

**Department of Electrical and Computer Engineering,  
University of Ottawa.**

**ELG 6131 : Advance Software Engineering in Biomedical  
(E-health, m-health, Telemedicine)**

**Project Deliverable : Initial design Phase**

**Project Title :** *“Meditech – E-health Platform”*

**Submitted by :**

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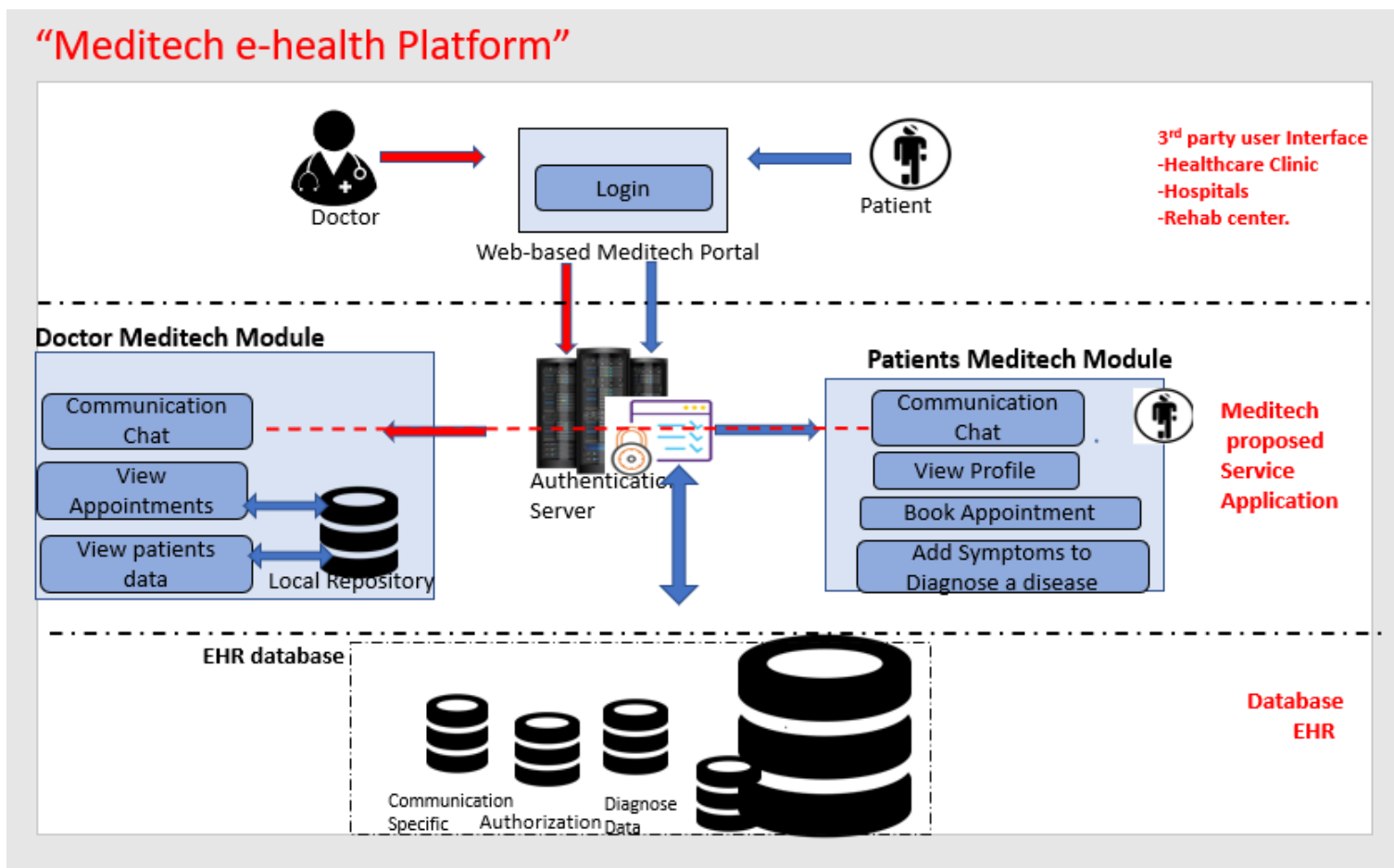
***This Initial design is Submitted to Professor Ali Hassan Abbas in partial fulfillment of the requirements for ELG 6131: Advance software in Biomedical course.***

## Overview /Conceptual design :

Web-based Meditech is an initiative providing a platform to support the Electronic based-health facilities and telemedicine system which simplify and help to co-ordinate the effective home health care function of Hospitals ,Clinics, or any Rehab centers . Meditech healthcare is designed as a platform to serve the patients the best e-healthcare available. Meditech provides with a user-friendly web portal for effective e-health and a secure communication feature for doctors and patients. Furthermore , it promises to assure data security and reliable database management.

Using the proposed system, the patients will be able to easily connect to web-portal using the credentials which will be authenticated by the admin for establishing a secure data management. The patients can also communicate with the specialized doctor, thereby minimizing the need of in person consultancy at hospitals and providing a better e-health care service at ease.

## Architectural view of System :



*Architectural view of Meditech portal.*

## High- Level Description :

The proposed design framework of **Web-based Meditech Portal** depicts how internal function are organized and helps to provide the best e- healthcare for the hospital . Figure 1 depicts the high-level architectural view of Meditech, and major components include:

### 1. Web portal

This is User-Interface level for any Hospital, clinic or 3<sup>rd</sup> party who accepts Meditech as a e-healthcare platform. This is a default Web browser configured to execute E-health platform where a user tries to login into the system to experience the best health care provided by Meditech Portal.

### 2. Meditech Proposed Services application

#### i. Doctors Meditech Module

This Module specifies a webpage for the Doctors registered with Meditech E-health platform. It has various functionalities such as Viewing the appointments, communicating with client for serious case discussions.

#### ii. 3.2 Patients Meditech Module

This module specifies a webpage that allows Meditech E- health Platform's Patient user to access their profile and medical records. They login using a secure authenticator to access the profile, Schedule an Appointment, Diagnose disease etc.

#### iii. 3.3 Authentication Server

The login credentials are then verified by an Authentication Server for establishing a Secure connection between doctor and client for chat feature. This Authenticator also provides a security to the database access and retrieval functions. Only Authorized user can access the portals.

### 3. Database Layer

The Database is the main repository that has Meditech Patient's E-Health Record. The database can be accessed only by an authorized Meditech user to retrieve or do any management commands. It also contains specific database for specific functionalities to increase the retrieval speed and provide faster and better service.

## **Functional & non-functional requirements :**

The design of Web-based Meditech portal aims to meet a collection of Functional and Non-Functional requirements with the view of clients and doctors for a successful E-health care management system. They are as follows:

### **Functional Requirements:**

Functional requirements specify a behaviour of the system to different environments. We have designed Web-based Meditech with functionalities such as,

1. Ease-of-use

The Web-based Meditech is developed using a user-friendly interface portal for everyone using e-health care.

2. Secured Channel

Web-base Meditech introduces a feature of communication with the doctor using a secure network channel and a network Authenticator.

3. Scheduling an Appointment

The users of Meditech can book an appointment to visit doctor in a very convenient way using the portal at your home vicinity.

The doctors of Meditech can view these appointments and can send an acknowledgment with decided time and location.

4. Diagnose a disease

Meditech is also capable of predicting a disease and provide medication using dataset of EHR (Electronic Health Record) and mention the allergy or side-effect due to the medication prescribed.

5. Chat Feature

The chat feature of Meditech makes it possible to have a quick response from the doctor regarding serious issue of the case and get an instant health , thus providing the best healthcare available.

### **Non- Functional Requirements:**

1. Network speed

The Meditech uses the chat feature which is dependent on the network speed for a faster communication.

2. AI predictions

The AI model used for the Disease detection and prescription learns from a history of existing health records, which sometimes can be inaccurate .

3. User credentials

For establishing a secure communication channel between the patients and doctors it is required to keep your credentials safe and protected to avoid phishing and other network attacks.

## Specifications:

Web-based Meditech Portal :

Mobile:

- *Android/IOS – with default web browser*

Desktop/Computer

- *Chrome/Edge/Safari/Mozilla (Web Browser)*

Authentication Server :

- *Apache*
- *MySQL*

Database :

- *PhpMyAdmin Localhost*

Hardware:

- *4 Cores, 2.8-3.0 GHz each (2.8 GHz minimum speed)*
- *4 GB RAM per core*
- *Standard hard drive, 100 GB free*
- *Network connectivity*

Operating System

- *Oracle Enterprise Linux 4 Update 7 or greater, 64-bit*