Interoperability is a Mindset
not a Technology
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Interoperability

- Very much in the foreground for NHS England
- Many driving forces, and organisations
- Many approaches and contributing technologies
Interoperability

- Interoperability
- Integration
- Data/Information Sharing

- Terms used interchangeably
Interoperability

- Interoperability
- Integration
- Data/Information Sharing
- Terms used interchangeably

This is messy thinking
Interoperability in Healthcare

- Means being able to send information from one healthcare system to another

  and

- For the information to be meaningful in both places

- Useful in multiple contexts
Consider by example, a Hospital Radiology

- Multiple systems
- Multiple data formats
- Structured / unstructured approaches
- Integration can bring some success
Consider by example, a Hospital Radiology

- Multiple systems
- Multiple data formats
- Structured / unstructured approaches
- Integration is the tool set – interoperability is a mindset
OK for Radiology .. But in the bigger world of Healthcare Information there is more to consider

- Privacy and consent
- More data types
- Aggregation/Federation
Three Different interoperability approaches - all of them are important

- IHE XDS
- FHIR
- openEHR
Pros and Cons

**Pros**

- **Network Approach**
- **Distributed federated systems**
- Central Index (means not relying on EHR)
- **Privacy and consent model** for regional solutions
- Practical – documents approach
- **Structured and unstructured data** – very practical
- Pub sub model and advanced workflow

**Cons**

- **Document based** model – can make it hard to get to individual data elements
- **Uses SOAP** not Restful API endpoints (but integrates with FHIR – see later)
- XML based, can be harder for integrators
- Not favoured by NHS Digital and INTERopen

Mature – in use globally
Pros

- Information Exchange protocol, uses Restful APIs
- Designed for easy readable integration – good for connecting EHRs and portals
- Has more detailed data modelling (but still under construction). **FHIR resources**
- Strong backing from NHS Digital and INTEROpen

Cons

- Privacy and consent not managed network wide (local system to system agreements)
- **No Central Index** – relies on EHR or other application
- Workflow driven from individual applications – not within the FHIR standard

Maturing – in use globally
Pros and Cons of openEHR

Young – in use globally

Pros

- **Data modelling methodology** – bottom up approach to Interop
- Shared understanding of model => shared information
- **Strong link to clinically driven data structures - archetypes**

Cons

- You have to have a big appetite for making your own systems
- **Data modelling is not a trivial task**
- International community still young in this area
- Strong market resistance from big suppliers
Interoperability is a Mindset - not a technology

- It’s not the technology that’s important – each with Pros and Cons
- It is the intention
- It is how you use these tools
- ..to achieve interoperability
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  - ..to achieve interoperability

Thank you

Please come and talk more

Forcare Stand 239
Standards and their evolution

Technological Evolution

- EDIFACT MD9
- INTERFILE
- HL7
- DICOM
- XDS
- FHIR
- COM/DCOM
- Active X
- CCOW
- GEHR-> openEHR
- openEHR
- WADO
- RAD69
- (web services)
- HTTP(S)
- SOAP
- REST
- XML
- JSON

TIME

2004
XDS

- Stands for Cross(x) Document Sharing
- Provides meta-data to reference document or other information blobs
- Can manage structured data (like CDAs)
- Or unstructured data like pdf’s
- Mature technology
Some Key Aspects of XDS

- A central registry – publish subscribe model
- Knows where all information is stored
- Information filed correctly (patient id and clinical context)
- Data sources can confidently store information (it will be linked)
- And consumers can trust the information
Some Key Aspects of XDS

- An entity to track who is accessing what (ATNA)
- Has Patient Privacy and Consent Management
- Publish subscribe model. Subscription module for workflow.
- Link to other domains
  XCA = Cross Community Access
Hospitals, labs, clinics

GP practices, care homes .. and people’s homes

Consumer

Hospitals, labs, clinics

Consumer

GP practices, care homes .. and people’s homes

Consumer

Consumer

Audit Record Repository

Registry

Consumer

Registry

Repository

Source

Repository

Source

Repository

Source

Repository

Source

Repository

Source
- Fast Healthcare Interoperability Resources (need to understand history to understand ‘fast’)
- Has heritage in HL7 v3
- Designed for implementors (easy to read)
- Great for making connectors to EHR / EMR / PAS

- Still early in development cycle
  - Meta-data management not explicit
  - Privacy and consent not explicit
FHIR Connectors

Apps (3rd party)

Platform
Forcare

Connectors
HL7, DICOM, FHIR

IHE MDH, PDQm, PIXm
openEHR

- data driven modelling for Healthcare
- Structured data
- Model built up on Archetypes
- Grouped together in Templates
Summary – interoperability approaches

- IHE XDS – mature technology
  - Allows implementation today with structured and unstructured objects
  - Separate index and Patient Privacy/Consent
  - Enables an interoperability highway
  - Includes FHIR connects for fast integration
- FHIR – essential tool
  - ‘down south’ focus for integration
  - Easy for Healthcare Systems Providers to adopt
  - Helpful for portals / apps

- openEHR
  - If you want to build-your-own
  - Have a strong data modelling requirement
  - Direct platform for Apps
  - Still needs IHE for Privacy/Consent
Summary – interoperability is a mindset

- No one solution or provider can do everything
- Monolithic solutions are too expensive (10x) and cannot work

- Re-using existing systems and developing an open systems ecosystem is the alternative

- Different Interoperability tools to choose from
- Interoperability is a mindset – to set a forward strategy (over and beyond simple integration)
- The Interoperability forward evolution is inclusive,

Do not let evangelists fool you