



Ministry  
of Health

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ADRI HEALTH MOB

# Implementation of eHealth in Croatia

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## ICT & HEALTH

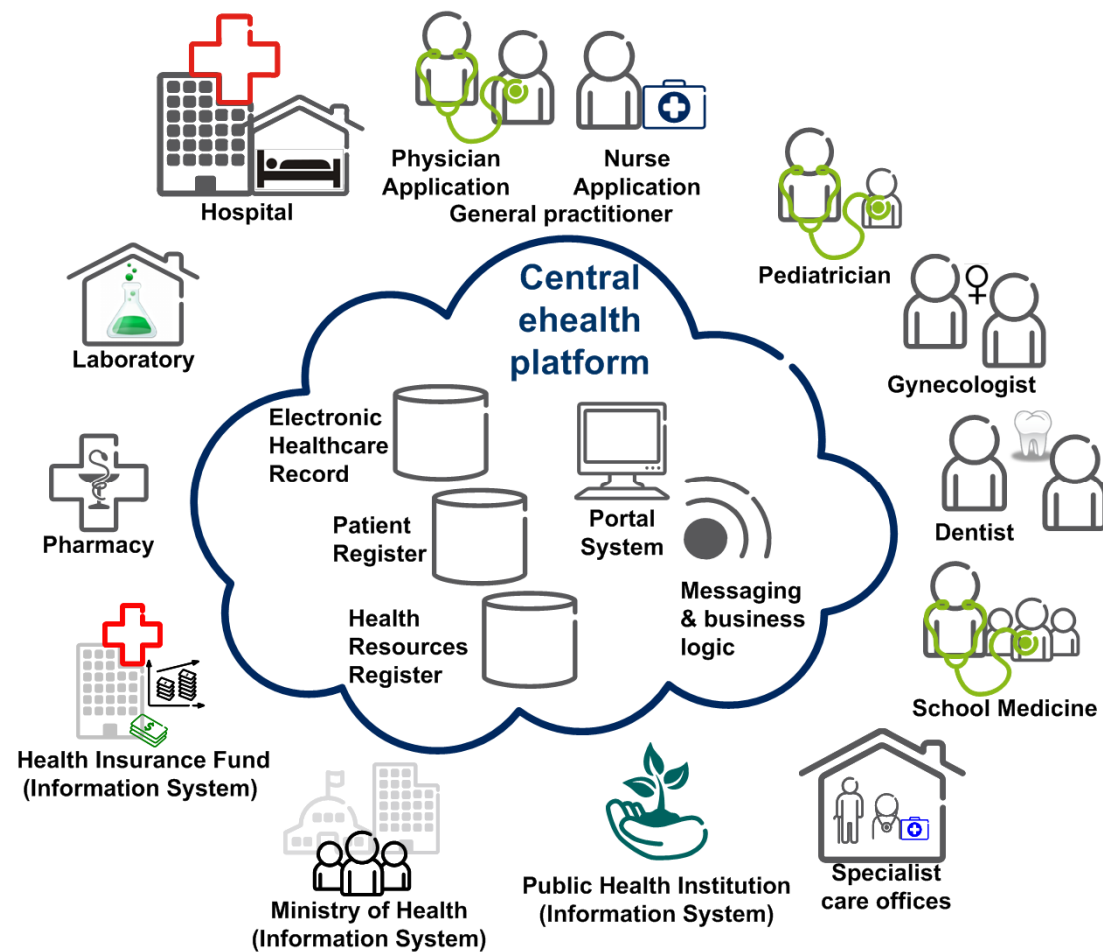
THE ROLE OF THE DIGITAL SECTOR IN MAKING THE  
HEALTH & CARE NEARER TO THE USERS





# Content

- Croatian Health Network
- eHealth in Croatia
- Major projects / services
- Next steps



# Croatian Health Network



**60+** hospitals  
**2.300** GPs  
**120** LABs  
**1.300** Pharmacies  
**1.900** Dental practices  
  
**1** state insurance  
**4.3M** insured persons





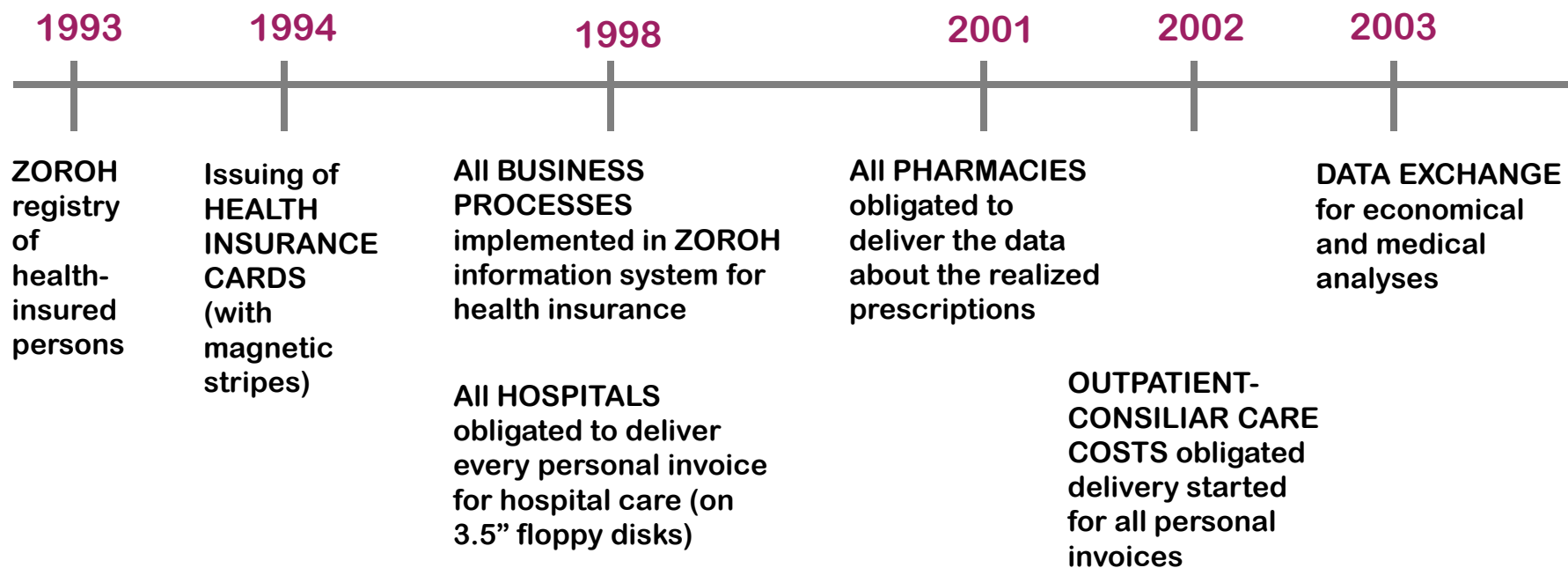
## Health care scheme

- The Croatian Health Insurance Fund (CHIF) is the **main payor** within Croatian health care system (single-payer system) – **4.3M insured persons**
- Health care insurance in Croatia includes **mandatory, complementary** and **supplementary** insurance. Mandatory insurance provides right to health care and the financial benefits
- CHIF has been appointed by Ministry of Health to be the main **eHealth operator**: key stakeholder for informatisation and eHealth development – the first priority of the Croatian National Healthcare Strategy (2012-2020)



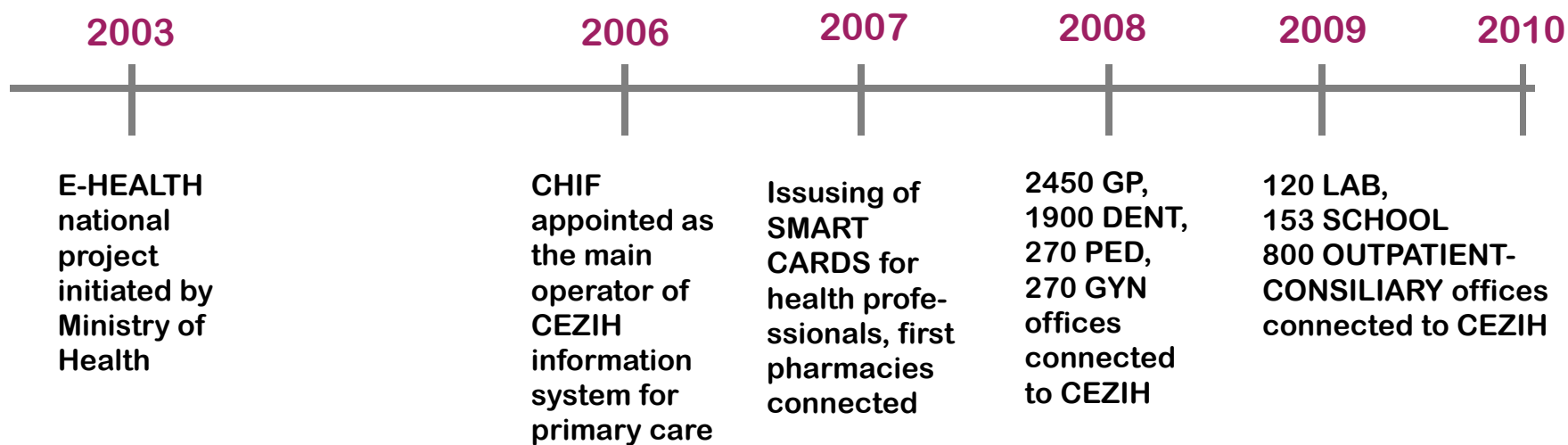


# Beginning of eHealth in Croatia





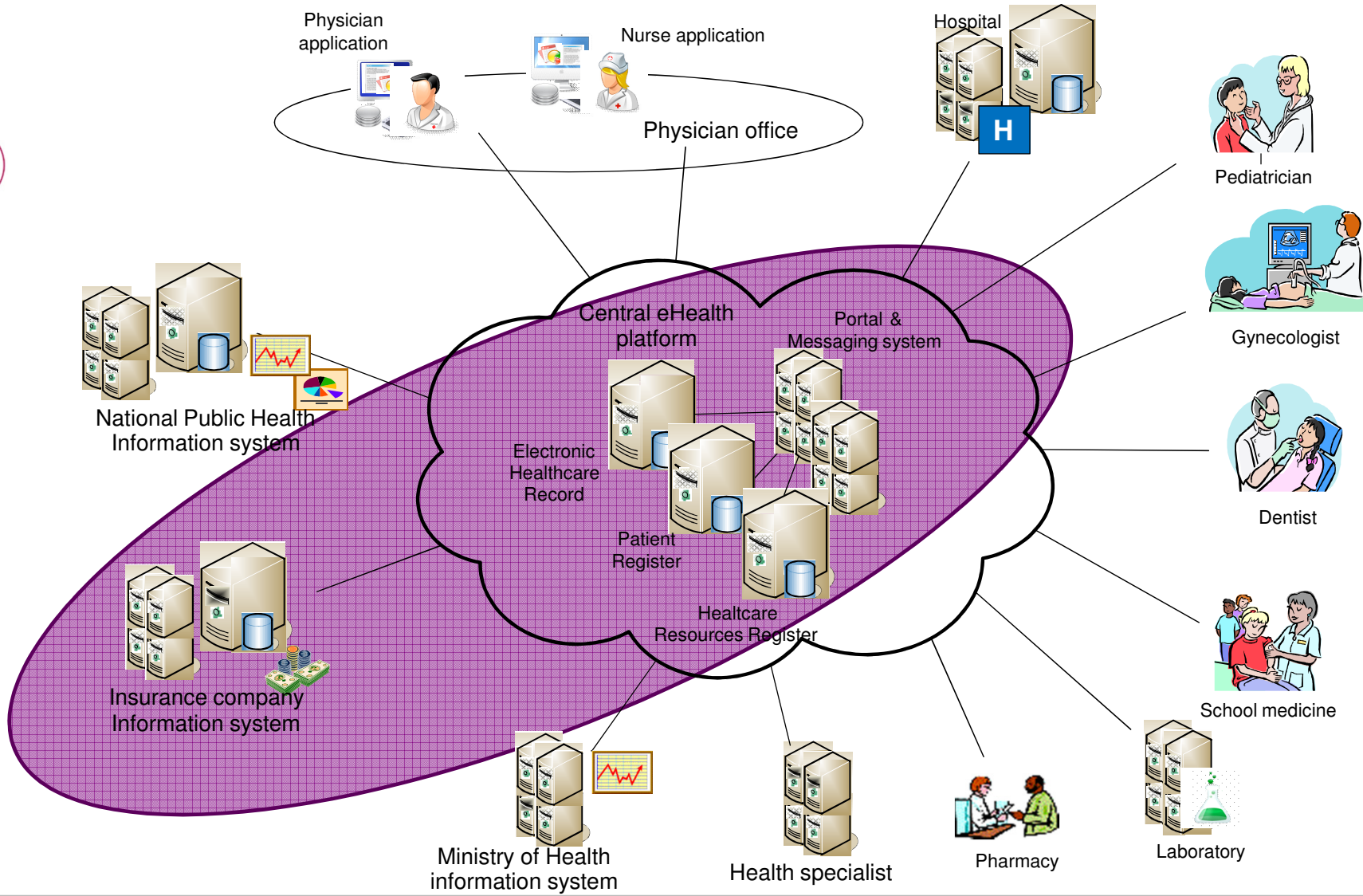
# Croatian eHealth for 21st Century



## Software and IT vendors for:

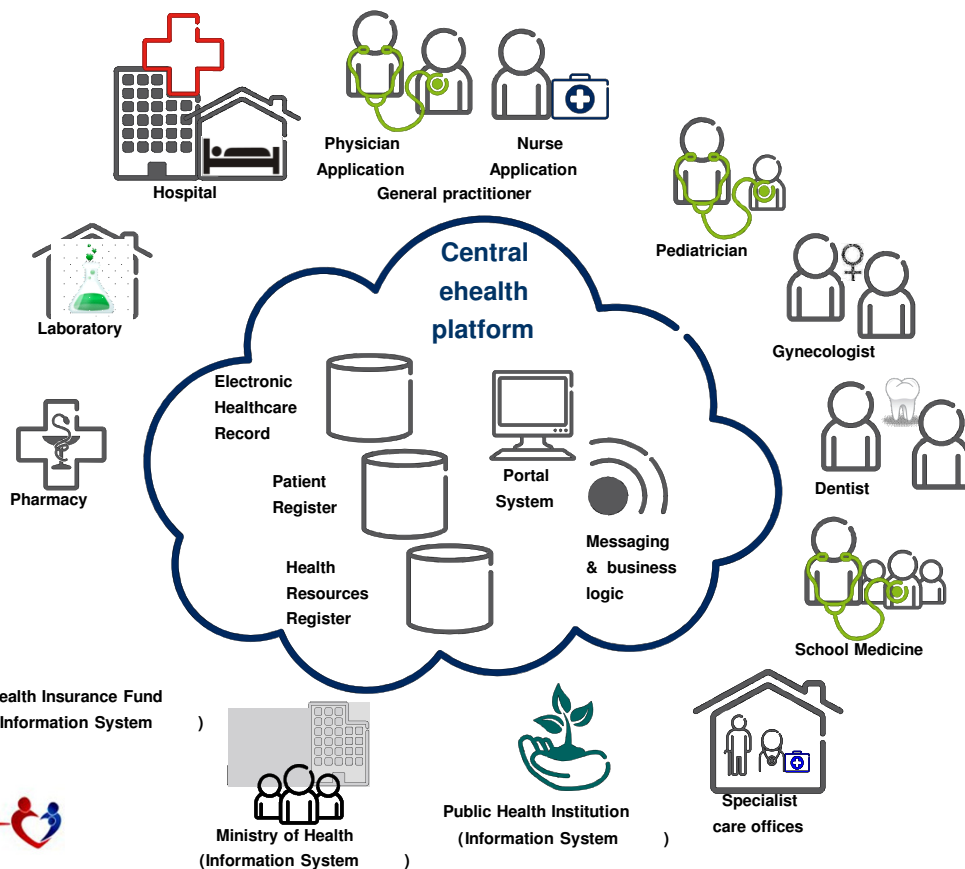
- ❖ GP - 8
- ❖ DENT - 7
- ❖ PED - 8
- ❖ GYN - 8
- ❖ SCHOOL - 1
- ❖ PHARM - 4
- ❖ LAB - 5
- ❖ CON - 16







# Croatian e-Health Overview



## Specialities and vendors

- > 2.300+ GP offices (8 different vendors)
- > 280+ pediatrician offices (8 different vendors)
- > 270+ gynaecologist offices (8 different vendors)
- > 150+ school medicine offices (1 vendor)
- > 1.900+ dentist offices (7 vendors)
- > 1.300+ pharmacies (4 vendors)
- > 120+ biochemistry laboratory (5 vendors)
- > 1.000+ specialist health care offices (16 vendors)
- > 65 hospitals (14 vendors)







# Croatian eHealth Strategy 2012-2020 (aligned with EU Strategy)



- Optimization
- Standardization
- E-Identification/Security
- Integration/Interoperability (technical, semantical, organizational)
- Information management / Electronic Health (Medical) Record
- Knowledge Management
- Telemedicine/mHealth
- BI/Support to Health Management
- Data Exchange (21-CRO and 28-EU)





## eIDs for citizens and health care professionals

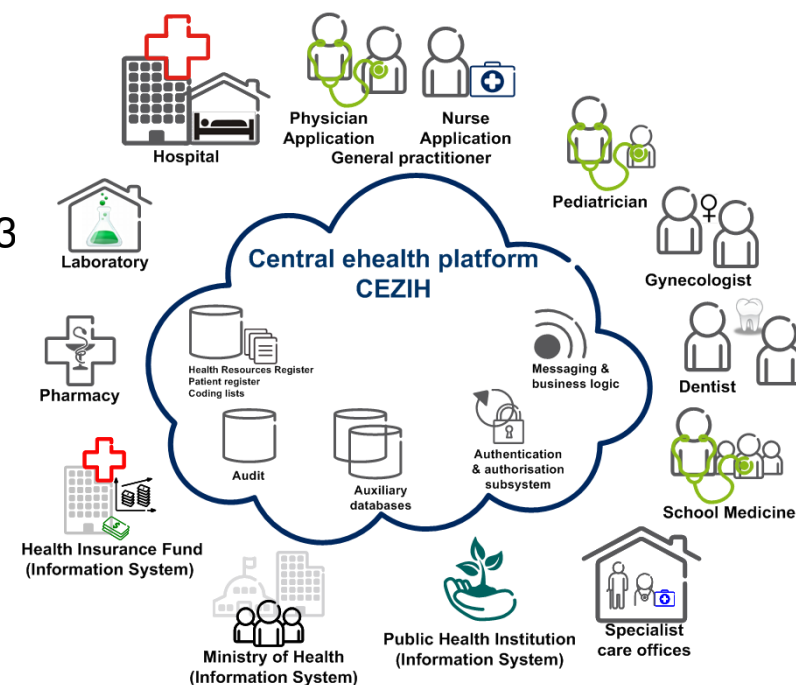
- eID for citizens / patients (insured persons)
  - Each health insured person in Croatia has a magnetic health insurance card holding an **ID code** (MBO), assigned by the Croatian Health Insurance Fund
  - The MBO ID code is a primary identifier, used directly from the patient's card
- eID for health care professionals
  - Each health care professional (HCP) has a **smart card** providing his ID data and a certificate
  - The **PKI card** is issued and technologically supported by the CHIF





# eHealth projects overview

- Croatian eHealth system supports nationally:
  - **ePrescriptions** - full production from the beginning of 2011
  - **eReferrals** - biochemistry labs, specialist health care out of hospitals
  - **eWaiting Lists and eOrdering** – full production early in 2013
  - **National health BI/GIS** – in 2014
  - Chronic Diseases Management/**ePathways**
- These features are available to all Croatian citizens
- Final aim: to have a healthcare system that ensures optimal quality, patient safety and eligible expenditures





# e-Prescriptions in Croatia

- Contract signed 2009
- Pilot started in 2010 , full implemented in 2011
- Today - full national coverage of e-prescriptions, **98,8%** of all prescriptions
- 137.000 e-prescriptions issued daily, **56M yearly**
- Connecting:
  - 2.300 GPOs, 280 pediatrician and 270 gynecological offices
  - 1.300 pharmacies
- Ready for **EU Cross-border** cooperation





# Croatian ePrescriptions – 3rd in EU

 **DIGITAL AGENDA FOR EUROPE**  
A Europe 2020 Initiative  
European Commission > Digital Agenda for Europe > Scoreboard > Visualizations > DESI

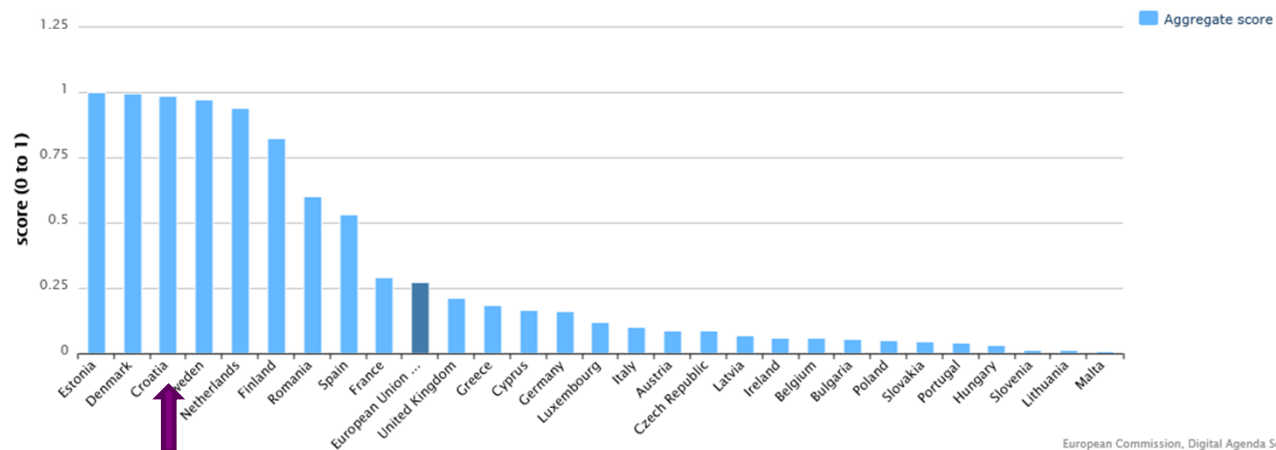
DESI by components — Digital Agenda Scoreboard

## DESI by components

Indicator	5b2 ePrescription
Breakdown group	Aggregate scores
Period	2015

5b2 ePrescription, by Aggregate scores

[Print chart](#) [Download image](#)



European Commission, Digital Agenda Scoreboard





# Open to (e-)Citizens

- 7 e-messages & 3 e-services
- In 2014: 56.817.671 ePrescriptions realized
- Over 500.000 messages sent to e-Citizens

The screenshot shows the HZZO e-portal interface. At the top, there is a navigation bar with the HZZO logo and the text "Hrvatski zavod za zdravstveno osiguranje". Below this, there are several menu items: "OPĆI UVJETI", "KORISNIČKA PODRŠKA", and "ODJAVA". The main content area is titled "PREGLED REALIZIRANIH RECEPATA U ZADNJIH 6 MJESECI". On the left, there is a summary box with the following information:

- OIB: 34115441267
- Period od: 15.7.2014.
- Ukupno recepata: 7
- Ukupni iznos\*: 201.91 kn

\* Iznos pokriven od HZZO-a i eventualna doplata osiguranika, s PDV-om

On the right, there is a table titled "Realizirani recepti u zadnjih 6 mjeseci" with the following columns: Datum, Lijek, Količina, Iznos\*, and Ljekarna.

Datum	Lijek	Količina	Iznos*	Ljekarna
24.12.2014	J01CA04117 Amoksicilin Belupo	1	19,60 kn	LJ GRBAVAC LJ JED I
08.12.2014	B03AB05222 Ferum	2	41,48 kn	LJ PHYTO PHARMA LJ JED II
07.11.2014	B03AB05222 Ferum	2	41,48 kn	LJ GRBAVAC LJ JED I
14.10.2014	B03AB05222 Ferum	2	41,48 kn	LJ PRIMA PHARME - POD BROJ 53
13.10.2014	N05BA01111 Normabel	1	4,61 kn	LJ SPLIT DAL ŽUPANIJE LJ JED VAROŠ
24.09.2014	R06AX13162 Clarifline	1	31,06 kn	LJ SPLIT DAL ŽUPANIJE LJ JED VAROŠ
25.07.2014	B03BB01112 Folacin	1	22,20 kn	LJ GRBAVAC LJ JED I

\* Iznos pokriven od HZZO-a i eventualna doplata osiguranika, s PDV-om

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## eRefferals

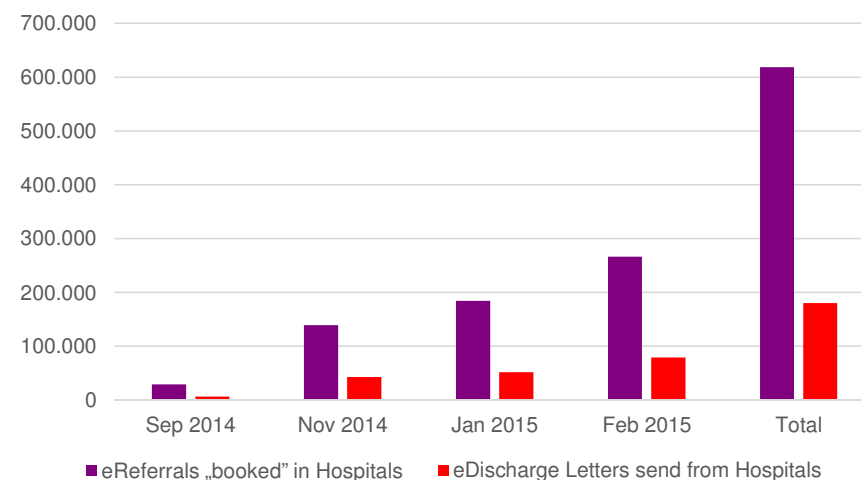
- To biochemistry lab (inc. electronic results), to specialist care out of hospitals (inc.eFindings), to Hospitals - since 2011
- eRefferals adapted according to „New Model of contracting 2013”
- IT connections between primary health care and hospitals established in 2014, eDischarge Letter started piloting in Hospitals





# eReferrals and eDischarge Letter in Hospitals – current state

- 37% of available eReferrals „booked” in Hospitals
- therefrom 30% eDischarge Letters are send from Hospitals to the primary healthcare doctors
- Target full coverage in September 2015



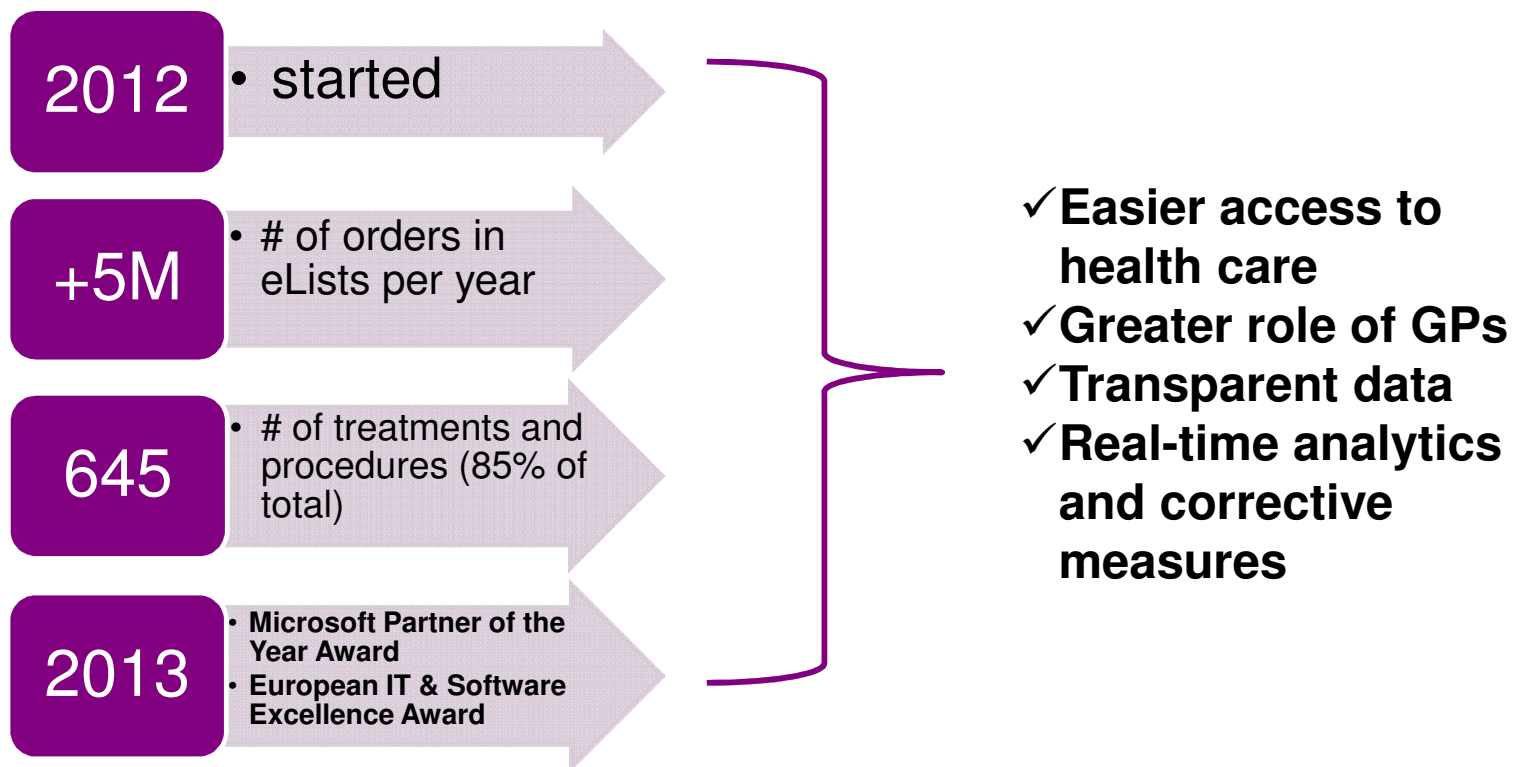
Month / Year	eReferrals	eDischarge Letters
Sep 2014	28.863	6.415
Nov 2014	139.347	43.107
Jan 2015	184.327	51.615
Feb 2015	266.143	79.312







# eOrders and eLists - Hospitals





# eOrders and eLists - Hospitals

- It is a **communication hub** between existing primary care systems and scheduling applications used by hospitals and other medical institutions
- Primary care physicians can make inquiry about available appointments, can **book an appointment directly** within the hospital system and can obtain feedback about bookings made
- Primary care physicians use eBooking **web application**
- Hospitals and other healthcare institutions are connected through **HL7 communication standard**
- The system was developed by using Microsoft development tools, while data storage can be implemented using various vendors technology (such as Microsoft or Oracle) – **technology vendor agnostic**

The screenshot shows a web application interface for booking appointments. The header includes the logo of the Croatian Health Insurance Fund and the user's name, Ivan Džolan, with his ID number and date of birth. The main content area is titled "Overview of health facilities" and lists several facilities with their addresses, phone numbers, and the first available appointment date. The facilities listed are:

Name of health facility (County)	Address	Phone	The first available appointment
KBC Zagreb (Zagrebačka županija i grad Zagreb)	Uprava, Batuta 2, 10000 Zagreb	+385 1 2367 720	18.4.2014.
DZ Zagreb - Zapad (Zagrebačka županija i grad Zagreb)	Pričaj baruna Filipovića 11, Zagreb	+385 1 3760 444	29.4.2014.
KB Sveti Duh (Zagrebačka županija i grad Zagreb)	Sveti Duh 64, 10000 Zagreb	+385 1 3712 111	2.5.2014.
DZ Zagreb - Centar (Zagrebačka županija i grad Zagreb)	Runjaninova 4, 10000 Zagreb	+385 1 4897 666	13.5.2014.
DZ Ministarstva Unutarnjih Poslova (Zagrebačka županija i grad Zagreb)	Šarengradska 3, 10000 Zagreb	+385 1 4801 444	4.8.2014.
SB za plućne bolesti (Zagrebačka županija i grad Zagreb)	Rockefellerova 3, Zagreb	+385 1 4684 400	Reservations for April 2014
KBC Sestre milosrdnice (Zagrebačka županija i grad Zagreb)	Vinogradska cesta 2		
KB Merkur (Zagrebačka županija i grad Zagreb)	Začeva 19, 10000 Z		
DZ Zagreb - Istok (Zagrebačka županija i grad Zagreb)	Švarcova 20, 10000 Z		

Below the table, there is a section for "Appointments overview" and a "Select healthcare facility" dropdown menu. At the bottom, there is a row of icons representing different healthcare professionals: a doctor, a nurse, a pharmacist, a receptionist, and a patient.





# eLists

- eLists is a **national system for monitoring** +900.000 orders in 61 public hospitals and 200+ public health institutions
- Acts as a data collection system for **management of waiting times** and support for business decisions
- All information regarding available appointments for specialist or diagnostic services are collected and analysed **in real time**
- **Publicly available e-Waiting Lists web site** conduct online search of available appointments in each institution that provide necessary service (obtaining the exact date and time of the first available appointment)
- **Data** can be **compared** from institutions from different geographical areas or nationally

## Liste narudžbi



Unesite naziv postupka

Odaberite županiju

Točnost prikazanih podataka je u nadležnosti zdravstvenih ustanova.

PROVJERITE 

Kako bi svi u najkraćem roku mogli doći na red lijepo Vas molimo da se za potreban pregled ili pretragu prijavite samo u jednu zdravstvenu ustanovu, te se odjavite na navedeni mail ili telefon ukoliko ste spriječeni doći.

Zahvaljujemo!  
MZ i HZZO

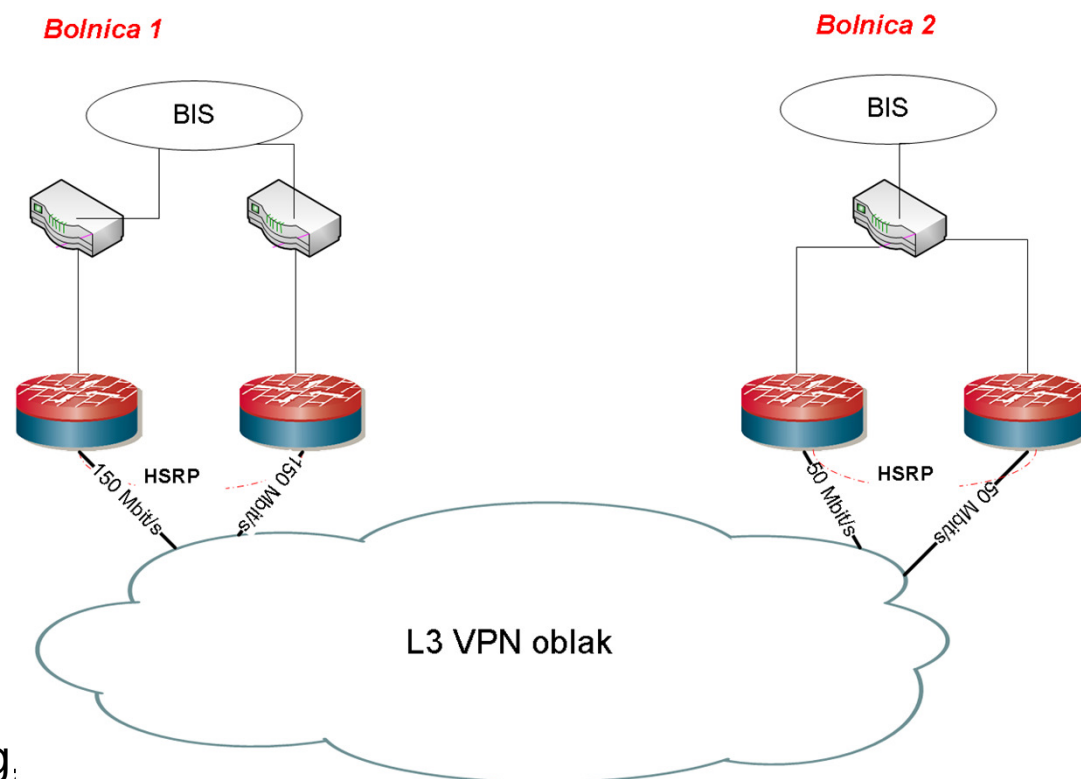
Za sve upite kontaktirajte nas na **0800 7999** ili postavite pitanje na [Pitanja i odgovori](#)





# eHealthNet

- Virtual private network for Croatian healthcare institutions:
  - Raising security levels
  - Implementing new eHealth services
  - Need to increase of speed in access network
  - Central control of access to sensitive medical data
- Secure network is the backbone:
  - Use of existing network equipment, links
  - Challenges: public procurement, financing, education of IT staff at health institutions





# Telemedicine in Croatia

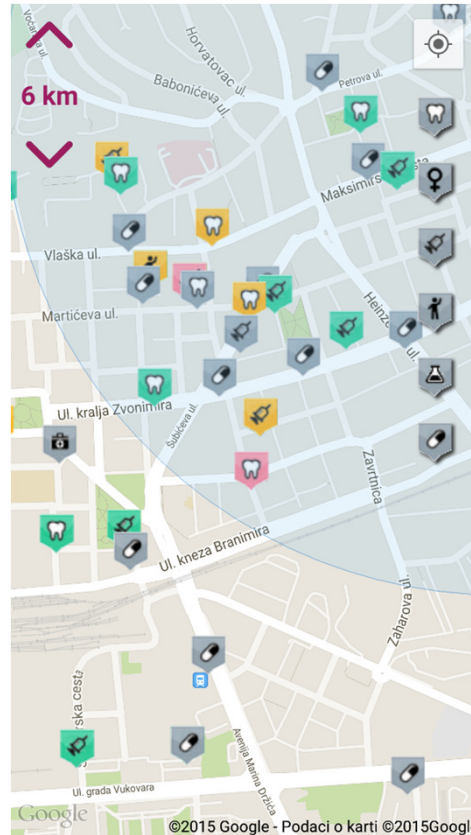
- 102 telemedicine centres within 59 health institutions (all clinical hospitals, clinical hospital centres and general hospitals)
- All centres connected through the private IP/MPLS network
- Telemedicine centers mainly for radiology, neurosurgery, neurology, cardiology and gastroenterology
- All RIS/PACS systems connected via teleradiology workstations in telemedicine centres
- 12 health centres digitalized (RTG, MAMMO), CR and RIS/PACS systems setup
- In 2014: 9250 examinations done via telemedicine (mostly DICOM – teleradiology and ECG Holter - telecardiology)
- E-Training – professional development programme for health care professionals at remote locations, carried out successfully for five years (video-conferences, audio-visual interaction in real-time)






# Open Data: Smart Health App

- Open Data government initiative
- Free mobile application – „Pametno zdravlje”
- Easy searching for health institutions (by type) in Croatia
- Mapping of public health network
- Phone calls and e-mails directly to the institutions
- Drug lists search







 Help



**Remark**


It is required to have most recent Google Maps app update for this app to work properly

**Meaning of icon colors**

-  – Institution capacities are below average occupancy
-  – Institution capacities are above average occupancy
-  – Institution capacities are in average occupancy
-  – No information about the capacity of institutions

**Icon meaning**

-  – General medicine
-  – Pharmacy

 Voltaren

amp. 5x75 mg/3 ml

**Medication code**  
M01AB05 004

**Medication name**  
Voltaren

**How to apply medication**  
Parenteralno


**Manufacturer**  
Pliva Hrvatska d.o.o.

**The form and method of packaging**  
amp. 5x75 mg/3 ml

**Price**  
11,24

**Reference group of the medicine**  
M

**Issuance on prescription**  
Yes







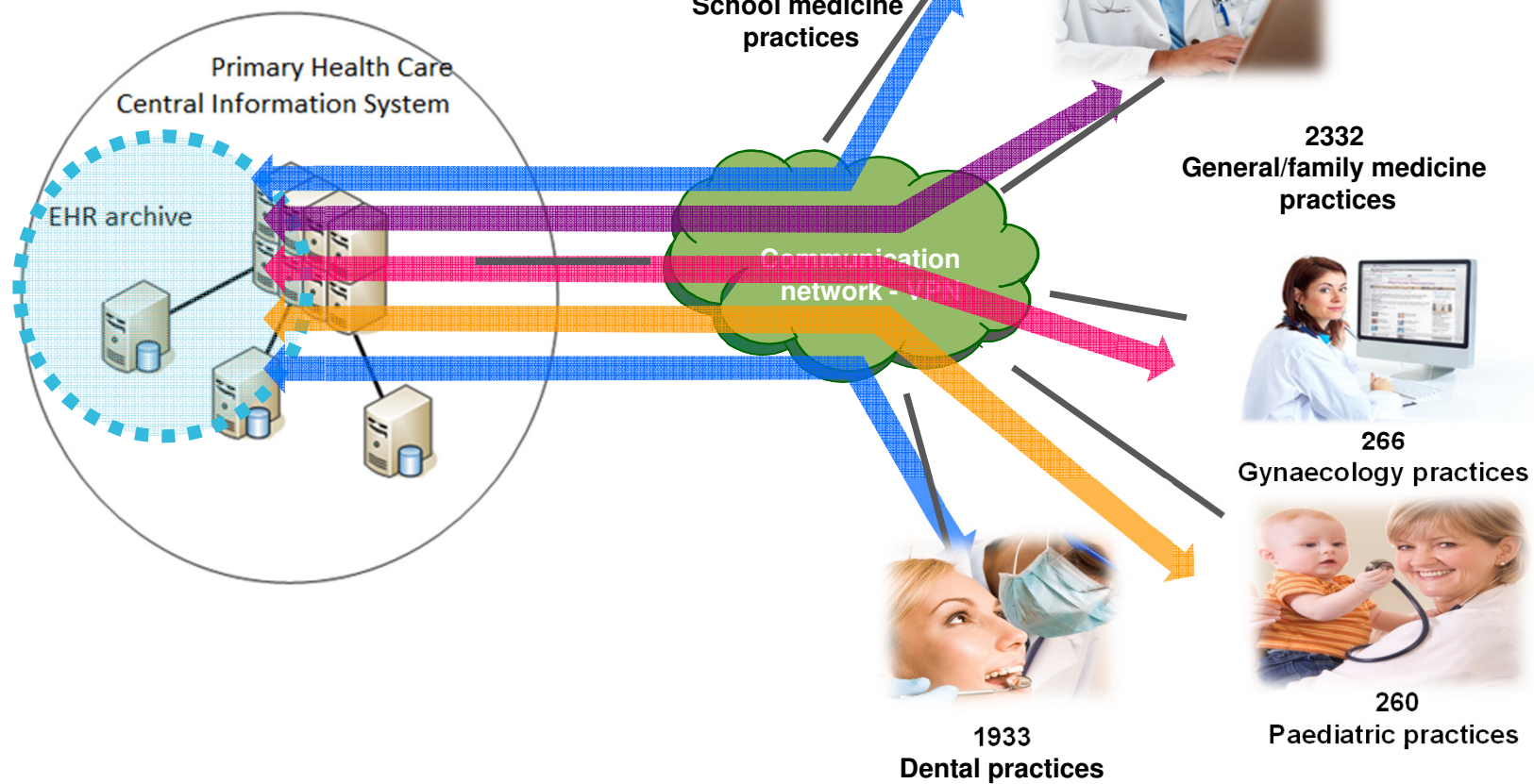
## eHealth - still to come

- Croatian eHealth system further development:
  - eHealth Records – to be ready for piloting in mid 2015
  - Integration of all registries – in 2015
  - Patient Portals – second half 2015
  - Extending BI and DWH
  - eNursing, eHomeCare, eEmergency, ...
  - Chronic Diseases Management/ePathways
  - mHealth projects
  - Open Data initiatives
  - ...





# eHealth Records







# ICT & HEALTH

THE ROLE OF THE DIGITAL SECTOR  
IN MAKING THE HEALTH & CARE  
NEARER TO THE USERS

May 6th 2015 · Lecce · Italy

***Thank you!***

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