

Literature Survey on CDA Generation and Integration on Cloud

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Abstract— Successful deployment of Electronic Health Record helps improve patient safety and quality of care, but it has the prerequisite of interoperability between Health Information Exchange at different hospitals. The Clinical Document Architecture (CDA) developed by HL7 is a center report standard to guarantee such interoperability, and engendering of this record design is basic for interoperability. Unfortunately, hospitals are reluctant to adopt interoperable HIS due to its deployment cost except for in a handful countries. An issue emerges notwithstanding when more doctor's facilities begin utilizing the CDA report arrange in light of the fact that the information scattered in various archives are difficult to oversee. In this paper, we describe our CDA document generation and integration Open API service based on cloud computing, through which doctor's facilities are empowered to helpfully create CDA reports without purchasing exclusive programming Our CDA report joining structure arranges diverse CDA records per calm into a lone CDA chronicle and specialists and patients can examine the clinical data in successive demand.. Our system of CDA document generation and integration is based on cloud computing and the service is offered in Open API. Designers utilizing distinctive stages along these lines can utilize our framework to upgrade interoperability.

Key words: Clinical Document Architecture (CDA)

I. INTRODUCTION

The health information that consists health of the patient, health care provided to that patient as well as the reaction of the patient to the provided healthcare can be stored as electronic health information in the form of longitudinal collection, thus forming an Electronic Health Record (EHR) Therefore, the implementation of HIE system is made to ensure successful maintenance o EHR [2]. But there is also a problem of incompatibility between systems and also there are different characteristics involved in HIS. Accordingly, there is a need to institutionalize the wellbeing data trade between clinics guaranteeing interoperability over wellbeing data. In this manner, the center of ensuring interoperability is to institutionalize the clinical report. The significant standard for clinical records is CDA which was set up by Health Level Seven (HL7).

CDA is the core document standard, an XML document. Which holds the structure and semantics of clinical document for health information exchange. The first version of CDA was released on 2001 and its second version was released on 2005. Numerous nations have done numerous effective activities receiving CDA. To improve semantic interoperability, many active works are done based on open HER and CEN3606 More HIE system has to support CDA to establish confidence in interoperable Health Information Exchange. Besides, the structure of CDA is excessively intricate and the right CDA Document generation is troublesome without the great comprehension of the CDA

standard and enough involvement with it. Also, the HIS improvement stages for clinics contrast so extraordinarily such that age of CDA archives in each healing facility constantly requires a different CDA age framework. In addition to that, hospitals refuses to adopt a new system unless it is perfectly necessary for delivery of care. As a result, except for only few handful countries like New Zealand or Australia, the adoption rate of EHR is too low .To promote EHR adoption among hospitals, the USA government had implemented an incentive program called the Meaningful Use Program .A CDA document which has the record for the diagnosis is generated, when a patient is diagnosed at a clinic. This CDA report will be imparted to different doctor's facilities if the patient concurs. A person or a patient may shift his location from one place to another hence it is common for a patient to visit a number of different hospitals for check in or treatment.

II. CLINICAL DOCUMENT ARCHITECTURE

Clinical Document Architecture is in XML based format. It is classified from the HL7 RIM (Reference Information Model) and uses HL7 version 3 data types. The documents contain any relevant information to a healthcare provider or government entity and all information about a patient's medical history, such as allergies, medications, insurance information or lab results. Each piece of clinical data is allocated a section and given a code as defined in the Logical Observation Identifiers Names and Codes (LOINC).

For the coordinated CDA archive, we picked the Korean Standard for CDA Referral and Reply Letters organize as the quantity of clinical records created when patients are alluded and answers made, is substantial .In CDA Header that includes Patient ID, Birth Date, Gender, Given Name, and Family-Name. In CDA Body, the things are incorporated as Problem, Medication, Laboratory, Immunization et cetera. Distinctive subcategories are embedded in a CDA report contingent upon the reason for the archive, and picked the Continuity of Care Document (CCD) in light of the fact that it contains the wellbeing outline information for the patient and it is additionally generally utilized for interoperability.

III. CDA IN CLOUD COMPUTING

The information can exchange and use the information that has been exchanged between two or more systems or components through interoperability. The cloud computing services model refers the cloud SaaS where the software applications HIS are offered as services. A web services is any service that is available over the internet or intranet, uses standardized XML messaging system and is self-describing, discoverable and not tied to any operating system or programming language [19]. So the focus on HL7 CDA (Clinical Document Architecture) and CCD (Continuity of

Care Document). CDA is a document markup standard that defined with clear structure and semantics of clinical document for the purpose of data exchange and cloud be any of the following: discharge summary, referral, clinical summary, history/physical examination, diagnostic report, prescription, or public health report. In a private or public cloud, the medical data are stored with the condition for the public cloud to provide a strong security and all the departments of the hospital access this medical data of the patients. Distributed computing can help to access their restorative history from anyplace on the planet by means of the web. It defines the new style of computing where resources are dynamically scaled, virtualized and are provided as a service on the internet. Health care Information System recommends the technology for its benefits: flexible and quick access to information, features needed more and more in these times characterized on one side by budget cutting and on the other side by ageing societies.

IV. CDA GENERATION AND INTEGRATION ON CLOUD COMPUTING

CDA generation software is platform dependent and it is not centralized. So the procedure of CDA archive an Open API is produced. The clinical information of patient, hospital, and physician are entered through CDA Generation interfaces and sent to the cloud server by CDA generation API. The data are relayed in the CDA Header/Body. The Header and Body contains about the patient's, and clinical information. The CDA Generation API are packaged the data in the CDA Header Set and Body Set and relayed to CDA Generator. The Continuity of care report organize is gotten by CDA Generated in the cloud. Eventual outcome of the created CDA report is surveyed by Validator. Usually the patients are consults with multiple physicians in different hospitals. The CDA document scattered in different location. Physicians need to spend more time on reading these documents for making clinical decisions. So the multiple CDA documents are integrated into single document in CDA Integration system. Each CDA document sent to the cloud to the CDA parser, which converts each input CDA documents to an XML object and analyses the CDA header and groups them by each patient ID. The incorporated CDA sent to validator, and the outcome is returned as string to the healing center that asked for CDA archive mix. Using the system on cloud, hospitals are enabled to conveniently generated CDA documents without having to purchase proprietary software. So all the CDA records are coordinated into a solitary report, the doctor is engaged to audit the patient's clinical history helpfully.

V. EXISTING SYSTEM APPROACH

Significantly delays the medical personnel in making decisions the medical personnel in making decisions. An answer that incorporates numerous CDA reports into one doesn't exist yet to the best of our insight. There is a practical limitation for individual hospitals to develop and implement a CDA document integration technology. In the current frameworks healing centre's need to buy respectability programming to produce and incorporate CDA archives and bear the cost as previously.

VI. DISADVANTAGE

- 1) Healing facilities need to buy respectability programming to create and coordinate CDA archives and bear the cost as previously.
- 2) Handy restriction for singular doctor's facilities to create and execute a CDA archive coordination innovation.
- 3) Integration of multiple CDA documents into one does not exist yet in existing systems

VII. PROPOSED SYSTEM APPROACH

An answer that incorporates different CDA archives into one doesn't exist yet to the best of our insight. There is a practical limitation for individual hospitals to develop and implement a 2CDA document integration technology. We proposed following systems:

One CDA record age framework that creates CDA reports on various creating stages. CDA document integration system that integrates multiple CDA documents scattered in different hospitals for each doctors and patient.

VIII. ADVANTAGE

- 1) Hospitals do not have to purchase proprietary software to generate and integrate CDA documents.
- 2) Hospitals do not bear the cost as before.
- 3) Our administration is promptly relevant to different designer stages in light of the fact that an Open API is to drive our CDA report age and mix framework.4)CDA document generation and integration system based on cloud server is more useful over existing services for CDA document if the variety of CDA document increases.

IX. LITERATURE SURVEY

K. Ashish, et.al[1]presented meaningful use of electronic health records the road ahead. For practicing clinicians, the origins and likely effects of this rule may be opaque. It would be helpful to understand the motivation behind the key components of the meaningful use rules, where they are likely to take the US health care system (and the obstacles along the way), and the benefits and risks of a rapid transformation from paper to electronic record systems.

M. Armbrust et.al[2] proposed the promise of the CCD:challenges and opportunity for quality improvement and population health. Interoperability is a requirement of recent electronic health record (EHR) adoption incentive programs in the United States. One approved structure for clinical data exchange is the continuity of care document (CCD). While primarily designed to promote communication between this suppliers amid mind advances, coded information in the CCD can be re-used to total information from various EHRs. Provides an opportunity for provider networks to measure quality and improve population health from a consolidated database. To evaluate such potential, this research collected CCDs from 14 organizations and developed a computer program to parse and aggregate them.

S. Lee, J. Song,et.al[3]presented a view of cloud computing which describes cloud computing. Authors goal in this article is to reduce that confusion by clarifying terms, providing simple figures to quantify comparisons between of

cloud and conventional computing, and identifying the top technical and non-technical obstacles and opportunities of cloud computing.

S. R. Simon, et.al[4] Presented clinical document architecture integration system to support patient referral and reply letters. Many Clinical Document Architecture (CDA) referrals and reply documents have been accumulated for patients since the deployment of the Health Information Exchange System (HIES) in Korea. Clinical information were scattered in numerous CDA archives and this set aside a lot of time for doctors to peruse. Physicians in Korea spend only limited time per patient as insurances in Korea follow a fee-for-service model. Therefore, physicians were not allowed sufficient time for making medical decisions, and follow-up care service was hindered. To address this, we developed CDA Integration Template (CIT) and CDA Integration System (CIS) for the HIES. The clinical things incorporated into CIT were characterized mirroring the Korean Standard for CDA Referral and Reply Letters and demands by doctors.s

S. R. Simon et.al[5] presented correlates of electronic health record adoption in office practices: A statewide survey in which despite emerging evidence that electronic health records (EHRs) can improve the efficiency and quality of medical care, most physicians in office practice in the United States do not currently use an EHR. We sought to measure the correlates of EHR adoption.

X. CONCLUSION

Interoperability between hospitals not only helps ameliorate patient safety and quality of care but also minimize time and resources spent on data format conversion. Interoperability is act toward more vital as the quantity of healing facilities partaking in HIE increases. As the quantity of HIE in light of CDA records expands, interoperability is proficient. We proposed a CDA document generation system that generates CDA documents on different developing platforms and CDA document integration system that integrates ion and integration system based on cloud server is more helpful over existing services for CDA document if the variety of CDA document increases

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