

Archetypes – systems and implementation

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Experience with Archetypes

- Australia
 - 3 GeHR pilot projects – legacy & GP data (various)
 - Operational obstetrics system in NSW (Dos, NT)
 - openEHR trial for national HealthConnect EHR/event summary infrastructure – Brisbane South
- UK – CEN/SynEx archetypes
 - anti-coag. system – Whittington Hospital (java/Oracle)
 - Devon ERDIP demonstrator (java/Oracle)
- US –
 - Initial steps in IHC / 3M system
 - Mayo / Ocean ADL/OWL project

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Experience with Archetypes

- Denmark
 - Systematic Software Engineering (SSE) / Aarhus Regional Health Authority (4 counties in Denmark; distributed shared EHR, own archotyping tools).
- France
 - Odyssee GI endoscopy system (20 hospitals)

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Lessons so far...

- Build reference models AND archetypes simultaneously - archetype development will change reference models!
- Clinicians want to be involved, and are starting to use the tools
- Archetypes can be used for legacy data purification
- Use abstract syntaxes (e.g. ADL, OWL) - XML should be invisible
- Archetype-enabled kernel is non-trivial
- Overall framework proven

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Lessons so far...

- Small modular software possible
- Minimal software maintenance
- 50% of the work is now in archetypes, templates and among clinicians
- Self-building GUIs not far off (DSFC, NL, Systematic (dk))
- Expect Advocacy, Education and Training costs for clinicians

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Where is it going?

- CEN TC/251 13606-2 has incorporated archetypes and ADL
- ADL is a major input to HL7 templates work
- Canadian InfoWay investigating openEHR
- 2 of the largest IT vendors exploring archetypes
- Many open source developers
- US VHA studying it

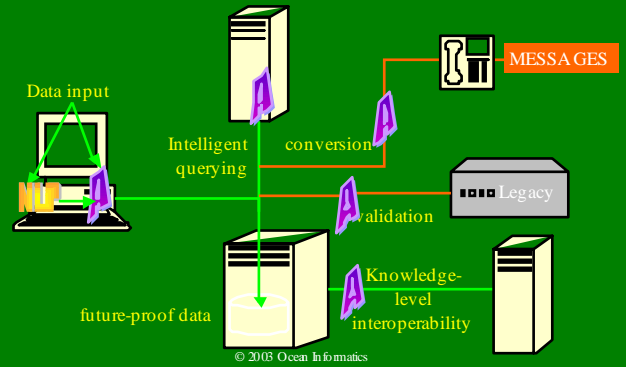
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The Big Picture

- Data is created by use of local Templates
- Templates reference particular archetypes
- Archetypes create default structure and provide validation rules for user input
- Archetype ids and node-ids are embedded in the data
- When data is read, relevant archetypes are retrieved locally, used for intelligent display, querying

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Templates & Archetypes in Use



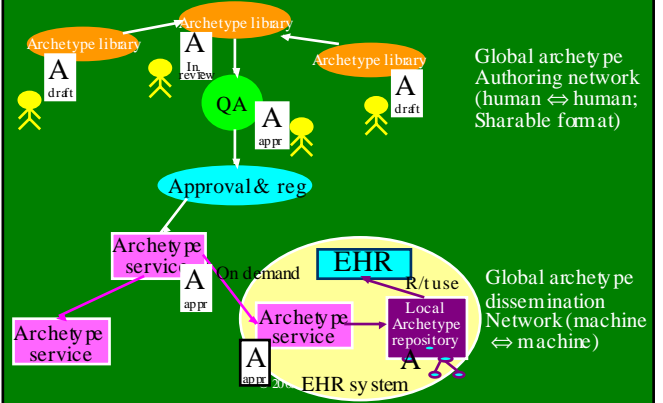
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Formalisms

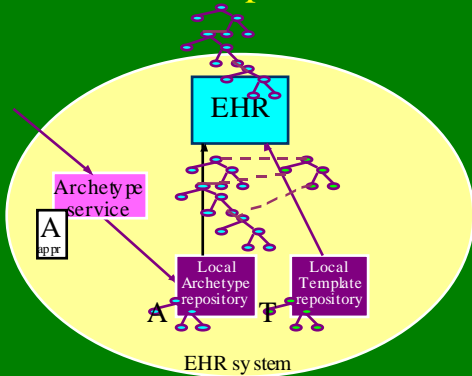
- ADL currently provides the semantics required, and allows structure to be clearly expressed
- Some parts are ~transformable to OWL (Mayo Clinic working on this); but OWL:
 - lacks powerful constraint data types (??)
 - requires compute-intensive reasoner
 - Hard to write in (but easy for computers to work in)
- cADL part of archetype transformable to OCL?
 - No support for paths or node ids
 - ~OCL used in ADL invariants

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The Archetype System



Templates



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Templates...

- Define locally used compositions of archetypes (e.g. Sections, Entries)
- Choose default values
- Remove optional nodes
- Choose language available to user
- Choose terminologies available to user

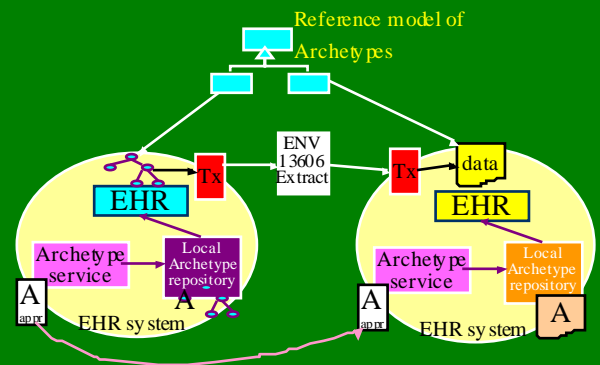
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Archetypes, Templates and Data Communication

- Archetypes and templates are used *inside* EHR systems at data creation time, not at data transfer time
- The assumed reference model of shared archetypes should be rich, but also transformable to models in actual systems
- The model of transmitted data is a LCD model of data serialisation, not a semantic model of an EHR
- ⇒ archetype reference model is not the data communication model

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Communication of Archetyped Data



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What is needed for interoperability?

- Sharable archetype format (e.g. ADL)
- Shared/agreed archetype reference model
- Archetype converter: shared archetype format local ⇒ archetype format
- Data converter: internal form ⇔ CEN 13606
- EHR kernel: processor for archetypes in local format to create data

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Archetype Reference Model

- These are the types and attributes mentioned with archetypes and templates
- Need to be
 - Clinically rich
 - Simple to understand
 - Mappable to any particular internal model
- Current assumed reference model in Aust work: ~ *openEHR* (superset of CDA 1.0; ~CDA 2.0)
- Proposed approach:
 - Develop some representative archetypes
 - Evaluate deficiencies
 - This is what HL7 is now doing as well

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