



Transport - track and trace with RFID and latest developments in barcoding

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RFID- Technical data

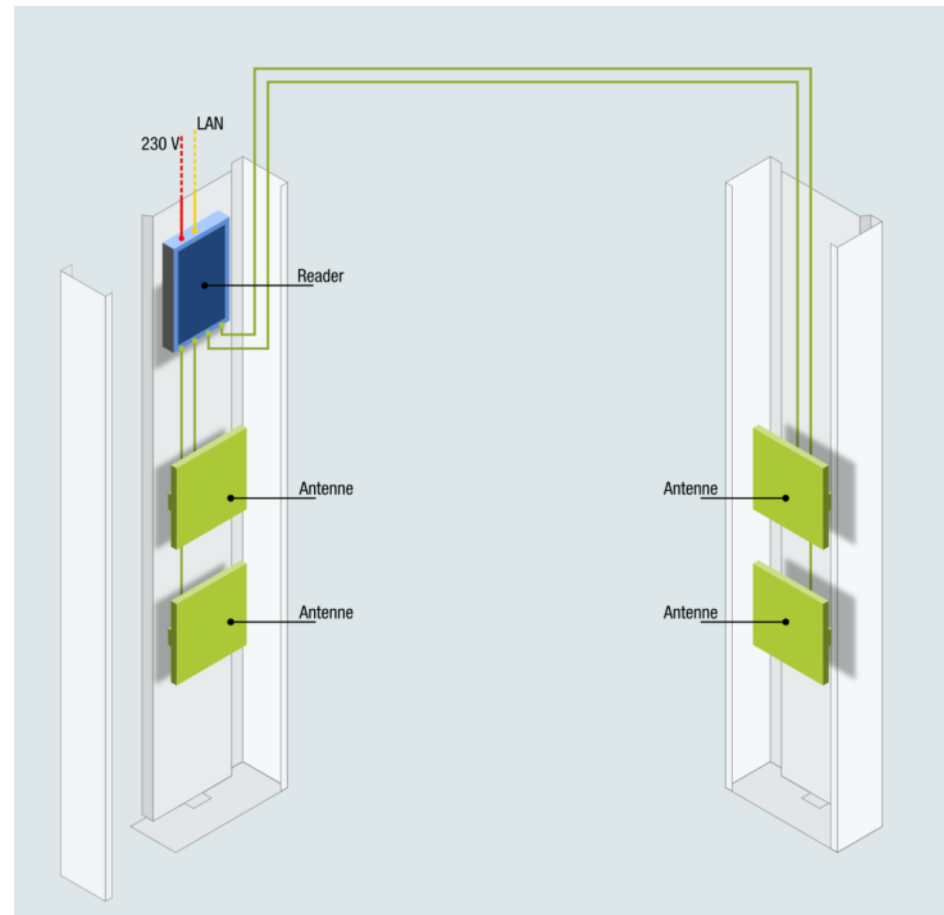
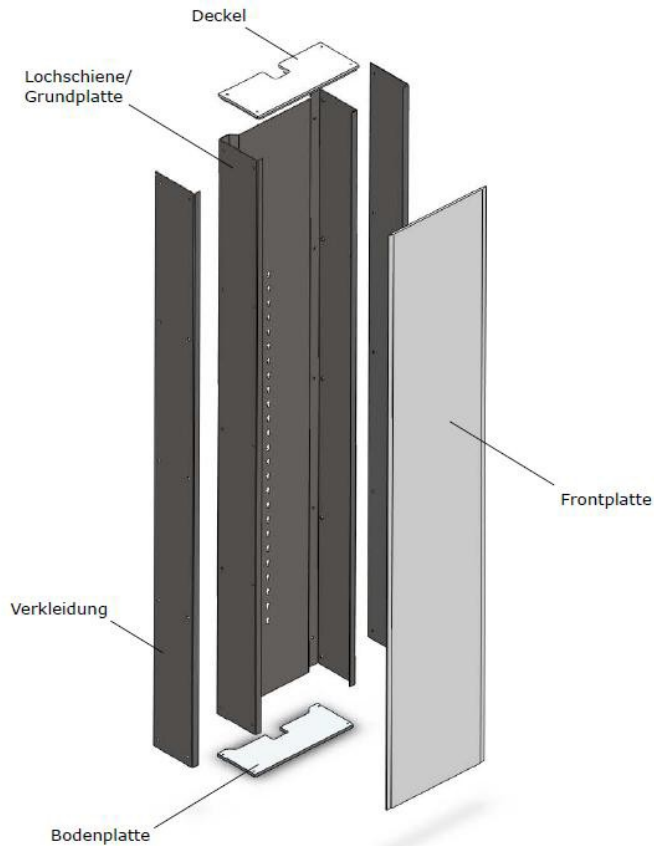
- RFID – Radio-Frequency Identification
- Uses non-contact identification through electromagnetic fields
- Different types of RFID



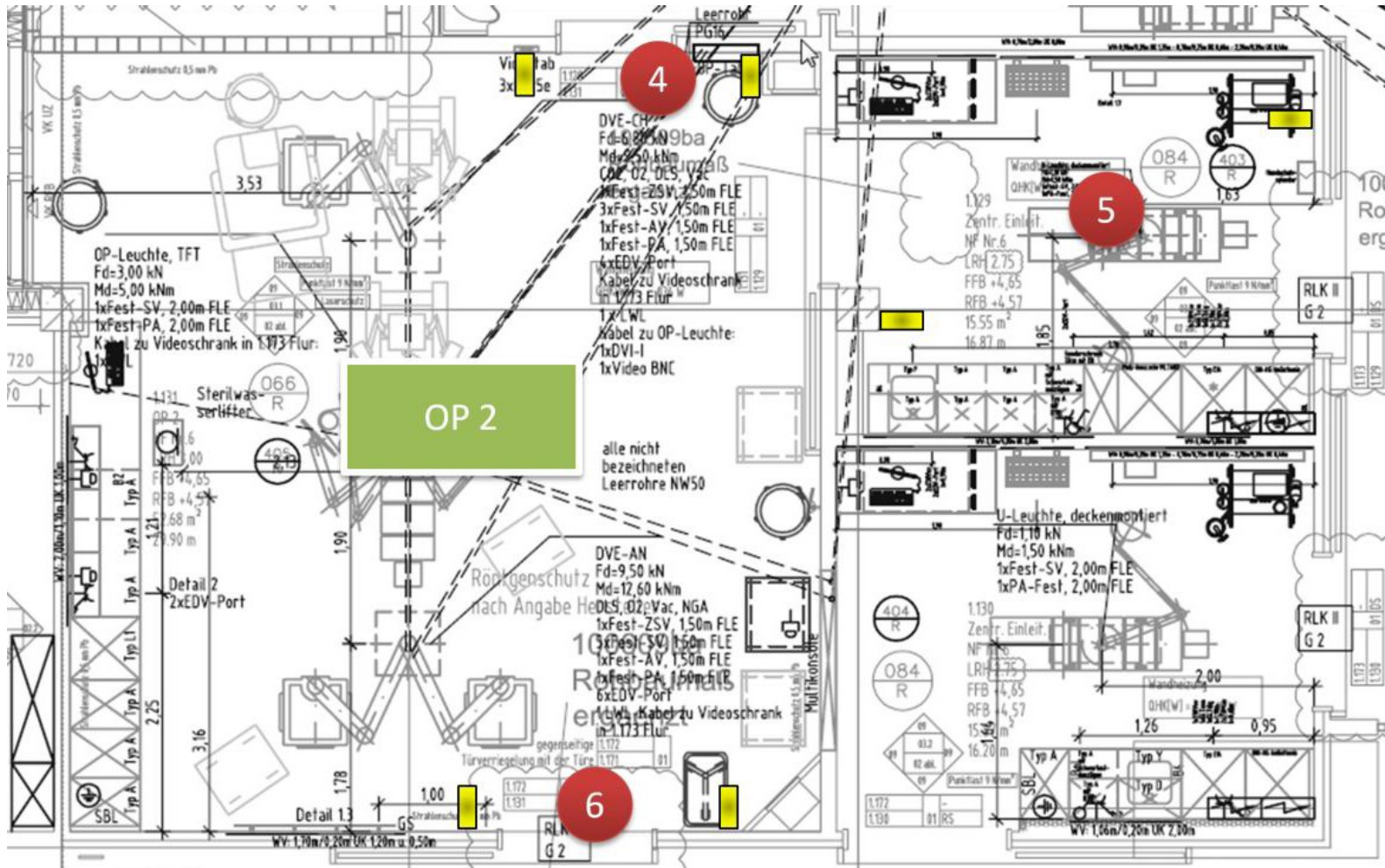
- Some do not require a battery (powered by electromagnetic fields)
- For identification the tag does not need to be within line of sight
 - but for optical control of the good you have to handle it anyway

Construction of RFID-Gates

Every gate is two meters high and needs a power and LAN connection



for high definition many gates are needed



RFID use as a protection from counterfeit medicines

- transparent distribution of medicines is one way to face counterfeit medicines
- RFIDs rewritable by pharmaceutical wholesale and pharmacists
- better copy protection than 2D- barcodes
- decrease of costs (42%) through new printing technology
- cost per package:
 - about 4,5 Cent for RFID-transponder;
 - 7,4 Cent for infrastructure;
 - costs for Database and scanner equivalent to 2D-barcodes
- suitable for expensive drugs and narcotic drugs

www.apotheke-adhoc.de/nachrichten/markt/rfid-statt-2d-code

RFID use in logistics of cytostatics

- since December 2011 pilot project in a cytostatics producing pharmacy
- objectives:
 - traceability of all components of the produced formulation
 - time savings whilst receiving the cytostatics
- information on the RFID
 - composition and origin of the used ingredients
 - Pharma central number (PZN), Lot-number and expiry date
 - no patient data
 - digital signature
- disadvantages
 - only ten tagged products available
 - risk of contamination in the air flow box (unlabelling required)
- planned: temperature supervision and a shock sensor system



barcoding

barcodes

- optical machine-readable representation of data
- distinction between **linear** (variation of widths and spacings of parallel lines)



or **Matrix (2D) barcodes** (arrangement of rectangles, dots, hexagons and other geometric patterns in two dimensions)



- advantages
 - simple
 - wide range of applications
 - low cost

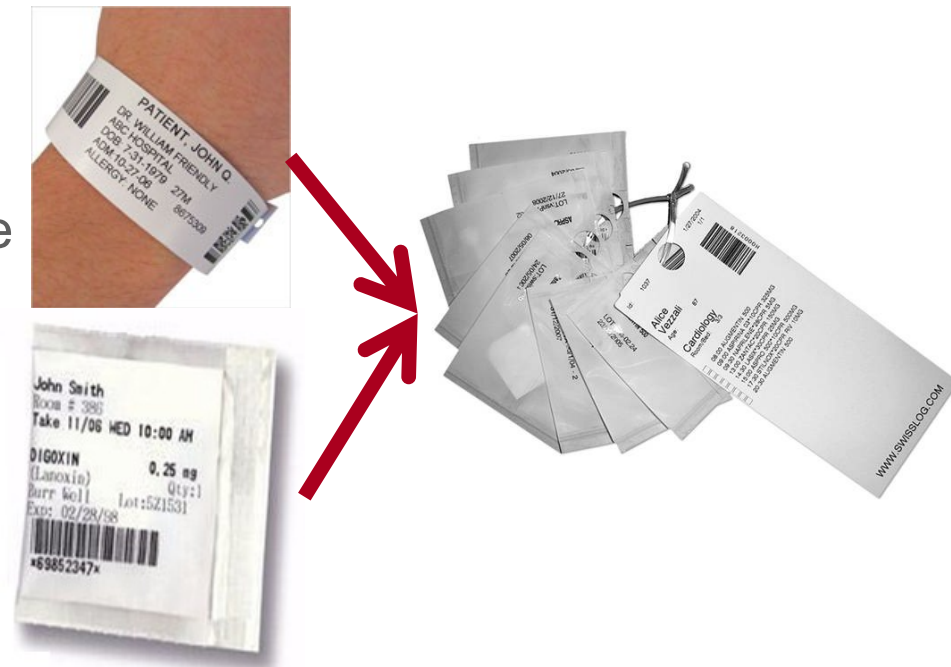
What can you do with barcodes?

- broad application possible
- differentiation between **use in logistics** (tag items like medication packages etc.)
and for patient's safety (identification of patients (including access data, medical history, drug allergies, etc.) and their medication)
- Auto identification and data capture (AIDC)
 - use of barcodes, radio frequency identification (RFID) and other machine-readable codes for capturing information about an item or process
 - aims
 - better vigilance
 - more effective device recalls
 - better facilitation of medical records

one information – one barcode?

- healthcare providers often use proprietary codes and systems
 - re-labelling required
 - incompatibility to others systems
 - more than one coding system on a package
- GS1 global Healthcare User Group
 - worldwide, voluntary and ‘open to all’ organisation
 - consists of more than 40 leading pharmaceutical and medical device companies and wholesalers, trade associations and healthcare providers
 - aims to enhance patient’s safety worldwide through accurate and standardised product identification.
 - for example: standardisation of EAN-Code (European Article Number) (parallel to Pharma central number (PZN) in Austria and Germany)

- Improvement of patient's safety through the connection of different barcoding strategies
- Right patient gets the right drug at the right time in the right dose
- A faultless technology?





Scan for safety

- Place: Universitätsklinikum Hamburg-Eppendorf, Germany
- Work flow:
 - Patient gets a wristband with an unique barcode on admission
 - Physicians prescribe medication at bedside using a wireless PC
 - The computerised physician order entry (CPOE) indicates potential side effects or drug interaction
 - Transmission of the prescription to the pharmacy
 - Ordered medication gets tagged with the patient's individual barcode and is delivered to the ward
 - Scanning of the patient's wristband and unit dose packs before medicines application

medication regimens as barcode

- general practitioner, clinic physician or pharmacist could create a patient's individualised, updated and printable medication regime
- advantages
 - different medical professions responsible for the correctness and up-to-dateness of this chart
 - easily transferable to own data system without loss of information by using barcode

Medikationsplan		für: Michaela Mustermann		geb. am: 13.12.1936			
Seite 1 von 1		erstellt von: Dr. Manfred Überall		Hauptstraße 55, 01234 Am Ort			
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				erstellt am: 12.01.2012			
Arzneimittel	Wirkstoff	Stärke	Darfo	Dosierung <small>(mg, ml, µg, Z.N.)</small>	Einnahmehinweise	Zeitraum	Behandlungs- grund
Ramipril STADA® N1	Ramipril	5mg	Tab	1 0 0 1	während der Mahlzeiten		Bluthochdruck
HCT-dura® 5mg N2	Hydrochlorothiazid	25mg	Tab	1 0 0 1	während der Mahlzeiten		Bluthochdruck
Plavix® 75 mg N1	Clopidogrel	75mg	Tab	0 0 1 1	während der Mahlzeiten		wt. Verschluss
Simvalip® 20mg N2	Simvastatin	20mg	Tab	0 0 1 1	nach der Mahlzeit		erhöhte Blutfette
I.m./i.v./s.c. Anwendung:							
Insulin B. Braun Basal	Insulin human			20E-0-10E	s.c.		Diabetes
Bedarfsmedikation:							
Corangin® Nitrospray	Glyceroltrinitrat				max. 3 Höbe akut		Herzschmerzen
Verinox® stark			Tab	0 0 0 1	bei Bedarf		Schlaflosigkeit

outlook

- Department of Health (UK) published report “Coding for Success”
 - question of identifying products and examples of the use of machine readable codes (i.e. patient wristbands)
- FDA is developing legislation for the mandatory use of unique device identifiers (UDIs)
- in US the law will probably require ‘the label of devices to bear an unique identifier’ to enable ‘identification through distribution and use’ and this identifier will include a lot or serial number.
- European Commission is developing a strategy for further action to combat counterfeit products and concerns for safe products in parallel trade.

Kreuzer M, Kreysa U. The automatic choice. the journal of the abhi



Thank you for your attention

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