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Logistics & RFID within Hospitals

Workflow optimization at a pediatric
intensive care unit (PICU)

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Approach

- Logistics within hospitals?
- Process optimization at a pediatric intensive care unit?
- Use of transponders? RFID?

Hows does that fit together?

How to approach this environment?

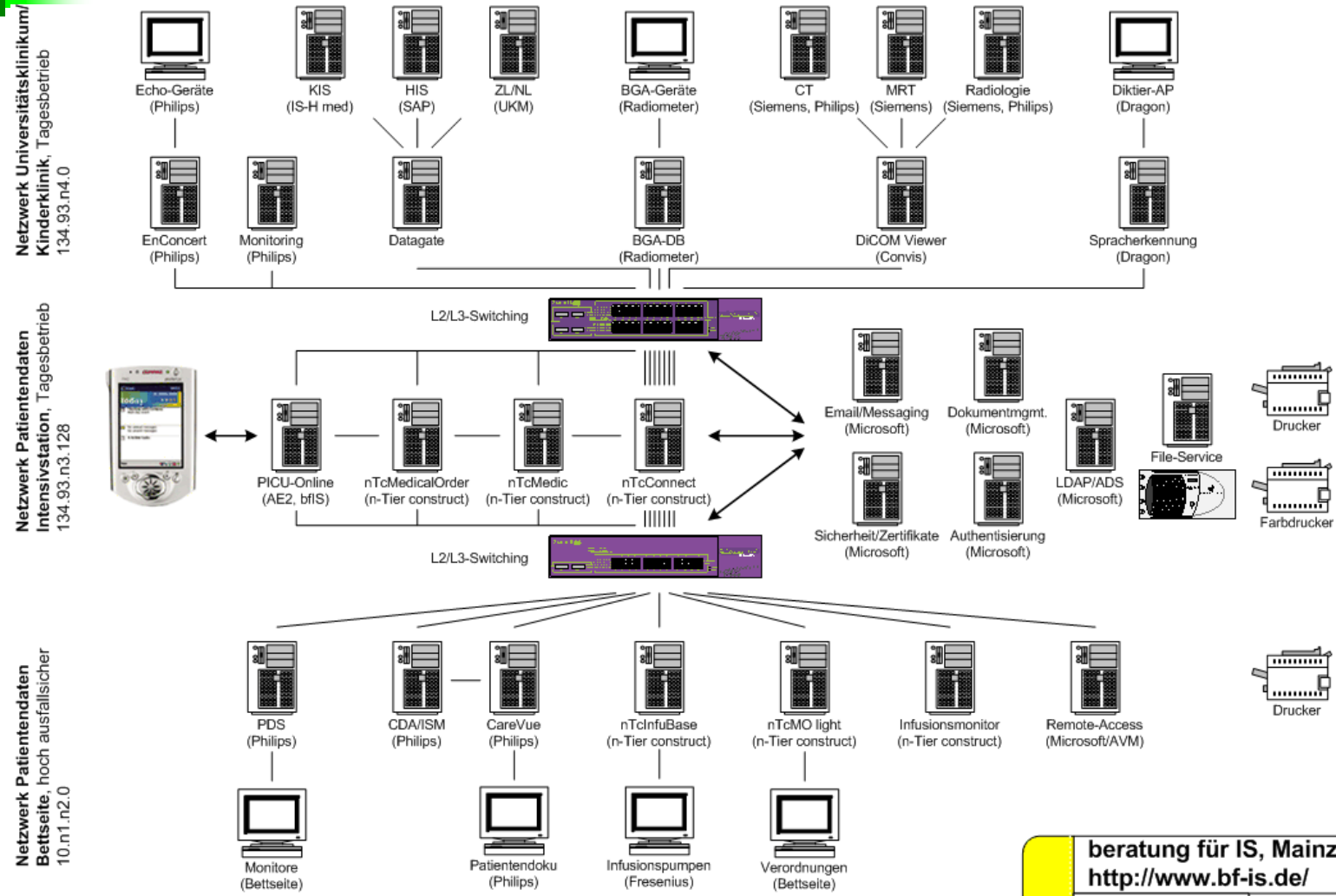
PICU Environment I

- Services are provided **by** at least three staff groups at the Point of Care:
 - physicians
 - nursing staff
 - administrative staff
 - ...
- Services are provided **to** at least three groups of „customers“ at the Point of Care:
 - patients
 - parents
 - relatives, friends and acquaintances
 - ...

PICU Environment II

- Characteristics of processes/workflows:
 - tightly meshed processes (e.g. nursing)
 - mostly multistaged workflows
 - often very complex processes (e.g. treatments)
 - often very strong time pressure
- Medical requirements (physicians/nursing staff):
 - fast and urgent need on information and documentation
 - focus on current, relevant and reliable information and documentation
- Administrative Requirements:
 - correct and consistent information on service details (e.g. costs and billing information)
 - very strict demands concerning data privacy

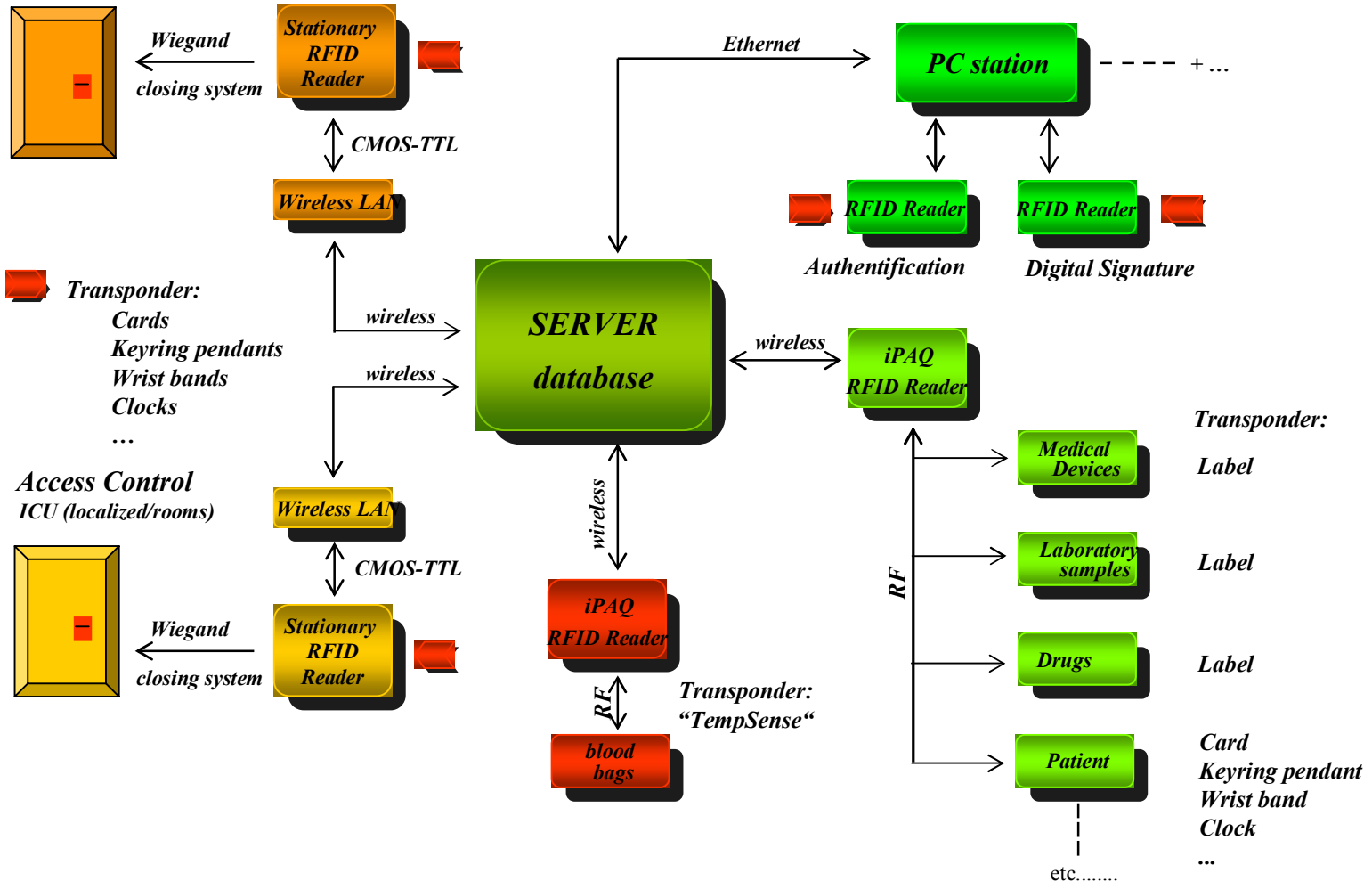
Coupling of PICU information systems



beratung für IS, Mainz	
http://www.bf-is.de/	
Kinderklinik, AE2 Uniklinikum Mainz	v 1.3 06.02.2002

Process support via RFID

Access Control to ICU via Hospital



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Use Cases of RFID Technology

Use cases

Identification/
“Labelling”

Authentication/
PKI/Security

Quality Management

Identification/“Labelling”



- Example: wrist bands
 - both, mother and baby, are connected by two wrist bands just from the moment of birth – a later mix-up is no longer possible!
 - unique identification of both mother and child within the medical documentation system – everytime and everywhere (PDA, iPAQ)
 - protection of the baby: using gate readers at the ICU entrances, the child can't be kidnapped

Authentication/PKI/Security

- Example: Medical staff
 - Authentication of all the different users occurs within the system infrastructure – only relevant and allowed patient data is presented to the user depending on context and user status
 - Data entry is related directly to the appropriate user identification
 - Medical data is highly encrypted before network transfer (e.g. WLAN transfer!)
 - Digital signature (e.g. prescriptions and orders) to avoid additional media breaks

Quality Management



- Example: Temperature Surveillance of Transport Chains
 - Active transponders attached to products allow to record temperatures during transport and storage of products
 - Pilot 1: Temperature surveillance of mother's milk until application to the baby (stationary and mobile components)
 - Pilot 2: Temperature surveillance of blood products during storage and transport (stationary and mobile components)

Summary

- RFID technology supports and simplifies even complex processes and workflows very well!
- Using RFID in combination with mobile information technology, medical staff can be supported with all the necessary and current information within each process (e.g. using a wrist band to identify patients)
- Medical documentation happens uniquely directly within processes and workflows, thus the medical staff wins valuable time to support additional processes
- Using a complete temperature surveillance, the risk of applying medical products can be minimized (e.g. temperature transponders)

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Project Partners



- PICU, University Hospital Mainz, Children 's Hospital, AE2



- ACG: RFID/Transponder



- ntc, Microsoft Certified Partner



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