

# Cloud based development for medical pharmacy and DCA application

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**Abstract** - Integration is the leading technology to connect from multiple sources to single destination and single source to multiple destinations. We propose an integration and informatics framework for cloud – based Electronic medical records. The data collected by the different Drug Agency and Medical Pharmacy to be smart and connected. So we use Boomi AtomSphere for the connection of data from different database. Traditional Electronic Drug Agency and Medical Pharmacy record systems are based on different technologies, languages. Electronic Medical Record store data based on interaction between Pharmacy and Drugs Control Administration. Drugs control administration will improve the integration of required data and helps in fast interaction between the Drugs Control and Medical Pharmacy. Thus there is the development of smart and connected data in the Medical Pharmacy and Drug Control application of cloud.

**Keywords:** Cloud Computing, Data Integration, Boomi Atmosphere, Electronic Medical Records

## 1. INTRODUCTION:

Informatics and information integration are faced many problems to connect the electronic medical record. A cloud-based integration atmosphere enables customers to integrate any combination of cloud and on-premise applications without software, appliances or coding. Atom Sphere supports real-time integration and elastically scales to meet high-volume needs in mobile, batch (ETL) and EDI environments.

After you have built your integration processes, they are deployed via a lightweight, dynamic runtime engine called an Atom. Created with patent-awarded technology, the Atom transforms what was previously a rigid, complex and costly approach to application integration into a fast, easy and distributed integration of cloud-based and on-premise applications.

A cloud based approach for design of interoperable EMRs [1] and an experimental system has been presented. Cloud Medical Record Technology Architecture (CMRTAR). CMRTAR achieves different types of interoperability through the use of a generic design methodology which uses a reference model that defines usual purpose set of data structures and an archetype model that defines the medical data logic. CMRTAR supports higher security features such as identity management services, authorization services

and authentication services for making secure access to medical data.

In this paper we propose a boomi Integration framework. The proposed framework allows:

**1.1 Data Integration** – Data integration involves combining data from several disparate sources, which are stored using various technologies and provide a unified view of data.

**1.2 Data Access** – querying and getting medical data from different source like on premise and cloud.

**1.3 Data Analytics** - Data Analytics has various aspects and methodologies, enveloping assorted procedures under an assortment of names, in various business, science, and sociology areas.

**1.4 Data Store** – Medical record storage and life cycle management. The importance of the proposed work obtained from the medical pharmacy and drug control administration. The data will store in the form of DCA understand format. The data will store in either in the cloud or on the on-premise.

## 2. RELATED WORK:

Integration application provides tools for accessing the different phases of the lifecycle – process creating, deploying, and managing processes and their dependent components. Integration process represents a business process or transaction level interface between two systems. Processes use connectors to get and send data. Every Process begins with start/begin shape. A process can have any number of execute and logic metamorphosis. A process typically ends with one or more outbound connectors.

Atom is a light weight runtime engine. Once your integration process has been deployed to your atom, the atom contains all the components required to execute your processes from end to end. Atom can connect in two ways either in the local or in the cloud. In local atom can fetch the data from our system, such as database, file system directory or other on-premise application. In cloud atom without internet connection we can't fetch the data from the source or cannot send the data to the destination the files source of the cloud application are file transfer protocol (ftp) and web based applications.

Atomsphere will take care of the integration process no need of software or hardware is required to run the application in the cloud integration.

## 2.1 ESSENTIAL CHARACTERISTICS:

### 2.1.1 Process creating:

Process creating will start with the build page we need to create a folder from the component explorer. This will enable you to configure and store a unique integration Process containing the workflow and processing rules for your business scenario.

### 2.1.2 Process Canvas:

Process canvas create the scenario for the work flow of the medical pharmacy record and the drug control administration the work flow will begin with the start shape. In process canvas there are extension, add note, show navigation, and the test mode for the process scenario.

## 2.2 INTEGRATION SERVICE MODELS:

The cloud-based iPaaS integration model, customers drive the development and deployment of integrations without installing or managing any hardware or middleware. The iPaaS allows businesses to achieve integration without big investment into skills or licensed middleware software. iPaaS used to be regarded as an integration tool for cloud-based software applications, used mainly by small to mid-sized business.

### 2.2.1 Application-based model:

Internal integration requirements were serviced through an on-premises middleware platform and typically utilized a service bus to manage exchange of data between systems.

### 2.2.2 Business to Business model:

B2B integration was serviced through EDI gateways or value-added network (VAN). The advent of SaaS applications created a new kind of demand which was met through cloud-based integration.

## 2.3 DEPLOYMENT MODELS:

**2.3.1 Private Cloud:** The cloud infrastructure is operated solely for an organization. It may be managed by the organization or a third party and may exist on premise or off premise.

**2.3.2 Community Cloud:** The cloud infrastructure is shared by several organizations and supports a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance

considerations). It may be managed by the organizations or a third party and may exist on premise or off premise.

**2.3.3 Public Cloud:** The cloud infrastructure is made available to the general public or a large industry group and is owned by an organization selling cloud services.

**2.3.4. Hybrid Cloud:** The cloud infrastructure is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds).

## 3. PREVIOUS STUDY:

The Medical Pharmacy owners need to submit the record manually along the drug details to the Drug Inspector and consolidated record to the Drug Control Office. The Medical Pharmacy and Agency need to write the records when every purchasing the stock form the medical Drug Company. The medical pharmacy owners need to write every day and the need to maintain the record form the starting of the stores. Medical pharmacy maintaining the records in the two ways system application and manual record. Medical Pharmacy when they bring stock form the agency or retailer they will update the record in the system application and they will write the record by the manual. Medical pharmacy owners need to send from their medical software application to the drug control office it will take a lot of time to the send the data from their system to another system and some medical pharmacy owners can't offered for system application and they will submit the records manually. So, the cloud application and information integration has came into the live to send the details to the durg control administration.

## 4. ARCHITECTURE:

The below architecture describe about the cloud integration process form the end to end. The Medical Pharmacy Owners need to enter the details in the pharmacy application which is developed for the system application or the web application. The data which is stored in the pharmacy application is connected to cloud integration with the multiple source connectors to send data to the Drug control officer for the medical pharmacy record verification.

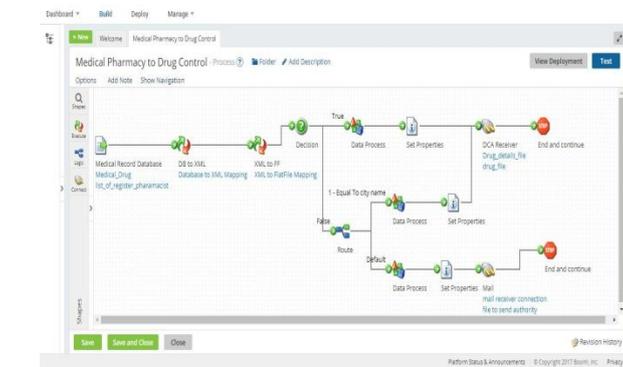


Fig: Architecture of cloud integration

The Pharmacy application contains the purchase order and sales order. Pharmacy owners need to enter the purchase order with the agency name along with the Batch No, drug name, purchase date, manufacture date and expire date. The sales order contains the patient name, doctor name, drug name, and purchase date.

Drug Control administration may contain FTP server or SFTP server to receive the data from the cloud application. The data which they have receiving from the server may be in the CSV format of Excel format because they can easily understand the data from where there are receiving the data can identify the records and they store the record for future purpose.

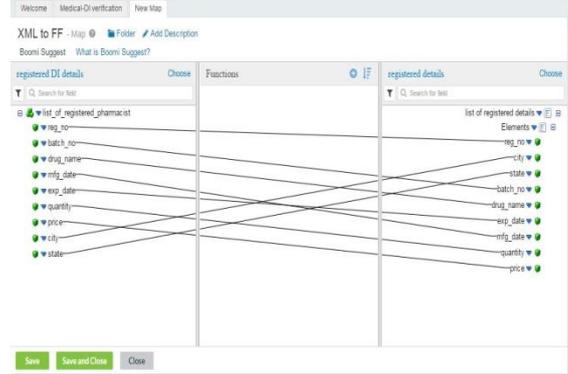
**5. IMPLEMENTATION:**



**Fig:** Process scenario flow medical pharmacy to drug control administration

Process Canvas will show the interface connection from end to end flow. Interface connector has a default shape it is called as start shape. We need to select the connector, action, connection and operation. Action will contain the get, send, create, query, delete, update, etc., we cannot decide the action in the start shape because the action may vary from different connectors. In designer process canvas we connect with database and select import option and retrieve the profile through from the connection. We need to establish the connection with database driver type, username and password additional we need to enter the database name and port number. Establishing the connection test the scenario with the help of atom. Atom is the run time engine to test our scenario case.

Component Explorer will use to create a new component or the connector, operation, profile, map and map function etc., it will use to create component, delete folder and give security permission for the folder or the component.



**Fig:** XML to Flat File Mapping

Mapping is used to change the profile format from source to destination. If we need to change the function of the map we need to go for map function need to enter which type of function. Map function allows transformation logic to be applied individual field values as they are being mapped. Map Function allows two main functions standard and user-defined. In Map function we are taking source as Database and destination as XML connect each field manually either boomi suggest. Boomi suggest will tell about import the source and destination profile click on the boomi suggest will connect each and every record. Again we are taking XML to Flat File profile for convert the profile here we are using the data function in the function field because we are saying that enter the data in the destination profile.

In Decision take first value, comparison and second value. First value we need to select the type is profile element, profile type will be flat file select the element city because we are dividing the records with the city name and sending the records to the destination. Second value type will be the document property it will take the value in the runtime. Set Properties will collect the information properties can be used to set outbound connector attributes such as file name or email subject, or store certain values in memory to facilitate the integration. The property values can be comprised of static and/or dynamic values. In set properties we select disk file with the name to store in the lock disk or in the server like SFTP with format “.csv”.

The Data Process shape provides a number of options for manipulating document data within a process, from splitting and combining documents to zipping and unzipping data. You can define multiple processing steps to perform more than one action on the document data. The processing steps will be executed in the order defined in the Data Process shape. Each processing step will operate on the data output from the previous processing step. In data process shape we need to process type is combine documents and profile type will be flat file because in mapping we have said that to convert the profile xml to flat file form there onwards the

profile will come under the flat file because that file will send to the destination connector and combine option for the heading purpose select the retain first line as column header.

The destination connector will come in the form of two sources one is disk connector and another one will be mail connector. Destination connector action will always be the send in this scenario. The disk connector connection will be the local directory path must be given and the operation has the file naming option will select we need to overwrite if file exists or create a unique name if file exists. The mail connector connection will contain the host, port, and user name/password without this requirement the data will not send to the destination. Operation will contain to whom we need to send the record this option much enter in this field.

## 6. PERFORMANCE EVALUATION

### 6.1 Rapid Application Development:

Traditional Medical Pharmacy system are related on client – server architectures and store all data in house which requires a server, software and hardware which are installed locally. Cloud computing makes data to be stored on external servers that can be accessed with the help of web. The proposed stack contains CMRTAR middleware and Information Integration and Informatics framework which facilitate rapid development of cloud – based Medical Pharmacy Application.

### 6.2 Integrated Medical Pharmacy Data:

The Data Integration framework makes integrating specific data from different data sources such as Oracle, SQL Server, file servers and EMR standards in a cloud – based storage.

### 6.3 Accessibility:

Cloud – based Integration and Informatics framework have high approach and understanding over client – server applications because users can securely log in to the system from everywhere if they have Internet connectivity. Cloud Integration and Informatics framework given a compatible representation, elucidation and access of the integrated Medical Pharmacy record. Improved security application of CMRTAR middleware such as role access control allows medical agency, pharmacy, and drug control administration to access more strongly in a secure environment and provides good continuity of care.

### 6.4 Scalability:

Cloud – based applications which are built with Information Integration and Informatics framework have good scalability compared with client – server EHRs. The computing facility can be scaled up on

demand as large data is combined and new users are added. Applications which are built with Information Integration and Informatics framework can lead both horizontal (scaling out) as well as vertical scaling (scaling up) options.

### 6.5 Reduced Costs:

Cloud – based applications which are built with Information Integration and Informatics framework have reduced services and operation costs as related to traditional client – server applications. Client – Server applications needs a team of IT experts to configure, install run, test, secure and update software and hardware. In cloud – based applications all of that is done in the cloud by the cloud provides.

## 7. Conclusion:

This paper describes the design of an Information Integration and Informatics framework that allows storing, integrating and analyzing Medical data in the cloud. The Information Integration and Informatics framework allow the development of advanced Medical pharmacy application with data integrated in difference database. Application developers can quickly develop medical pharmacy and drug control administration applications by not thinking about the data management in cloud and cloud infrastructure management deployment configuration which are taken care by the Information Integration and Informatics framework. We use Boomi Atomsphere Cloud Platform for the integration development. The effectiveness of the framework is demonstrated with Medical Pharmacy Applications and drug control administration.

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