

*open*EHR



Sam Heard



openEHR.org

Glossary

EHR	Electronic Health Record (EMR, CPR, EPR)
CEN	Comité Européen de Normalisation
CCR	Continuity of Care Record from ASTM
HL7	Health Level Seven, an international health standards body based in USA with Australian affiliate
CDA	Clinical Document Architecture by HL7 Release 1: an XML DTD *Release 2: Version 3 based XML schema

Features of *openEHR*

Fundamentally clinical

- Supports clinical health care recording
- Supports this care in a distributed environment

Fundamentally European

- No language primacy
- Agnostic about terminologies
- Community enterprise

The GEHR Project

United Kingdom

St Bartholomew's Hospital
Medical College
The Royal Hospitals NHS Trust
City & East London FHSA
The Royal Marsden Hospital
University of Hull
SmithKline Beecham

France

Croix Rouge Francaise
C2V
Kalamazoo S.A.
France Telecom

Portugal

Instituto Clinica
Geral Zona Norte

Spain

Clinica Puerta de Hierro

Belgium

Health Data Management Partners
ERIM
Federation des Association Medecins
Generalistes de Bruxelles
Insitut D'Hygiene et d'Epidemiologie

Germany

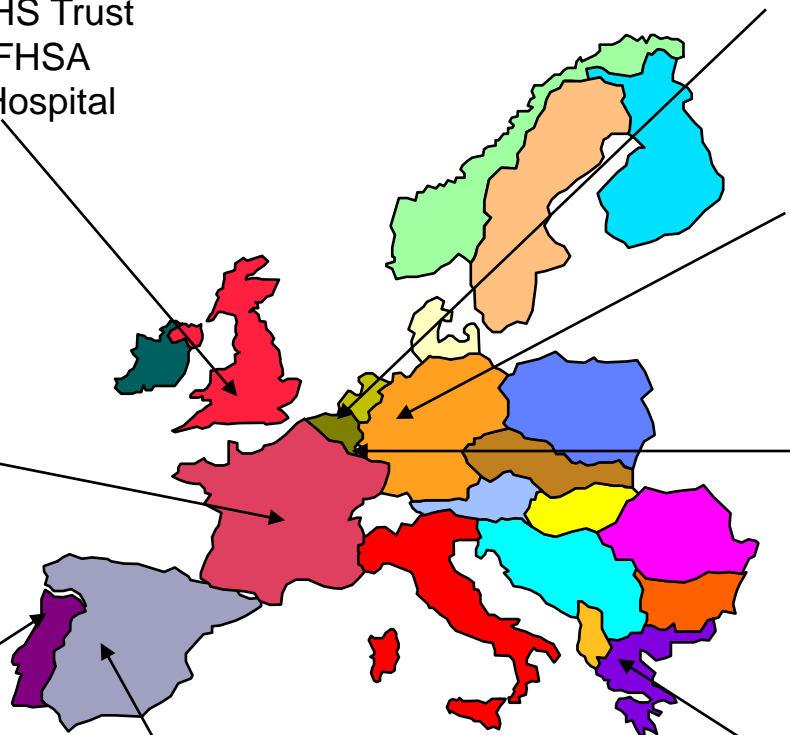
Zentralinstitut fur die
Kassenarztliche Versorgung

Luxembourg

Association des Medecins et
Medecins Dentistes
Microdata SARL
Centre de Recherche Public
Henri Tudor

Greece

University of Athens



Good European Health Record:
requirements and EHR architecture

1992



EHCR SupA:

revised requirements and architecture

Synapses:

FHR and Clinical Object Dictionary

SynEx:

middleware component architecture

Medicate:

remote asthma monitoring and alerts



Good Electronic Health Record

Formal Archetype approach

GPGC projects

- (1) EHR kernel services
- (2) legacy data transformation
- (3) diabetes extraction and merge

2004

6WINIT: wireless IPv6

mNET: wireless demonstrator



The *open*EHR Foundation

- began life in Australia
- MOU with CEN, 2001
- established as a non-profit organisation registered in the United Kingdom 2002.
 - founded by UCL & Ocean Informatics
 - Chair: Professor David Ingram
 - Deputy: Sam Heard
 - Director: Dipak Kalra
 - Director: Finance officer of UCL (Cengiz Tarhan)
- articles and incorporation documents are published on the website

The *open*EHR Foundation

Mission:

- To improve clinical health care via:
 - Interoperable life-long health records proven in practice
 - Open specifications, open source software and knowledge management resources
- To use standard quality processes to produce high quality specifications which are tested through implementation

The *open*EHR Foundation

Funding:

- Current; supported by University College London, Ocean Informatics – major contributions from Cambio, Linkoping Univ.
- Future; donations + business model based on conformance testing and archetype development

Jurisdiction:

- no official jurisdiction; aims to be appropriate for all types of health care, all localities, all languages

The *open*EHR Foundation

Requirements: research, develop and publish EHR requirements

Architecture: research, develop and publish open, modular architecture for EHR

Implementation: via the community, create open source implementations to validate approach, providing library of interoperable components

Clinical knowledge: to promote and develop clinical modelling approach, tools and models which empower users

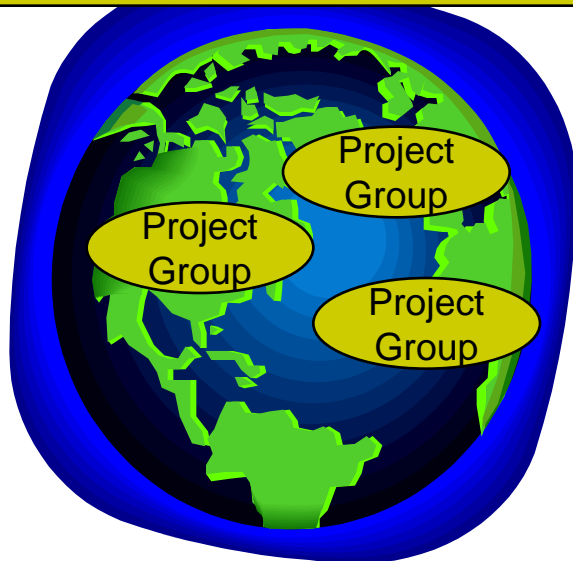
*open*EHR Foundation

- Driven by clinician and patient needs
- Specifications that compile, not just print.
- Implementation, not just explanation.
- Being the test bed for health IT standards.
If it doesn't work, we'll find out!
- Open & free specifications and source code
- It's a community

Activities

openEHR Board

Architecture Review Board



Technical

Clinical Review Board



Clinical

The *open*EHR Community

Who are its members?

- 1400 members, 84 countries

What levels of involvement are there?

- **Initial**: become a member on the website
- **Discussion**: subscribe to discussion lists – announce, technical, clinical

Technical stream

- **Experiment**: subscribe to implementors' discussion list
- **Use** software or specs and submit Problem Reports (PRs)
- **Join a project**: become a developer (see project pages), work with Change Requests (CRs) & submit changes

openEHR Products

Archetypes and tools:

- ADL reference parser (.net, java)
- Ocean archetype editor, LUI archetype editor
- Authoring and release control repository
- Workbench

Java EHR system (MySQL)

- EHR service
- Demographics service
- Archetype service
- Terminology access service
- Application component
- Test data & archetypes
- Basic GUI

*open*EHR Knowledge Manager

Requirements

- Controlled authoring environment
- Notification and review process for clinician experts
- Release management

Implementation

- Digital asset management with workflow control
- Web-based environment (linked)

openEHR references?

Europe

- CEN standard EN13606-part 2 (archetype model)
- Part I is based on openEHR circa 2002
- EuroRec/QRec: Archetype accreditation

UK/UCL

- Clef (MRC project) cancer research database system
- UCL open source development with a-code.se

Growing interest in South America, Asia

See <http://www.openehr.org/projects/>

Clinical Model Specification

UK NHS

- Creating archetypes to specify data models for the vendors
- Creating templates to specify how to use these archetypes at data entry time

Australian NEHTA

- Investigating transformations to CDA R2 using *openEHR* and Archetypes

Who is using it?

How are you doing? It has been a long time since we met in Atlanta enjoying some good blues and conversations. A lot of things have happened after that. In collaboration with the CDC (Bob) we started a health informatics department at the University of Zimbabwe. One of the achievements of this department was the development of an open source electronic patient records application for ART clinics. During the development we used a lot of ideas of the openEHR and Thomas' archetypes (btw. how is he doing? My greetings). In May last year we finished the first alpha version which was tested in a major Hospital in Zimbabwe and presented in October during the Southern African Health Informatics (HISA) conference in Kimberley (South Africa) where it got a prize for the best approach and presentation.

After that we started rewriting the application to include the findings of the pilot and to make a link to the DHIS (District Health Information System) of the South African Government and University of the Western Cape (Calle Hedgeberg). The application was written in .NET but didn't compile well under MONO. It was set-up as an ASP.NET application with MS SQL Server as a back-end and the EpiInfo Menu Browser as the GUI.

Dr. Frits van der Vorst, MD

5/9/05

Who is researching it?

University College London

University of South Australia

University of Central Queensland

University of Manchester, UK

University of Seville, Spain

University of Moratuwa, Sri Lanka

Mayo Clinic, Rochester, US

*open*EHR structure

Board appoints:

- Architecture Review Board
- Clinical Review Board
- Archetype Editorial Group

Democracy is through contribution to process

- Involvement in tool development and testing
- Submitting change requests
- Involvement in Archetype authoring, reviewing

Developments

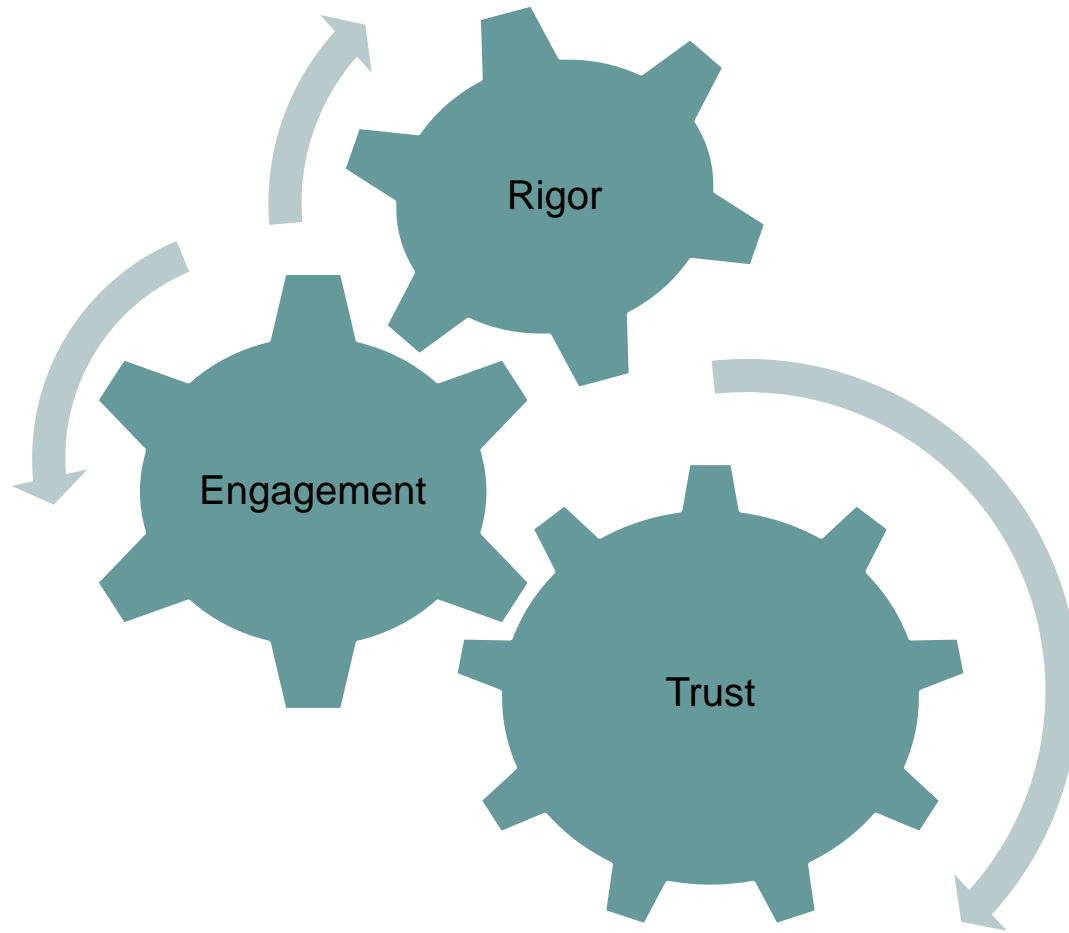
Clinical modelling

- Relationship with IHTSDO
 - Integration with terminology
 - Governance of archetypes
- National clinical engagement

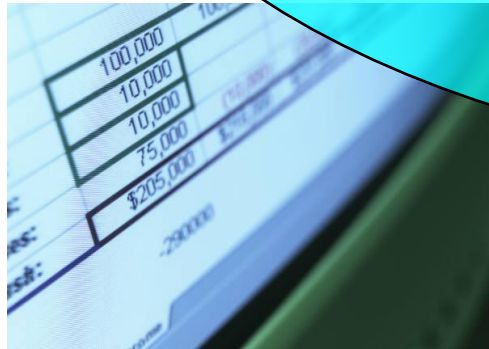
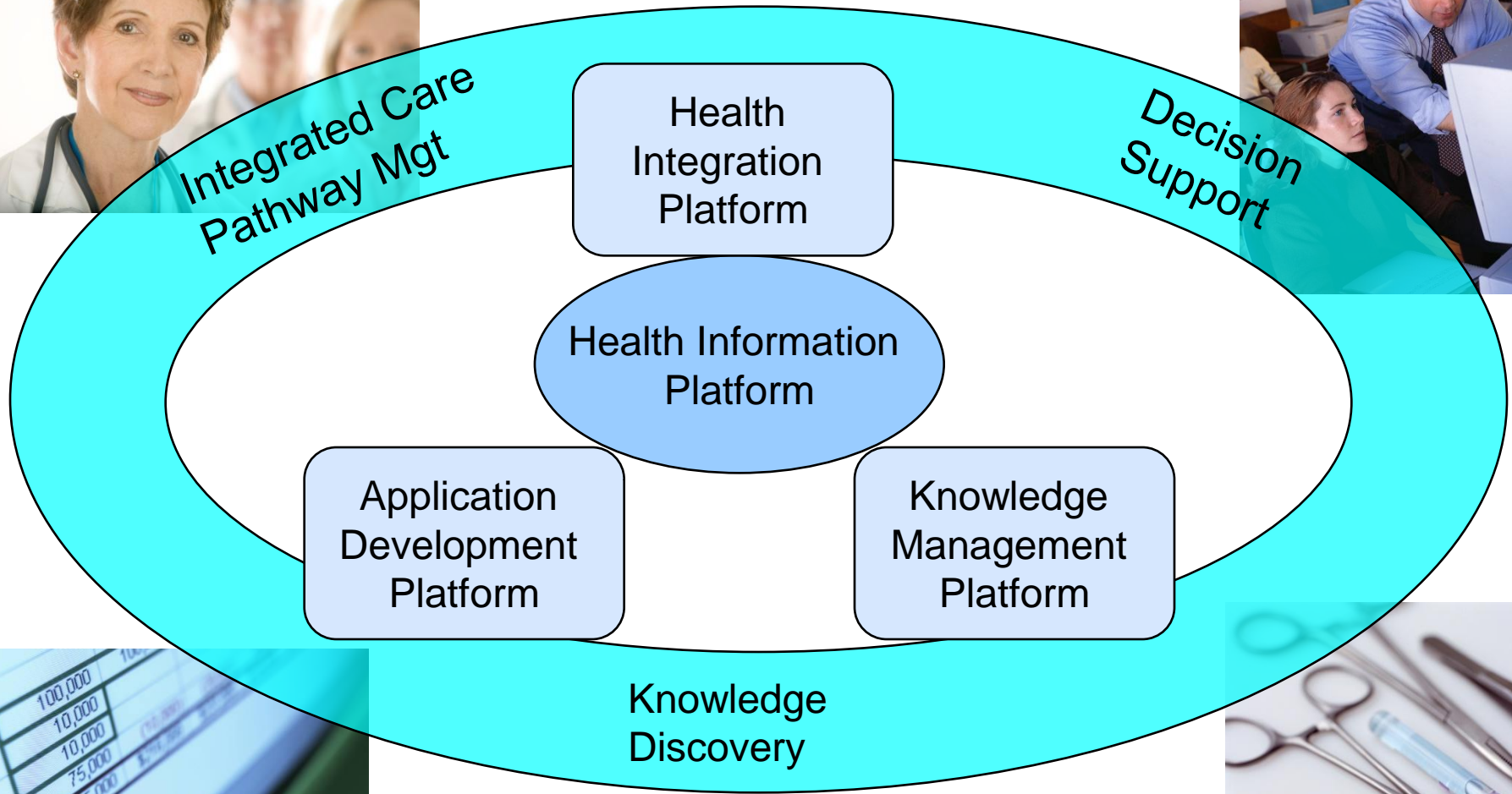
Software specifications and tools

- ? SDO status controlling the specifications
- Accreditation of software and systems

Principles

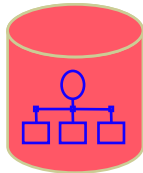


openEHR Health Computing Platform



The logical EHR

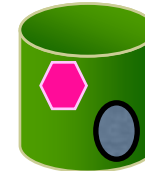
Clinical trials,
functional genomics,
public health databases



Clinical databases



Decision support,
knowledge management
and analysis components



Shared logical
EHR
Shared domain
knowledge

Personnel registers,
security services

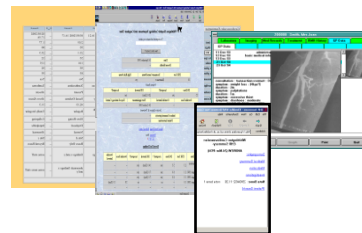


Mobile devices



Clinical devices,
instruments

Dipak Kalra, UCL



Clinical
applications

openEHR.org

Computing platform for Health

- Reference model as the universal container and record management
- Archetypes as the specification of how to represent information
- Templates as the specification of how to use archetypes in different settings
- Service specification as how to interact with the EHR Service
- Archetype repository as how to manage archetypes