



Advancing eHealth  
Interoperability

# eHealth Interoperability

## State of the Art in Serbia

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*ProRec Serbia*

Western Balkan Summit on eHealth interoperability  
Ljubljana, 3<sup>rd</sup> April 2014





1. eHealth – State of the art in the country
  - Health system in figures (number of citizens, number of physicians, hospitals, GP’s etc.)
  - eHealth in the country – overall achievements & challenges
  - Governing structure of eHealth – standardization bodies, standardization/interoperability coordinators
2. eHealth interoperability projects / cases in the country
  - Project domain, interoperability components (used standards, agreements etc.), level / scale of interoperability
3. Testing / certification activities in eHealth
4. Plans and Challenges



## Serbia & Health System in Figures

- **Serbia is a country in Central and Southeastern Europe**
- Population: **7,100,000**
- GDP (PPP) per capita: **\$10,911**
- The Health Care Expenditure in GDP: **6%**
  
- **354 Health Care Institutions**
- **120.000 employees**
- **4 clinical centers**
- **46 general hospitals**
- **158 PHC Centers**





# 1. eHealth in Serbia



## eHealth in Serbia - overall achievements & challenges (2)

**Dynamic development that begun in 2005 with the European Union and World Bank has resulted in the launch of several projects.**

- **Serbia Health Project – SHP (2005-2009)**
- **Serbia Health Project Additional Financing – SHPAF (2009-2012)**
- **Development of a Health Information System for Basic Health and Pharmaceutical Services in the Republic of Serbia - EHR Project (2005 – 2008)**
- **HIS IPA 2008 (2010 – 2011)**
- **Delivery of Improvement Local Services - DILS project (2009 – 2014)**
- **The Integrated Health Information System - EU-IHIS (2012-2015)**



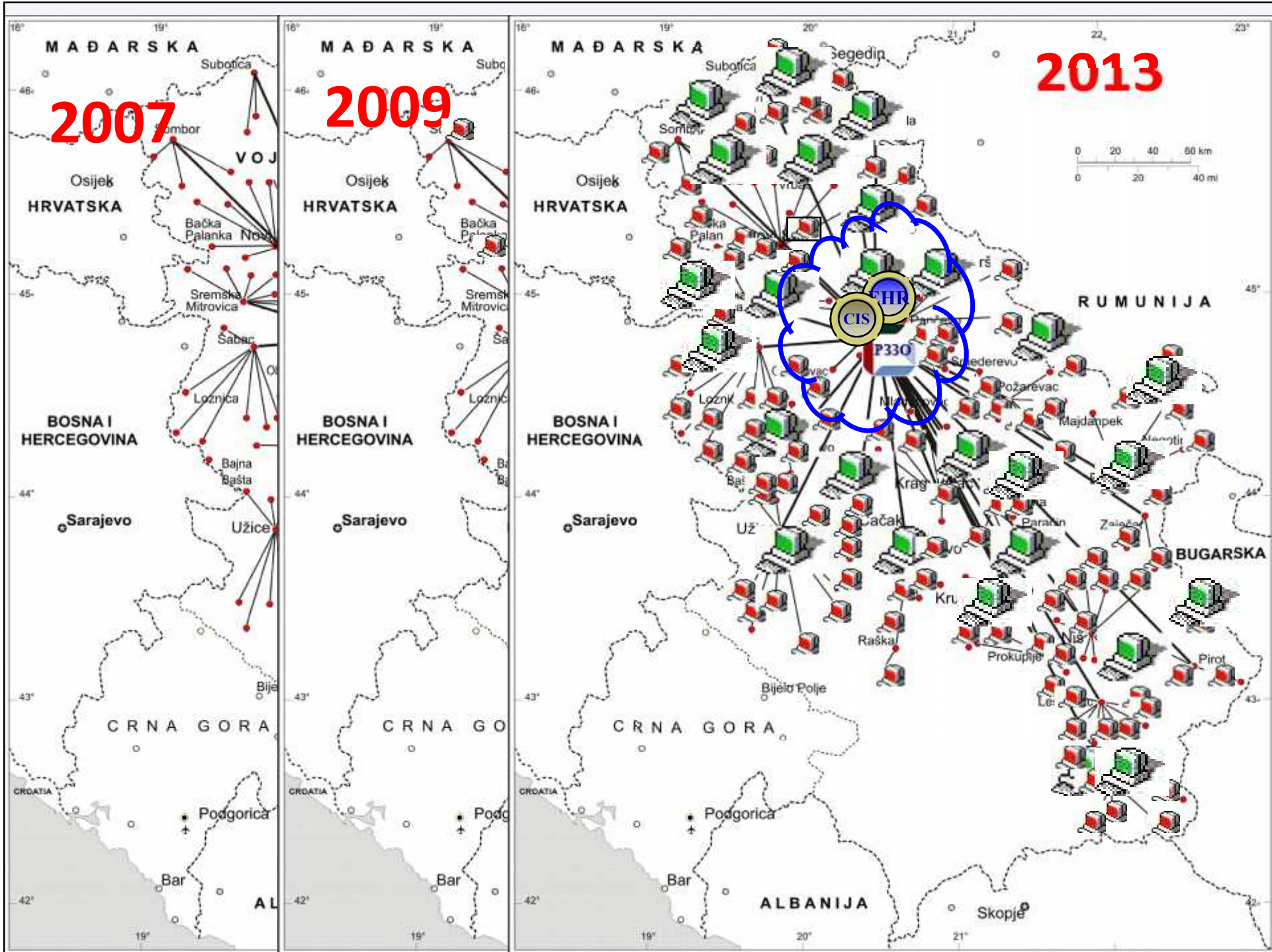
# 1. eHealth in Serbia

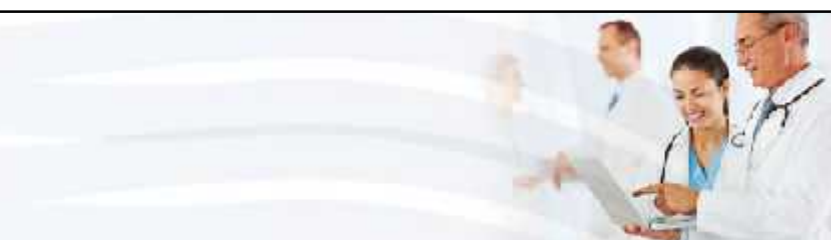


## eHealth in Serbia - overall achievements & challenges (2)

### ICT sub-components:

- Database of Insured
- WAN network for the Health Insurance Fund (connected 170 locations)
- WAN - Wide Area Network for healthcare system of Serbia (over 350 health care institutions were connected);
- Central Information Service (CIS) - resource database of health institutions, staff, medical equipment and coding systems;
- Information systems for all PHC centers (162 PHC Centers)
- Hospital Information System (HIS) for over 40 hospitals;
- Laboratory Information System (LIS) for 45 laboratories;
- Radiology Information System (RIS) and PACS for 6 hospitals;
- ISO 27000 - Information Security Management System (ISMS) implemented and certificated in General hospital in Zrenjanin.



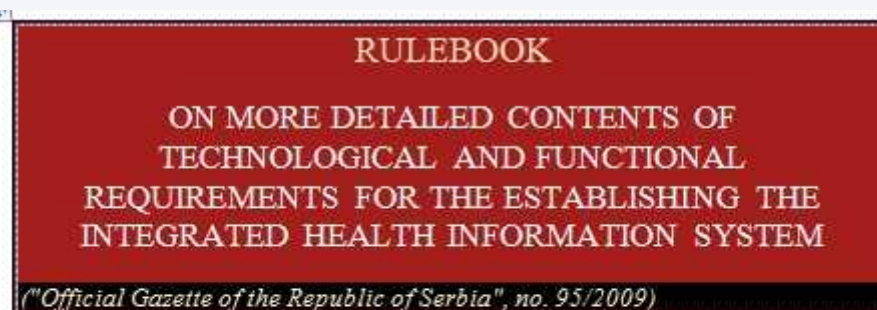


## eHealth in Serbia - overall achievements & challenges (3)

### Strategic documents

- **e-Health<sup>2015</sup>** - Programme of work, development and organization of the integrated health information system (July 2009)

- **IT Rulebook** - Rulebook on more detailed contents of technological and functional requirements for the establishing the integrated health information system (November 2009)



#### Article 1

This Rulebook shall prescribe more detailed contents of technological and functional requirements for the establishing the Integrated Health Information System.

#### Article 2

Technological and functional requirements for the establishing the integrated health information system (hereinafter referred to as: "the Requirements") have been defined in the Annex 1, Annex 2 and Annex 3, printed out along with this Rulebook and being an integral part thereof.



## eHealth in Serbia - overall achievements & challenges (4)

- **Cooperation with the Ministry of Defense**  
(established infrastructure for common health IT network )
- **Participation in international and EU projects**  
(EHR-Q -TN => EU standardization => 24 countries)



- **ProRec Serbia** full member of EuroRec Institute (2008)
- 3 SW solutions awarded with EuroRec Seal Level 2

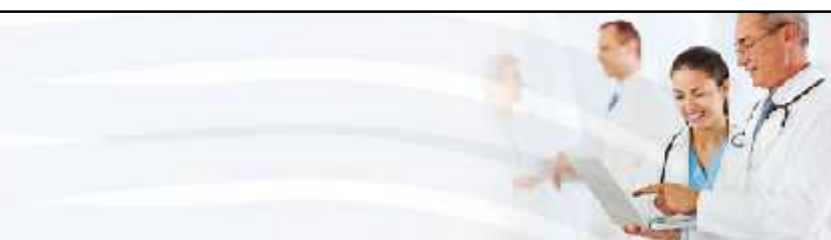
- **International conference „ EHR Systems Quality Labelling and Certification“**  
**Central and Southeastern Europe**  
(15 countries, November 2011)







# 1. eHealth in Serbia



## eHealth governing structures

### Currently:

- **IT Committee of the Ministry of Health => analysis of recent results ICT projects**
- **The Commission for Establishing the Integrated Health Information System => certification of software solutions in accordance with IT Rulebook**

### Next steps:

- **Agency/sector for health informatics in MoH – coordination of all ICT activities in eHealth**
- **eHealth Data Centre - central backup (remote backup), disaster recovery, hosting for EHR, CIS, screening, other services**



# Software Systems Certification in the Serbian Healthcare

## IT Rulebook

**RULEBOOK**

**ON MORE DETAILED CONTENTS OF TECHNOLOGICAL AND FUNCTIONAL REQUIREMENTS FOR THE ESTABLISHING THE INTEGRATED HEALTH INFORMATION SYSTEM**

*("Official Gazette of the Republic of Serbia", no. 95/2009)*

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**Article 3**

The requirements shall be considered fulfilled if the compliance of the software with the Requirements has been demonstrated and determined in actual environment (ambient), namely, in a health institution.

- The compliance of the software with the IT Rulebook is mandatory for existing SW solutions and for a new ones
- The main parts:
  - technical requirements
  - functional requirements for PHC and hospitals
  - coding systems
  - minimal data set



- 10 PHC SW solutions certificated
- 2 HIS certificated
- Interoperability of the System
- Support for management



### A link between Seal (EuroRec) & IT Rulebook (MoH)

IT Rulebook by MoH (EuroRec level 1)	EuroRec Seal – level 2	Status
10 SW solutions for PHC	2 SW solutions	Certificated
2 HIS – ownership by MoH	1 HIS – ownership by MoH	Certificated
	1 HIS – Slovenina SW for Serbian market	Certificated
6 SW solutions (PHC, HIS, LIS, DIS.)	2 SWs - HIS ownership by MoH - HIS (Montenegro)	In process



Република  
СРБИЈА  
МИНИСТАРСТВО  
ЗДРАВЉА

## СТАЊЕ СОФТВЕРА ПРИМАРНОЈ ЗДРАВСТ ЗАШТИТИ 2010. ГОДИНЕ



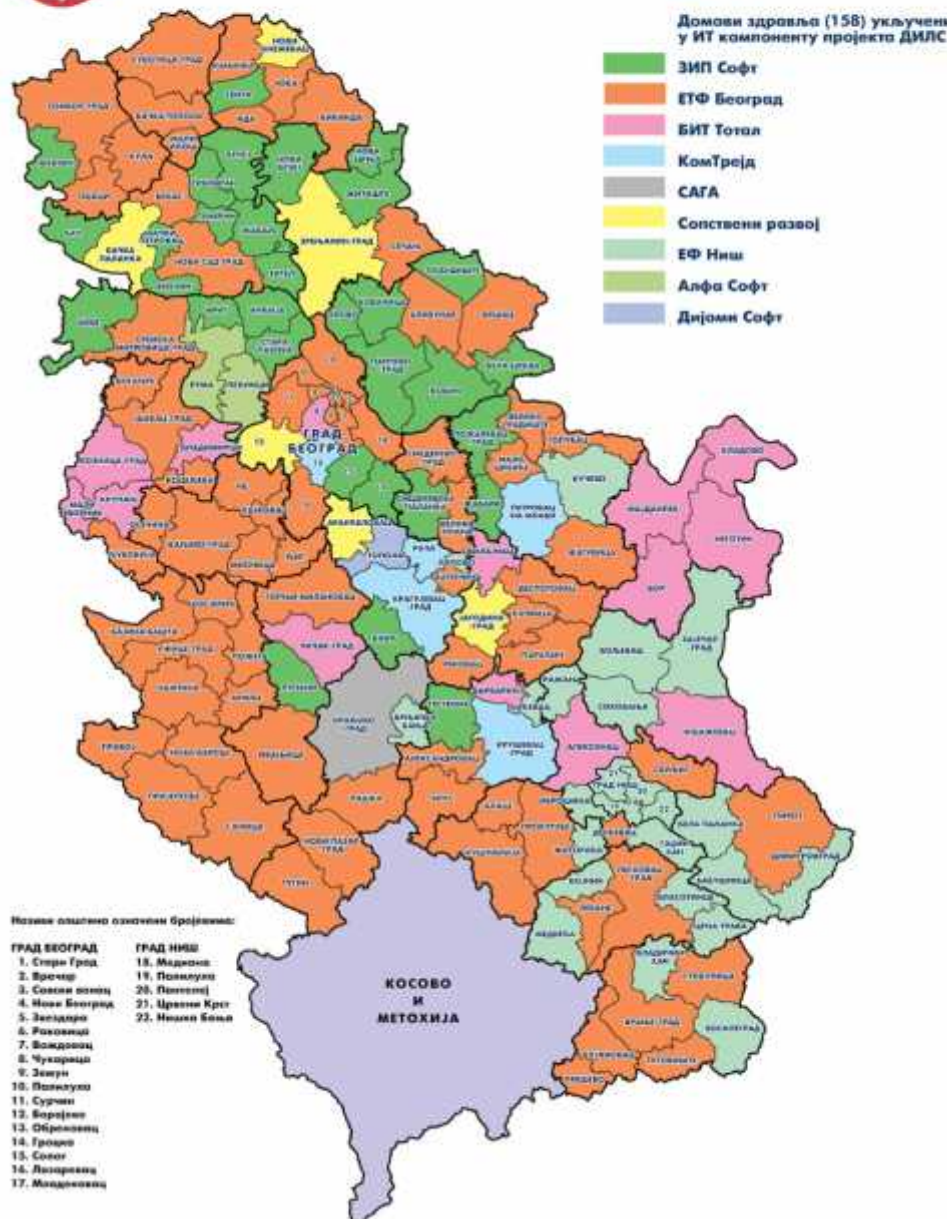
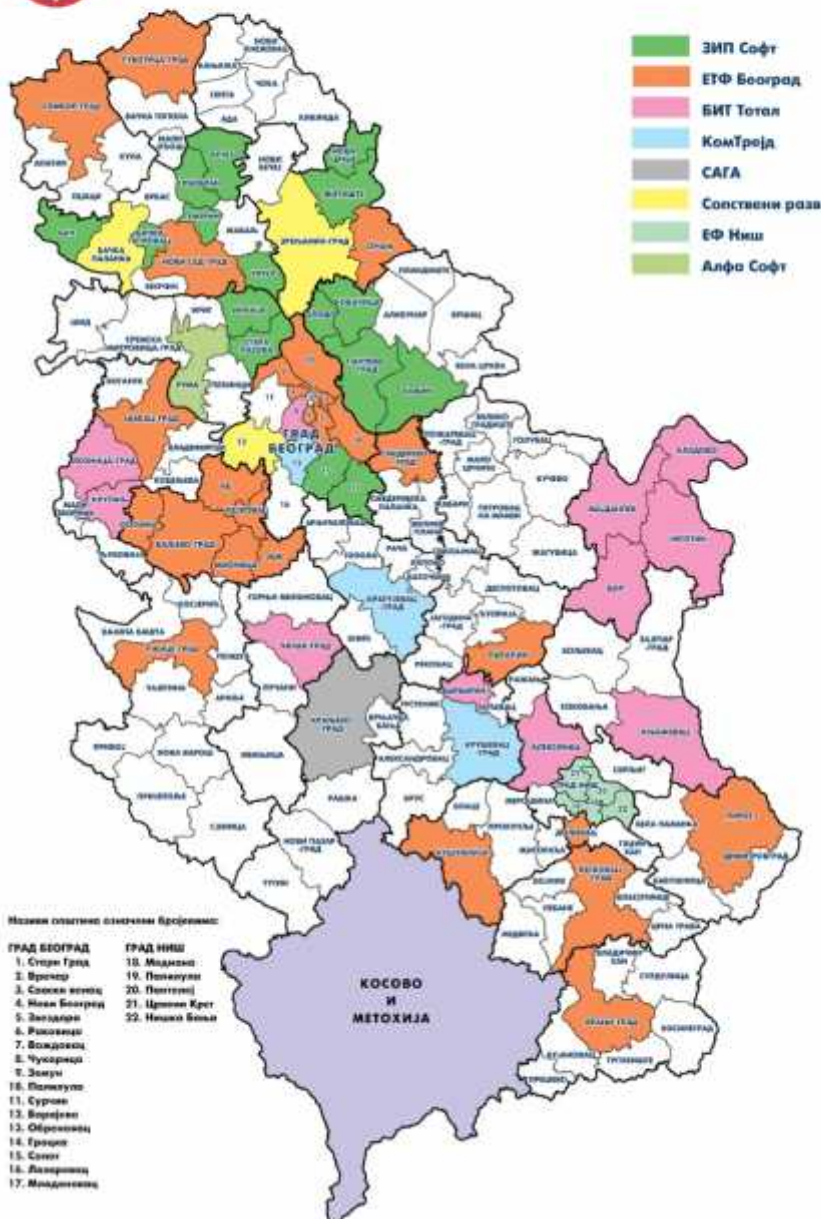
Република  
СРБИЈА  
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ЗДРАВЉА

# 2013

## ИМПЛЕМЕНТАЦИЈА СОФТВЕРА



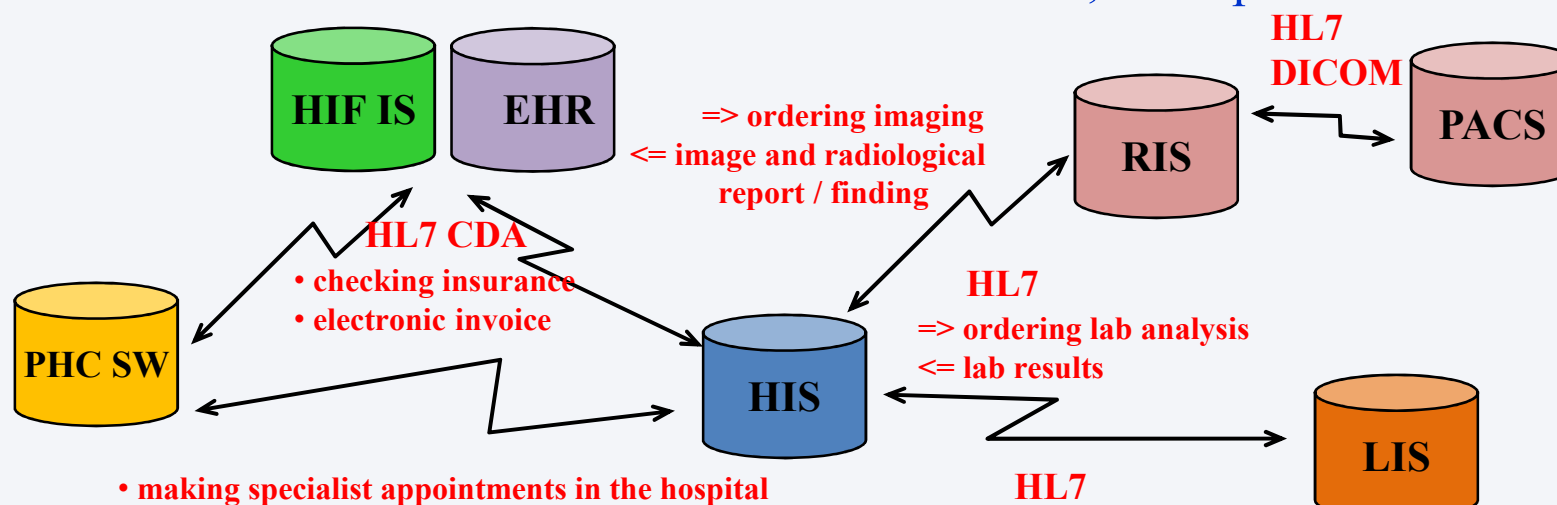
ПРОЈЕКАТ  
БРУЖАЊЕ  
УНАПРЕЂЕЊИХ УСЛУГА  
НА ЛОКАЛНОМ НИВУ





### Data exchange among different IS:

- **WS-\*** web services - checking insurance
- **xml** – electronic invoice - HIF
  - making specialist appointments in the hospital
- **HL7** – connection of LIS and RIS with HIS
- **HL7 CDA & RESTful web services** – clinical docs, EHR patient summary





## 2. eHealth Interoperability Cases / Projects



### Data exchange among different IS (2):

#### The whole system:

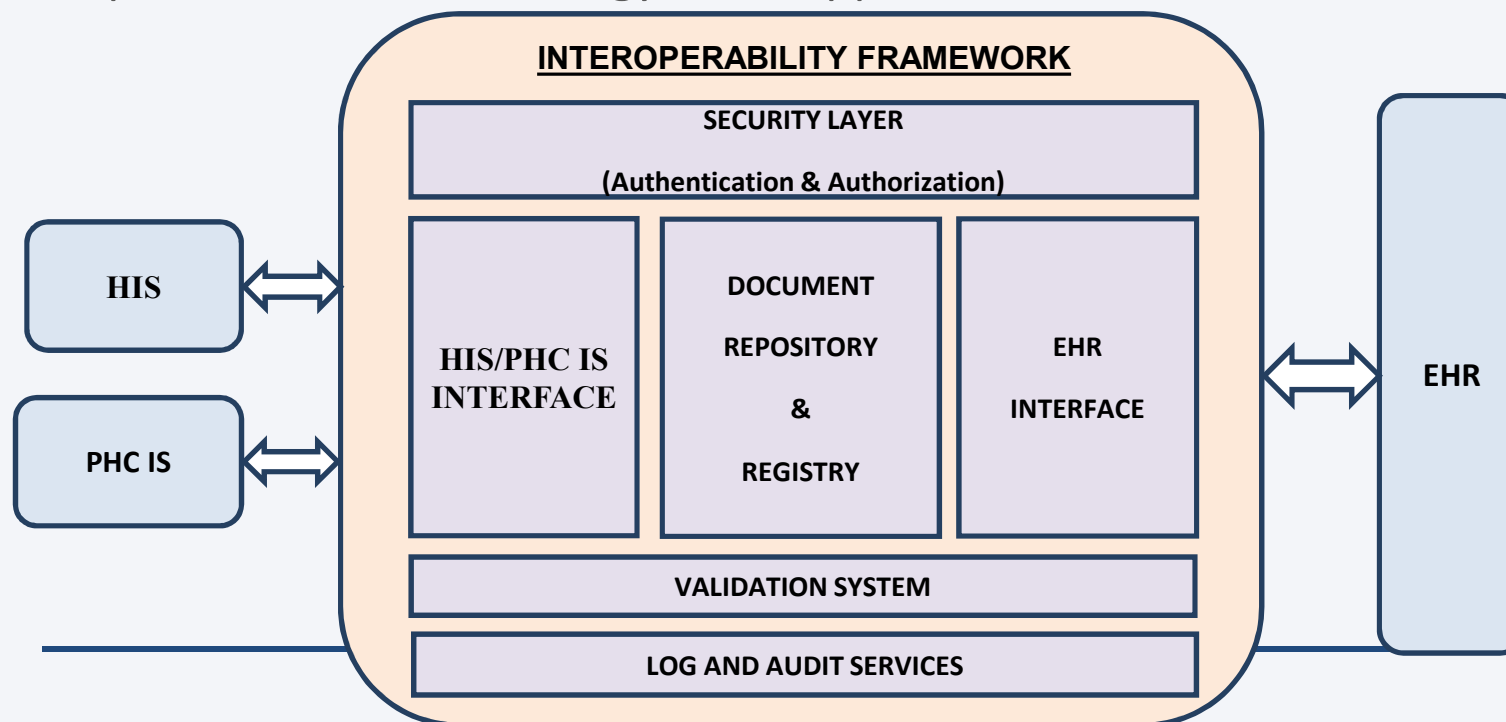
- checking insurance – all healthcare institutions with HIF
- electronic invoice – all healthcare institutions with HIF

#### Pilot components:

- making specialist appointments in the hospital => - all PHC Centers in Kolubara district with Valjevo hospital
  - PHC Center Novi Sad with Children's Hospital
  - PHC Vozdovac Belgrade with Clinical hospital centre “Dragisa Misovic – Dedinje”
- connection of LIS with HIS - all PHC Centers in Kolubara district with Lab in Valjevo hospital
- connection of RIS with HIS - PHC Vozdovac Belgrade with Clinical hospital centre “Dragisa Misovic – Dedinje”

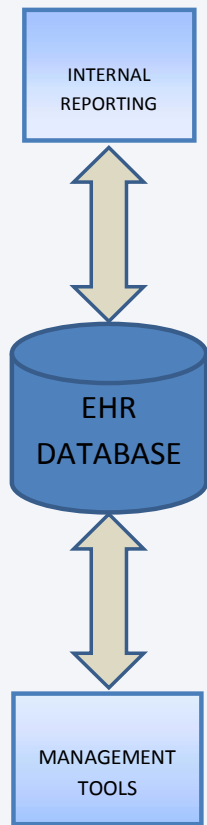


- Application of open standards, *Integrating the Healthcare Enterprise (IHE) interoperability framework (IHE-IF)* used as approach
- Facilitated connection of other components of IHIS and eGovernment
- Flexibility in components usage and linking of external modules, independent from technology and suppliers

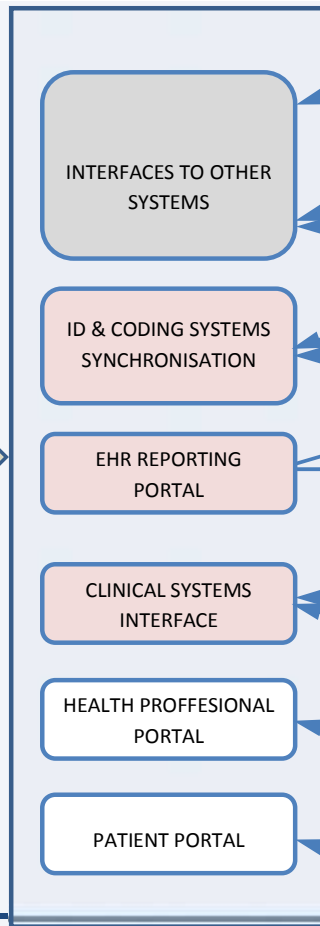




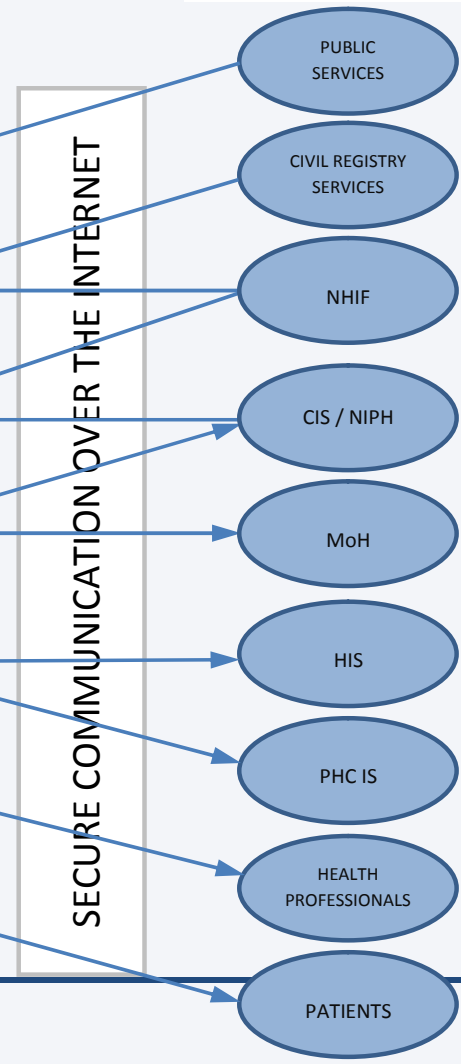
### EHR BACK END



### FRONT END ACCESS COMPONENTS



### USERS







## 2. eHealth Interoperability Cases /

Projects: EU-IHIS - <http://www.eu-ihis.rs/> Docs on EHR architecture, data, security, exchange...

The screenshot shows a web browser displaying the EU-IHIS website. The page features logos for the European Union, the Republic of Serbia, the World Health Organization, and UNOPS. A navigation menu includes Home, Project, Beneficiaries, Documents, Media, and Contact. The main content area is titled 'EHR System Architecture Overview' and is divided into 'Technical Documents' and 'Parties Involved'. Under 'Technical Documents', there are sections for 'Guidelines' and 'Architecture'. The 'Guidelines' section lists documents such as 'EU-IHIS Towards the Launch of EHR in Serbia - Consultancy Report' and 'EU-IHIS Metodološke smernice za uspostavljanje i održavanje baze podataka u zdravstvu'. The 'Architecture' section lists 'EU-IHIS Architectural Requirements and Assumptions for Serbian EHR'. The 'Parties Involved' section lists 'Delegation of the European Union to the Republic of Serbia', 'The Ministry of Health of the Republic of Serbia', 'World Health Organization', and 'United Nations Office for Project Services'. There is also a 'Highlights' section with a UNOPS logo and a 'Strategic plan 2014-2017'.



3<sup>rd</sup> April 2014

Western Balkan Summit on eHealth interoperability





## 2. eHealth Interoperability Cases / Projects



Medical domain	Project in country / status	Interoperability level	Interoperability challenges
1. Medication	eRecept ( <i>ePrescription</i> ) – in progress	national (pilot)	
2. Radiology	Screening for breast cancer - planned	national (pilot)	
3. Laboratory	Part of the EHR - in progress	National (pilot)	
4. Patient Summary	Part of the EHR - in progress	national	
5. Referral- and Discharge reporting	eZakazivanje (eReferral) - planned	national (pilot)	
6. Participatory healthcare			
7. Telemedicine	Regional hospitals with neighboring countries - pilots	cross-border	
8. Multidisciplinary consultation	planned		



## 4. Plans and Challenges



### Challenges:

- New Law on Records in Health Care and related by-laws.
  - Legal basis for collection of personal data (EHR etc.)
  - Establishment of responsibilities for electronic documentation processing and infrastructure, security and privacy monitoring
- Strategic guidance and IT development coordination in healthcare
- Establishment of the organizational framework for policy management related to development and application of IT in healthcare
- Ensuring sustainability of investing in ICT, and financing for maintenance and further development
- Central IT resources and services management



## 4. Plans and Challenges



### Next steps:

- Agency and/or the sector for health informatics in MoH – coordination of all ICT activities in eHealth
- e-Health Data Centre - central backup system (remote backup), disaster recovery, hosting for EHR, CIS, screening, other central services
- New version of IT Rulebook with new functionalities (EHR, LIS, ISMS, criteria from EuroRec level 2, ...)
- Continue the certification processes (IT rulebook and EuroRec seal)
- Further strong development of ICT – informatization of clinical centres and other health care institutions without IS, full implementation of the central integrative components: EHR, e-Prescription ... (national level)



### In the end:



#### **Highlights:**

- The basic pillars of the Integrated Health Information System (IHIS) were established.
- Information systems were implemented in all PHC (158+4 institutions).
- Standardization of software solutions in accordance with the IT Rulebook is the base for improvement of the Integrated Health Information System.
- Managers in health care institutions are fully aware of importance of informatization, and their trust in IT activities of the Ministry is one of the biggest achievements of previous projects.