Architecture Development for Interopreable EHR in Korea

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Abstract and Objective

In major advanced nations, EHR introduction guaranteed by mutual management is being activated. In proportion to this trend, domestic market is also developing EHR architecture for effective EHR establishment. Accordingly this study is to suggest architecture development-business architecture and its application architecture based on such demand-in accordance with domestic treatment information. Henceforth this architecture model is supposed to support not only international sharing of information but also inter-hospital sharing.

Keywords:

Electronic health record, Architecture, Interoperability

Introduction

Purpose of EHR is to provide personal information of health condition to both appropriate health care provider and customers in due time with eligible measure & methods in the midst of clinical procedure. [1] Under this purpose of EHR, information processing of national health care system is going on progress in domestic area, and as a part of it, EHR architecture is developed that is an infrastructure of treatment information sharing system. EHR architecture divides necessary information of personal health condition into component and made it as information model. According to ISO 18308, it is defined as "common structural components that compose all EHR defined as information model." Accordingly we tried to set sharing system of treatment information, and suggest an eligible architecture for standardized EHR service model.

Methods

At first, we analyzed all the literatures & materials about EHR architecture across domestic & international market.With respect to domestic case, from EHR concept model 2007, EHR architecture. We included a basic element of it. In case of international example, we referred to HealthConnect in Australia and Infoway [2] in Canada in terms of demand & its function. In addition, we composed two different scenarios in EHR business architecture such as emergency scenario and that of bio-surveillance; while former scenario deals outpatient who needs EHR service, treatment client of outpatient, patient's agreement, hospitalization & returning home patient, latter one deals with only bio-surveillance purpose. From which I drew out event & action, and defined a flow chart. As for Application architecture, we drew out necessary function grouped by service types for business scenario's demand function that is needed for EHR service setting, and from which suggested inter-service flow chart through sequence diagram.

Results

We classified EHR into two areas; business architecture and application.

EHR business architecture consists of 20 detailed scenarios. 22 actors such as patient, medical staff, health care provider were drawn out of each scenario, of which 145 events and 392 actions were defined as use case. We drew out EHR function requirement through scenario, and then reflected it on EHR application.EHR application architecture defined its service demand function based on 9elements-registration, agreement, privacy & security, identification, and etc-that was drawn out of system requirement of business architecture. From which 12 services (registration service, standard service, repository service, storage facility etc) came out. And we defined 10 profile sequence diagram like patient retrieval, patient registration, on which finally came up with an idea of inter-service workflow transaction.

This is a result of business & application architecture for EHR embodiment in Korea, so will it provide infrastructure of communication in establishing EHR and its maintenance support for better operation. Finally this model will be ultimately actualized at a certain physical level for EHR realization.

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References

[1] Center for Interoperable EHR, EHR Architecture Conceptual Modeling V2.0. Korea, 2007.

[2] Canada Health Infoway Inc, EHRS Blueprint Version 2.