

BioHealth and RFID

The third BioHealth newsletter addresses Radio Frequency Identification (RFID) and Near Field Communication (NFC) technology and its use in eHealth.

Safety and security standards are tightly bounded to the nature of these technologies. Awareness of Identity Management and supportive technologies like biometrics, are triggers for rapid deployment of significantly better, standard-based security solutions.

RFID and NFC hold the promise of improving patient care by reducing medical errors or by monitoring the supply chain of medication.

However, tagging raises a number of significant legal, ethical and psychological questions and one of the tasks of BioHealth is discussing benefits as well as limitations and threats. Particular attention is on involving the stakeholders in the discussion and communicating issues of general interest to the public.

Without a wide perception of RFID as sufficiently safe and secure device, all the technological benefits will be useless.

Technology

The **purpose** of an RFID system is to enable data - usually on the identity of an object- to be transmitted wirelessly using radio waves. The RFID tag has a unique serial number which is read remotely by an RFID reader and transferred to a processing device.

An **RFID tag** is a tiny radio device made of a microchip and an aerial usually surrounded by some material.

Passive RFID tags are small and inexpensive, but do not have good range; they store up to 128 bits of read-only data. They operate using power from the RFID transceiver.

Active RFID tags are larger, more expensive and battery powered. They offer a much better identification range and store up to 1 MB of data. Generally they are rewritable.

NFC technology is gaining increased attention through its adoption by the mobile communication industry. It enables simple and safe two-way interactions via wireless communication limited to literally touching

distance. A single NFC device either acts as a reader, or as a simulated RFID-Tag.

eHealth Applications

RFID tags may be used to

- » identify and verify a patient in an emergency setting
- » measure vital body parameters in chronically ill patients recording important medical data and directly transferring them to an electronic monitoring device
- » monitor senior citizens enabling them to continue living at home
- » track assets and equipment
- » control the administration of medical drugs and blood transfusions reducing medical errors in hospitals.

Concerns and Counteractions

RFID technology has been subject to controversy. The **main concerns** relate to privacy, and include

- » collecting and using personally identifiable information for other purposes or without the knowledge of the individual
- » lack of transparency
- » data mismanagement
- » linking private information to other private information
- » differing regulations in different countries concerning identifiers

Countermeasures include

- » securing RFID data by encryption and by transmission protocols
- » making the user aware of RFID tags
- » the short range of passive RFID tags allow the user to deactivate tags
- » apply the current privacy rules and ethical obligations

Did you know ?

The World Health Organization estimates that 10 per cent of drugs are forged.

The number of RFID tags delivered in the next 10 years is expected to be over 450 times the number delivered in 2006.

150 persons die in Europe every day due to a hospital acquired infection.

In Germany the average rate of medical errors is estimated to be around 5 percent.

BioHealth partners and RFID

IMA - www.ima.cz

IMA is one of the key eID/RFID system integrators in the Czech Republic. It addresses large and variable RFID based solutions for merged access, security and information systems.

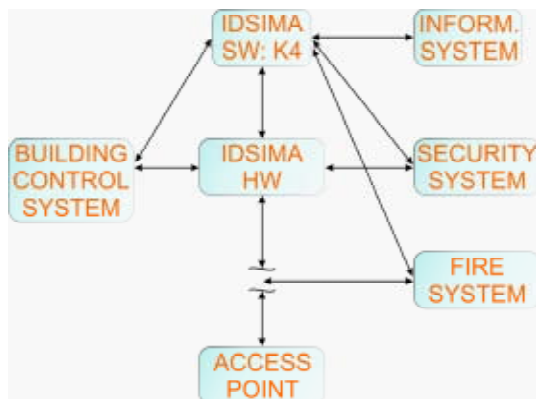


Figure: Setup in UVN

In the health sector the first mature applications of RFID are solving the logistics and support the physical security of premises. Ongoing roll-outs address patient security and safety and will dramatically improve the quality of the delivered care.

In UVN (Central military hospital) IMA implemented a unique access right management tightly bounded with security management of the hospital. Round 250 access points are controlled by IDSIMA4 achieving security clearance for strictly confidential level by National Security Agency.

EU RFID Forum

The EU RFID forum held in Brussels, March 13-14 2007 has been dedicated to RFID technology as enabler for ubiquitous identification of humans and things. Combined with internet facility the concept of „Internet of things“ was discussed. (<http://www.rfidconvocation.eu>)

Interesting Events coming up

June	12-13, 2007	RFIDSysTech07 - Workshop on RFID Systems and Technologies	http://www.mes.tu-darmstadt.de/fokusprojekt-rfid/html/workshop_2007.html
June	25-26, 2007	„RFID: Towards the Internet of Things“ - Expert Conference	http://www.nextgenerationmedia.de/Nextgenerationmedia/Navigation/en/rfid-conference.html
June	11-13, 2007	TTeC'07 - Telemedicine and eHealth Conference	http://www.telemed.no/index.php?id=371622
September	19-21, 2007	World e-ID 2007 - Electronic ID Management and Applications	http://www.strategiestm.com/conferences/we-id/07/index.htm

Standards

RFID Standardisation activity in Europe is dealt with in **CEN TC 225** and at international level by **ISO JTC1 / SC31 / WG2** and by **TG 34** of the European Telecommunications Standards Institute (**ETSI**).

Standards regarding RFID technology include **ISO 10536**, **ISO 14443**, **ISO 15693**, **ISO 18000**.

NFC (Near field communication) technology is gaining increased attention through its adoption by the mobile communication industry. It is based on the **ISO 18092** standard, evolved from a combination of RFID and short range interconnection technologies.

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- IBB-CNR – National Research Council of Italy
- IMA Ltd. – Institute of Microelectronic Applications
- ITS-Norway – Norwegian Association for Multimodal Transport Services
- eHCC – eHealth Competence Center, University of Regensburg

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