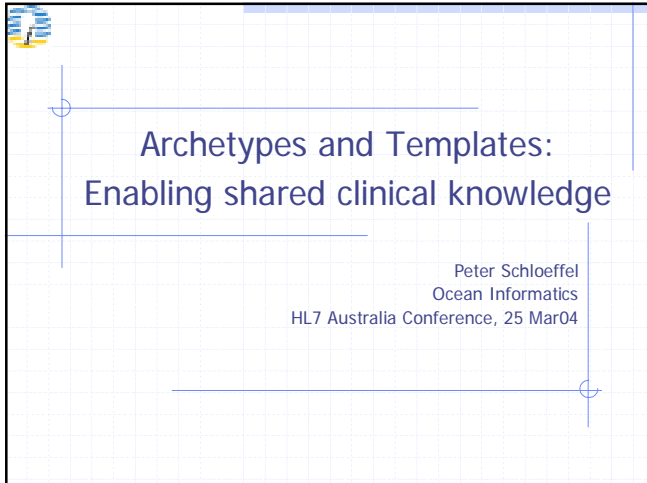


# Archetypes & templates: Enabling shared clinical knowledge

Peter Schloeffel, HL7 Australia Conference, Melbourne, 25 May 2004



### Benefits of interoperability standards

- ◆ The 3 big benefits of health information interoperability standards
  - ◆ Reduced medical errors -> improved patient safety
  - ◆ Better quality care -> improved health outcomes
  - ◆ More efficient care delivery -> reduced costs
- ◆ These benefits are fundamentally dependent on the ability to share patient information:
  - ◆ between different applications within a single CIS
  - ◆ between different clinicians at a single location
  - ◆ across different locations and clinical systems

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### Requirements for interoperability

- ◆ Standardised Reference Information Model
  - ◆ Semantics of information structure
- ◆ Standardised Service Models
  - ◆ Semantics of interface to EHR and other services
- ◆ Standardised Archetypes and Templates
  - ◆ Definitions of domain concepts and constrained groupings of these concepts
- ◆ Standardised Terminology
  - ◆ The language of health

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### What is an Archetype?

- ◆ Dictionary definition - a model or prototype
- ◆ *openEHR* archetypes are models of clinical or other domain-specific concepts
- ◆ They define the business rules (constraints) for valid values of a concept
- ◆ May define simple concepts such as 'blood pressure' or 'address', or more complex compound concepts such as 'biochemistry results' or 'family history'
- ◆ Use terminology to identify archetype components

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## The language of archetypes

- ◆ Need a formal language to express archetypes
- ◆ ADL (Archetype Definition Language)
  - ◆ A new language specifically for archetypes
  - ◆ Developed in Australia by Tom Beale & Sam Heard
  - ◆ Archetypes expressed in ADL resemble programming language files
  - ◆ ADL has 3 component syntaxes
    - dADL – describes data within the archetype
    - cADL – expresses structured constraints
    - “gADL” – the “glue” syntax which combines the archetype components
  - ◆ Also a template form of ADL (tADL)

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## ADL Document Structure

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## Why yet another KR language?

- ◆ Other possible archetype languages
  - ◆ XML / XML-schema
  - ◆ OWL (Web Ontology Language)
  - ◆ OCL (Object Constraint Language)
  - ◆ KIF (Knowledge Interchange Format)
  - ◆ Schematron
- ◆ US interoperability project
  - ◆ Mayo Clinic
  - ◆ UCSF
  - ◆ HL7 Templates SIG
  - ◆ Ocean Informatics

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## Archetypes not just for *openEHR*

- ◆ An archetype is a formal expression of a distinct domain-level concept, expressed in the form of constraints on data whose instances conform to some information model, known as a reference model
- ◆ Archetypes can therefore be built for any reference model e.g.
  - ◆ GEHR
  - ◆ *openEHR*
  - ◆ CDA
  - ◆ CEN 13606

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## Relationship of archetypes to data

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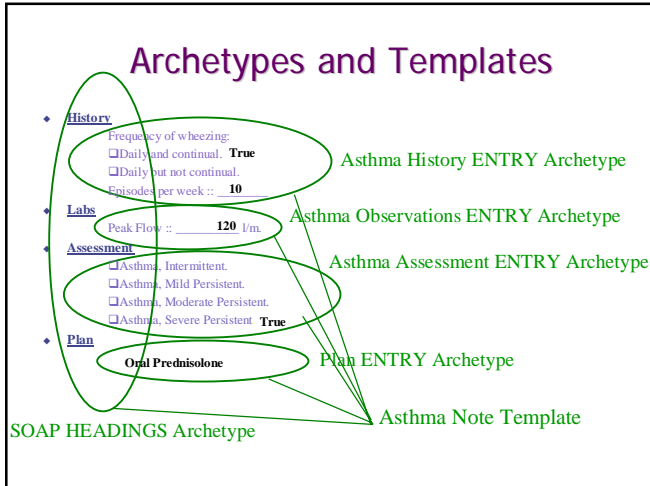
## What is a template?

- ◆ A structured collection of archetypes used to narrow the choices of archetypes for local or specific purposes such as a screen entry form
- ◆ Templates are directly useable for:
  - ◆ Data construction: used at runtime to constrain the creation of data in local contexts to conform to data capture requirements
  - ◆ Data validation: used at runtime to validate data from other sources
- ◆ Templates specify:
  - ◆ which archetypes will be used
  - ◆ which optional elements will be included
  - ◆ which default values apply

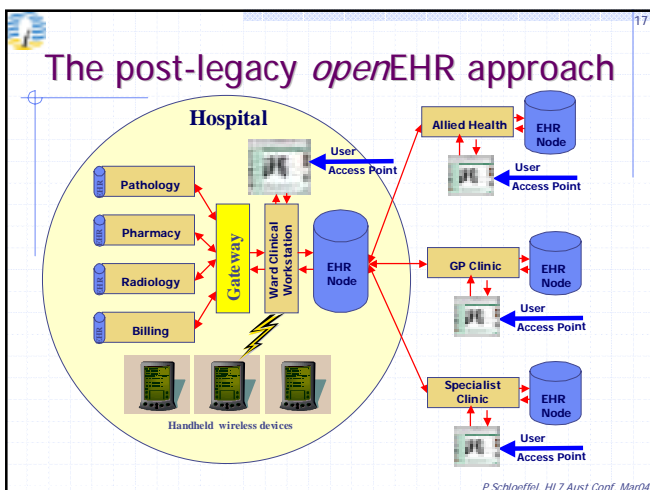
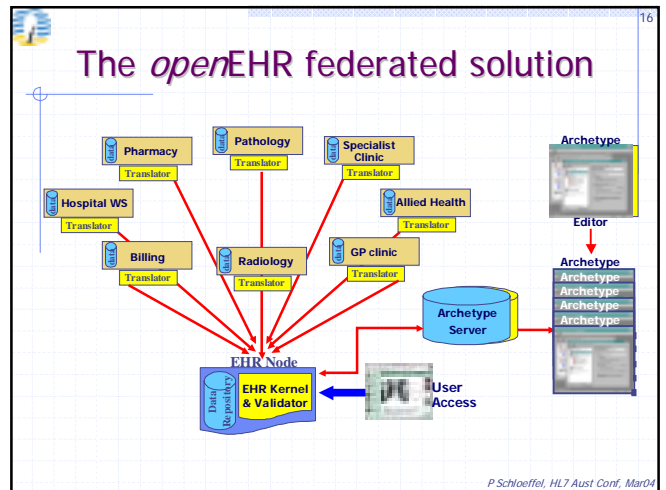
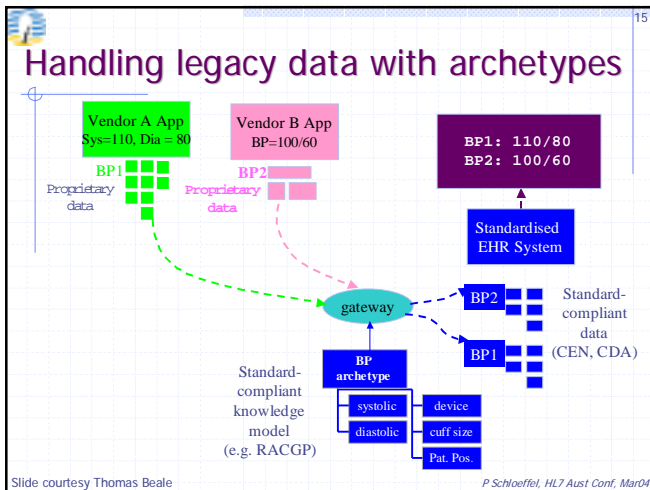
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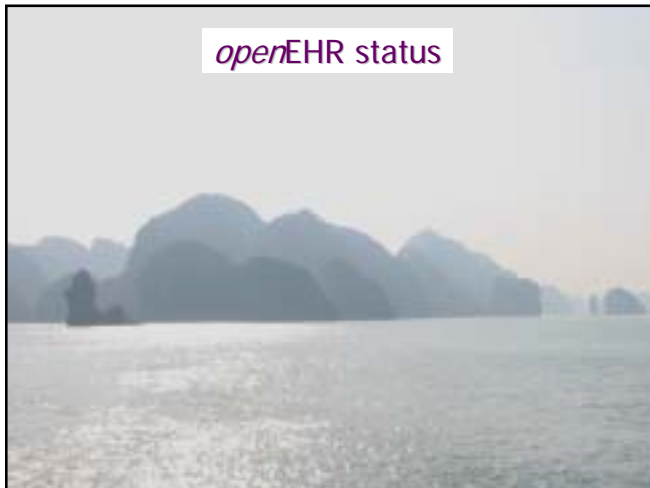
- ## Management of archetypes
- ◆ Need to avoid the terminology "anarchy" problem
  - ◆ Initial creation of archetypes
    - ◆ Domain experts -> professional Colleges
  - ◆ Technical quality assurance/certification
    - ◆ Probably best done by Health Informatics SDOs e.g. SAI/HDSC, HL7, CEN, ISO
  - ◆ Web-based archetype repositories
  - ◆ Archetypes must be in the public domain
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- ## Benefits of archetypes
- ◆ Ensures knowledge-level interoperability
  - ◆ Enables intelligent decision support
  - ◆ Archetypes developed directly by clinicians, independent of "techies"
  - ◆ Ensures data validation via archetype constraints for data entry
  - ◆ Enables efficient querying on large amounts of EHR data
  - ◆ Can be used to define demographics, guidelines, workflow etc
  - ◆ Ensures future-proof EHRs
  - ◆ Enables future-proof EHR systems
  - ◆ -> significant software maintenance cost reductions
- Slide courtesy Thomas Beale
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openEHR status

- ◆ *openEHR* V0.9 now released
- ◆ New *openEHR* website – [www.openehr.org](http://www.openehr.org)
- ◆ *openEHR* Foundation now has 395 members from 50 countries
- ◆ Australian *openEHR* trial
- ◆ Archetype Definition Language (ADL)
  - ◆ ADL archetype editor
  - ◆ GPCG archetype editor project
  - ◆ Mayo Clinic/UCSF/HL7 project

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