFID chips are as small as 0.25 mm<sup>2</sup>. These chips are typically used for unintelligent barcodes. If you require a little more such as encryption, reading security, data storage for sensor readings, the chip will quickly become bigger. With the customer cases we have seen over the

Number delivered per year	Price in DKK
Up to 100,000	4.30
Up to 500,000	3.00
Up to 1 million	2.25

Figure 5: Typical prices for a tailored, active RFID chip

past couple of years, there is a tendency for the chips to be bigger and bigger as the customers want more intelligence built into their chip.

#### GENERAL CONSIDERATIONS

As mentioned, FAST-RIFD has been designed for active tags. The price for active tags is higher than for passive tags, which is why active tags should

be used where an increased functionality makes sense.

One way to justify the high price is that these tags will be reused. Another option is to exploit other savings (increased security, less waste or similar) in order to cover additional costs – this depends on each business case. We are happy to provide advice and are in the process of organising a number of seminars, including one in Stockholm on 25 October 2011.

*Editors: Jesper Kamp Nielsen,  
Sales Manager Denmark  
Gert Jørgensen,  
VP Sales & Marketing  
earth."*

#### CASE STUDY:

##### RFID WITH TEMPERATURE SENSOR USED FOR MONITORING WITHIN THE PHARMACEUTICAL INDUSTRY

An example of an RFID solution designed by DELTA involving a 900 MHz active RFID tag with an integrated temperature sensor.

An on-chip sensor measures the ambient temperature. This is of interest when transporting blood, for example, which after donation has to be transported long distances and maintain the correct temperature at all times.

In this particular example, because there is also a battery in the RFID tag, online measurements can be taken, for instance every minute throughout the entire transport. If the battery gets damaged, the temperature logging will naturally stop, but the RFID tag can still be read with the RFID reader.

When the blood transport bags pass a checkpoint, data such as the blood type and number of bags can be checked, and thus an important QA check on the shipping methods can also be introduced. You can also add a time function that is saved together with the temperature measurement and thus determine when any error occurred.

If you want more security you can introduce an access code without which the tag will not respond. It is also possible to encrypt data, such as who the blood comes from etc., so that only your own system can process this data.

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**UPM RFID has launched a new website as a total global resource for online NFC tag stores, solutions, applications and related information. Powered by UPM RFID, the <http://www.nfctags.com/> site has been created in cooperation with leading players in the NFC business. It brings together the most comprehensive selection of NFC online vendors, converters and printing houses by service area and expertise.**

NFCTags.com primarily serves application developers and advertisers, but is also a knowledge base for consumers searching for NFC related information, products and suppliers.

Online stores partnered with nfctags.com deliver UPM RFID's high-quality NFC inlays as custom-printed, encoded and converted end-products as well as blank inlays. Tags are available in smaller sampling volumes as well as large scale roll-outs. Visitors to the site will find a technology overview, product information, useful links and downloadable applications for NFC phones and devices. Users will also have access to a wide variety of real-life use-cases and success stories, enabling them to select

the right tag for their end-use or the right apps for their smartphone using the tools provided online.

"We're extremely happy to be launching nfctags.com. UPM RFID's loyal and ambitious NFC partners needed greater visibility for their NFC tags, applications and solutions, and together we decided to invest in a high online presence to make these tags effortlessly available worldwide," says Mikko Nikkanen, Business Development Director, UPM RFID.

*For further information please contact:  
Mr Mikko Nikkanen,  
Business Development Director, UPM  
RFID, tel. +358 400 766 979*

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# LARGEST TURKISH SHOPPING CENTRE CHOSE SCIROCCO FOR EFFICIENT CAR PARKING

**Istanbul Marmara Forum, equipped with an avant-garde car parking management system with a capacity of 4 650 cars is the largest shopping centre in Turkey. With Scirocco RFID solutions, 22 million annual visitors can benefit from a highly innovative, efficient and secure parking facility, with eliminated queues and barring of unauthorized vehicles.**

Installed by Profi Automation Ltd. Sti., a leading Turkish parking system integrator, the car park comprises about 20 entry and exit lanes. Scirocco T200 tags in the car windshield and R610 "connect" readers, seamlessly integrated with advanced control software, provide a hands-free and fast entry/exit car park system.

"The access control system at Marmara Forum was very easy to install and manage, thanks to the robust design, reliable performance, and modularity of the Scirocco readers" said Fikret

Kiriscioglu, the CEO of Profi Automation. Each reader is, for example, connected to four A100 antennas, mounted in the most suitable positions for reliable reading of all kinds of vehicles. The Scirocco cards, which fit in a standard slide-in holder on the windshield of cars, can easily be moved between cars since they are as thin as credit cards.

*For further information please contact:  
Stefan.wilhelmsson@scirocco.se*



# TOTAL ENVIRONMENT CONTROL WITH RFID

## Electrotop 3000 is the manufacturer company of the logistics, production automation and access control system.

This was initially asked for by Mr. Attila Szedmak (who takes care of facility management) at the Szent Istvan University in Bekescsaba, Hungary: "Mr. Balogh we need an integrated total control system for our hostel and dormitory, from student arrival to the usage of the rooms and the necessary sources of electricity and other means of benefits. Can you make that?"  
- The answer was: YES!

The system solution to control all events in the facility and the process needed new nonstandard solutions. The question was how can a RFID based system work in a lively student environment? The area has all from humidity considerations to facility usages and precision security equipments. The request was all should be monitored and controlled by using RFID equipment.

As the system needs to demonstrate a

total tool solution based on the usage of passive radio frequency identification (RFID) technology for identifying it was a need for new readers, antennas and control systems.

The system was created by ELECTROTOP3000 in a State-of-the-art fashion with all the different fractions specially designed and developed for security and beneficial need.

In the process the system could not fail and did not have to have any weak parts as the RFID solutions involved, an all positions and all aspects had a crucial part in the total solution concept.

To the selected areas, it was designed and tested out with high expectations and with a risk analyze system to control all security and quality aspects of the system.

As the customer quality demand was high also the RFID parts used has to be of high quality.

What was the outcome of the system? A completely integrated RFID system is in place. All components are work-

ing with no problems detected after the final trimming procedure. Today the access control and security system is working with the all the following procedures at Szent Istvan University (Faculty of Economics) Dormitory in Bekescsaba Hungary.

The system consists of the following elements:

- -RFID cards to identify students, rights and to gain access to the dormitory room or apartment.
- Guest cards: these cards can be obtained at reception when a student mate comes to visit
- Terminal for returning guest cards
- Turnstiles (alarm connected to fire alarm system)
- Security cameras
- Surveillance system and card issuing at reception

All the students have their card, They can enter into the dormitory building by showing the card at the turnstile reader, then they can open the room's or the apartment's door also with the same card.

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The building is equipped with a camera surveillance system which is tracked at the receptions.

The turnstiles are connected to fire alarm system, so in case of emergency all turnstiles will open immediately to provide free escape.

In the rooms there is electricity by default only for the fridges and no other connectors or area in the room. This is for sustainable and security reason, because the apartments are equipped with a small kitchen and it also has electronic oven. So if there is nobody in the room then there is no power consumption and even situations can be avoided when students leave the apartment while cooking something. Actually they can only cook and have light when the card is hanged at the terminal inside the apartment. If the card reader recognizes the card then the system gives power to the room. Usually the apartment has two rooms and one kitchen. Rooms can have power separately of course. Somebody from each room has to hang on of their cards at the apartment's internal reader.

If a friend or mate comes to visit somebody at the dormitory, he or she has to ask for a guest card at the reception. The guest cards are time limited and have to be returned at the end of the visit either by inserting and throwing it into the card return box and terminal or by giving back at reception.

The card return box has also a card reader. The system is working on-line and real time, so reception always knows who are in the room, when they entered or when they have left the dormitory.

The process is to combine different activities with RFID labels in to an environmental base for future con-



suming saving, all are automatically performed.

Next step is to produce new environment solutions for the final product and all are controlled and logistically checked by the RFID system thru all the intended steps.

The solution is based on RFID tags and placed in storage in position for the security monitoring system. The user of the system is using the system day and night and if needed extra spare part can easily be replaced on site.

The system clearly has merit in a number of application areas, as well as the human logistic control area application, where tracking and tracing of the users is also important, for security reasons. Significant interest is being shown in this system by stakeholders in other production industries.

Additional benefits, including the environmental beneficial overview

and RFID control systems give the users a safety proofed system that assure best possible implementation of RFID solutions.

All expectations have been fulfilled at the greatest and have proven the well done key values, further commend the system for such applications.

*For further information:*

*Szent Istvan University Dormitory in  
Bekescsaba, Hungary*

*Web: <http://gk.szie.hu>*

*contact: CampusTrend*

*Mr. Attila Szedmak, facility management  
department director,*

*e-mail: [campustrendkft@gmail.com](mailto:campustrendkft@gmail.com) or  
[attila@zeus.tsf.hu](mailto:attila@zeus.tsf.hu)*

*Producer Electrotop3000 Kft. ,*

*e-mail: [noveczki@elektrotop3000.hu](mailto:noveczki@elektrotop3000.hu)*

*Mr. Lajos Balogh, general manager*

*Web: <http://www.elektrotop3000.com>  
contact:*

*Mr. Zsolt Noveczki, sales manager*



# THE RFID NORDIC STUDENT SCHOLARSHIP 2011 JURY FINDINGS

Jacob Hidén Rudander and Ikram-e-Khuda  
have, by a novel use of available technology,  
proposed and verified a new way to characterize RFID tags  
through measurements.

This new method has the potential to make RFID tag screenings and  
other types of measurements, faster and more realistic,  
and thus reducing the cost for such activities. This work is also believed to  
contribute to the general understanding of estimating  
the effects of [real world] multi-path wave propagation  
issues in UHF RFID systems.



# IMPLEMENTATION DRAWS ON UHF GEN 2 RFID TAGS

**Vicinity RFID Solutions Pvt. India has pioneered the use of UPM UHF Gen 2 RFID tags for event ticketing at a medical conference in India. The solution utilized ThingMagic Astra Readers provided by Fedders Lloyd Corporation Ltd., Agile Middlewares supplied by Vicinity RFID, and UPM ShortDipole™ UHF RFID inlays from UPM RFID.**

Vicinity RFID Solutions is the leading provider of innovative RFID-based business solutions in India, and an associate company of Fedders Lloyd Corporation Limited. The conference, the 63rd Annual National Conference of the Indian Psychiatric Society (ANCIPS) 2011, was held in January in New Delhi and attracted more than 1,900 attendees. One of the main event sponsors was Alkem Laboratories, the seventh largest pharmaceutical company in India.

The conference and various technical sessions took place in ten halls during four days. Delegates were given an RFID-tagged conference pass containing their personal data and access

rights. The Indian Psychiatric Society hoped to find out how much time the delegates spent in the conference halls. The delegates' movements were constantly monitored by Astra Readers installed at the entrances to each hall,

the Medical Council of India, a statutory body responsible for establishing and maintaining high standards of medical education and recognition of medical qualifications in India, is considering awarding credit hours to doc-

*“Vicinity RFID Solutions is the leading provider of innovative RFID-based business solutions in India”*

and their entry and exit times were recorded as they moved from one hall to another. The data gathered by RFID readers in each hall was processed and evaluated. Data was presented for each delegate and each session, including the time spent at each session and a report of total hours spent in different halls.

RFID technology enables event organizers to guarantee improved security and enhance customer service while eliminating queues to the various locations in the event area. Furthermore,

tors based on their attendance at such conferences for their license renewal. Vicinity RFID Solutions and Alkem Laboratories are aiming to implement more than ten similar projects in the year ahead with a variety of medical associations.

*For further information please contact:  
Tiina.kainulainen@upmraflatac.com*

## TAGMASTER ANNOUNCES

# HIGH SECURITY VEHICLE ACCESS CONTROL SYSTEM AT ITALIAN COURT HOUSE

**Stockholm, Sweden, 30 August, 2011** - TagMaster, the leading producer of advanced long-range and high-performance identification systems based on Radio Frequency Identification (RFID) systems for Automatic Vehicle Identification (AVI) solutions inform today that their partner Generale Sistemi has announced the Vehicle Access Control installation for the Italian court in central Italy as a recent addition to its customer base of successful installations. The installation ensures a high level of security and reliability using an integrated combination of long range RFID identification and OCR cameras for the access control of vehicles.

To be able to handle access control for visitors and other vehicles not equipped with an RFID tag an integrated OCR camera is used. The cam-

era is an integrated part of the Total Gate Control system developed and supplied by Generale Sistemi using a TCP/IP based solution with a built in database. The Total Gate Control (TGC) system uses a built in database for administration of access control parameters such as scheduling and access rights. The database contains both the Id-tag numbers as well as the number plates. The access gate is controlled by the TGC system and forms in this way a complete high security access control solution.

Pictures taken by the OCR camera of cars not equipped with RFID tag are used to identify vehicles given temporary access acceptance. Pictures are also taken of vehicles trying to access without permission. All pictures are stored in a database for security reasons. In this way a high

level of security has been obtained in this vehicle access control installation and a level of flexibility to handling different categories of vehicles and different categories of users with different access permissions.

“This installation solved many problems for the customer. This was made possible using Total Gate Control system built on the powerful TagMaster reader platform open for development and integration with other devices and technologies to build up a winning solution”, says Adolfo Deltodesco CEO at Generale Sistemi.

For further information please contact:  
emma.sundvall@tagmaster.se  
tel. +358400 814 964

*“TagMaster, the leading producer of advanced long-range and high-performance identification systems based on Radio Frequency Identification (RFID) systems for Automatic Vehicle Identification (AVI) solutions inform today that their partner Generale Sistemi has announced the Vehicle Access Control installation for the Italian court in central Italy as a recent addition to its customer base of successful installations”*



*“Scandinavian Airlines continues to make it smoother and more time-efficient for its customers as the SAS Smart Pass will roll out across Scandinavia this fall. ”*

# SAS LAUNCHES SMART PASS ACROSS SCANDINAVIA

**Scandinavian Airlines continues to make it smoother and more time-efficient for its customers as the SAS Smart Pass will roll out across Scandinavia this fall. SAS is thereby one of the first airlines in the world to offer a mobile NFC (Near Field Communication) solution to quicker pass through the airport.**

This new reader family and ID-tags The SAS Smart Pass was trialed earlier this year with great success amongst selected members of its frequent flyer program EuroBonus in three Scan-

dinavian cities. The new technique is the latest within NFC, allowing EuroBonus Gold members to put the SAS Smart Pass on their mobile phone, which then acts as a wireless transmitter across the airport at Self Service machines, security, Fast Track, lounges, tax free shopping and by gate.

“Our customers really appreciate our mobile travel solutions, and we can see that your mobile and NFC is the future. We are therefore proud to be one of the first airlines in the world to offer such a smart solution as the SAS Smart Pass to our most frequent travelers, making their journey even smoother. The trial period earlier this

year clearly showed that customers enjoy the product and that SAS is once again meeting customers’ expectations,” says Lena Rökaas, Vice President, Product and Customer Service.

The SAS Smart Pass will be rolled out across Scandinavia in September and available to all EuroBonus Gold members.

*For more information, please contact:  
Anders Lindström  
PR Director, Scandinavian Airlines  
Telephone: +46 70997 3394  
E-mail: anders.lindstrom@sas.se*

*“SAS is thereby one of the first airlines in the world to offer a mobile NFC (Near Field Communication) solution to quicker pass through the airport. ”*

# TAGMASTER ANNOUNCES THE CHAPMAN UNIVERSITY INSTALLATION

**TagMaster, producer of advanced long-range and high-performance identification systems based on Radio Frequency Identification (RFID) systems for Automatic Vehicle Identification (AVI) solutions inform today that their premium partner Tagmaster North America has announced Chapman University in Orange, CA. as a recent addition to its customer base of successful installations. The installation makes a tighter parking operation possible with an improved use of the available parking space. Automated Access Systems, Inc., a regional leader in access control and parking solutions performed the installation.**

Prior to the installation, parking controls were virtually non-existent. With no barrier gates to restrict entry and exit, anyone – students, faculty, staff, and visitors - could park anywhere

and anytime. The university therefore decided to install an Automatic Vehicle Identification system based on 18 TagMaster LR-6 long range readers and 12,000 MarkTag ID-tags to control the gates. Chapman University now enjoys the benefits of tighter parking controls, thus dramatically enhancing their ability to manage parking operations. Drivers are now able to park in assigned parking structures at specific times with exclusive parking in designated parking areas still assured. Visitors with pay-and-display privileges can park at specified times.

Vehicle entry and exit time has also been accelerated due to TagMaster's convenient, hands-free and highly automated RFID AVI technology, contributing greatly to an enhanced traffic flow, especially during congested periods. An improved traffic flow promotes also a minimized environmental impact. Additionally, tighter parking controls and the elimination of need for parking guard monitoring during business hours have contributed to an overall cost savings for Chapman University.

Sheryl Boyd, Supervisor of Parking and Transportation Services, at Chapman University noted, "The implementation of parking control systems at our most centrally located parking facilities has allowed us to provide better customer service for our students, faculty and staff. The ease of entry and exiting utilizing TagMaster's RFID AVI's allowed for a smooth transition into this new approach to managing our parking facilities here at Chapman University. We have also been able to utilize occupancy data provided by the TagMaster Readers to better allocate our parking resources."

Ali Khaksar president of TagMaster North America noted, "The Chapman University installation solidifies the Tagmaster North America market presence in the university sector and is yet more proof of the superiority of the TagMaster AVI product line."

*For more information, please contact:  
Bo Tideman, CEO, TagMaster AB  
Telephone: +46 8 632 1950  
E-mail: bo.tideman<mailto:richard.holt@tagmaster.com>@tagmaster.com*

## ABOUT TAGMASTER

*TagMaster is a Swedish technology company founded 1994 with headquarters in Kista (Stockholm), Sweden. TagMaster designs and markets advanced long-range radio frequency identification (RFID) systems and information services associated with automatic vehicle identification, rail bound transportation, asset management and people access, in order to increase efficiency, security, convenience and to decrease environmental impact. TagMaster exports mainly to Europe, Asia and North America via a global network of partners, systems integrators and distributors. TagMaster shares are traded on First North in Stockholm, Sweden. TagMaster's certified Adviser is Remium AB.  
<<http://media.ne.cision.com/l/rnydgvr/www.tagmaster.com/>>www.tagmaster.com.*

# RFID TECHNOLOGY TO TRACK GOVERNMENT ASSETS

**Disaster relief contractor Partnership for Response and Recovery (PaRR) Inspections, a joint venture of Dewberry & Davis, LLC, and URS Corporation, put RFID technology's ability to track government assets to the test in the aftermath of tornadoes, storms and floods that struck the southeastern United States in April 2011.**

The firm used AssetTrax, an automated solution from Entigral Systems and UPM DogBone™ UHF RFID tags to streamline the assembly, distribution and return of kits used by more than 400 field inspectors to evaluate damaged homes and businesses in Arkansas, Kentucky, North Carolina, Tennessee and Virginia.

Field inspectors use kits, containing hardened laptop computers, cameras, batteries, battery chargers and other items, to gather information and photographic evidence and electronically file claims on victims' behalf to the Federal Emergency Management Agency. Previously, PaRR used barcodes to tag approximately 65,000 pieces of equipment in its inventory and manually wrote or input serial numbers of items before distributing them. PaRR's challenges managing this large-scale inventory base were further complicated by the fact that the firm customizes the equipment in its 6,000 inspector kits for different types of natural disasters.

PaRR Inspections worked with Entigral Systems to implement an RFID-based asset tracking system that would uniquely identify every item in its inventory and link items to both their kits and users, providing the company with enhanced visibility into the whereabouts of government assets and contract personnel. PaRR sought to streamline its kit assembly, distribution and return processes, while also reducing labor and equipment losses in the field.

*"In the aftermath of natural disasters, responding promptly to citizens' needs is essential," says Jan Svoboda, Sales and Marketing Director, Americas, UPM RFID "*

Items and their carrying cases are tagged at PaRR's warehouse in Winchester, Virginia; the UPM DogBone™ UHF RFID tags by UPM RFID record the electronic product code for each item. Operators then use the AssetTrax system, which includes handheld and fixed readers and software that captures tag data, to associate items with their carrying cases, pallets and warehouse storage locations.

When the recent disasters were declared, warehouse operators shipped pallets of pre-prepared kits to the company's field offices in Alabama

and North Carolina. Inspectors, who checked in at their designated field office, received RFID-tagged ID badges and kits, which were read and associated by fixed RFID readers onsite. After completing their mission, inspectors returned kits to their field office, which were read again to determine that all equipment had been returned.

"In the aftermath of natural disasters, responding promptly to citizens' needs is essential," says Jan Svoboda, Sales and Marketing Director, Americas, UPM RFID. "The asset tracking system

from Entigral Systems and UPM RFID demonstrates how RFID technology can streamline critical operational processes and protect valuable inventory in challenging environments."

*For further information, please contact:  
Mr Jan Svoboda, Sales and Marketing  
Director, Americas, UPM RFID,  
tel. +1 805 312 4679  
Mr Booth Kalmbach, President, Entigral  
Systems, tel. + 1 919 787 5885, x206*





FÖLJ UTVECKLINGEN AV  
DEN SPÄNNANDE RFID MARKNADEN  
VAD HAR HÄNT OCH VAD HÄNDER?

BLI MEDLEM I  
RFID NORDIC

Skicka dina/ditt företags kontaktuppgifter till:  
ove.canemyr@trendsetter.se

MER INFO PÅ [WWW.RFIDNORDIC.ORG](http://WWW.RFIDNORDIC.ORG)

Medlemskapet koster 7 000:-/år.

# Contact RFID Nordic organisation

C = Consultant P = Producer U = User F = Federation M = Media

## Associated:

**AMC**  
Bob Forslund Lyckebo,  
514 52 Långhem  
Phone +46 325 406 40  
Cell +46 70 289 11 42 bob@amc-hb.se

**AMD**  
Leif Nordlund  
+46 8 562 540 61

**C**  
**ADAGE SOLUTIONS**  
Juha Rajala Box 10021, 952 27 Kalix  
Tel 0923 668 81 Fax 0923 668 88  
Juha.rajala@adage.se

**F**  
*samarbete med:*  
**AIM DENMARK**  
Arne Rask, ordförande ar@logsys.dk

samt F AIM Europe  
milagros@aimglobal.org

**C**  
**ADHTECH AB P**  
eter Nilsson Box 22023  
250 22 Helsingborg  
Tel 042-25 60 21  
Mail contact@adhtech.se  
www.adhtech.se/

**C**  
**AUTOID EXPERT**  
Scandinavia Olle Hydbom  
Lars Christers väg 1 224 78 Lund  
Phone +46 730 80 34 00  
olle.hydbom@autoidexpert.se  
www.autoidexpert.se  
Uppsala Universitet I.Katardjiev,  
Avd. för fasta tillståndets elektronik  
Box 534 75121 Uppsala  
+46 18 47 17248  
ilia.katardjiev@angstrom.uu.se

**P**  
**AREFF SYSTEMS AB**  
Metallgatan 1 372 38 Ronneby  
Tel +46 455 61 66 00  
Mail info@areff.se www.areff.se

**P**  
**BALLUFF**  
Arne Pettersson Gamlestadsvägen 2,  
B19 415 02 Göteborg  
+46 31-3535503 +46 708 453989  
arne.pettersson@balluff.se

**P**  
**BEAB ETIKETT & SYSTEM AB**  
Box 943, SE-501 10 Borås  
Besöksadress: Vevgatan 9  
Växel: +46 33 29 09 00  
Fax: +46 33 29 09 09

**C**  
**BNEARIT AB**  
Spantagatan 2 973 46 Luleå  
+46 920 211 800  
anders.hermansson@bnearit.se

**U**  
**BOLIDEN MINERAL AB**  
Bert-Ove Johansson  
Box 85, 982 21 Gällivare P  
hone +46 970 735  
34 Kjell.h.johansson@boliden.com

**C**  
**CAPGEMINI**  
David Glans Gustavslundsvägen 131,  
Box 825 161 24 Bromma  
Mobil 0736 737355  
david.glans@capgemini.se

**P**  
**CIVIL ID SYSTEMS**  
Pierre Wincent Box 933,  
194 29 Upplands-Väsby  
Tel +46 8 626 85 60  
Pierre.wincent@civilidsystems.com

**C**  
**COMBIQ AB**  
Gjuterigatan 9 Science Park  
553 18 Jönköping  
Tel +46 705 74 04 72  
torbjorn.birging@combiq.com

**P**  
**CONFIDEX LTD**  
Torbjörn Andersson Haarlankatu 1,  
33230 Tampere,  
Finland +46 768 530 130  
(mobile) +358 10 424 4100  
(office) Skype ID: lakselva  
torbjorn.andersson@confidex.net  
www.confidex.fi

**P C**  
**DATAFÅNGST SVENSKA AB**  
Brännögatan 9A, 211 24 Malmö  
Lars Enoksson Mobil +46 709 41 67  
87 Lars.enoksson@datafangst.se

**C**  
**DATEMA**  
SolnaStrandväg 98  
Mobil: 0730-93 52 01  
Tel 08 517 150 86 (00 vx)  
Fax 08 28 77 05  
larry.nilsson@datema.se

**C P**  
**DELTA MICROELECTRONICS**  
Claus Meyer Reenberg Sales Manager,  
Sweden & Norway  
Venlighedsvej 4, 2970 Hørsholm,  
Danmark  
Phone +45 72 19 44 02  
Cell +45 24 44 11 86  
CMR@delta.dk  
rid.madebydelta.com

*I samarbete med:*  
F Eforum i Standard  
Postboks 242, 1326 Lysaker  
Tel 67 83 86 93  
post@eforum.no

**C**  
**ELECTRONA-SIEVERT AB**  
Erik Surén Gårdsvägen 4, 169 70  
SOLNA  
Tel 08 447 31 00  
erik.suren@electrona.se

**ENVIROTAINER ENGINEERING AB**  
Nicholas Martin Lagga, Marma  
SE-741 93 Knivsta  
Phone: +46 (0)18 34 73 20  
Mobile: +46 (0)765 27 73 20  
Fax: +46 (0)18 38 40 33  
nicholas.martin@envirocontainer.com  
http://www.envirocontainer.com  
Skype: nicholasatenvirocontainer

**C**  
**ESCS AB**  
christer@escs.se  
Heberg 117, 31196 Heberg Besök  
Skreavägen 5  
0346-13075. ,  
0705088403  
www.escs.se

**M**  
**EXPOIT24**  
leif.ewald@exploit24.se  
+46 70 639 48 34 www.exploit24.se

**P**  
**FERROXCUBE**  
Rolf Lindgren  
Seminariiegatan 29B 752 28 Uppsala  
Tel +46 18 509 02 40  
Mobil +46 70 659 0205  
Rolf.lindgren@ferroxcube.com

**C**  
**FREE2MOVE**  
Dan Hellgren Serlingsgatan 7 302 48  
Halmstad  
Tel 035 15 22 60  
dan.hellgren@free2move.se

**U**  
**HANDELSBANKEN**  
Henrik Sirborg  
Tegeluddsvägen 31 115 82 Stockholm  
Mobil 070 - 53 156 34 hesi02@handelsbanken.se

**C**  
**HENCOL**  
Henrik Östergren  
Svartviksslingan 23,  
167 38 Bromma  
Tel +46 8 26 91 49  
Cell +46 70 733 36 78  
info@hencol.se

**P**  
**HP**  
Ulf Syvertsen  
Gustav III Boulevard 36  
169 85 SOLNA  
Tel 08 524 910 00  
ulf.syvertsen@hp.com

**C**  
**IDENDEC SOLUTIONS**  
Blekingegatan 3 554 48 Jönköping  
Tel +46 36 13 50 80  
Fax+ 46 36 13 51 80  
Mobil +46 708-139454  
aboman@identecolutions.com

**C**  
**IDENDEC SOLUTIONS NORWAY AS**  
(formerly Wtek AS)  
Skarpengland 4715 ØVREBØ, Norway  
Phone: +47 38 13 91 53  
Fax: +47 38 13 96 91  
Mobile: +47 951 16 047 E-Mail:  
mona@identecolutions.no  
Inst. för Designvetenskaper  
Lunds Universitet Daniel Hellström  
Phone: +46 46 222 72 30  
Cell: +46 730 560 580  
Daniel.hellstrom@plog.lth.se

**P**  
**INTERMEC**  
Patrik Fredriksson  
Vendevägen 85 B 182 91 Danderyd  
Tel 08 622 06 53  
patrik.fredriksson@intermec.com

*I samarbete med:*  
**F**  
**KOMPETANSENETTVERKET EFORUM I STANDARD NORGE**  
August Nilssen Prosjektleder  
Tlf dir: 67838689  
Mobil: 90140566  
www.eforum.no

*I samarbete med:*  
**F**  
**KTH INFORMATION AND COMMUNICATIONS TECHNOLOGY**  
Li-Rong Zheng  
Box Elctrum 229 164 40 Kista  
+46 8 790 4104  
lirong@imit.kth.se

**C**  
**LEARNINGWELL**  
Cylindervägen 18 Box 1113, 131 26  
NACKA STRAND  
+46 70 332 84 70  
gunnar.ivansson@learningwell.se

**P**  
**LOGOPAK SYSTEMS AB**  
Lilla Bommen 1 SE-411 04 Göteborg  
Tel 0 31 - 700 12 30  
mobile: 0709 - 67 84 70  
fax: 031 - 15 12 01  
mail: LThuring@Logopak.se  
web: www.logopak.se

**C**  
**MALM LOGISTICS**  
Johan Malm  
+46 769 41 48 40  
johan.malm@malmlog.se

**P**  
**MECTEC ELEKTRONIK AB**  
Joachim Holgersson  
Agnesfridsvägen 189 S-213 75 Malmö  
Tel 040 689 25 01 (Direct)  
Mobil 070 354 75 01 (Mobile) Växel  
040 689 25 00 (Switchboard)  
Fax 040 689 25 25 (Fax)  
joachim.holgersson@mectec.se  
www.mectec.se

**C**  
*Associated:*  
Björn Söderberg Mobil  
073 805 09 00  
bjorn.soderberg@gmail.com

**M**  
**MENTOR ONLINE**  
Lars Nordmark  
Tel 042 490 19 17  
Fax 042 490 19 99  
Mobil 0709 75 99 42  
Mats.b@mentoronline.se

**P**  
**MOTOROLA ENTERPRISE MOBILITY**  
Jonas Folkesson Solna Strandväg 78,  
171 26 Solna  
+46 8 445 29 23  
Mobil +46 733 35 29 23  
Jonas.Folkesson@motorola.com

**P**  
**NORDICID**  
Miia Kivela Alexander Aminoff  
Myllyjoankatu 2A 24100 SALO, Finland  
Tel +358 2 727 7700  
miia.kivela@nordicid.com  
alexander.aminoff@nordicid.com

**P**  
**OBERTHUR TECHNOLOGIES SWEDEN AB**  
Torjörn Noré  
Färögatan 7, 164 40 KISTA  
Tel +46 8 658 75 00  
t.nore@oberthurcs.com

*I samarbete med:*  
**F**  
**ODETTE**  
Sten Lindgren  
Karlavägen 14, Stockholm  
Tel +46 8 700 41 20  
Sten.lindgren@odette.se

**P**  
**OPTICON**  
Henrik Sittkoff  
Spjutvägen 5, Hus C 175 61 Järfälla  
Tel +46 8 585 485 60  
henrik@opticon-sensors.se

**C**  
**OPTIDEV**  
Gullbergs Strandgata 36 D 411 04  
Göteborg  
Tel +46 31 80 93 80

**C**  
**PETER ÖST**  
Lagman Eskils väg 4 443 34 Lerum  
0706-376803

**C P**  
**PAS CARD AB**  
Årstaängsvägen 1A, 117 43 Stockholm  
Freddie Parrman  
Phone +46 8 685 45 60  
www.pascard.se  
freddie.parrman@pascard.se

**P**  
**PMS TECHNOLOGIES AB**  
Ögärdesvägen 4 433 30 Partille,  
Gothenburg SWEDEN  
Tfn + 46 31 7518721  
Cell + 46 708 449405  
Fax + 46 31 7518701  
e-mail:  
bernt.bohlenius@pmstechnologies.se  
http://www.pmstechnologies.se

**C**  
**POCKETMOBILE**  
Anders Gilbertsson Sveavägen 168,  
113 46 Stockholm  
Tel +46 8 736 77 05  
Anders.gilbertsson@pocketmobile.se

**P**  
**POINT TRANSACTION  
SYSTEMS AB**  
Bo Danielsson Box 92031,  
SE-120 06 Stockholm  
Phone: +46 8 566 288 30  
Mobile: +46 766 31 88 30  
www.point.se  
bo.danielsson@point.se

**U**  
**POSTEN MEDDELANDE AB**  
attn Mikael Hansen 105 00 Stockholm  
+46 8 781 76 80  
+46 73 079 03 02  
mikael.hansen@posten.se  
www.posten.se

**C**  
**RESLINK SOLUTIONS LTD**  
attn Jukka Hautala Kumitehtaankatu  
5 Fin-04260 KERAVA  
+46 733 18 33 87  
Mail: Jukka.Hautala@reslink.fi

*I samarbete med:*

**F**  
**RFID INNOVASJONSSENTER AS**  
Petter Thune-Larsen Postboks 124 Blin-  
dern, 0314 Oslo

**WWW.RFIDLAB.NO**  
Petter@rfidlab.no

*I samarbete med:*

**F**  
**RFID SOCIETY**  
www.rfidsociety.com

*I samarbete med:*

**F**  
**RFID BUSINESS ASSOCIATION**  
www.rfidba.org

*I samarbete med:*

**F**  
**WWW.MORERFID.COM**

**C**  
**RFID CONSTRUCTORS**  
Niklas Hild  
Scheelevägen 19A 223 70 LUND  
Tel +46 46 286 30 61  
Mobile +46 709 98 13 70  
Mail/Skype  
niklas.hild@roi4u.se  
www.rfidconstructors.com

*Associated member:*

**C**  
**RETORIUM**  
Box 23, 182 11 Danderyd  
Lucas Åhlström  
Mobil 070 182 15 00  
Mail: lucas@retorium.com

**C**  
**R2M**  
Magnus Råhlander  
Box 1027, 164 21 KISTA Tel  
+46 8 633 13 00  
Mobil +46 733 709 515  
Magnus.rahlander@r2m.se

**C**  
**ROI4U**  
Niklas Hild  
niklas.hild@roi4u.se  
Phone: +46 709 98 13 70  
Skype: triumphniklas

**P C**  
**SCIROCCO AB**  
Stefan Wilhelmsson  
Electrum 217  
Besöksadress: Isafjordsgatan 30A  
16440 Kista, Sweden  
+4687529891  
+46733982337  
Stefan.wilhelmsson@scirocco.se

**P C**  
**SIEMENS AB**  
Jos Klein Woud Box 18575  
212 39 Malmö  
Gatuadress: Höjdrodergatan 25, Malmö  
Tel 040-59 25 13  
Cell: 070-728 1280  
jos.kleinwoud@siemens.com

*I samarbete med:*

**F**  
**SIS SWEDISH STANDARDS  
INSTITUTE**  
Stina Wallström 118 80 Stockholm  
+46 8 555 520 00  
stina.wallstrom@sis.se

**C**  
**SOFTCENTER**  
Mattias Selberg  
Kaserngatan 14 981 37 Kiruna  
Tel vxl: 0980-770 50  
Mattias.selberg@softcenter.it

**C**  
**SOGETI**  
Hoss Eizaad  
Gustavslundsvägen 131 Box 825 161  
24 BROMMA  
Tel 08 536 820 07  
070 922 99 77  
hoss.eizad@sogeti.se

**U**  
**SSAB EMEA AB 225/LOGISTIK-  
UTVECKLING**  
Lars-Erik Stenberg 78184 Borlänge

**C**  
**STARBRIGHT CONSULTING AB**  
Hans Börjesson Gjuterigatan 9 553 18  
Jönköping  
Tel +46 704 21 04 04  
hans.borjesson@starbright.se

**M**  
**STOCKHOLMSMÄSSAN**  
Daniel Andersson 125 80 Stockholm  
Tel 08 749 41 00  
Daniel.andersson@stofair.se

**P**  
**STRÅLIN & PERSSON AB**  
Tauno Ollinen Rottnebyvägen 6, 791  
44 FALUN  
+46 23 350 60  
tauno.ollinen@stralin-persson.se  
www.stralin-persson.se

**F**  
**SVENSK HANDEL**  
Bo Svensson 103 29 Stockholm  
Tel 08 762 78 28  
bo.svensson@svenskhandel.se

**U**  
**SWEDBANK**  
Ronny Forsberg 105 34 Stockholm  
Tel 08 585 900 00  
ronny.forsberg@swedbank.se

**P**  
**SYMBOL**  
Box 1115, 164 22 KISTA  
Rebecca Krantz

**C**  
**TAGMASTER**  
Emma Sundvall  
Kronborgsgränd 1 164 87 Kista  
Tel 8 632 19 50  
emma.sundvall@tagmaster.se

**P C**  
**TECHPAY**  
Göran Carlqvist Science Park Gjuteriga-  
tan 9 553 18 Jönköping  
Phone +46 736 20 99 05  
email: goran.carlqvist@techpay.se

**P**  
**TELENOR**  
Katrin Calderon 116 45 STOCKHOLM  
Tel +46 709 33 55 12  
Katrin.calderon@telenor.com  
Thor.steffensen@telenor.com

**P**  
**TELIASONERA**  
Alf Johnson Augustendalsvägen 7 SE  
131 86 Nacka Strand  
Mobil 070 680 4101  
Tel 08 601 8609  
alf.johnson@teliasonera.com

*associated:*  
**TELMINA**  
Stefan Tjerngren  
Vendelsö Skolväg 240 136 71 Haninge  
Tel +46 8 81 35 13  
Mobil 070 332 84 70  
stefan.tjerngren@bredband.net

**C**  
**TEXI AS**  
rild Engesbak Abelsgatan 5 N-7030  
Trondheim  
Tel +47 99 53 54 64

**P**  
**THE IMEGO INSTITUTE**  
Christina Rusu Arvid Hedvalls Backe  
4, Box 53071 SE-400 14, Göteborg,  
Sweden  
Tel. dir: +46 (0)31 7501 868  
Fax: +46 (0)31 7501 801  
cristina.rusu@imego.com www.imego.  
com

**C**  
**TRACTEchnology**  
Hans Lewin Svärdvägen 19 182 33  
Danderyd  
Tel: 08-630 53 00  
Mobil 0761 74 85 28  
hans.lewin@tractechnology.se

**P C**  
**UPM RAFLATAC**  
Tiina Kainulainen P.O. Box 669 Mylly-  
puronkatu 31 FI-33101 Tampere  
Tel +358 40 5434654  
Mobil +358 40 842 2470  
Tiina.kainulainen@upmraflatac.com

**C**  
**VILANT SYSTEMS OY**  
Antti Virkkunen Tietejäntie 2 02130  
Espoo, Finland  
Tel +358 9 8561 9900  
Mobil +358 50 529 4574  
Antti.virkkunen@vilant.com

**P**  
**VISMA RETAIL**  
Box 274 S-761 23 Norrtälje  
Besöksadress: Roslagsgatan 6-8  
Tel 0176 - 745 00  
Direkt: 0176 - 745 22  
www.vismaretail.se

**P**  
**WISTEQ OY**  
Olavi Meriläinen Salvesenintie 6 40420  
Jyskä, Finland  
Mobil +358 40 504 7963  
olavi.merilainen@wisteq.com

**C**  
**ÅF-ENGINEERING**  
Greger Du Rietz  
Kvamborgsgatan 2 | Box 1551,  
401 51 GÖTEBORG Tel 010 505 30 84  
Mobil: 0730 70 10 84  
Fax: 010-505 30 10  
greger.durietz@afconsult.com

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