

# Smart hospital – our experience

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# The pathway to “smart”

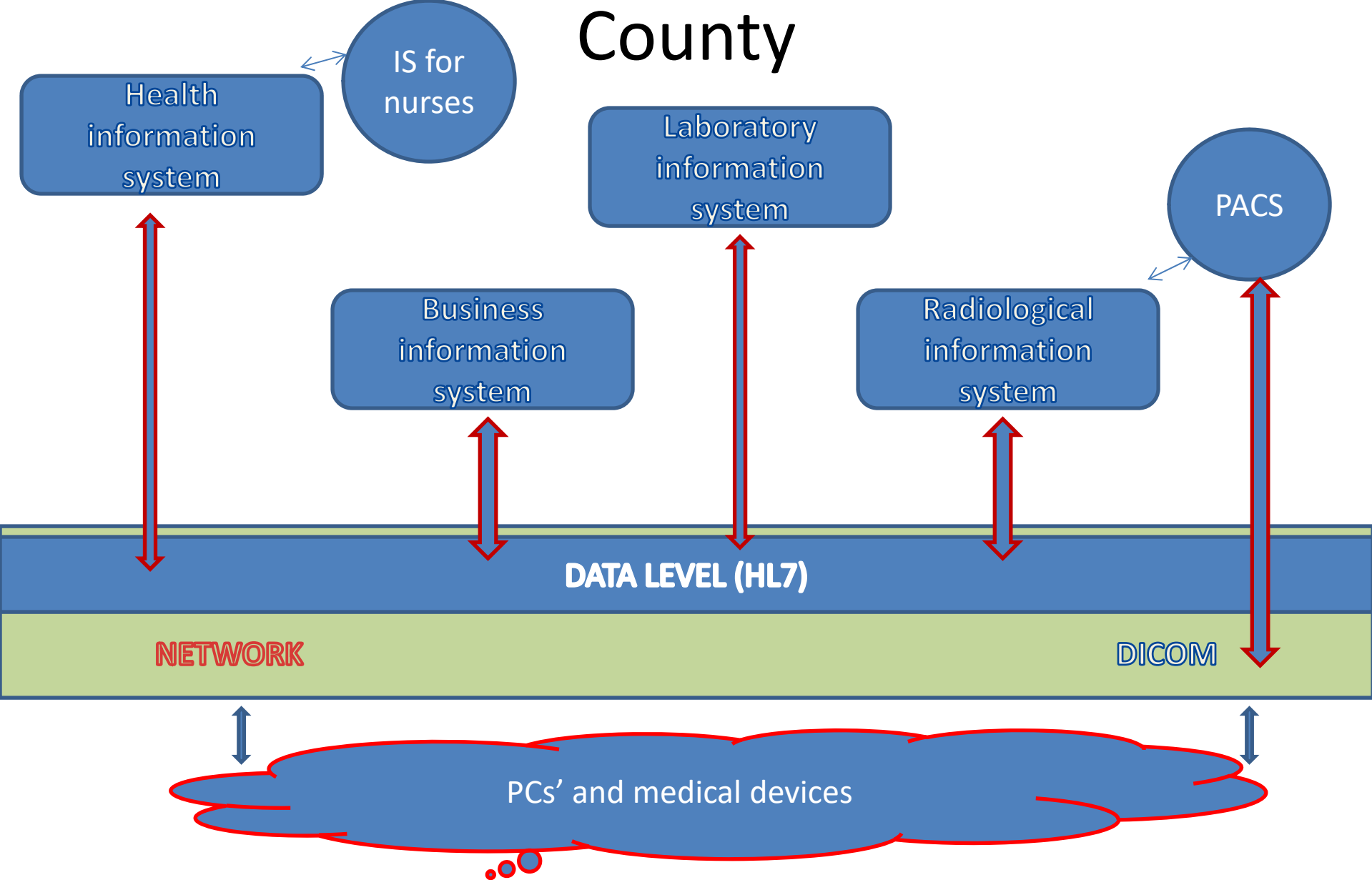
- ***How the Board see informatics***
  - Auxillary activity
  - Support to the Board in decisions bringing
- ***Do we have Informatization Strategy?***
  - *Infrastructure, vertical and horizontal communication (how do informatzation)*
- ***GAP analysis***
  - *Where we are, and where we want to be*

## **RESULT:** SMART hospital

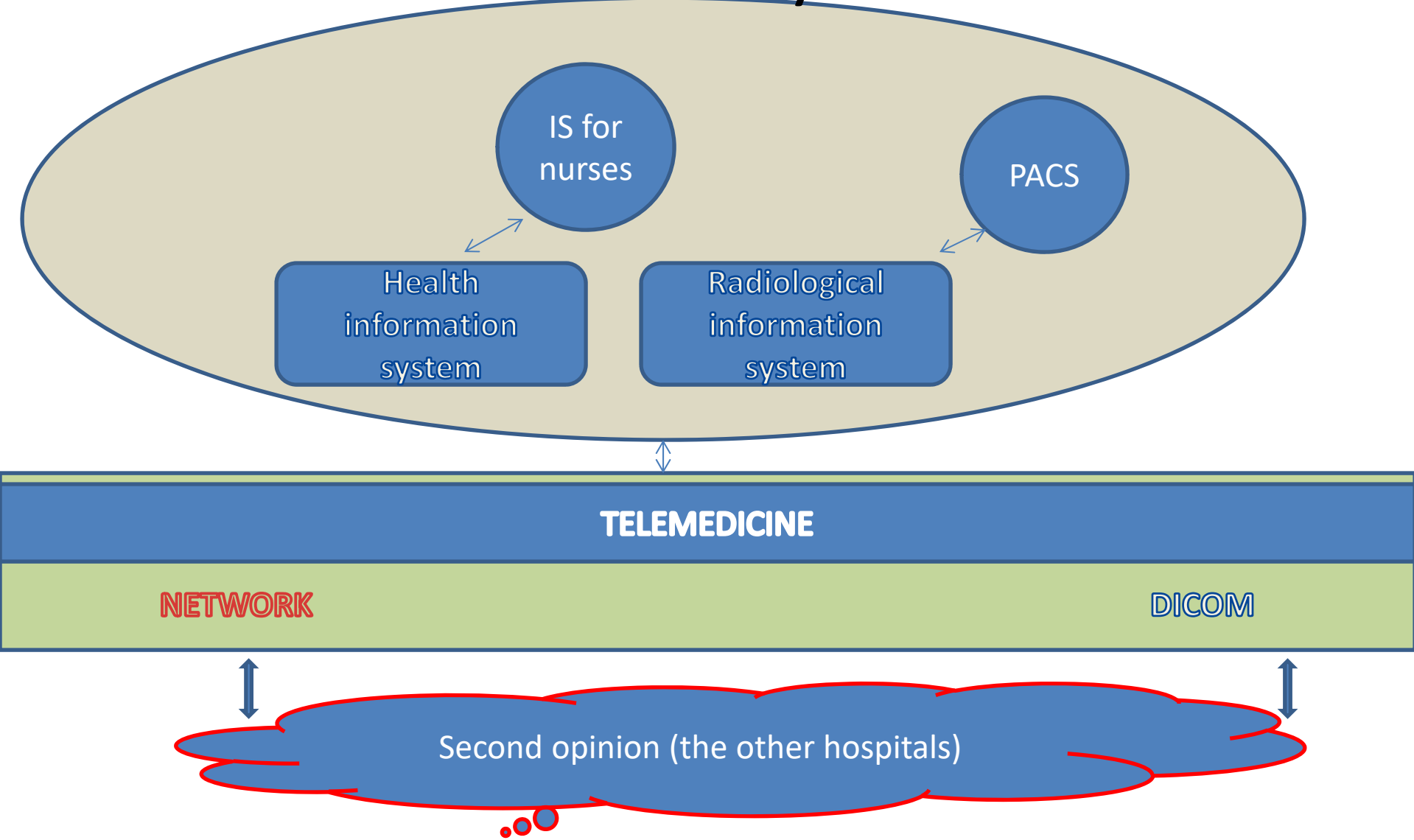
- Optimized and automated business processes
- Excellent ICT environment (network speed, information security, cloud computing, bigdata, IoT...)
- Very well educated people who work in

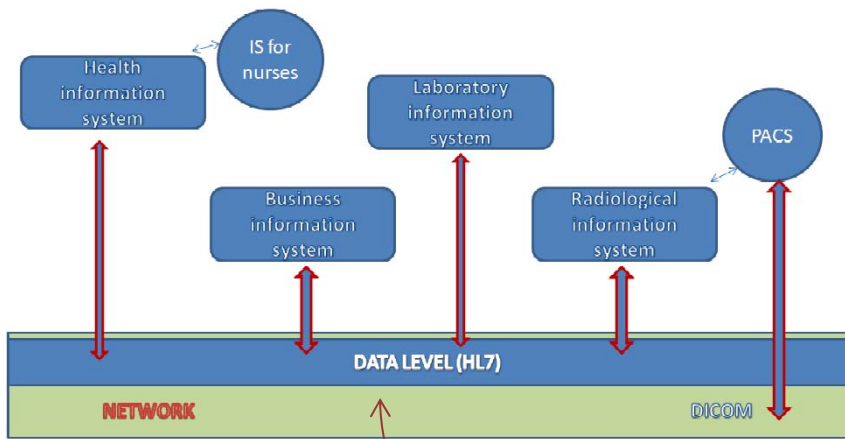
# General hospital of Koprivnica-Krizevci

## County



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Transaction system

Decision Support Sysytem



# Connection with CEZIH



E Health

E-prescription  
E-order  
E-newborn child  
E-learning  
E-findings



The goal:

EHR (Electronic Health Record)

# Are we smart?

- **Smart (intelligent) organizations** – hospitals in our case – have to looking for way of increasing their business processes, their capacity of learninig, they have to looking for a way of increasing competenties of eployees. If we have better proceesses, more competent employees, users of our services will be more satisfied. On that way, financial result will be better.

# Are we smart?

Smart is the fact that all of information systems are completely integrated among themselves. They mutually communicated on the data level with HL7 protocol.

The communication enables:

- Business processes improving (diagnostics are faster; for example doctor see on PC picture and finding of radiologist before patient came back him in ordination)
- Possibility of error is minimalized because of no rewriting
- Picture from radiological system or from colonoscopy and gastroscopy are in archive of patient instantly
- Efficiency of employees are improving – they can processed more patients in the same unit of time
- Data exchange are safer because autentification and authorization of every system user (ISO 27001:2013: ISO 9001:2015)
- Every night data from transactional information systems are copying on so called OLAP server; on that server we have set reports for top management
- Inside health information system we have so called archive in which doctors may see all events what happened with pacient; it is electronic health record of patient; for now it's only in hospital and we don't exchange it with other because the law forbid that; but technically it's possible



# Vertical connection

Everyday we must give information to HZZO about:

- Number of findings for every clinic and doctor
- About financial realization
- About list of waiting for some diagnostic or specialistic activity
- About key performance indicators (number of patients per doctor, availability of beds in stationary part, number of deaths, use of antibiotics ...)
- For every patient we are sending radiological and laboratory findings on CEZIH (doctor of family medicine always can accept findings from CEZIH)
- All this information we send automatically in background, without user intervention. We also connect with Office for Public Health. Automatically give them information so called statistical – patient forms.

# Vertical connection

- If our doctors aren't so sure in diagnosis they can ask another opinion via telemedicine (sending medical pictures).  
Telemedicine enables interactive lecture also. Medical stuff are in hall and actively listen and talk with lecturer who can be everywhere (so called *e-learning*).
- directly connected with so called Registrar's office. This modul enables registration of a newborn child very soon after birth. This modul is called *e-newborn child*.
- Our non-medical employees are communicated with service *e-citizen*. There we can carry out all things which is linkage with employment or which is linkage with certificates. Certificates are necessary for work with Central Financial Agency (so called FINA). We need that for payroll, length of service (for pension) etc..

# Conclusion

The goals are:

- EHR (Electronic Health Record) - some ethical questions about protection of content.
- Better protection of personal data (GDPR)
- Middleware between health information system and Ministry of Health (reporting of the same way from all hospitals – possibility of benchmarking)