eHealth in the Netherlands

Vincent van Pelt, MD

Senior advisor, Nictiz

Sopot, September 18, 2018

Nictiz Better health through better information

Connections between the Netherlands and Poland

Nation wide collaboration in medicine since 1972

Anna Paprocka-Lipińska
Paul Gründeman

Dutch roots
in the foundation
of open-heart surgery
in Gdańsk

Agenda

- Healthcare in the Netherlands, Nictiz

- Digital transformation

- National programs

  - Continuity of care

  - Empowering citizens

  - Upscaling interoperability
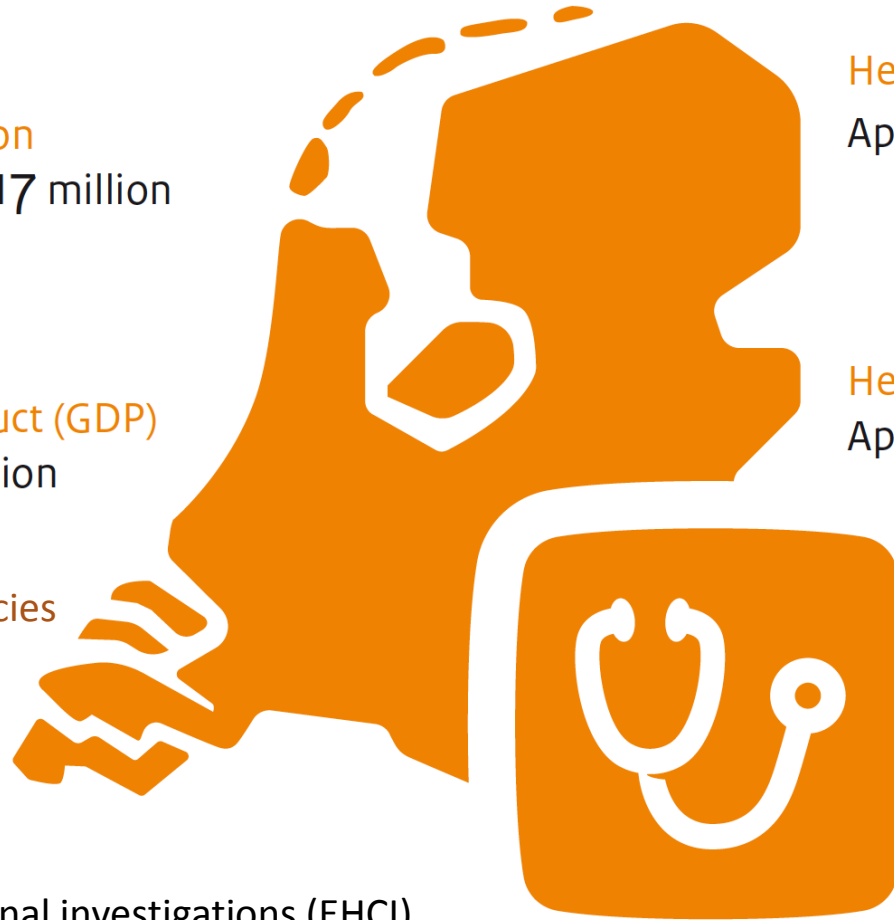
- Lessons learned

Healthcare in the Netherlands

Population
Approx. 17 million

Gross Domestic Product (GDP)
Approx. EUR 700 billion

90 hospitals, 5000 GPs, 2000 Pharmacies
Mostly privately owned

High quality healthcare
According to various international investigations (EHCI)

Healthcare expenditure in EUR
Approx. EUR 70 billion

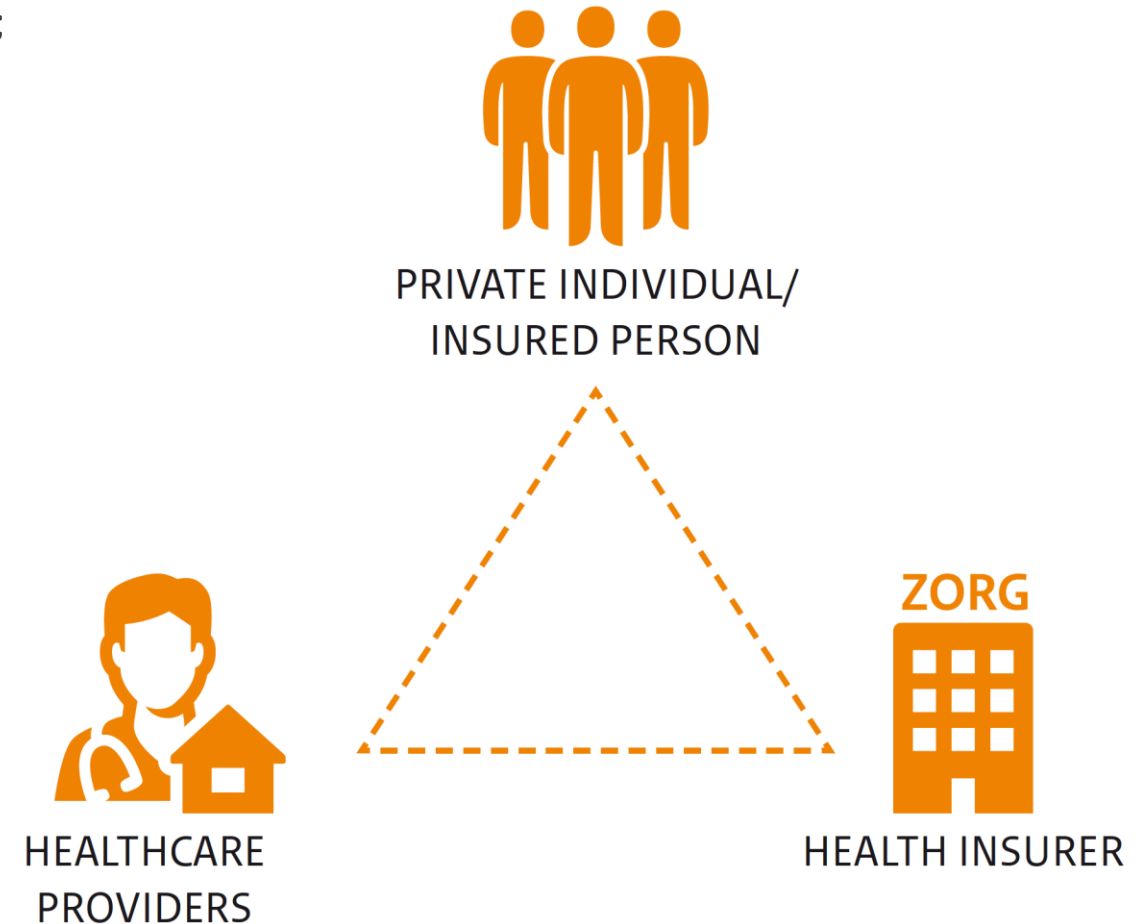**Healthcare expenditure**
Approx. 10% of GDP

Total number of people employed in the healthcare field
Roughly 1,1 million

Well-organised primary care (GP's)
Contributing to quality

Financing in the Netherlands

- Everyone pays a basic health insurance (about 1200 per year);
- Extra services are optional.

- About 10 non-profit (but private) healthcare insurers;
- Citizens can choose between them, every year;
- Content of the basic insurance coverage is defined by law;
- Insurers must accept all patients and have a duty of care.

- Healthcare providers are private entrepreneurs (except academic hospitals);
- There is no national health information infrastructure;
- Healthcare infrastructures are privately operated and mostly regional, SaaS or categorical.

PRIVATE INDIVIDUAL/
INSURED PERSON

ZORG

HEALTHCARE
PROVIDERS

HEALTH INSURER

The national competence centre for eHealth

ADVISOR

PARTNER

SERVICE DESK

Better health through better information

The national competence centre for eHealth

ADVISOR

PARTNER

SERVICE DESK
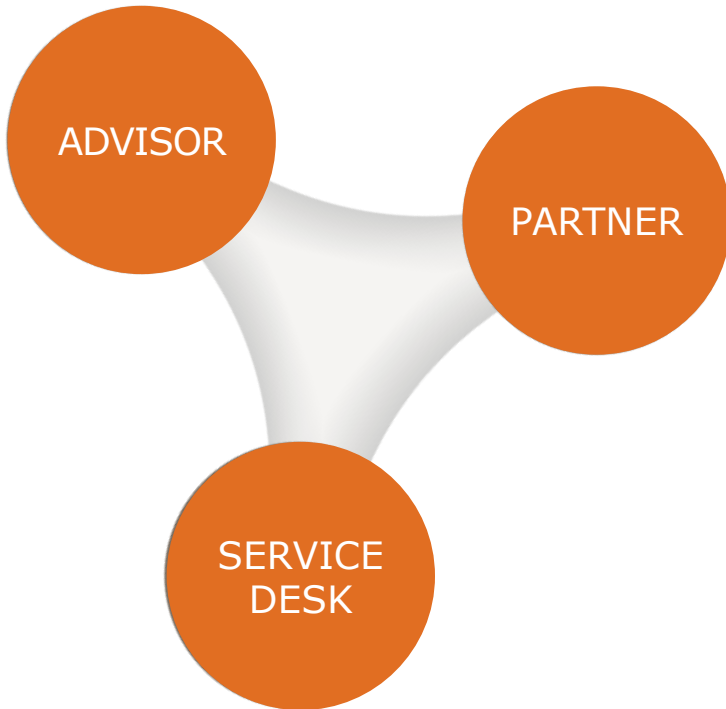
Since 2002

50 employees

The Hague

- Information standards, including:
  - Information standards
  - Clinical Building Blocks

- Knowledge centre
  - SNOMED CT National Release Center
  - HL7 (FHIR, CDA, v2)
  - IHE (NL, EU, International)
  - LOINC, DICOM, CEN, ISO

- eHealth Monitor

- Programs and projects.

Digital transformation – definition depends on where you are

STAGE	HiMSS Analytics EMRAM EMR Adoption Model Cumulative Capabilities
7	Complete EMR; External HIE; Data Analytics, Governance, Disaster Recovery, Privacy and Security
6	Technology Enabled Medication, Blood Products, and Human Milk Administration; Risk Reporting; Full CDS
5	Physician documentation using structured templates; Intrusion/Device Protection
4	CPOE with CDS; Nursing and Allied Health Documentation; Basic Business Continuity
3	Nursing and Allied Health Documentation; eMAR; Role-Based Security
2	CDR; Internal Interoperability; Basic Security
1	Ancillaries - Laboratory, Pharmacy, and Radiology/Cardiology information systems; PACS; Digital non-DICOM image management
0	All three ancillaries not installed

HiMSS Analytics Continuity of Care Maturity Model	
STAGE 7	Knowledge Driven Engagement for a Dynamic, Multi-vendor, Multi-organizational Interconnected Healthcare Delivery Model
STAGE 6	Closed Loop Care Coordination Across Care Team Members
STAGE 5	Community Wide Patient Record using Applied Information with Patient Engagement Focus
STAGE 4	Care Coordination based on Actionable Data using a Semantic Interoperable Patient Record
STAGE 3	Normalized Patient Record using Structural Interoperability
STAGE 2	Patient Centered Clinical Data using Basic System-to-System Exchange
STAGE 1	Basic Peer-to-Peer Data Exchange
STAGE 0	Limited to No E-communication

eHealth in NL - digitization of patient records

Digital EHRs

GPs	99%
Specialists	90%
Nurses (cure)	75%
Nurses (care)	31%

Medication interaction warning

GPs	98%
Specialists	60%

Effects (eHealth Monitor)

- Higher quality of care	72%
- Increased safety	67%
- Less administration	33%

Use of EHR by specialists

Legend: Electronic · Electronic + Paper · Paper

X-axis: 2013 (n=228), 2014 (n=161), 2015 (n=385), 2016 (n=274), 2017 (n=253)
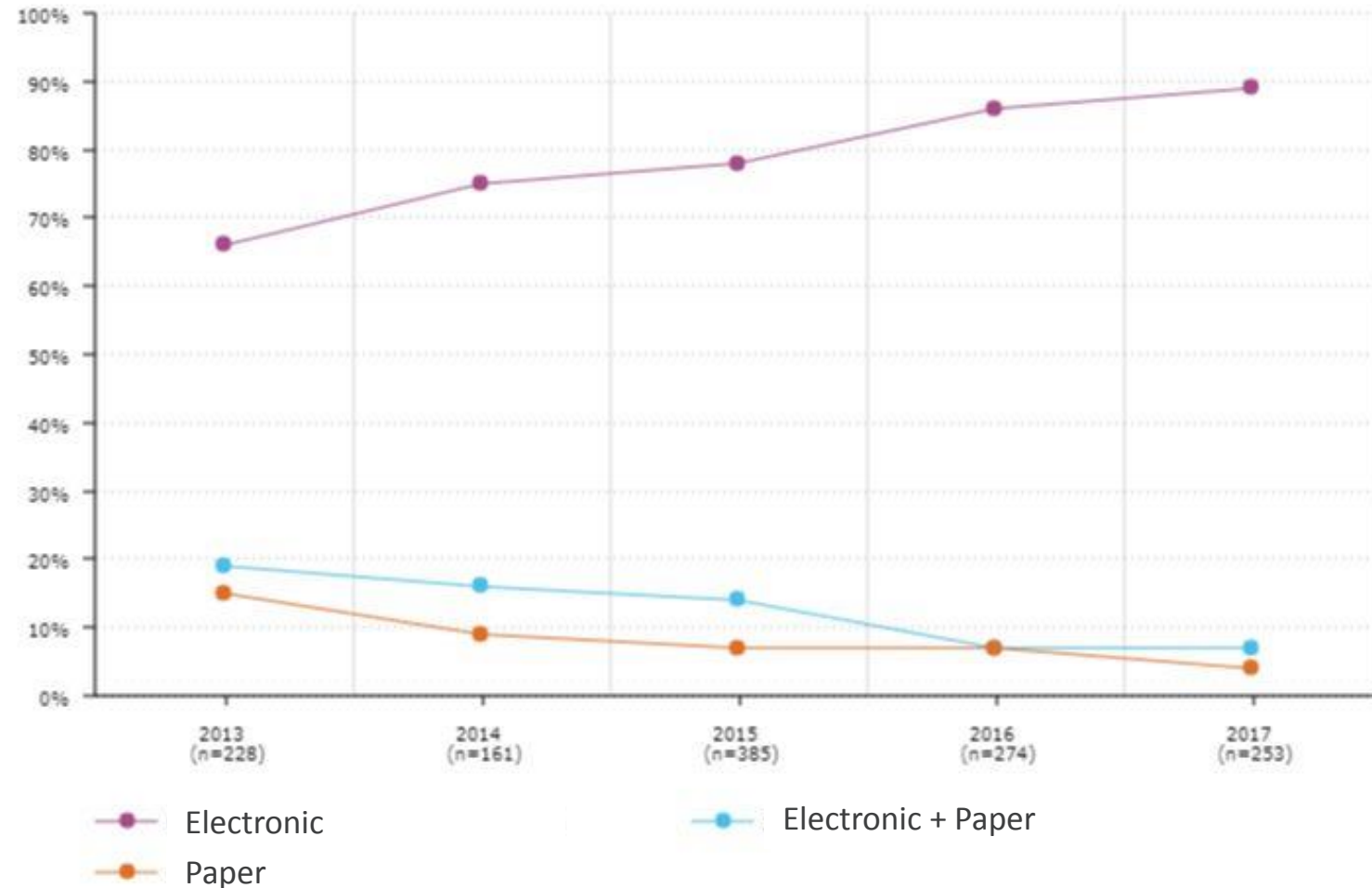
eHealth in NL - electronic information exchange
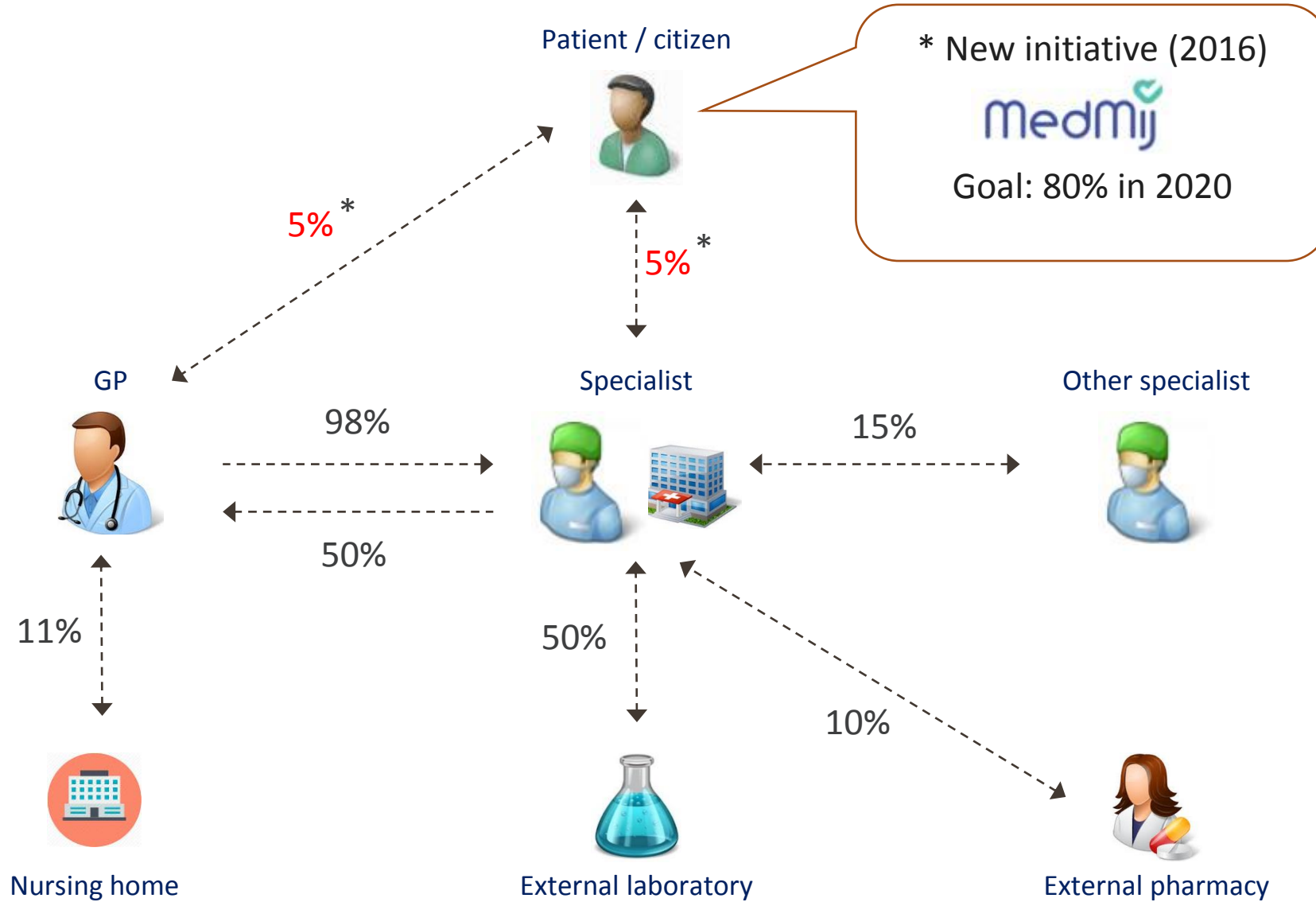
Transformation challenges in the Netherlands

1. Continuity of care - availability of information across organizations

2. Empowering citizens to take part in their own health situation

3. Upscaling interoperability, standards, governance

4. Closing the quality loop – to understand and manage healthcare better

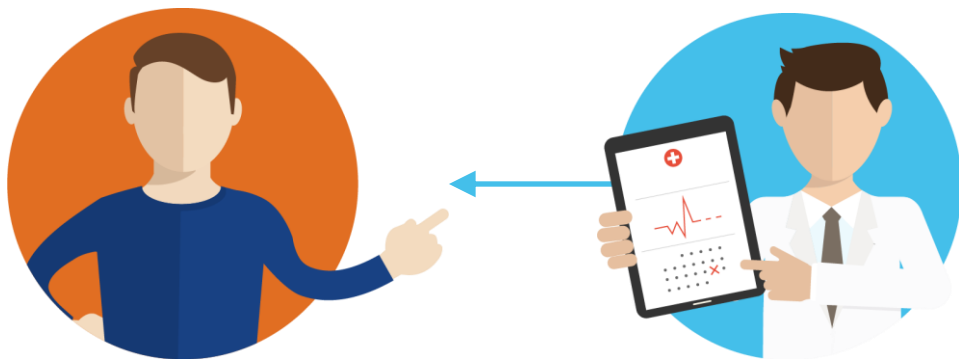Dutch eHealth Information Council – whole system in the room

Programs

NATIONAL HEALTH INFORMATION COUNCIL

- Personal Health Environment

- Data - Health and Care Information Model

- Infrastructure, common services

- Funding to provide data to patient

  - PHEs

  - Hospitals

  - GPs

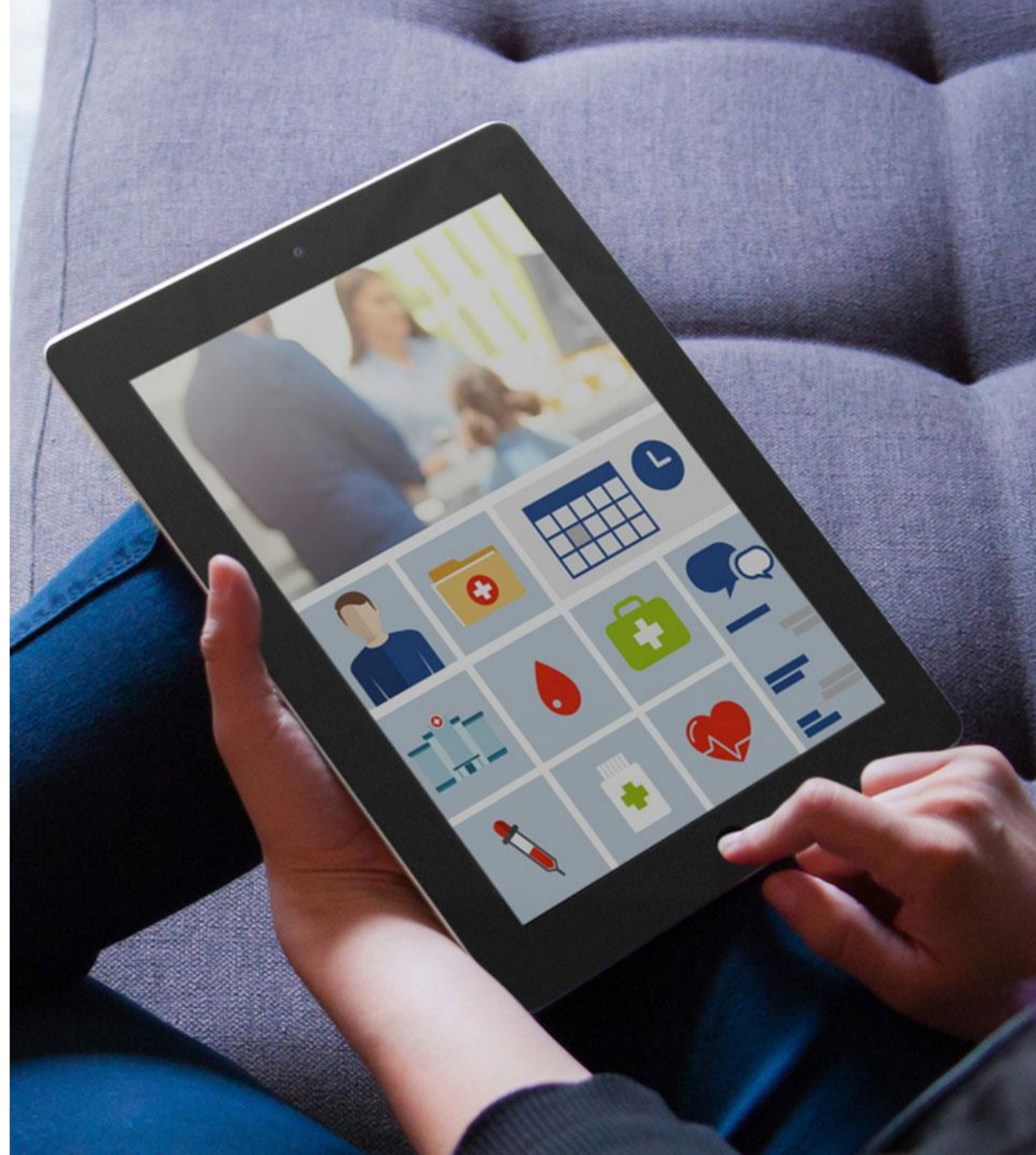 - Mental care

  - Infrastructure
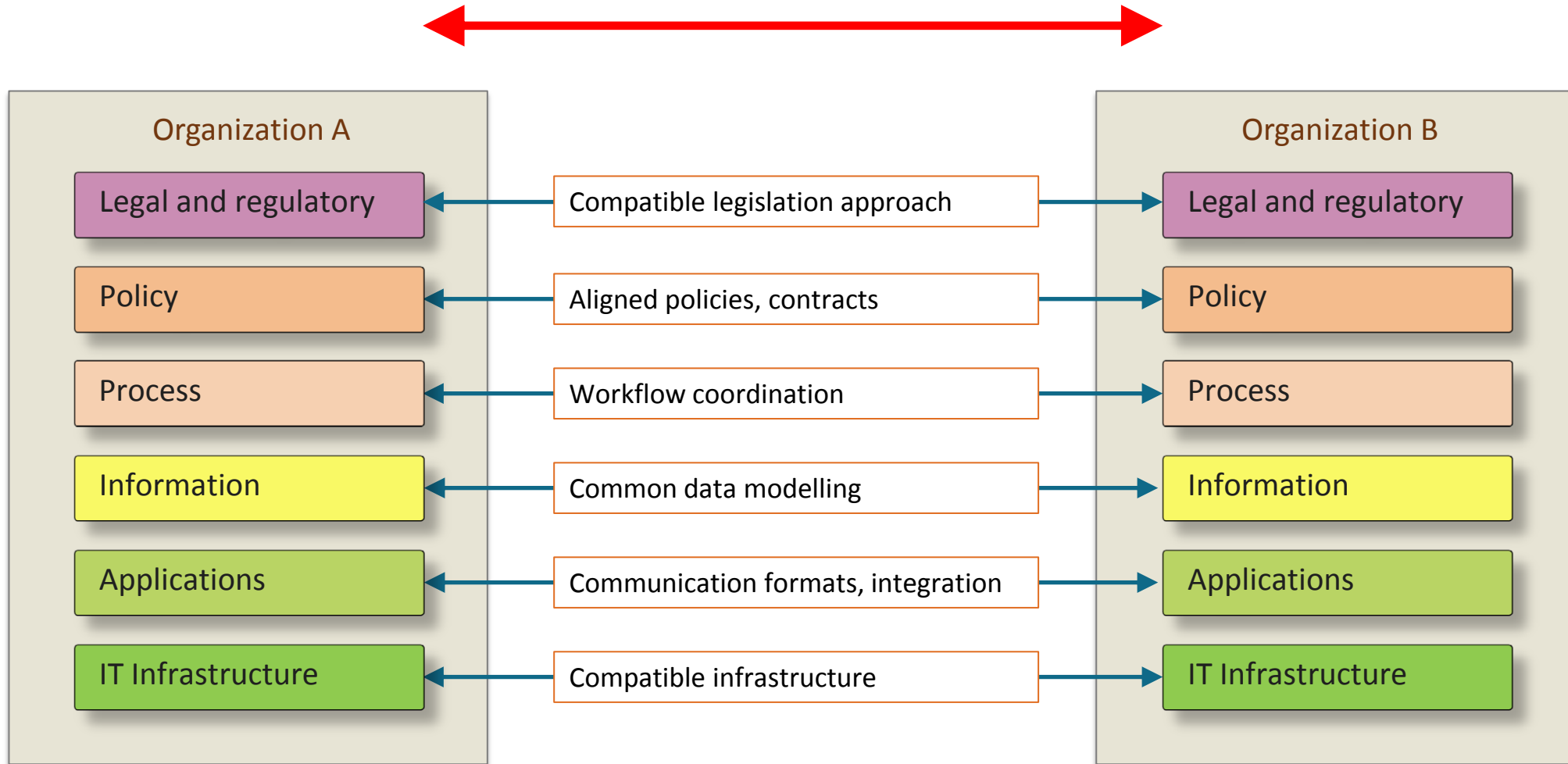
Continuity of care
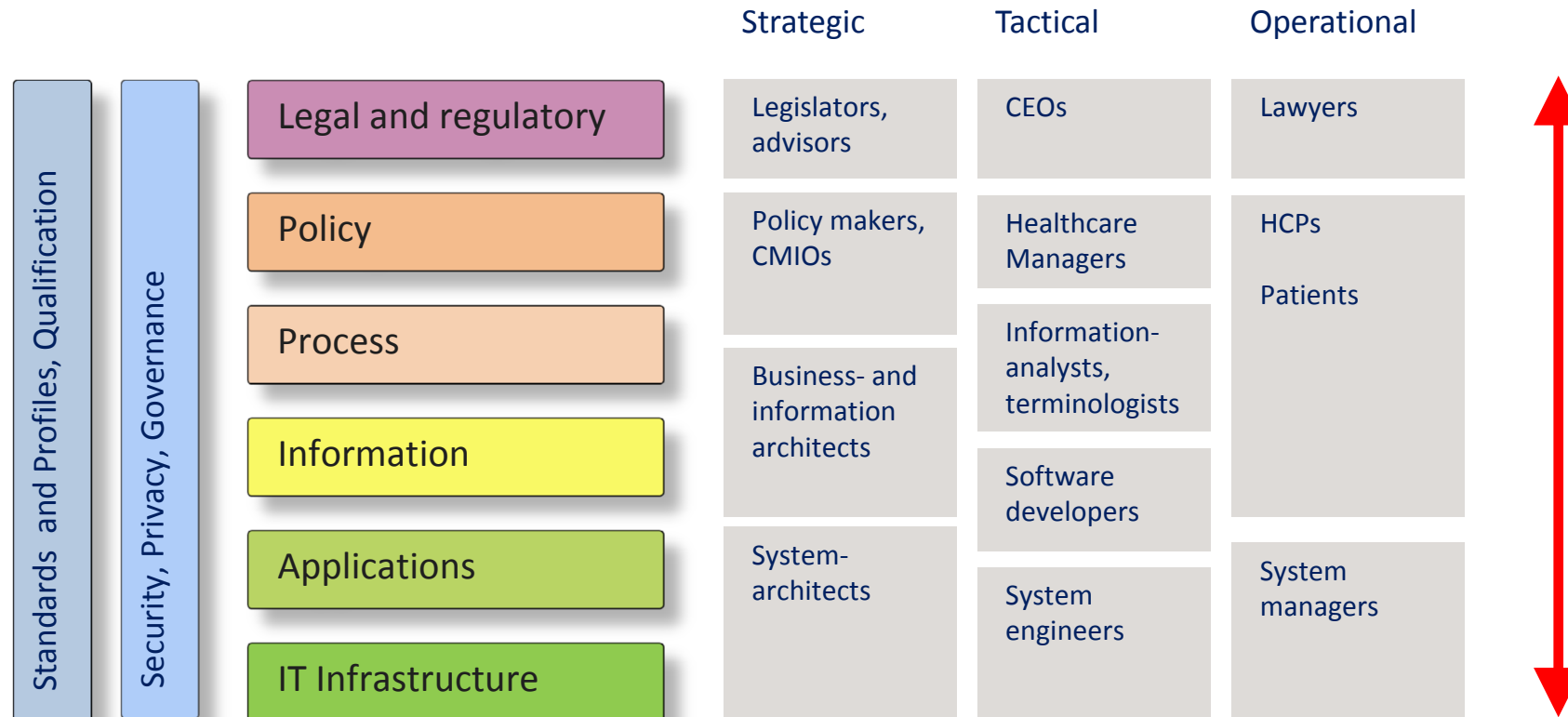
Healthcare, from one-on-one…

# Continuity of care

... to integrated care

Interoperability – agreements between organizations

Organization A		Organization B
Legal and regulatory	Compatible legislation approach	Legal and regulatory
Policy	Aligned policies, contracts	Policy
Process	Workflow coordination	Process
Information	Common data modelling	Information
Applications	Communication formats, integration	Applications
IT Infrastructure	Compatible infrastructure	IT Infrastructure

Interoperability – cooperation between stakeholders

# Chronic care is mostly self care. eHealth can bridge the gap.
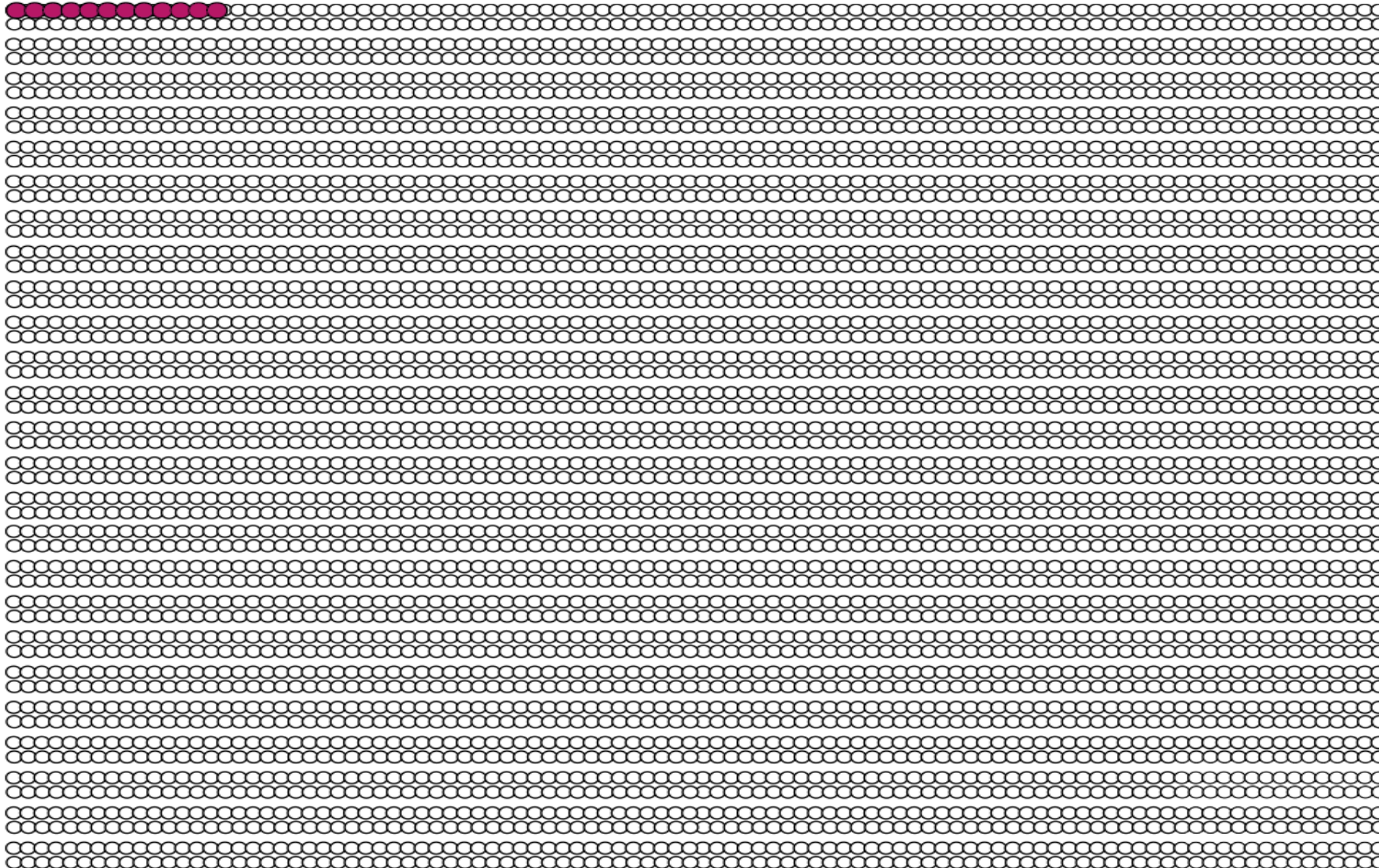
Empowering the patient

Analysis

➤ Currently, there are thousands of devices, apps, networks, platforms and portals.

➤ Many of them have similar functionalities. But none work together.

➤ Needed: a dashboard-environment that supports citizens to oversee and manage all relevant health related information, providing overview, clarity and insight.

➤ This platform can connect to other apps, devices and services, sharing information.

➤ eHealth enables and empowers citizens to improve their own health.
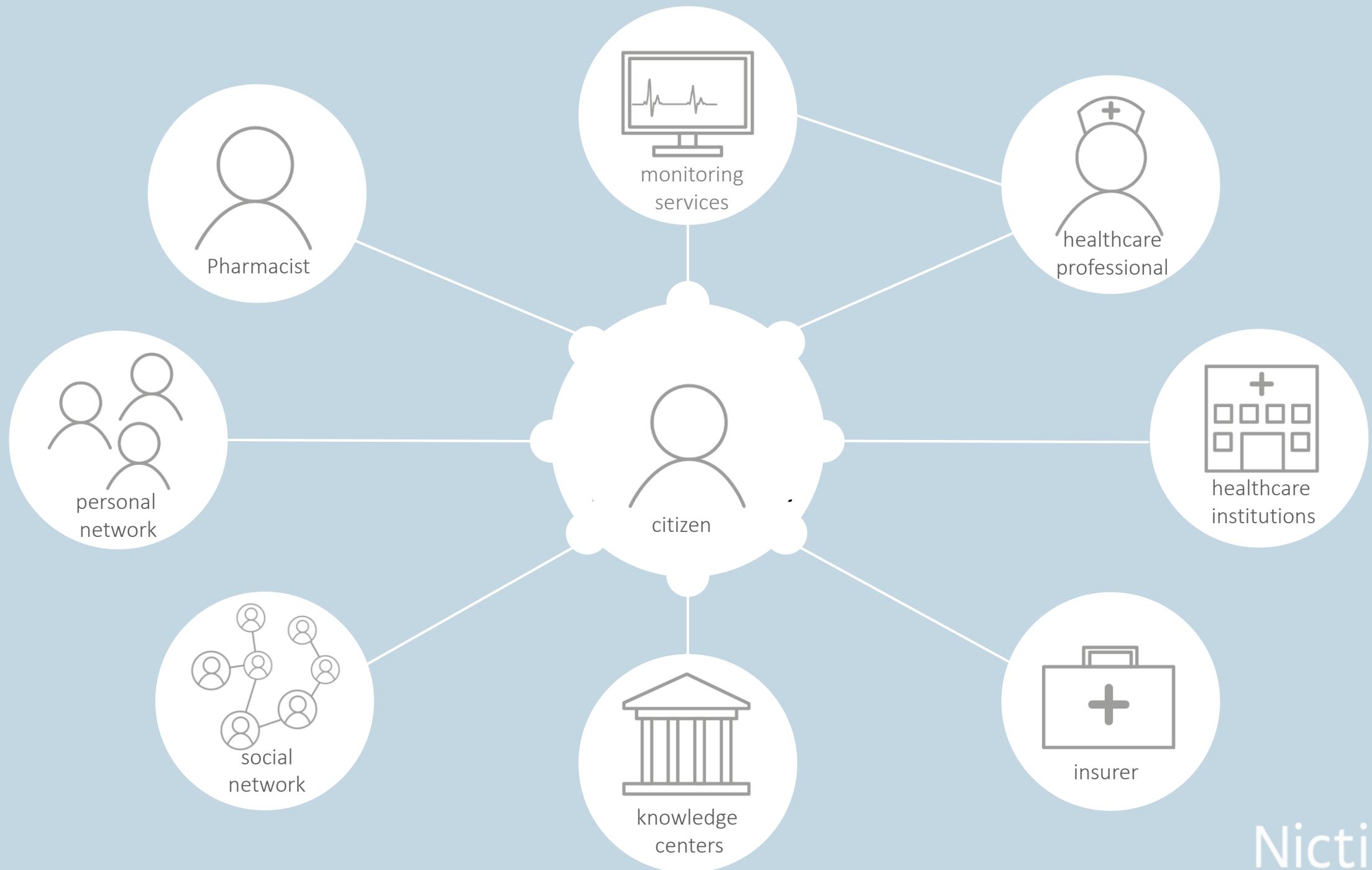
MedMij

Collaboration of

- Ministry of Health
- Patient organizations
- Healthcare insurers
- Nictiz

Actions

- Patient involvement
- Standardization
- Safety and security, legal
- Funding (startup and structural)

Health and Care Information Models – HCIMs

✓ Functional definition of small clinical information objects

✓ As small as possible, as large as needed – keep it simple!

✓ Linked to terminologies

✓ Independent of use case or technology

✓ Based upon Detailed Clinical Models

✓ Harmonized with eHN Guidelines

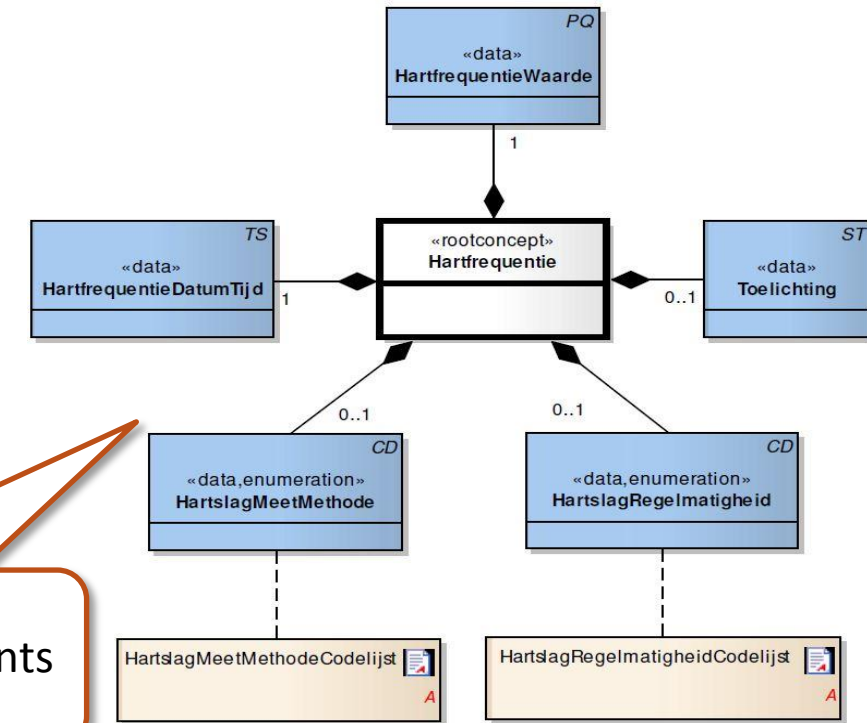✓ Technically defined in CDA and in FHIR

Example HCIM: Heart Rate

Inhoudsopgave

Specification of Concept

Specification of Data Elements

Specification on how Data Elements are recorded

HartslagMeetMethodeCodelijst		OID: 2.16.840.1.113883.2.4.3.11.60.40.2.12.3.2		
Concept Name	**Concept Code**	**Coding Syst. Name**	**Coding System OID**	**Description**
Palpation	113011001	SNOMED CT	2.16.840.1.113883.6.96	Palpatie
Auscultation	37931006	SNOMED CT	2.16.840.1.113883.6.96	Auscultatie
Cardiac monitoring	88140007	SNOMED CT	2.16.840.1.113883.6.96	Cardiale monitoring
ECG	46825001	SNOMED CT	2.16.840.1.113883.6.96	Electrocardiografie

«data»	HartfrequentieWaarde	
Definitie	De hartfrequentie gemeten als aantal slagen per minuut.	
Datatype	PQ	
DCM::DefinitionCode	SNOMED CT: 364075005 Heart Rate (Observable Entity)	
DCM::DefinitionCode	NL-CM:12.3.2	
DCM::ExampleValue	76/min	

Connecting the infrastructures

Current situation

- National infrastructure - textual (medication, GP exchange).
- 10 IHE XDS Affinity Domains, regional initiatives (± 40% of the hospitals).
- Regional organizations.

Goals

- Create a combined network, on a national level.
- Based upon a set of rules, on all levels of interoperability.
  - Guide to interoperability between XDS Affinity Domains.
  - National XDS metadata set definition.
- Proposition for funding; focus on clear and strong business cases.

Digital transformation, lessons learned

- Look beyond simple migration from paper to electronic, with a planned strategy.

- Use the possibilities of ICT to change the way healthcare works.

- Use bottom-up creativity and cooperation, facilitate innovations top-down.

- Use best practices, standards and profiles, use a modular approach.

- Split functional from technical requirements.

- The technical part is the easiest.

- Connect with other countries.

- The pie is big, but you can eat the small pieces.
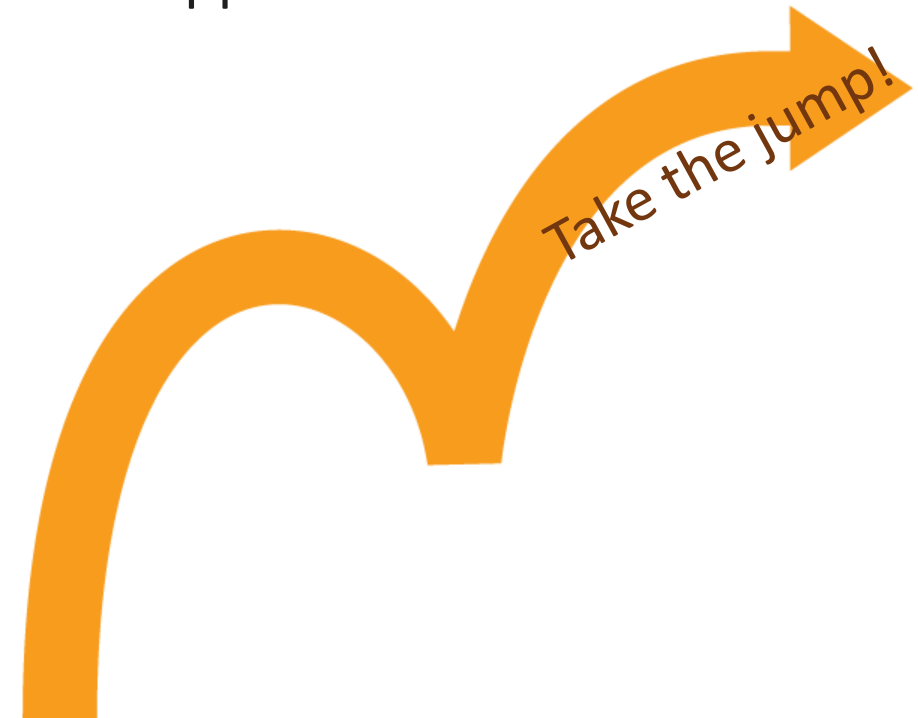
Take the jump!

Take the jump!
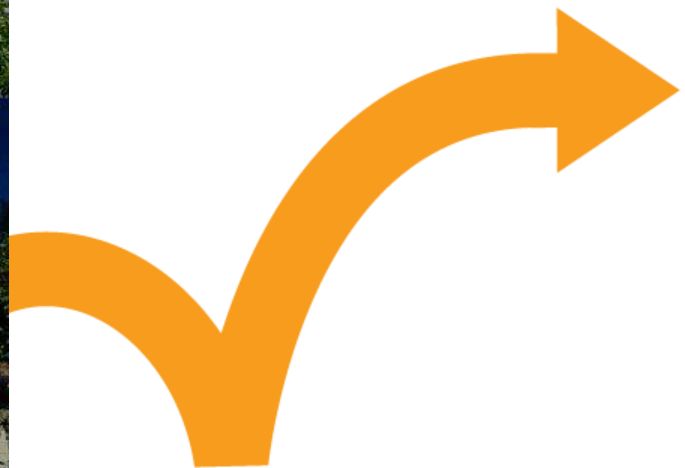
Vincent van Pelt

- Nictiz: senior advisor
  - Member IHE NL, EU, International (ITI TC)
  - Member CEN IPS
  - Member HL7 FHIR Advisory Board
  - PHE - Personal Health Environment
  - Oncology

- Previous activities:
  - Medical Doctor
  - Software developer
  - Senior Product Manager (iSOFT)

Links

- Email: pelt@nictiz.nl
- LinkedIn: https://www.linkedin.com/in/vincentvanpelt/
- Nictiz: www.nictiz.nl
- HCIMs: https://zibs.nl/wiki/HCIM_Mainpage
- eHealth Monitor: https://www.ehealth-monitor.nl/
- ART-DECOR: http://art-decor.org/art-decor/home
- ART-DECOR NL: https://decor.nictiz.nl/art-decor/home
- Handbook XDS Document Sharing Metadata: https://www.ihe.net/resources/user_handbooks/
- Guideline for XDS metadata: 'XDS metadata for exchange medical documents and images guideline
- Nictiz - Guide to interoperability: https://www.nictiz.nl/overig/guide-to-interoperability-between-xds-affinity-domains-2015/