

eHealth in Estonia

Pille Kink



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- Estonian Business School 2012 MSc Business Administration
- 2006 - 2010 Ministry of Social Affairs, e-Health Project Manager
- 2010 – 2013 Ministry of Social Affairs, Head of e-Health Department
- 2013-2015 Estonian eHealth Foundation, Standardisation Manager
- 2013 – 2015 The International Health Terminology Standards Development Organisation (IHTSDO) Member of Board
- 2015 – East-Tallinn Central Hospital, Head of Services Development Department
- 2016 – Simpleks Consult, Member of Management Board

I have worked in eHealth related projects

- Digital Prescription
- Health Information System
- ANTILOPE – cross-border interoperability
- Expert – eHealth Strategy for Moldova

When you can say that it is a success story?

- State view
- Medical personnel view
- Patient view

eHealth in numbers

ePrescriptions: **100%** of issued prescriptions

1,46 mio person have documents (**more than population**) in the central health information system

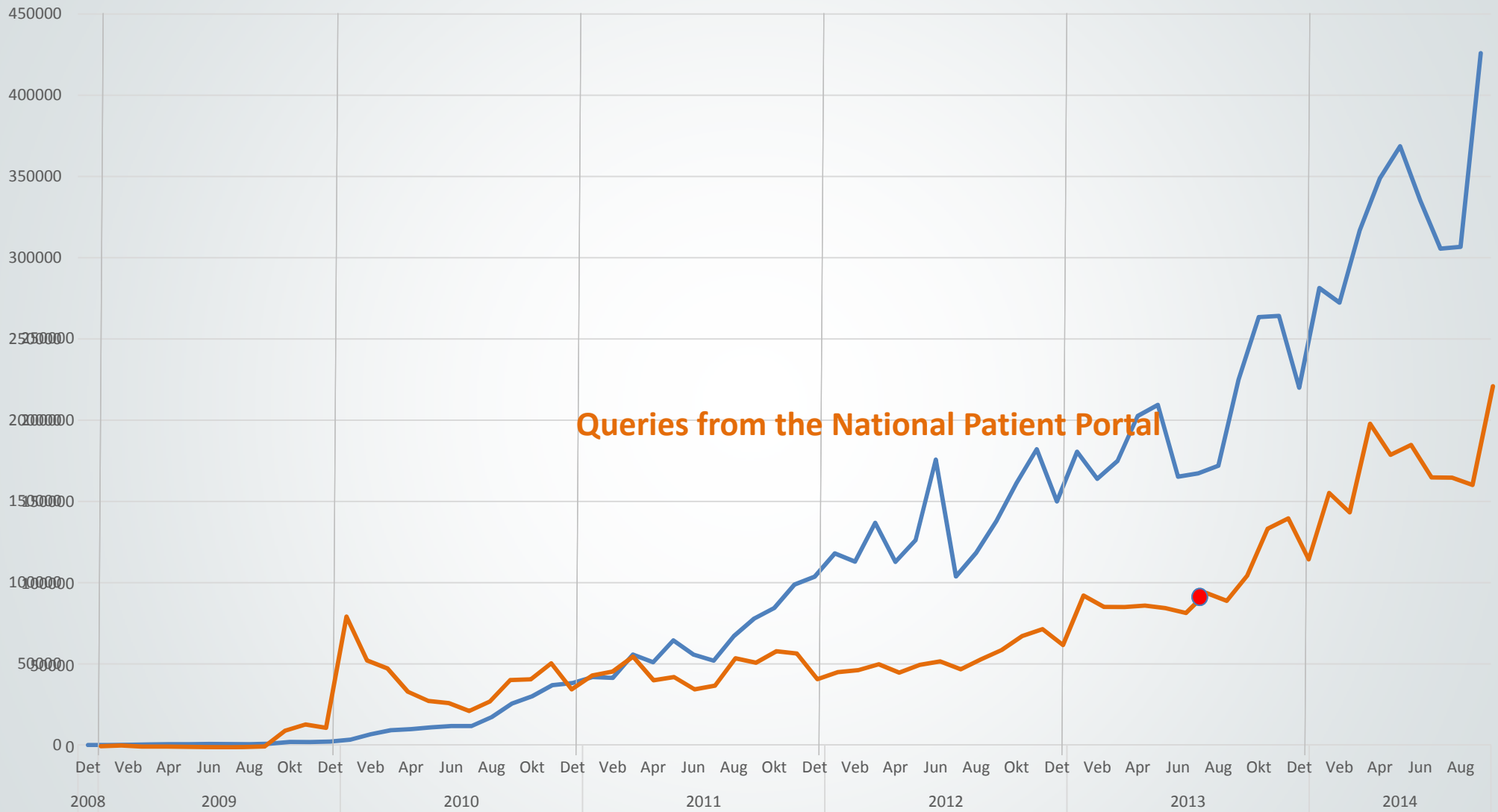
~ **97%** of stationary case summaries have been sent to the central health information system

Statistics of documents in ENHIS

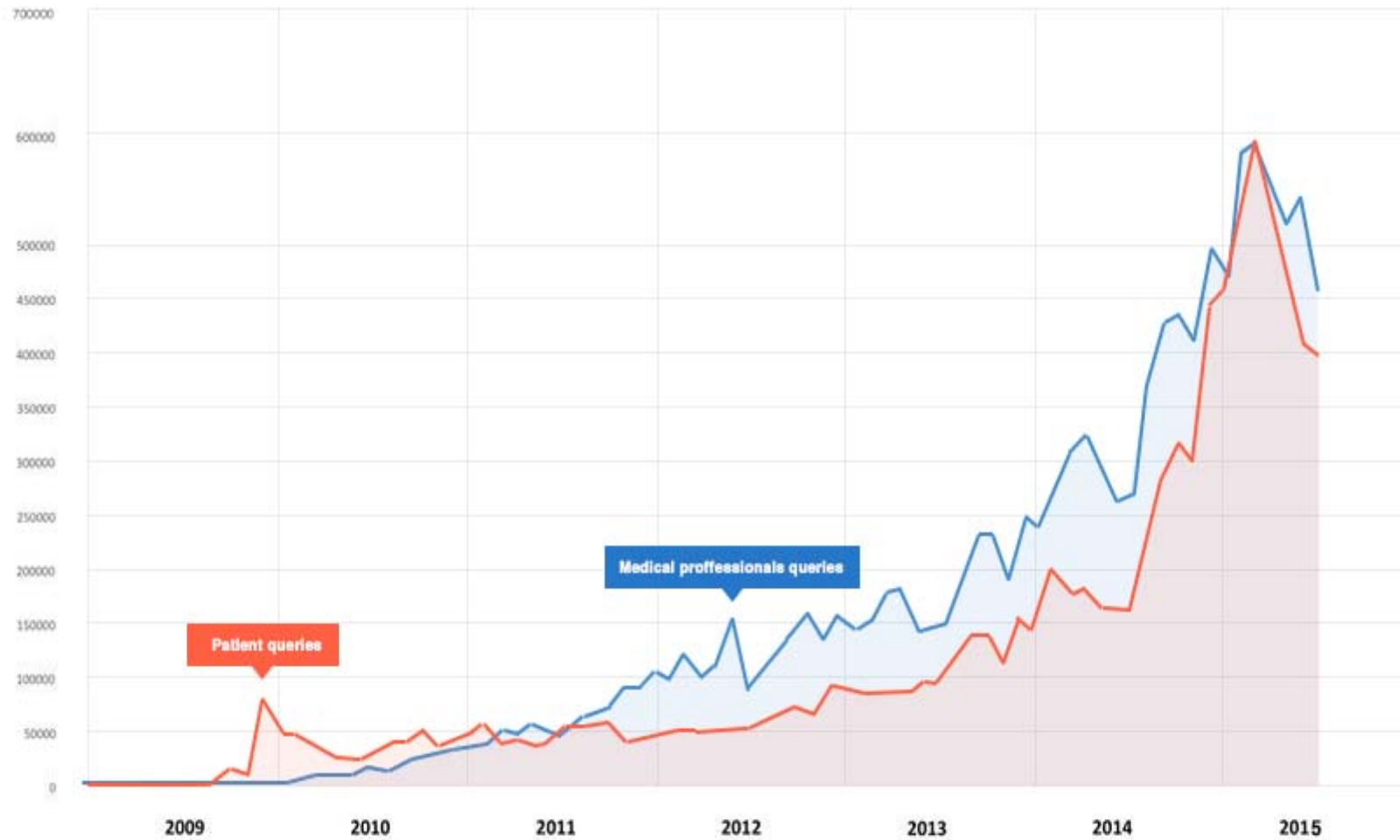
29.04.2016

Document type	Number of documents
Out patient case summaries	12 100 995
Responses to the referrals	5 487 220
Links to the digital images	2 515 370
In-patient case summaries	1 468 496
Referrals	509 300
Ambulatory case summaries	175 067
Immunisation notifications	330 687
.....
TOTAL	23 343 302

Medical documents in ENHIS/queries from NPP 2009 - 2014



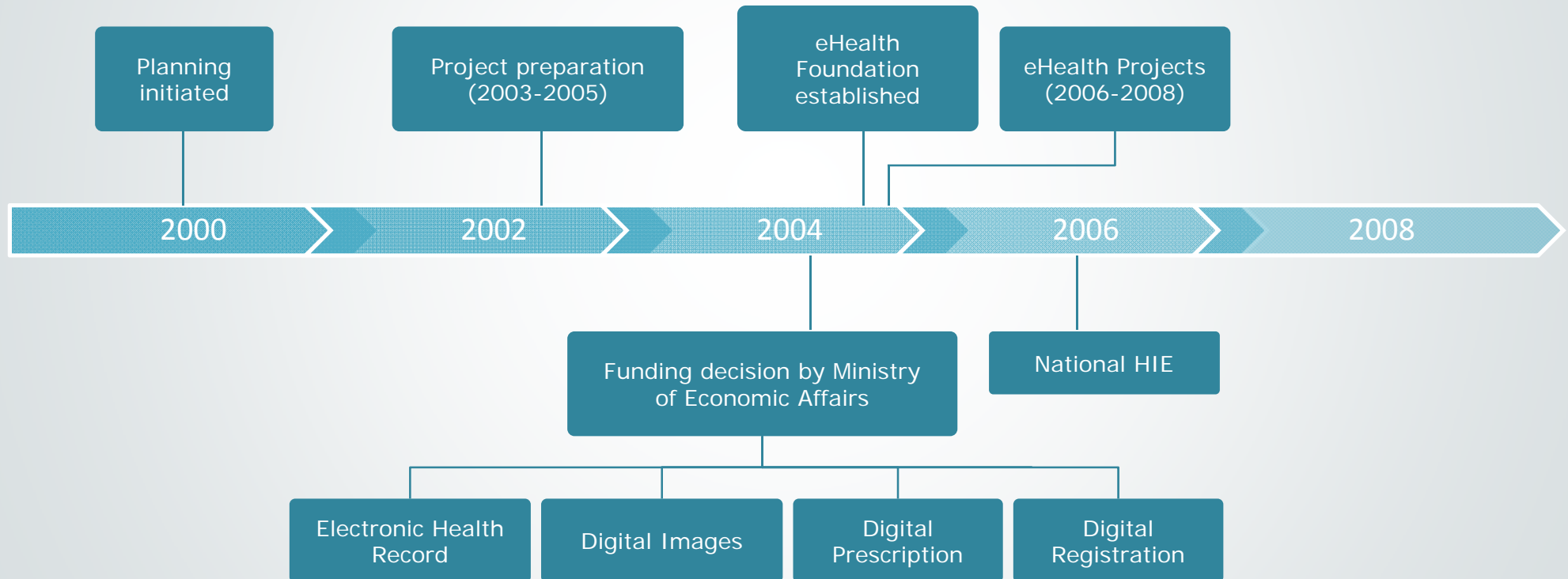
HIS queries per month



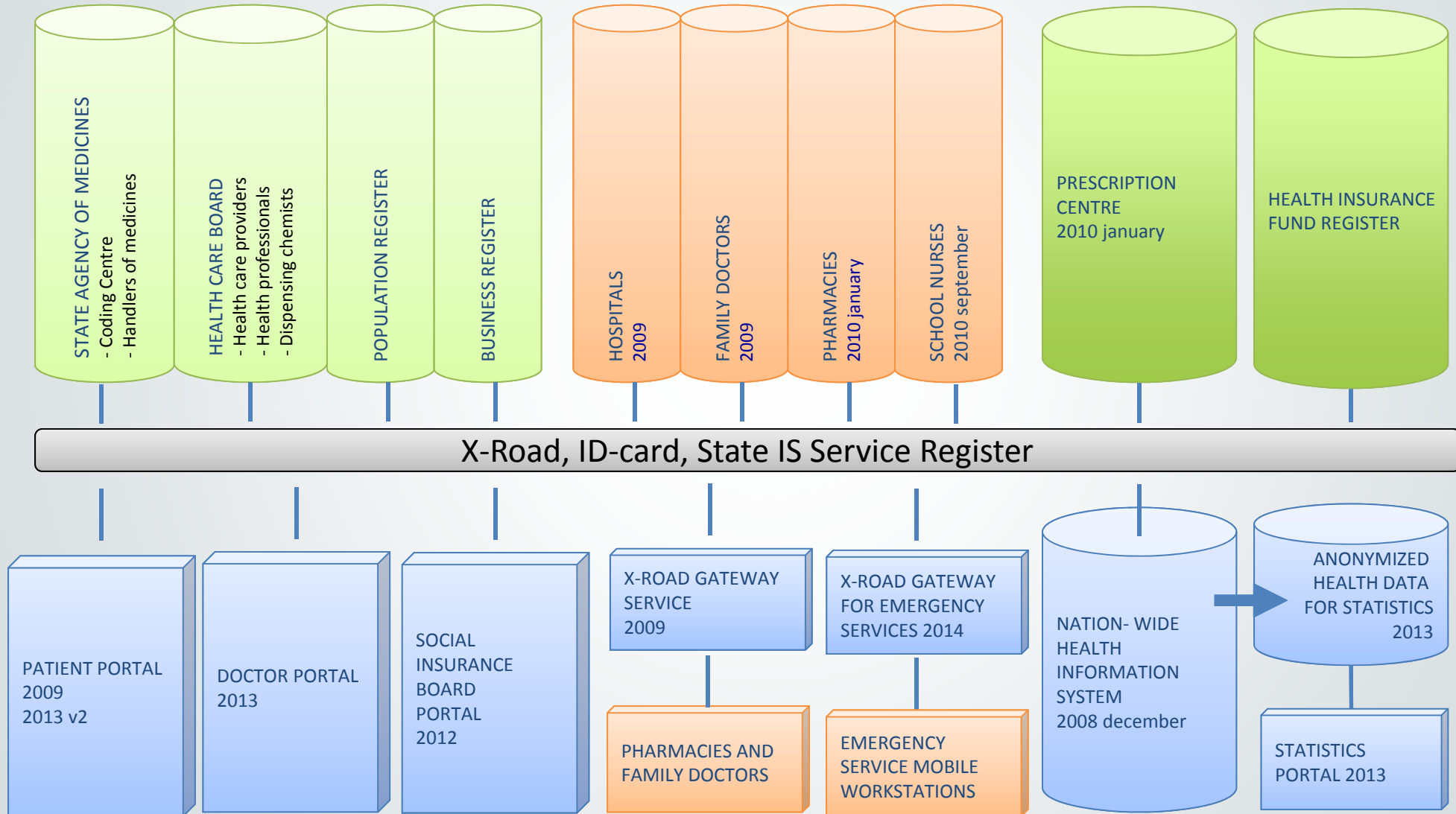
Usage of the National Patient Portal

	30.12.2010	30.12.2011	30.12.2012	30.12.2013	30.12.2014	30.12.2015
Queries made via the NPP	53 1035	1 098 201	1 754 688	2 950 650	4 503 036	11 424 109
Unique users of the NPP	23 458	38 631	48 386	61 256	82 419	177 137

HIE platform history



Estonian eHealth architecture



Functionalities of health information system:

- Provide services to health care providers to simplify their every day work
- Provide health information to patients
- Central secure storage of health data



New Patient Portal released 01.07.2013

Minu e-tervis

Portaalis "Minu e-tervis" näed Sa oma terviseandmeid, saad esitada lahtevaidusi, määrata endale esindaja(d) ning teha toiminguid isikute eest, kes on määranud Sind enda esindajaks.

Kõikide tegevuste küsimuste või tehniliste probleemide korral pöördu Eesti E-tervise SA kasutajate poole telefonil +372 694 3943 (tööpäeviti kell 9-17) või elektronposti aadressil abi@e-tervis.ee. Samal elektronposti aadressil ootame Sinu ettepanekuid edasiste arenduste osas, mis aitaks muuta portaali mugavamaks ning kasulikumaks.

Sisene ID-kaardiga



Sisene mobiil-IDga




Tervise infosüsteem

Tervise infosüsteemis paknevad terviseandmed, mis on tervishutemeiste osutajad esitanud Sinu kohta. Sita kogutakse kõige olulisem meditsiiniline informatsioon ning see on portaali vahendusel kättesaadav ainult Sinu arstidele ning Sulle. [Loe edasi](#)

Turvalisus

Andmete turvalisus on ülioluline. Igast tegevusest jääb jälge jälg. [Loe edasi](#)



Eesti E-tervise Sihtasutus

Üleriigilised e-lahendused tervishoius. [Loe edasi](#)

Olulised teeviidad


Veebilehed, kust leiad tervise ja tervishoiukorraldusega seotud infot süstematiseeritult. [Loe edasi](#)


Õigusruum



Tervise infosüsteem ja portaali "Minu e-tervis" lähtuvad tegevuses Eesti seadustest ning Euroopa Liidu õigusaktidest. [Loe edasi](#)

SUSTAINS

SUSTAINS on portaali arendust toetav projekt, mida rahastab Euroopa Komisjon. [Loe edasi](#)



Vaheta rolli  Sisselogitud ja esindad: **Katy Kuusk**


Abi  **Logi välja** 

45002280288 KATY CUUSK

Minu e-tervis


Minu andmed

Seitsmes Testnumber
14212128025
**KINDLUSTUSINFO POLE
HETKEL KÄTTESAADAV**

Vaheta 


Terviseandmed

Saatekirjad
Uuringute vastused
Epikriisid
Aegkriitilised andmed
E-konsultatsioonide otsused
Teatiseid




Tahte-avaldused

Tahteavalduste nägemiseks ja koostamiseks vajuta kastile, lisainfoks noolele




Uuringute vastused

Uuringu vastuste nägemiseks vajuta kastile, lisainfoks noolele



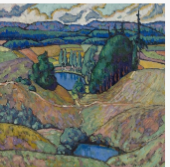
Vaktsineerimised

Immunisatsioonide teostatud nägemiseks vajuta kastile, lisainfoks noolele




Retseptid


Lisainfoks vajuta noolele



Broneeri vastuvõtu aeg



Logiraamat



Possibilities for patient

In the national patient portal patients can:

- view and print out medical documents sent by health care providers to the central system;
- view information about their general practitioners and validity of health insurance;
- make informed consents;
- compile a health declaration and apply for Health Certificate
- provide general information about themselves for health care providers;
- give authorisations for trustees;
- mask data for trustees and health care providers;
- monitor logs

Get useful information and read explanations

Security and authentication



The 6 main principles “6 whales” of security of Estonian eHealth system

1. **A secure authentication** of all users with ID-card or Mobile ID
2. **Digital signing or stamping** of all medical documents
3. **A maximum accountability (transparency)**: all actions will leave an unchangeable (and unremovable) secure trail
4. **Coding of personal data**: separating of personal data from medical data
5. **Encrypted database** that allows to remove the confidentiality risk from the technical administrators
6. **Monitoring** of all actions together with the corresponding counter-measures (both organizational and technical)



Major architectural decisions of HIS

- Integration through Central system (Opt-out)
- HL7 v3 (extended)
- Documents are kept in XML format (HL7 CDA)
- All structured data fields have OID-s
- Only final versions of clinical documents are sent into central system
- Reuse of national infrastructure
 - ID card for authentication and digital signature
 - Xroad for secure communication

Benefits of eHealth Systems

- greater transparency
- improved efficiency
- lower costs
- quality of care
- patient awareness about their health
- patients involvement to care

LEARNING POINTS



- Resources were planned only for central development.
- Usability. Developing process has to include medical competence – users
- Data quality is important
 - Complete and quality data give value.
- Balance between security and usability
 - PIN for every document ...

Estonian E-health strategy 2020

- 5 Focus domains
 - Quality of health data and infrastructure
 - Orientation to person and personalized medicine
 - Integral case handling and organizational cooperation
 - Performance and quality of services evaluation / analytics
 - Remote services
- Workgroups - services, architecture, justice, research and development, international cooperation, management and financing
- ~ 50 mln. EUR in 5 years.

Thank you!

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