

GeHR in Australia - The Good electronic Health Record

The Documents

- [Requirements](#)¹ - a comprehensive set of technical requirements for the EHR, based on original GEHR requirements
- [System architecture](#)² - a description of the deployed system
- [Kernel architecture](#)³ - describing in detail how archetypes were used in the software
- [Gehr Object Model](#)⁴ (the GOM) - the reference object model of GeHR
- [The kernel API](#)⁵ - the Application Programmers Interface
- [Gehr archetype system](#)⁶ - overview of archetypes in GeHR and simple server API

Overview

The GeHR (Australia) project was the precursor to the modern *openEHR* project. It was undertaken with funding from the (then) Australian Department of Health, and was carried out by Ocean Informatics and DSTC personnel. It built on the experience of the European GEHR project, but radically changed the models and introduced archetypes for the first time. A significant amount of software was built (in Java, Eiffel and VB) which ran exactly according to the published designs. These lessons led to many of the numerous improvements which constitute *openEHR* today. The development programme of GeHR included as deliverables:

- Clear statement of requirements;
- A description of the architecture;
- Formal expression of the architecture as compilable source code;
- A generated CASE (diagrammatic) expression of the model;
- Various exchange specifications (IDL, XML, etc.);
- An application programming interface (API);
- Provisional set of archetypes;
- Detailed technical documentation; and
- development guidelines.

All of these were made available in the public domain through the efforts of Thomas Beale and Sam Heard. This publication provided the impetus for using GeHR in a series of four trials organised under the auspices of the General Practice Computing Group (GPCG) and funded by the Commonwealth Department of Health and Ageing (DoHA) in Australia.

The GeHR family of projects is described below.

GPCG GeHR Electronic Health Record Architecture Project

1. http://www.openehr.org/downloads/usage/gehr_australia/gehr_requirements.pdf
2. http://www.openehr.org/downloads/usage/gehr_australia/gehr_system_architecture.pdf
3. http://www.openehr.org/downloads/usage/gehr_australia/gehr_kernel_architecture.pdf
4. http://www.openehr.org/downloads/usage/gehr_australia/gehr_gom.pdf
5. http://www.openehr.org/downloads/usage/gehr_australia/gehr_api.pdf
6. http://www.openehr.org/downloads/usage/gehr_australia/gehr_archetypes.pdf

This project was the first implementation of GEHR in Australia. It extended over an 18 month period from January 2000 to June 2001. The aim of the project was to integrate three GP clinical software applications to the GEHR EHR kernel via a Microsoft COM interface. The server was built and successfully tested, but integration to vendor software did not succeed due to lack of vendor resources to implement the integration. Instead, a VB test program was built. This project produced a wealth of knowledge and experience about using archetypes computationally, which has led to today's Archetype

Description Language (ADL) and *openEHR* EHR specifications.

GPCG Hospital Data Transformation Project

This project developed and successfully trialed an XML-based data transformation methodology for converting legacy data from clinical data repositories (CDRs) to GeHR-compliant format. The aim was to develop a proof-of-concept for hospital to GP communication between non-GeHR and GeHR-compliant systems. The CDR used was the world's largest implementation of Oacis which is being deployed state-wide in South Australia. This project was undertaken by Flinders University, South Australia, and DSTC Pty Ltd, a research organisation funded in part by the Australian Federal Government's Cooperative Research Centre program, that has worked with Ocean Informatics since 2001. This project ran from January to May 2001. Final GPCG report [here](#)⁷.

GPCG Diabetes Messaging and Data Communication

This project was undertaken jointly with Medical Communications Associates, a health applications vendor specialising in HL7-based systems, from March to December 2001. The task was the development of a set of HL7 messages and a corresponding set of GeHR archetypes for diabetes shared care. Final report [here](#)⁸.

GP Data Transformation Project

Following the successful proof-of-concept trial in the acute hospital sector, this project aimed to extend the legacy data transformation methodology into the primary care sector. Data was extracted from the two leading (and incompatible) Australian GP clinical systems and transformed to GeHR-compliant data for use in diabetes shared care between a specialist diabetician and several GPs. An internet-based shared EHR was created in what is believed to be the first demonstration of this kind in the world. The project was undertaken in partnership with the DSTC from January to June 2002.

The research undertaken during 1998-2001 formed the basis of the *openEHR* body of work and contributed to the establishment of the *openEHR* architecture, which has become a major element of national (Standards Australia) and international (CEN) standardisation efforts and R&D collaborations.

7. http://www.openehr.org/downloads/usage/gehr_australia/GPCG_Project2_01.pdf

8. http://www.openehr.org/downloads/usage/gehr_australia/GPCG_Project5_01.PDF