

## Experiences with archetypes and templates in the UK



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## NHS UK Background

⑩ "Four countries"

- England – 51 million
- Scotland – 5.1 million
- Wales – 3.7 million
- Northern Ireland – 1.7 million



- ⑩ Health is a devolved responsibility and is increasingly diversely managed including IT strategy, implementation



The Scottish Government  
Riaghaidas na h-Alba



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"Scotland has a low population density, mainly due to many parts of Scotland being unsuitable for people to live."



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## NHS UK Interoperability approaches

- England
  - Terminology Snomed-CT
  - Messaging HL7v3
  - Document wrapper CDA
  - Clinical Content definition openEHR
- Scotland
  - Terminology Snomed-CT
  - Messaging SCI-XML
  - Document Wrapper SCI-XML -> CDA
  - Clinical content definition "clinical clusters"



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## NHS England

⑩ NPfIT / Connecting for Health

- National projects
  - Spine
  - Choose and Book
  - Summary Care Record
- 5 Local Service Providers "Clusters"
  - London - BT
  - South - Fujitsu
  - North Midlands East (NME) - CSC Alliance
    - iSoft Lorenzo (Secondary Care/ Community)
    - TPP System One (Primary / Community)
- Working with 5 different clusters complicates national integration efforts/negotiations



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### HLv3 NHS England

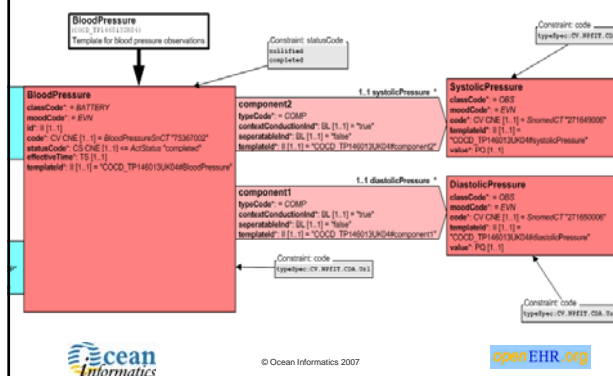
- Ⓜ Some success
  - GP2GP
- Ⓜ but defining clinical content using HLv3 is difficult
  - CDA + “NHS HLv3 Templates”
    - Clinical content tends to be obscured by technical and reference model noise
    - Mostly simple wrappers around SnCT subsets



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### HLv3 NHS Template



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### openEHR Clinical Content pilot

- Ⓜ Jan 2007
  - Used Ocean tools to develop models for A&E, maternity as part of content definitions for iSoft Lorenzo product
  - Regarded as successful
  - began as EN13606 pilot but now accepted as openEHR
  - Ocean contracted to supply/support openEHR authoring and publishing tools
  - CfH staff engaged on further in-house repository management tools



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### openEHR based modelling

- Ⓜ Further clinical content definition being undertaken for Lorenzo over the next 18 months
  - Over 1000 archetypes developed
  - Generic discharge, emergency medicine, ENT, mental health, learning disability, child health
  - Investigation of SnCT binding issues
    - possible, indeed positive synergy
  - Investigation of openEHR->HLv3 transforms
    - possible but ?scalable
  - <http://www.ehr.chime.ucl.ac.uk/display/nhsmodels/NHS+CFH+EHR+Content+TAG>



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### NHS Clinical Content service Content priorities for 2008

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• <b>Generic</b></li> <li>• Acute Admission Proforma</li> <li>• Discharge Summary</li> <li>• Referral Letter</li> <li>• Nursing/AHP assessment/care plans</li> <li>• Single Assessment Process</li> <li>• Common Assessment Framework</li> <li>• <b>Domains</b></li> <li>• Acute/Urgent Care-                             <ul style="list-style-type: none"> <li>• Referral letter in</li> <li>• Admission Proforma</li> <li>• Discharge Summary</li> </ul> </li> <li>• Scheduled/Planned Care-                             <ul style="list-style-type: none"> <li>• Day Surgery</li> </ul> </li> <li>• Maternity-                             <ul style="list-style-type: none"> <li>• Antenatal to Postnatal care</li> </ul> </li> <li>• Child Health                             <ul style="list-style-type: none"> <li>• ENT/Audiology</li> </ul> </li> <li>• Mental Health                             <ul style="list-style-type: none"> <li>• Care Programmed Approach</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>Patient presentation</b></li> <li>• CHD- Chest pain</li> <li>• Respiratory- Breathlessness                             <ul style="list-style-type: none"> <li>• COPD/Asthma</li> </ul> </li> <li>• Lung Cancer</li> <li>• Change in Bowel Habit -                             <ul style="list-style-type: none"> <li>• Bowel Cancer</li> </ul> </li> <li>• Stroke/TIA</li> <li>• Diabetes</li> <li>• Orthopaedics-                             <ul style="list-style-type: none"> <li>• Hip/Knee pain</li> </ul> </li> <li>• Visual Loss                             <ul style="list-style-type: none"> <li>• Cataracts</li> </ul> </li> </ul> |
|---|--|



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### openEHR-based content modelling

- Ⓜ It works!!
  - Clear feedback that openEHR + Ocean tools can deliver clinical models at scale
  - Real potential to make progress in multi-disciplinary / social-healthcare integration
    - Learning disability assessment, Care of the elderly
    - Horrible mix of conflicting technical, clinical and organisational disconnects



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## Lessons learned

- Organisational
  - Skill-mix
  - Engagement of users, vendors
  - Training
- Process
  - Repository management
    - Versioning
  - Tooling
- Informatics issues
  - New challenges
  - Managing diversity



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## Lessons learned – Skill mix

- Archetype development is a specialist skill
  - 'Maximal dataset' can seem an unusual concept
  - Some knowledge of underlying reference model required
  - SnCT skills and knowledge are required early in the process
  - Some clinical business analysis is required
- Needs a team approach
  - Clinical informatician +- business analyst
  - Technical modellers w messaging/ standards experience
  - Clinical users (domain experts)
  - Terminologist (s)



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## Lessons learned – Skill mix II

- **Template** development can be devolved to enthusiastic, relatively lightly trained clinical users
  - **It is easy for clinicians to tell us what they do NOT want to record**
  - Needs foundation of good quality archetypes
  - Improved tools
    - Web- based collaboration
  - Clear approach / guidance on SnCT binding
  - Good support network



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## Engagement of Users

- Modelling context is significant
  - Project-driven (EPR)
    - Template->Form outputs can cause difficulties
      - Close to UI requirement but Templates are **not accurate UI requirements**
    - May prevent proper business analysis / modelling
    - esp. with naive users, tight timescales
  - Integration-driven (EHR)
    - Ivory tower / "Best practice"
      - Must support "Not terribly good practice"
    - May not reflect the real recording requirements in systems "What clinicians want to say"



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## Engaging Vendors

- Project (EPR) driven
  - openEHR is not a requirements gathering package
    - Conditional UI views
    - UI formatting, behaviours
- Integration (EHR) driven
  - Intellectual property of clinical content is an issue for some vendors
- Twin approach
  - Tactical forms-level modelling
  - Strategic integration modelling for 'big ticket' areas
    - PMH, adverse drug reactions, FH etc



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## The Modelling Process

- Repository management
  - Versioning
    - Versions vs. revisions
    - Templates
  - Publishing processes
    - C/H HL7v3 experience valuable
- Tooling
  - Repository management tools
  - Mindmap tool for pre-archotyping
  - Refactoring support
  - Revisioning support
  - Holistic requirements gathering and collaboration tool

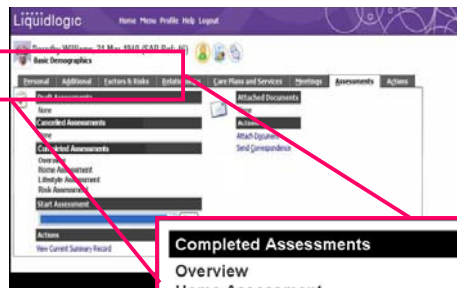


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### Assessment-driven Care



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### Managing diversity

- ⊗ Assessment-driven care
  - interoperability very limited
    - Differing granularity
    - Overlapping use- cases
    - Organisational demands
    - Professional /legislative demands
    - “not invented here”
  - Poor terminology support
    - SnCT, ICF
  - Less well matched to the openEHR “clinical investigator” ontology



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### Managing diversity

- ⊗ Assessment-driven care
  - Very low expectations from users, vendors
- ⊗ Maximal dataset /archetypes
  - Single space where differing approaches can be documented
  - Automatically organises broad headings of assessment content e.g. mobility, housing
  - openEHR data is self-describing and supports simple display of data not natively supported by application



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### Continual change and complexity

**“The art of progress is to preserve order amid change and to preserve change amid order.”** *Alfred North Whitehead*

- Archetype / Template approach allows a ‘crumple-zone’ where complete inter-system consensus cannot be achieved
- 30% interoperability is better than 0%



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### Fin

