CDA for enabling Data Sharing on Cloud environment

N.Divya
Student, Department of Computer Science,
Anand Institute of Higher Technology, Kazhipattur, India
divyan42017@gmail.com

A.S.Jayanthi
Student, Department of Computer Science,
Anand Institute of Higher Technology, Kazhipattur, India
jayanthicse2359@gmail.com

P.Meena
Student, Department of Computer Science,
Anand Institute of Higher Technology, Kazhipattur, India
meenaperu@gmail.com

S.Praveen Kumar
Assitant Professor, Department of Computer Science,
Anand Institute of Higher Technology, Kazhipattur, India
spraveen2007@gmail.com

***Abstract*—Cloud computing is a type of internet based computing that provides shared computer processing resources and data to computers and other devices on demand. Electronic Health Record is longitudinal collection of electronic health information as well as about persons. A successful implementation of electronic health records helps to improve patients safety and quality of information, but there is problem in that sharing confidential information or health information exchange at different hospitals. This electronic document is a "live" template and already CDA specifies the content of the document consist of mandatory textual part and optional structural parts. The structural part relies on coding systems. CDA can maintain any type of clinical notes. Typical CDA document types include discharge summary, imaging, history and physical and pathology report.**

Keywords—cloud computing, CDA, electronic health record

I. INTRODUCTION

Health Level Seven has established CDA as a major standard for clinical documents. CDA is markup standard that specifies the structure and semantics of "clinical document" for the purpose of exchange several projects, adopting CDA have been successfully completed in several countries, a difficulty arises still when additional hospitals start employing the CDA document. In preceding project, depict the CDA document production and addition open API services supported on the blur computing, through which hospitals are enabled to expediently produce CDA document without having to buy proprietary software. For example, if a document is created under Windows platform, separate cost is needed to process document in Java platform. Moreover, duplicate records for same patient can be generated.

Medical record is confidential about the patient. But the security to the medical record is not provided. The Electronic Clinical Communication Implementation (ECCI) is a programmer enlarge by the NHS Scotland to make sure that staff contributes to suitable data information about patients automatically. The report concludes the greater important requires to be placed on the average, quality and discharge summary content. CDA generation software is not centralized and platform dependent. The HIS development platforms for hospitals vary so greatly that generation of CDA document in each hospitals invariably requires a separate CDA generation system. In proposed scheme, CDA document system that generates CDA document on different developing platforms and a CDA document integration system that integrates multiple CDA documents scattered in different hospitals for each patient.

CDA software is designed and run under browser support, the documents are to be stored in the server so it is centralized and also independent. Each patient contains unique Id so that duplication of documents is restricted. Doctor can download the patient's CDA document by providing their doctor's Id and patient's unique Id. After login, doctor can view the health check history report and illness history and its equivalent prescription and complete report manner. Added to that, doctor an view the list of sickness or abnormalities the patient is

facing. The doctor can view the prescription in illness wise or clinical wise. So that the doctor knows how to sight the instruction in sickness intelligent or scientific shrewd the novel updates in the CDA document reflected in the cloud server. For security purpose, all the date in CDA document is stored in cloud server.

II. EXISTING SYSTEM

The existing system generates Clinical Document Architecture (CDA) which is developed by HL7 is a core document standard to ensure such interoperability. The CDA document generation and integration is done by open API service based on cloud computing. The system supports many CDA based projects have been successfully completed in many countries. It is an xml based document markup standard that specify the structure and semantic of clinical documents, and its primary purpose is facilitating clinical document exchanges between heterogeneous software systems.

III. PROPOSED SYSTEM

In proposed system we presented a CDA document generation system and integration system that generates CDA documents. In different developing platforms integrates multiple CDA documents scattered in differed hospitals for each patient. This system is accessible through Open API developers are easily use their favorite development platforms such as java, .net and c/c++. Cloud service provide the CDA generation and integration system as Saas. Hospitals are permit to conveniently generate CDA documents without having to purchase software. The patients are provided with unique Id during registration where the details of patient are collected. The patient details are requested by a hospital, by sending a request to the appropriate hospital with patient Id. The requested is accepted or denied based on the hospital. Then the details are transferred to the requested hospital through cloud server. The documents are generated as CDA document.

IV. OVERALL SYSTEM ARCHITECTURE

Hospitals document request, transformation can be authorized by the dean of the hospital. Hospital document request, transformation is maintained by dean of the hospital. The dean has own unique Id and password. The documents are stored in the hospital database. Consider a patient is transferred from hospital A to hospital B, if hospital requires details of patient, then a request is send to Hospital A with unique Id. Document is transferred to requested hospital. The CDA is generated for the requested patient Id that contains the details about the patient health history. The CDA document, patient details, doctor details are stored in the database. The patient documents requested are stored in cloud server so that it can be accessed by other hospitals.

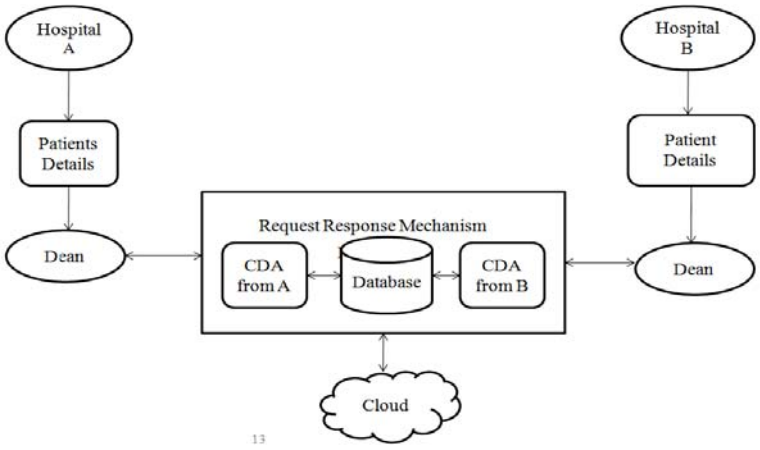

Fig 1: Architecture Diagram

A. Patient registeration and doctor login

- Every patient who visits the hospital has to get registered prior to getting any consultation, treatment or investigations done.
- The patient is allocated a unique Registration number and Patient Identification number. Parents who will come to a hospital with different types of disease, will register and get an appointment from the admin then consult doctor. The module allows the doctor details on department wise.

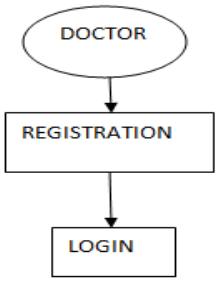

Fig 2: Doctor Registration and Login

B. CDA generation

- CDA is a popular flexible markup standard document. That defines structure of certain medical records and way to exchange this information between providers and patients.
- It allows health care providers to create digit document contain patient information. That they might wish to send to other health care providers.

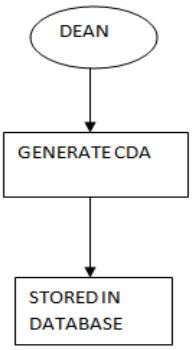

Fig 3: Generating CDA

C. Transferring document

- The patient is transferred when requested from other hospital. Consider that one hospital application in jav platform, another application in .net. If one hospital refer patient to another hospital sharing the patient details to another hospital through cloud.
- Multiple documents of patient details together into single CDA document. These cloud can integrate this java and .net platforms.

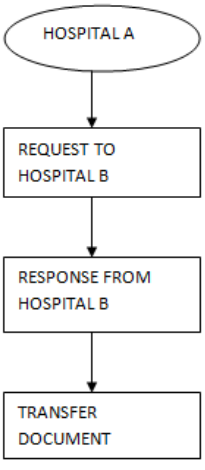

Fig 4: Transferring Patient Document

V. ALGORITHM

A. CDA method:

The CDA specifies that the content of the document consist of mandatory textual part and optional structural part. The structural part relies on coding system. A CDA can contain any type of clinical notes. Typical CDA document types include discharge summary, history and physical report.

VI. CONCLUSION

CDA document format a clinical information standard design to guarantee interoperability between hospitals. Single CDA document should be integrate with multiple CDA documents.

FUTURE ENHANCEMENT

Future work will attempt to enhance security while ensuring reasonable quality of service even with multiple users logged on the system at same time. We will make concrete estimation of the reduction in cost that is cloud based. Cloud computing is effective and efficient in cost reduction and the medical field seems to be no exception.

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