The openEHR Developers' workshop

Shinji KOBAYASHIa, Pablo Pazos Gutierrezb, Koray Atalagc, Sebastian Garded, Ian McNicolle

 a The EHR Research Unit, Kyoto University, Kyoto, Japan

 bCaboLabs, Montevideo, Uruguay

 cUniversity of Auckland, Auckland, New Zealand

 dOcean Informatics, New South Wales, Australia

 eHandiHealth, Worcestershire, UK

Abstract

*The openEHR project is well-known as a set of specifications to build future-proof and semantically interoperable electronic health record systems and is related to the family of ISO 13606 standards . This workshop will discuss implementations of the openEHR specifications with the following contents.*

## Learning objectives

* *What archetypes are and how to operate standardized clinical models to assure semantic interoperability between EHR systems and why healthcare needs a mix of people, process and technology change and the role of the openEHR project.*
* The openEHR implementation technologies with various development communities.
* State of the Art of the openEHR specifications
* Current software engineering technologies around the openEHR implementations.
* Upcoming ADL 2.0 and AOM 2.0 specifications.

## Expected outcomes

* Further understanding of the openEHR specification and its implementation technologies
* Evaluation the conformance to the specifications and more features of each technology.
* Sharing experience and passion with speakers and participants.

Keywords:

openEHR, archetype, open-source software, clinical standard

Workshop description

1 General Topics

The openEHR project[1]  is well known as a development source for the ISO 13606 standards[2]. These standards are considered the technology basis of clinical information models which enable the interoperability for electronic healthcare applications in clinical information modeling initiative (CIMI), the worldwide collaboration[3]. Moreover, upcoming ADL/AOM 2.0 is expected to integrate existing openEHR template and archetypes technology. A number of projects have been implementing the openEHR specifications with various approaches. Development projects related to the openEHR are spreading worldwide. For example, there are 61 repositories at GitHub related with openEHR at January 2015. The core reference implementation has been implemented using Eiffel and is recognized as a reference implementation of the openEHR specifications. Java and C# are also being used in a number of reference implementations. Moreover, Ruby implementation project and Grails implementation project have growing on this project[4,5]. These core implementations are provided as open-source softwares. This momentum provided an evidence that the openEHR specification are being widely accepted and gaining worldwide interest. On this steady international growth, we are taking this opportunity to introduce these specifications to a wider audience and explain their features. Even though these projects are still ongoing and have not yet completed their missions, developers, whether they are involved in openEHR or not, will benefit from the sharing of experiences and  discussions about the implementation of the openEHR specifications.

2 The workshop structure and arguments

This workshop will be consisted with the following contents. At first, we introduce openEHR architectural overview and the second, each speaker make presentation of each project.

2.1 The openEHR architecture overview

The core technology of openEHR specification features a two-level modeling system, named as ‘archetype-based systems’ [6]. With regards to this archetype-based technology, technological implementation is clearly isolated from clinical concern and assures future-proof semantic interoperability. In this workshop, we will overview this archetype-based technology.

* What archetype is.
* Why archetypes assures semantic interoperability in future.
* How to implement archetype-based systems.
* Upcoming ADL(ARchetype Definition Language) 2.0 and AOM(Archetype Object Model) 2.0.

2.2 Overview of each implementation project

****Renovation of regional healthcare inter-exchange system by openEHR technology (Shinji Kobayashi)****

We had developed EHR system for regional health care in these 12 years and published an XML based MML (Medical Markup Lanugage) standard to communicate with intra/inter hospitals. This EHR system has involved more than 6,000 users in three regions in Japan, but the system had become legacy to maintenance and catch up clinical updates. Therefore, we renovated this EHR system with archetype technology and Ruby on Rails framework. XML messages were re-constructed by archetype models and showed a flexibility to update UI forms.

****Development of the Gestational Diabetes Registry in New Zealand (Koray Atalag)****

We have employed the openEHR standard which underpins our national interoperability reference architecture to represent the dataset and also to build the web-based registry system. Use of this rigorous methodology to tackle health information is expected to ensure semantic consistency of Registry data and maximise interoperability with other Sector projects. The development work has been facilitated by the ability to transform the dataset automatically into software code – ensuring clinical requirements accurately translated into technical terms.

****Clinical Knowledge Manager (Sebastian Garde)****

The Clinical Knowledge Manager (CKM) is a system for collaborative development, management, review and publishing of openEHR clinical knowledge resources. It enables the knowledge governance of openEHR archetypes, templates, terminology subsets, artefact release sets, as well as metadata relating to clinical models and related resources. CKM is used internationally by the openEHR foundation as well as in several national programmes.

****HANDI-HOPD - building apps on an openEHR platform (Ian McNicoll)****

HANDI-HOPD is a demonstrator based on SMART, FHIR and openEHR APIs, designed to allow training and experimentation in an open-standards/vendor-neutral environment. It exposes a set of simple Restful APIs which are easy to consume in modern languages/ frameworks. HANDI-HOPD is being used as the basis of the NHS England Code4Health project which aims to give clinicians the skills and knowledge to allow them to participate more directly in design of their systems.

****Development of an openEHR-based Open Source EHR Platform and openEHR EMR frameworks(Pablo Pazos)****

Since 2009 we have developed several Clinical Information System projects based on openEHR. We started focusing on R&D, and now reusing that experience (and code) to build a service oriented (REST and SOAP), open source, and general purpose EHR platform to help developers to create shared EHRs that will be standard-compliant from scratch. That platform will support many EMR applications and devices. We are also creating tools to help on the application development itself, providing frameworks, libraries and tools.

### 2.3 Workshop speakers

* KOBAYASHI, Shinji, MD, PhD - Kyoto University, Japan
* Pablo Pazos Gutierrez, Ingeniero en Computación, openEHR en español, CaboLabs, ACHISA
* Koray Atalag, MD, PhD, FACHI - University of Auckland, New Zealand
* Sebastian Garde, Dr. sc. hum., Dipl.-Inform. Med., FACHI - Ocean Informatics, Australia
* Ian McNicoll, MBChB,MSc, HandiHealth CIC, UK

3 Specific Educational Goals

The educational goal of this workshop is not only to learn openEHR technology, but implementation technology of standardized clinical models for semantic interoperability.

## 4 Expected Attendees

Expected attendees of this workshop are mainly developers who are interested in openEHR archetype technology, implementation of clinical models or open-source software projects in medical domain. The knowledge of the openEHR specification/technology is helpful to understand, but not required.

Because the workshop will present the state-of-the-art of implementation technologies in health care, attendees can learn the cutting edge of EHR system and software technology.

References

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## Address for correspondence

Tel: (+81) 75-874-2659

Address: Kyoto research park No 9, 5F, Room 506, Awata-cho 91, Chudoji, Shimogyo-ku, Kyoto, Japan

Email: kobayashi.shinji.5s@kyoto-u.ac.jp