



# TQ

THE  
QUINTESSENCE

## *of RFID Technology*

The Knowledge Magazine from EBV Elektronik

### **RFID technology | 06**

As diverse as  
its many uses

### **Data protection | 20**

No fundamentally  
new requirements

### **Promoting and monitoring | 22**

Interview about  
the work of the  
EU Commission

### **More safety in theatre | 52**

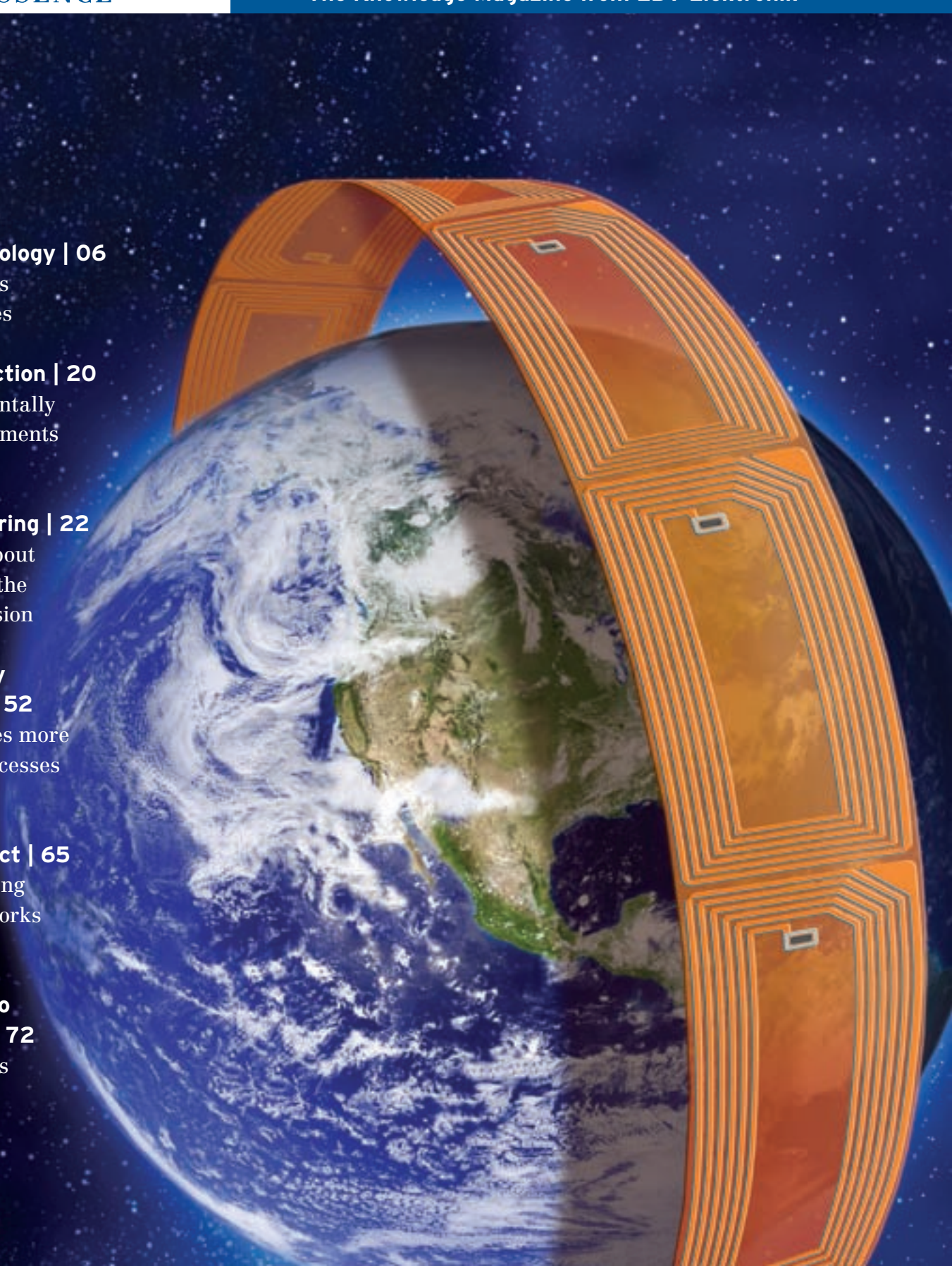
RFID ensures more  
efficient processes  
in hospitals

### **Demo project | 65**

Demonstrating  
how RFID works  
as a system

### **Looking into the future | 72**

RFID experts  
on trends in  
the industry





# The RFID boom is only just beginning!

Increasingly global flows of goods, more and more stringent product traceability requirements and the need for efficient production processes all demand an information system which can be used to identify deliveries and individual products reliably, but which can also be accompanied by individual data. RFID provides these options, and as a consequence, the market for RFID systems is booming. According to a study by IDTechEx, it will grow from a global 5.29 billion dollars at present to more than five times that amount over the next ten years.

Although the majority of reports is still about pilot projects in large companies, RFID is also a technology for small to medium-sized enterprises. This is borne out by figures from Germany, at least – according to the “RFID Report 2008” from the Institute of Information Technology and Society (Institut für Informatik und Gesellschaft) of the University of Freiburg, 26 per cent of small to medium-sized businesses surveyed are already using RFID, whilst a much larger proportion of companies consider RFID suitable for their business, but are still too reluctant to use this innovative ID technology.

This is where EBV, with its product portfolio and extensive network of partners, can play an important role. EBV applications specialists are currently determining the potential of an RFID application for smaller busi-



nesses, helping select the right components and collaborating with the user on producing a customized system solution.

The important factor here is the international presence of EBV in EMEA, making it possible to simplify and accelerate the flow of a company's goods across national borders using RFID.

Our RFID specialists receive continuous training in this and, if required, can also call on the expertise of our partners – component manufacturers and system houses.

We mediate in the necessary RFID technology and expertise and are also system suppliers with comprehensive solutions. Large companies benefit from

this, as do small to medium-sized enterprises for whom we can facilitate entry into RFID technology. This is the only way to ensure that the potential of RFID technology actually bears fruit and is successful in use for all those involved.

This is precisely what I hope for your RFID project – EBV would be delighted to help you with it!

Slobodan Puljarevic  
President & CEO, EBV Elektronik



# Editorial

## *Dear Reader,*

A chip in your arm opens the front door, replaces your keys and credit cards, gets you into the right clubs and, in an emergency, provides a doctor with immediate access to the necessary medical information. This is the image called up in many people's minds by the term "RFID technology" and for many, it is a nightmarish image which conjures up Orwell's "Big Brother".

This certainly isn't the complete pie in the sky, but the real benefit of RFID technology is in quite different fields.

In this edition of our knowledge magazine, we would like to introduce RFID and its wide variety of applications. Reports about the use of RFID in a hospital, in a retail environment and on Australian cattle farms illustrate the benefits and the improvements in processes. You can also find out about the technical principles on which it is based – and in the process, realize the breadth of this technology and its potential applications.

In high-level round-table discussions, experts from the RFID sector – users, researchers, manufacturers and consultants – throw light on the current state of the art and on the future development of RFID. It goes without saying that the issue of data protection is also covered.

One thing becomes clear: in most sectors, the time for RFID pilot projects is over, but there are still challenges ahead. These include making the benefits of this technology clear to end-users and thus promoting acceptance by the public. It is also important to create structures which enable small and medium-sized enterprises, too, to implement complex RFID projects in a sensible way. One thing is certain, however – RFID will be optimizing processes in more and more sectors and opening up completely new opportunities.

One really important thing: "The Quintessence" is intended for you – our readers and customers!

Your feedback, whether in the form of suggested topics for us to cover, criticism or queries, will help us continue developing the magazine. I look forward to hearing your opinions and ideas! You can contact me at [bernd.schlemmer@ebv.com](mailto:bernd.schlemmer@ebv.com).

Best regards,

A handwritten signature in blue ink, appearing to read 'Schlemmer', written over a light blue circular graphic element.

Bernd Schlemmer,  
Director Communications, EBV Elektronik

# Contents



15

**Round-table discussion  
on trends in the technology**



22

**Grant-aided by  
the European Commission**



»RFID makes work  
more interesting and  
rewarding.«

39

**RFID chip for Australia's cattle**

## Opening

2

### Market Overview

| 2

The RFID boom  
is only just beginning

### Editorial

| 3

RFID is opening up  
new opportunities

## Overview of RFID

6

### What is RFID?

| 6

Fundamentals of  
the technology

### 60 years old, younger than ever

| 9

History of RFID

### Reliable data transfer

| 11

Middleware as the  
bridge to the IT world

### Trends in RFID

| 15

Round-table  
discussion with  
leading manufacturers

### Secure handling of data

| 20

Data security, or the  
surveillance society?

### Perspective of the European Commission

| 22

Interview with  
"Mr. RFID":  
Dr. Florent Frederix

## Applications

### RFID in practice

| 27

Established areas  
and weird  
applications

### Welcome to a new shopping age

| 33

Application of RFID  
in the Metro Group's  
Future Store

### RFID for Australia's cattle

| 39

How RFID is making  
life easier for farmers



»If it enhances patient safety, RFID will be welcomed with open arms.«

52

Hospital applications



72

Round-table discussion on the future of RFID



78

RFID terminology

# Contents

27	Company and Products	63	Future of RFID	72	Good to know	78
<p><b>Entrance tickets with added value</b>   45</p> <p>Benefits for visitors and organisers</p> <p><b>Locking plan on an electronic card</b>   47</p> <p>Intelligent locking system thanks to RFID</p> <p><b>RFID in the hospital</b>   52</p> <p>RFID improves quality and cuts costs</p> <p><b>NFC technology</b>   58</p> <p>Uncomplicated, user-friendly communications with the Nokia NFC mobile phone</p>	<p><b>RFID - more than just a chip with an antenna</b>   63</p> <p>EBV offers solutions</p> <p><b>Inventory management with added value</b>   65</p> <p>RFID live in action</p> <p><b>Product Presentations</b>   68</p> <p>RFID solutions from: Atmel, NXP and Texas Instruments</p>	<p><b>A network of partners delivering added value</b>   72</p> <p>Round-table discussion with leading experts</p>	<p><b>Glossary</b>   78</p> <p>Key terms – shown in the text in italics – explained in brief</p> <p><b>Imprint</b>   82</p> <p><b>Picture credits</b>   82</p>			