

**The NHS is on**  **FHIR**<sup>®</sup> <sup>©</sup>

Clinical and technical collaboration  
through  
PRSB and INTEROPen

**Dr Philip Scott**

Senior Lecturer in Information Systems,  
University of Portsmouth, UK  
Chair, EFMI Evaluation Working Group  
Past Chair, HL7 UK

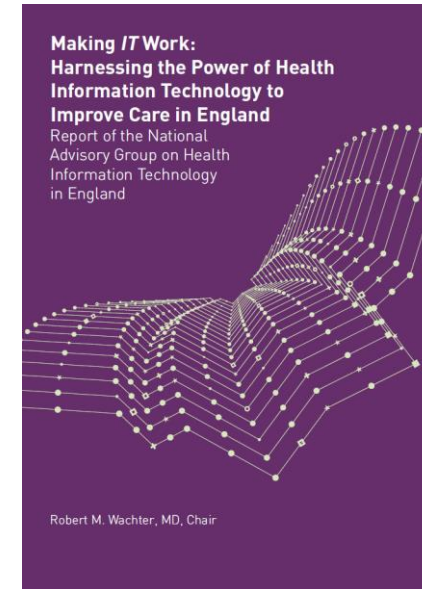
# Overview

- Background
- Technical standards
  - Terminology
  - Interchange
- Clinical standards: PRSB
- New collaboration: INTEROPen
- Local Health and Care Records

**Background**

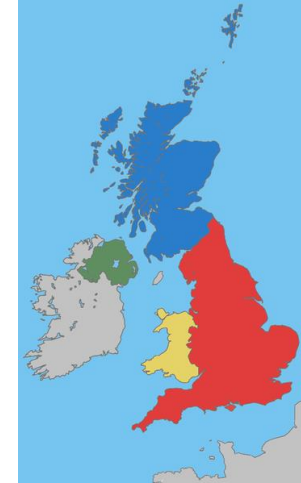
# NPfIT: Wachter verdict

“the National Programme for IT (NPfIT), launched in 2002 – was shut down in 2011 after having **mostly failed** to achieve its goals”



# The UK ‘federation’

- Devolved governments control health policy
- Current UK populations and NHS expenditure:
  - England (55m, £116bn)
  - Wales (3m, £6bn)
  - Scotland (5m, £12bn)
  - Northern Ireland (2m, £5bn)
- England since 1990s has pursued “plural provision” (internal market) but “ACOs” are seen as the future.
- Wales and Scotland maintain central NHS coordination.
- Northern Ireland healthcare is managed with social care.



# “The” NHS?

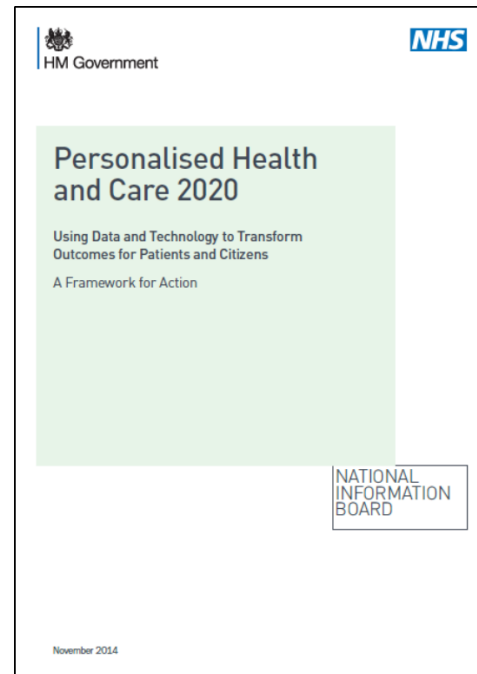


# Five Year Forward View (2014)

- Gaps: health outcomes, care quality, funding & efficiency
- “Radical new care delivery options” (locally flexible)
  - *Multispecialty Community Providers*: groups of GPs, nurses, community care, hospital specialists, possibly social care and mental health services.
  - *Primary and Acute Care Systems*: integrated family doctor and hospital specialist services.
  - *Emergency care re-design*: integrated services from NHS 111, out-of-hours GPs, hospital ED, ambulance and urgent care walk-in centres.
- What do they all need?
  - ***Interoperability & adaptability***



# National Information Board (England)



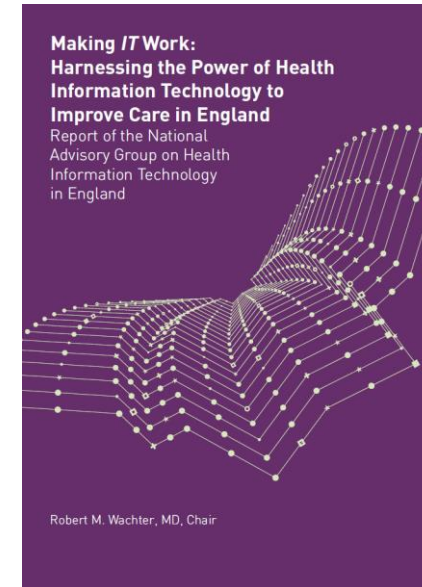
Care Quality Commission	NHS Trust Development Authority
Health and Social Care Information Centre	Public Health England
Health Education England	Association of Directors of Adult Social Services Informatics Network
Health Research Authority	Cabinet Office
Human Fertilisation and Embryology Authority	Department of Health
Human Tissue Authority	
Medicines and Healthcare products Regulatory Agency	
Monitor	
National Institute for Health and Care Excellence	
NHS Blood and Transplant	
NHS Business Services Authority	Independent Information Governance Oversight Panel
NHS England	Local Chief Information Officer Council
	Local Government Association
NHS Litigation Authority	Strategic Clinical Reference Group



# **Technical information standards**

# Wachter report

**“National standards for interoperability should be developed and enforced, with an expectation of widespread interoperability of core data elements by 2020”**



# NHS exchange standards

- Spine (PDS, GP2GP, EPS): HL7 v3
- Lab results to GPs: EDIFACT
- Hospitals (internal): HL7 v2.x + proprietary
- Some CDA (discharge summaries)
- Most new work: FHIR

# NHS terminology standards

- Hospital performance/billing: ICD-10, OPCS.
- Radiology: NICIP procedure codes → SnCT.
- Labs
  - Only proprietary internal standards.
  - External: PBCL Read subset for GP messaging (biochemistry, haematology and microbiology).
  - LOINC used in patches.
- Pharmacy: GS1 by 2019/20 [?].

# NHS terminology standards

- Primary care: Read codes → SNOMED CT by Apr 2018 (!)
- Primary care prescribing: dm+d (SNOMED CT UK Drug Extension).
- Aim is 'paperless NHS' using SNOMED CT for everything by 2020.

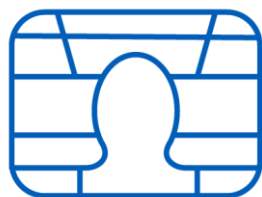




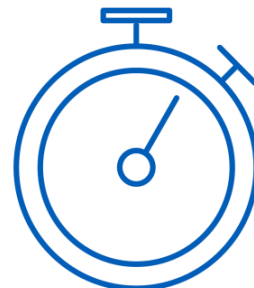
# NHS CCIO priorities



**Staff ID**



**Citizen ID**



**Dates and  
scheduling**



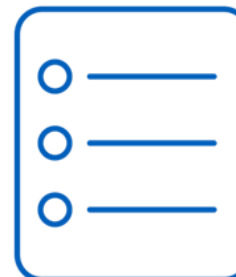
**Basic  
observations**



**Basic  
pathology**



**Medications**



**Diagnostic  
codes**

# **Clinical information standards: PRSB**

# PRSB: Patient & Professional Voice

- “Technical standards alone do not ensure the ability for information systems to transfer interpretable health data around the NHS” (DHID Joint Working Group, 2012).
- **Professional Records Standards Body for health and social care (PRSB)** was established in 2013, with representation from all UK nations.
- PRSB members are the Royal Colleges and other professional bodies including patient representatives and British Computer Society (BCS).
- PRSB has been confirmed as 'the preferred route for clinical involvement in patient record keeping national activities' by the National Information Board (England).





# PRSB founder members

- National Voices (umbrella patient group organisation)
- Royal College of Physicians
- Allied Health Professions Federation
- Royal College of Nursing
- Royal College of General Practitioners
- Royal College of Pathologists
- Royal College of Surgeons of England
- Royal College of Psychiatrists
- Royal College of Paediatrics and Child Health
- Academy of Medical Royal Colleges
- Association of Directors of Adult Social Services
- British Computer Society (BCS)

# Existing and developing standards

The screenshot shows a web browser window with the URL <https://theprsb.org/standards/>. The page features the PRSB logo (Professional Record Standards Body) and a navigation menu with links to HOME, STANDARDS, PROJECTS, USING OUR STANDARDS, NEWS, and ABOUT US. A dropdown menu is open under the STANDARDS link, listing various standard categories. To the right, a section titled 'PRSB STANDARDS' lists specific standards with links to their respective pages. The browser's address bar and tabs are visible at the top.

**Professional Record Standards Body**

Better records for better care

HOME STANDARDS PROJECTS USING OUR STANDARDS NEWS ABOUT US

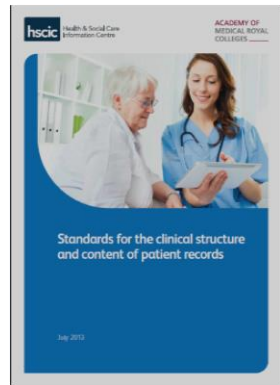
**CLINICAL REFERRAL INFORMATION**

- CRISIS CARE SUMMARY
- DIGITAL CARE AND SUPPORT PLAN
- E-DISCHARGE SUMMARY
- EMERGENCY CARE DISCHARGE
- HEALTHY CHILD RECORD
- MATERNITY RECORD
- MENTAL HEALTH INPATIENT DISCHARGE
- OUTPATIENT LETTERS
- STRUCTURE AND CONTENT OF HEALTH AND CARE RECORDS
- STRUCTURE AND CONTENT OF AMBULANCE RECORDS

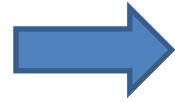
**PRSB STANDARDS**

- [Clinical referral standard](#)
- [Crisis care](#)
- [Digital care and support plan](#)
- [Healthy child record](#)
- [E-discharge](#)
- [Emergency care discharge](#)
- [Maternity record standard](#)
- [Mental health inpatient discharge](#)
- [Outpatient letters](#)
- [PRSB standards for the structure and content of health and care records](#)

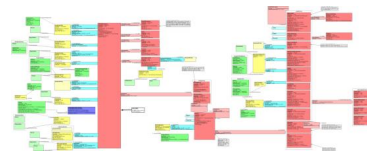
# PRSB information standards are technology agnostic



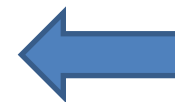
**Generic clinical  
information  
standard**



**Mind  
map**



**CDA templates**



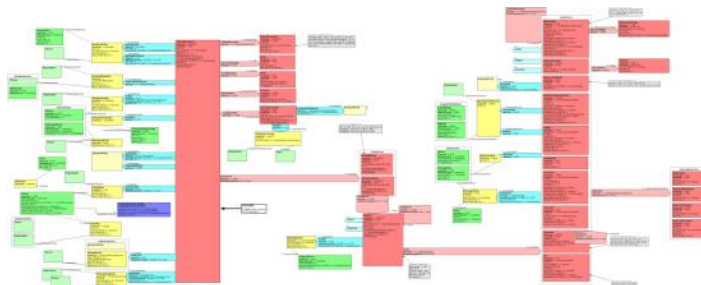
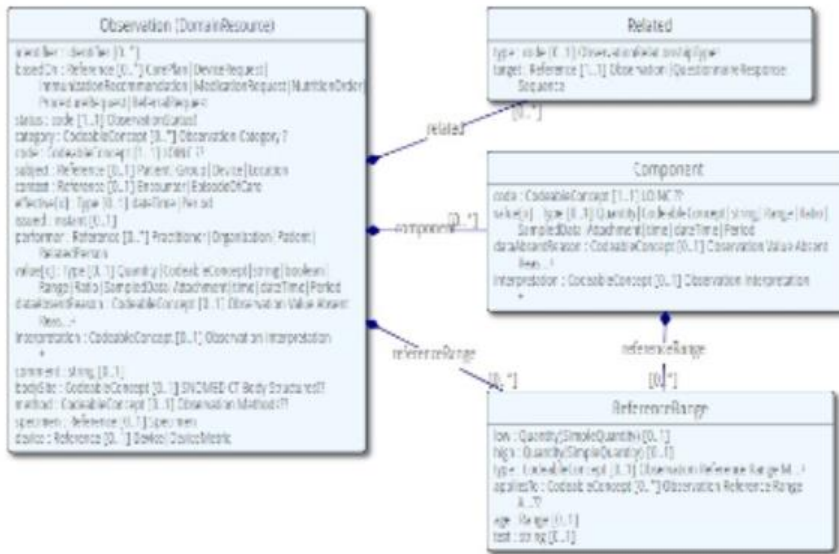
**Clinical and technical  
interpretation**



**FHIR profiles**

# Comprehension gap

- Information model  $\neq$  user interface design



**New collaboration:  
INTEROPen**

## Networks & Others

BCS (British Computer Society)  
Digital Health CCIO Network  
Digital Health CIO Network  
EMIS National User Group  
Innovative UK - Knowledge Transfer Network  
Klas Research  
NHS HACK DAY  
Northern Ireland CCIO Network  
One HealthTech  
OpenHealthHub CIC  
SOCITM  
techUK

## Care Organisations

Birmingham & Solihull LDR  
Birmingham & Solihull Mental Health NHS Foundation Trust  
Connecting Care Partnership  
Dorset Health & Care Community (Dorset CCG)  
Great North Care Record  
Greater Manchester Health & Social Care Partnership CDO  
Holding Your Hand Limited  
Humber, Coast and Vale STP  
Humber NHS Foundation Trust  
Imperial College Healthcare NHS Trust  
Lancashire and South Cumbria STP  
Marie Curie UK  
NHS Gloucestershire CCG  
NHS South, Central and West CSU  
North West London Care Information Exchange  
North Yorkshire County Council (Adult Social Care Services)  
Northumberland, Tyne and Wear NHS Foundation Trust  
Salford Royal NHS Foundation Trust  
Sheffield Health and Social Care NHS Foundation Trust  
Somerset Integrated Digital Electronic Record  
Taunton and Somerset NHS FT  
Tower Hamlet/Newham/City Hackney/Waltham Forest CCG  
University College London Hospitals NHS Foundation Trust  
University Hospitals Southampton NHS Foundation Trust  
York Teaching Hospitals NHS Foundation Trust

## ALBs

Health Education England  
Healthy London Partnership  
NHS Digital  
NHS England

## Standards Organisations

HL7 UK  
IHE UK  
OpenEHR  
PRSB (Professional Records  
Standards Body)

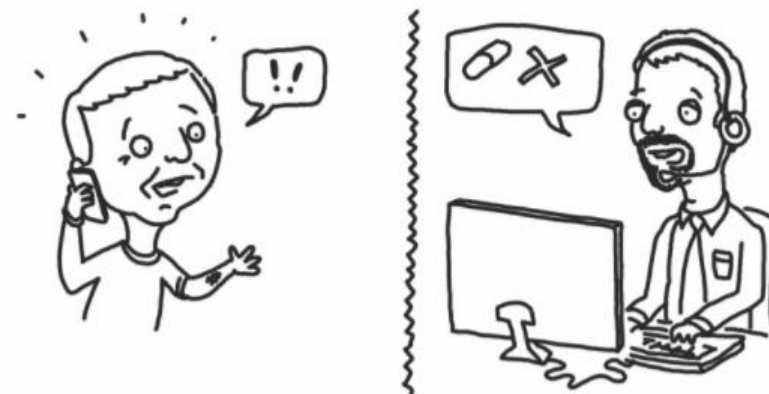
## IT Suppliers

AccuRx  
Active Medicine  
Advanced Health & Care  
Aire Logic Ltd  
Allocate Software  
Allscripts  
Answer Digital  
Application Insight  
Atos  
Boots  
Black Pear  
BT  
Cambio + Healthcare Systems  
Capita Health Partners  
Careflow Connect Ltd  
Carelink (Piksel Ltd)  
Cerner  
CGI Group  
CharityLog  
CheckWare  
Clinisys  
CommonTime  
CSC  
Cyber Media Solutions  
Deepmind Health  
Deontics  
Docman  
Egress  
Elsevier  
EMIS Health  
Endeavour Health  
Enovacom  
Epic  
Epro  
everyLIFE Technologies  
Experis  
Forcare  
FreshEHR  
G2 Speech B.V  
GPC Group  
Graphnet Health  
HCI Group (Tech Mahindra Ltd)  
Health Fabric  
Health Intelligence  
HealthForge  
Healthcare Gateway  
Healthlinked  
Huawei Technologies  
IBM  
IMD-SOFT  
IMMJ Systems (Mediviewer)  
IMSMAXIMS  
Inidus Ltd  
INPS  
Intelerad  
Intelesant  
Intersystems  
JAC Computer Services Ltd  
Kainos Evolve  
Mayden  
Medelinked  
Medical Connections  
Medxnote  
Microsoft Health & Life Sciences  
Microtest  
MphRx  
NHS Wales Informatics Service  
NoemaLife UK  
Northgate Public Services  
Nottinghamshire Health  
Informatics Service (NHIS)  
Nth Dimension  
OLM Systems  
Open Mapping Software  
Optum International  
Oracle  
Orion Health  
Ortivus  
OTTech Healthcare Consultancy  
Outcomes Based Healthcare  
Phillips Healthcare  
Pinnacle Health Partnership

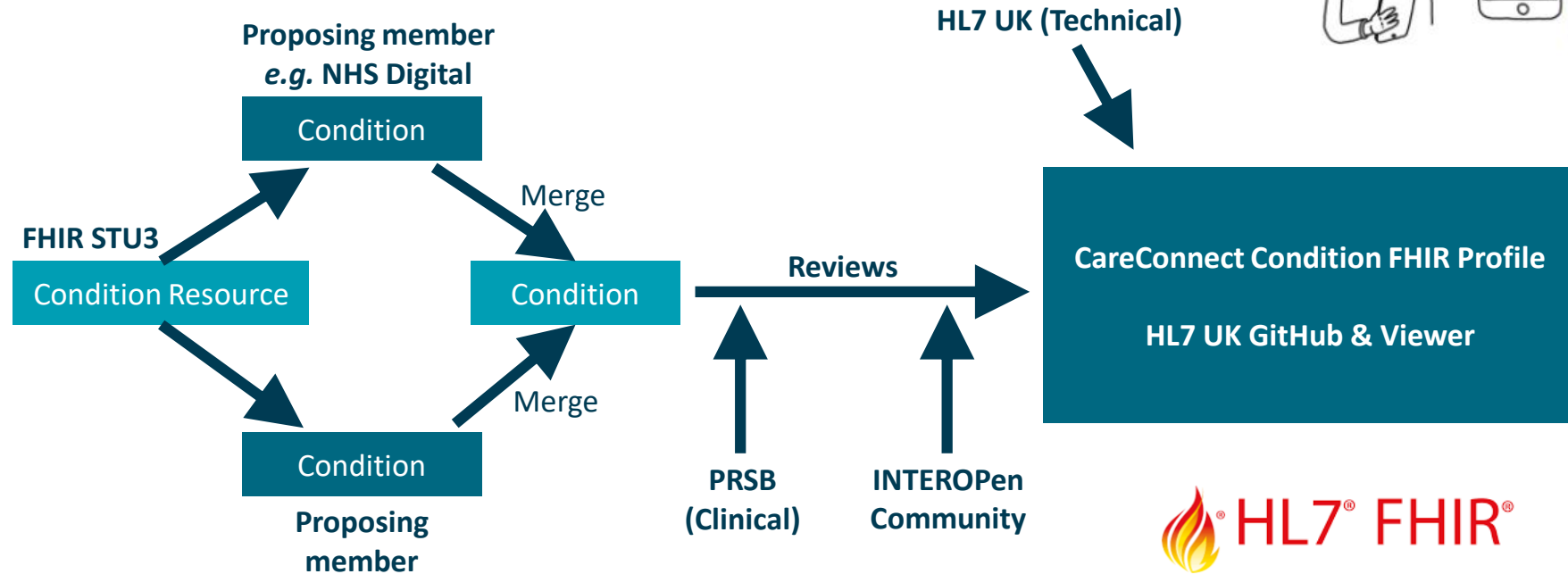
Prederi  
psHEALTH  
Pumpco  
Quicksilva Systems Integration Solutions  
Ramsey Systems  
Red Embedded Systems  
Restart Consulting  
Ripple  
Servelec  
Sitekit  
Soliton IT  
Solutions4Health  
Specialist Computer Centres  
Stalis  
Sunquest  
SystemC  
Targett Business Technology  
Tiani Spirit  
Tiny Medical Apps  
TotalMobile  
TPP  
Trisoft Ltd (Trisoft Healthcare)  
Virgin Media Business  
Vision Health  
Wiggly-Amps  
Wolters Kluwer Health  
"HealthLanguage"  
X-Lab



# What we're trying to achieve:

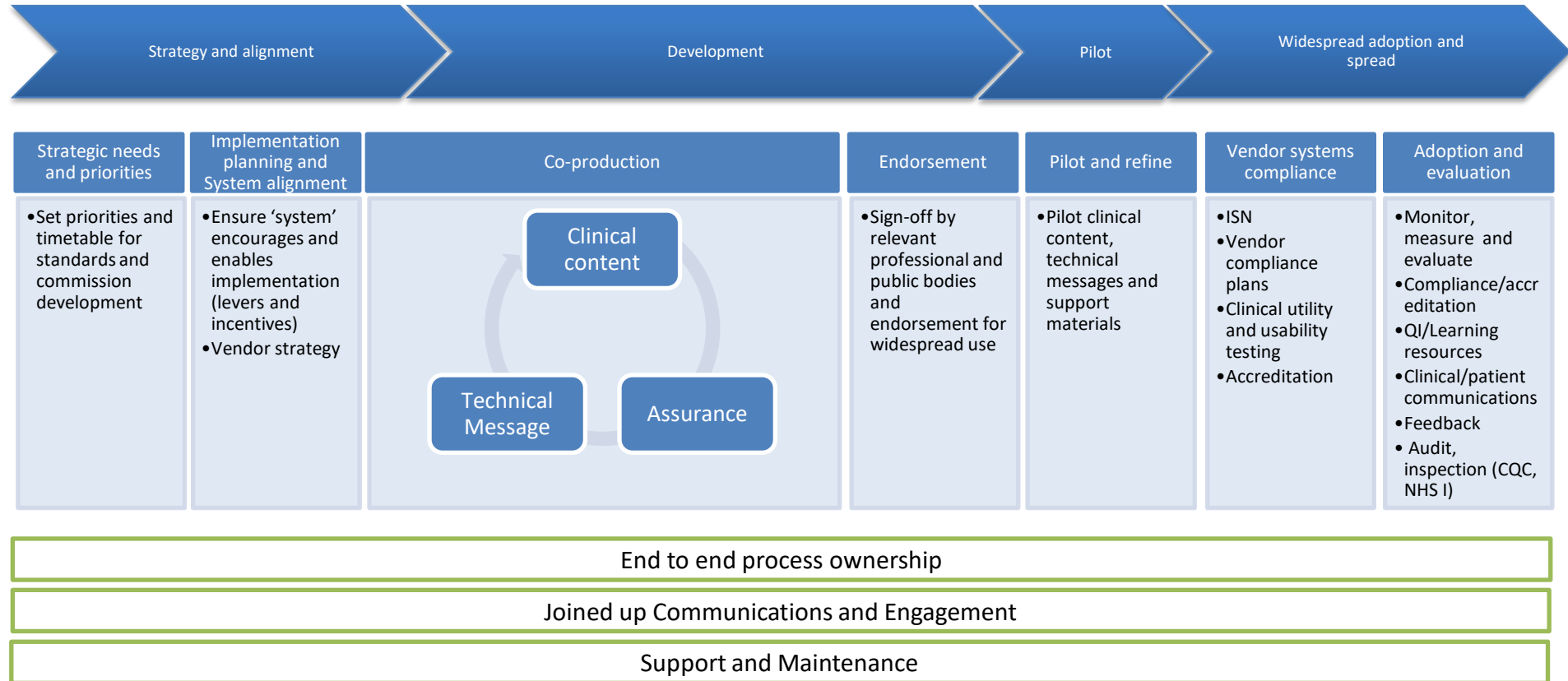


# CareConnect curation





# PRSB proposed end-to-end model

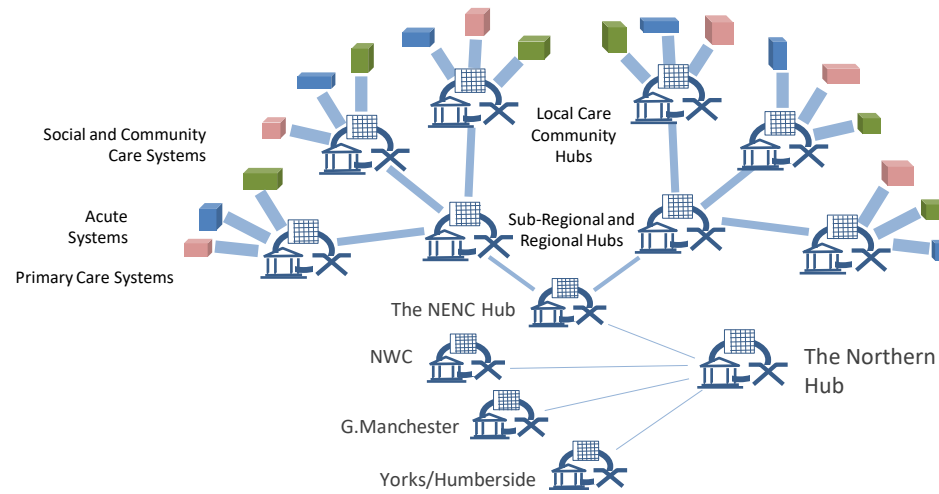


# **Local Health & Care Records**

# Regional EHRs

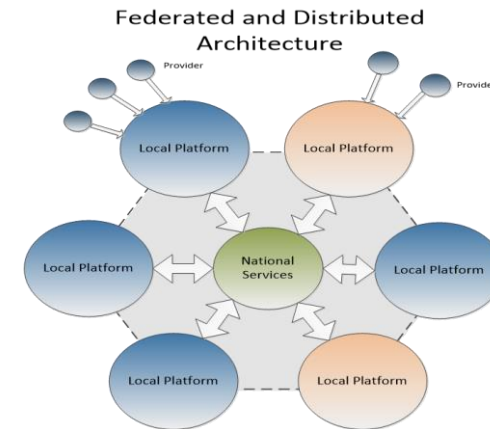


# Emerging “health internet”

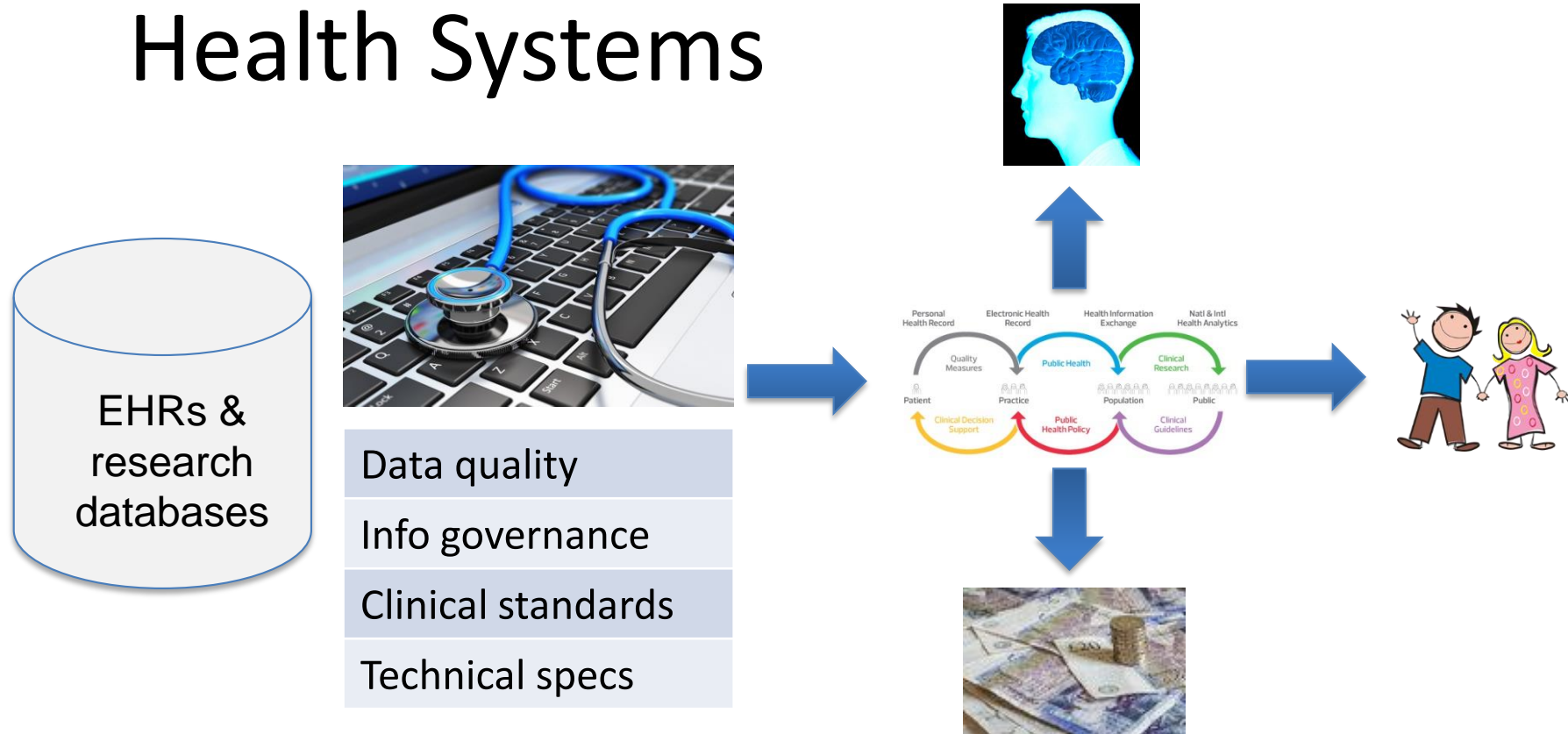


A regional view (reality)

National view (idealised)



# Goal: Learning Health Systems

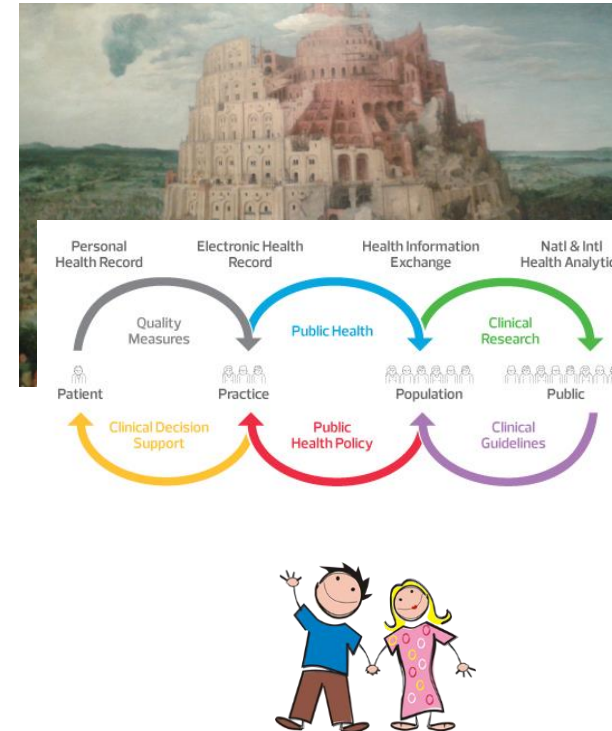


# Issues

- Clinical content terminology standards
  - Most hospitals don't yet use national drug dictionary ("dm+d").
  - Laboratories don't yet have a standard test catalogue (some LOINC, NHS wants SNOMED CT).
- Patient identification
  - Legacy data and legitimate NHS number exceptions.

# Summary

- Failed NPfIT
- Mixed technical standards
- New collaboration & clinical leadership
- Aim: Learning Health Systems



# Thank you for your attention

[Philip.scott@port.ac.uk](mailto:Philip.scott@port.ac.uk)



## Best wishes to HL7 Croatia