



Advancing eHealth  
Interoperability

# eHealth Interoperability State of the Art in Slovenia

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





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



## Slovenia & Health System in Figures

Expenditures on Health: **8,9% GDP<sup>1</sup>** or **2421 USD per capita<sup>1</sup>**

**2,5 practising physicians** per 1000 inhabitants<sup>1</sup>  
ca. **5200 physicians** (21% general, 76% other specialities)<sup>1</sup>

**4,6 hospital beds** per 1000 inhabitants<sup>1</sup>

Life expectancy: **80,1 years<sup>1</sup>**

Population: 2.055.527<sup>2</sup>  
Area: 20.237km<sup>2</sup>

<sup>1</sup>OECD Health data 2013

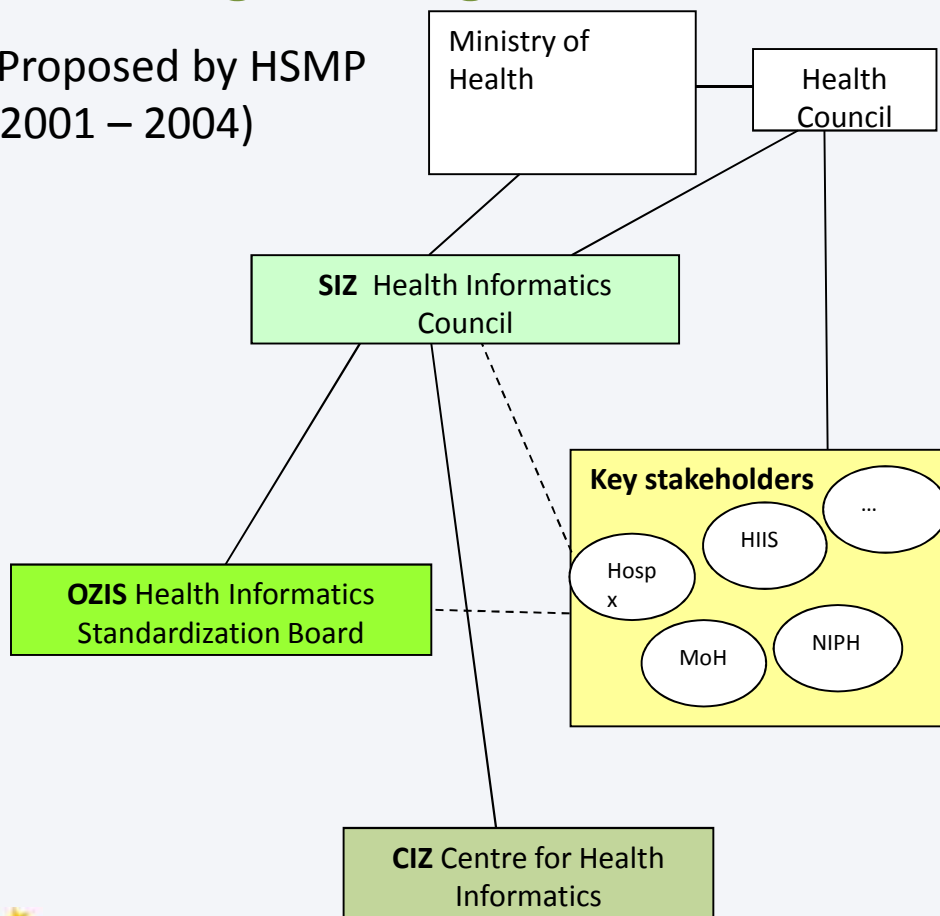
<sup>2</sup>SI – STAT (30. 7. 2012)





## eHealth governing structures

Proposed by HSMP  
(2001 – 2004)



SIZ – management of key stakeholders

- preparation & execution of national strategic plan on health informatics

OZIS – representatives of key stakeholders dealing with standardization

- SIZ & OZIS established in 2006
- worked with pause till 2011 / 2012
- CIZ was not established



Medical domain	Project in country / status	Interoperability level	Interoperability challenges
1. Medication	eRecept ( <i>ePrescription</i> ) – April 2014 (mass deployment) eRCO ( <i>Immunization register</i> ) - May 2014 (user training)	national	National Medication Database Adapting legacy systems
2. Radiology	Teleradiologija (national teleradiology portal) – application in use (challenge: payment system)	national	radiological examinations code list (for ordering)
3. Laboratory	LabPoštar – electronic exchange between hospitals and microbiological laboratories – in use in hospital Novo mesto	national (pilot)	Set of possible microbiological tests for ordering
4. Patient Summary	epSOS (pilot) – 2011 - 2013 PPoP (Patient summary) - planned	international national	legal issues, translation & mapping use of OpenERH archetypes

## 2. eHealth Interoperability Cases / Projects



Medical domain	Project in country / status	Interoperability level	Interoperability challenges
5. Referral- and Discharge reporting	eNaročanje (eRefferal) – July 2014 deployment Odpustno pismo v pdf (Discharge reporting) - used	national	Set of possible services / interventions for ordering
6. Participatory healthcare	zVEM (gateway) - planned	national	
7. Telemonitoring	United4Health (2013 – 2015)	international	
8. Multidisciplinary consultation	Telekap (TeleStroke) <i>Internist consults a neurologist</i> – in progress	national	
9. “infra - & info-structure”	Health insurance card, zNET (April 2013, upgrade - October 2014), IH (Interoperable backbone) (in use)	national	



Medical domain	Project in country / status	Interoperability level	Interoperability challenges
10. other MoH - eZdravje	eKnjiga (eBook ICD-10-AM) <i>Book with hyperlinks for coding purposes of diseases and interventions – in progress</i>	national	translation
	Referenčne ambulate (Reference outpatient clinics) – <i>quality indicators for cronical diseases monitoring – in progress</i>	national	to standardize quality indicators
	eTriaža (eTriage) – Manchester protocol – <i>in progress</i>	national	
NIPH	Redesign of hospital & outpatient activity reporting	national	common terminologies
	new IT solution for reporting communicable diseases & illicit drug us	national	
	PARENT Joint Action (interoperable patient registries across EU)	international	
	EXPAND: planning sustainability of European IOp assets	international	





## 2. eHealth Interoperability Cases / Projects



### IH (interoperabilna hrbtnica) – interoperable backbone

- responsible for Technical interoperability
- provides exchange of documents and data in electronic form & short term storage only for exchange purposes
- part of national health IS
- enables linking of registered healthcare providers
- unified system for common use and exchange of documents among healthcare providers
- defines and uses standards and protocols (eg. IHE, OpenEHR, HL7/CDA)

**10** healthcare providers fully connected (50 with signed agreement)

Number of exchanged documents:

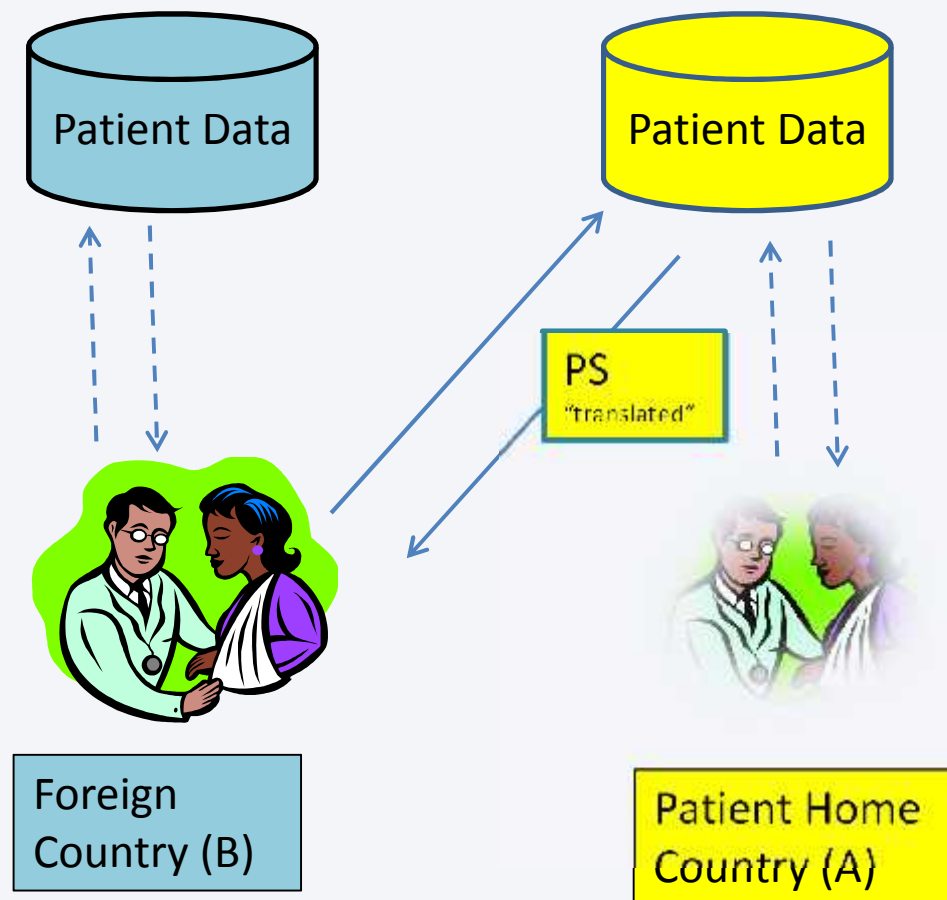
**159.000** outpatient exams

**36.900** discharge letters



### epSOS (NIPH & MoH)

- Slovenia participated in exchange of Patient summaries as country A & B
  - Definition of Slovenian PPOp (Slovenian Patient summary)
    - mapping of slovene data values into epSOS data values
    - translation of epSOS data fields into slovene
- Use of IHE PCC profile, international code lists (ICD, SNOMED, LOINC, ...)
- epSOS **National Contact Point** successfully implemented





## 2. eHealth Interoperability Cases / Projects



Project REPORTING DATA OF HEALTHCARE SERVICES to the Slovenian Compulsory Health Insurance (HIIS)

- performed 2011-2013, solutions implemented on 1 Jan 2013
  - New dataset and XML data structure for reporting
  - Introduced to all Slovenian healthcare providers
  - New ways of data exchange: Web services, Web portal
  
- Healthcare providers adopted their information system to new reporting rules



## 3. Testing / Certification Activities in eHealth



### 1. zNET & IH (interoperable backbone) certification

- certification of end points (health provider site) – assessment of systems to be compliant with Personal Data Protection Act & health net security requirements (defined in project eZdravje)
- Healthcare provider (end point) performs assesment as self evaluation & signs a declaration of conformity

### 2. euroREC Seal 2 certification

- assesment of EHR IS upon 50 EUROREC criteria
- Functional interoperability (what a system should have, not how it is implemented) – for example: **“The system supports the use of clinical coding systems, where appropriate, for data entry of health items.”**
- **3 SW providers from Slovenia have 8 certified EHR IS**, more “in the pipeline”



## 4. Plans and Challenges



- There is a plan to certify health IS to be “eZdravje compliant” in the future
- There is a need for close and coordinated collaboration of all players in the field of eHealth in Slovenia – also to integrate knowledge
- There is a need for standardization activities – common terminologies, national data sets, national coding lists, ...



### Key success factors (from HHS praxis)<sup>1</sup>:

- Clear business and technical instructions for healthcare providers and SW companies.
- Use of national coding schemes and
- Testing data, testing system.
- Testing scenarios.
- Technical support.
- Project database on the web (Q&A).
- Automated testing solutions, reporting testing results to healthcare providers and SW companies.
- Monitoring solutions in production environment.

<sup>1</sup> Author: Tomaž Marčun



Many thanks for information on current state in Slovenia for this presentation goes to:

- Katarina Kralj (MoH)
- Matic Meglič (NIPH)
- Tomaž Marčun (HIIS)
- Drago Rudel (MKS)
- Leo Ciglencečki (Prorec.SI)

