



HOSPITAL MANAGEMENT SYSTEM



PURPOSE

- The basic design of healthcare management system on a web application is that the application sits on a web server, and all users will access it via web browser over the internet/HTTP
- This is more user convenient as people from worldwide can fix their appointment for consultant to their favorite doctors.
- Rescheduling/Cancelling of appointment is also available as in case of any urgency.
- Consultant for patients as well as discussion between doctors is done through online by means of text, audio and video chatting.
- Separate Dash Board and reports are also available for users.
- They can also post Articles which can be useful for researchers and doctors to get clarifications(Forums/Blogs)
- Since data maintenance is done by single server, we can make the report maintenance easier and it provides high security



- Pharmacy and laboratory details of each and every hospital are also maintained by the corresponding admin of the hospital.
- Doctors can view Drug lists of different manufacturing companies, Each Drug profile consists of its basic composition, Intake details, its usage and complete details. So, that they can ensure their quality services
- Single admin can maintain the entire ERP flow of that particular hospital.
- Super Admin can create multiple admins into their hospital. Roles will be defined by the super admin for all the users under the hospital. Such as (admins, doctors, nurse, pharmacist, receptionist etc.,)
- Note: Super admin will be the owner who owns the specific HMS and the logins will be created at the time of hospital registration into this system.



SCOPE

- The scope of this document involves in proposing architecture
- All departments collaborate to provide the best care for patients, to improve outcomes and achieve our mission, vision and goals



AUDIENCE AND SCOPE

This document is intended primarily to understand the underneath technical implementation of the Hospital Management System (HMS). This provides a high level overview of Credit activation implementation in the following tiers and process flow diagram for each flow.

- Presentation Layer
- Business Layer
- Entity Layer
- Database Layer



Definitions, Acronyms, and Abbreviations

Definition	Description
ADO. Net	Active Data Object
EIS	Information System
ASP .NET	Active Server Page
C#	Programming Language
WCF	Windows Communication Foundation
SQL Server	Structured Query Language
SSRS(Reporting Services)	SQL Server Reporting Services



Technology Selection

Client Tier:

- As per standards, the browser used in the client tier will be Internet Explorer 6.0/7.0/8.0/10 Mozilla Firefox 3.0/3.5, Opera and Chrome.



Presentation Layer

- As per standards, in the presentation tier the following technologies will be used.

ASP .NET	C# Ajax JavaScript JQuery CSS HTML JSTL JavaScript
Framework	Microsoft Visual Studio 4.0



Business Layer

- The Business Controller and Business helpers will be introduced to achieve the loose coupling between layers. The loose coupling between entity and business layers will be taken care by .NET framework

Entity Layer:

- User Properties and Web Services are used for business functionalities.



EIS Layer

Database	SQL Server 2008
Reporting	SQL Server Reporting Services

Recommended Software Versions

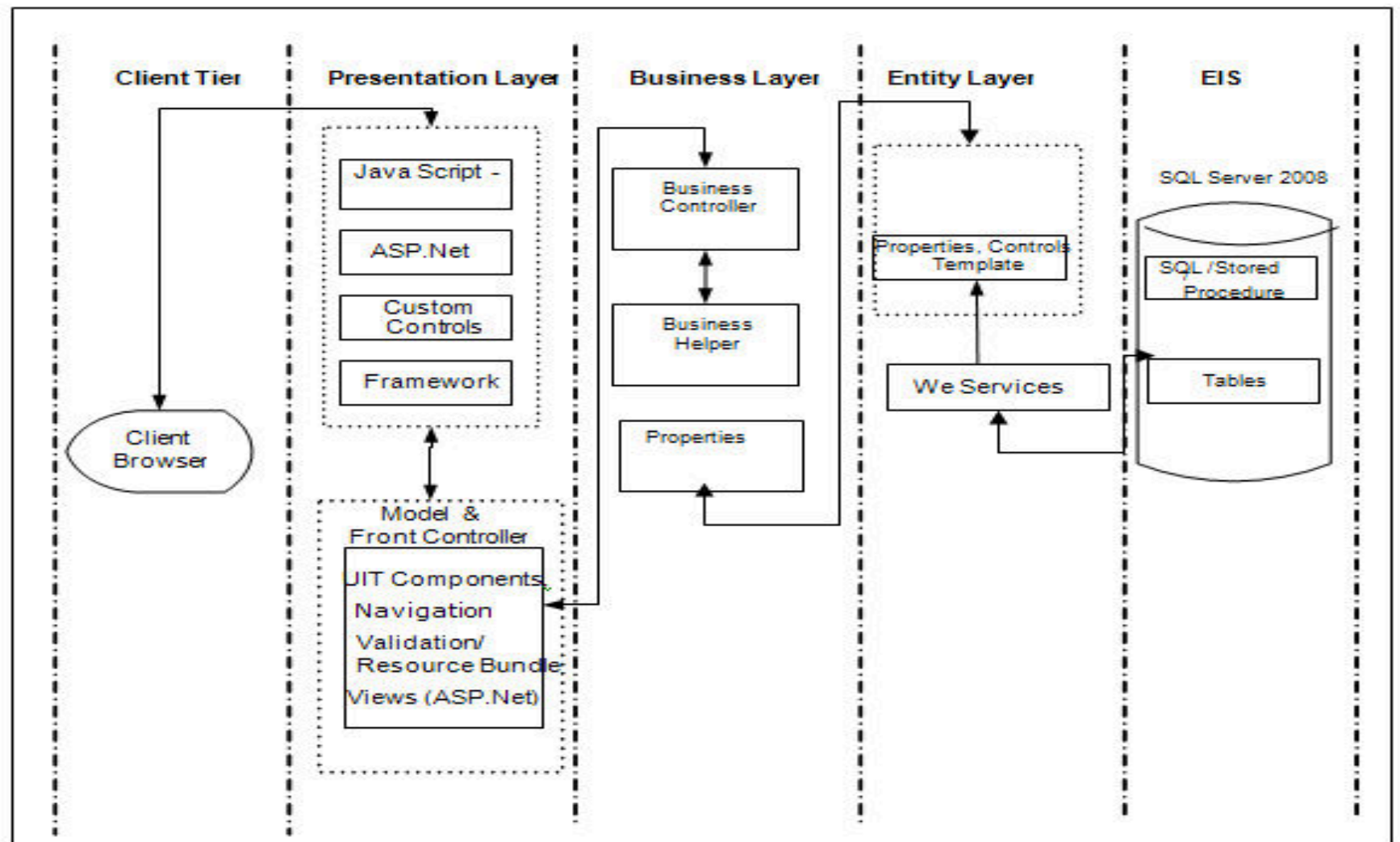


Software		Version
Technologies / Frameworks	.NET C#	4.0
	WCF	4.0
	Ajax Control Toolkit	4.1
Database	SQL Server	2008



Design View

- The following figure shows the proposed architecture of Hospital Management System (HMS). The following subsections provide more detail on each tier.





- The client tier is the end user's browser
- In presentation layer Custom Properties will be used. Business layer objects will be injected into Properties using IOC.
- The Business Controller and Business helpers will be used to achieve the loose coupling between layers. The loose coupling between entity and business layers will be taken care by .net framework
- The Hospital Management System (HMS) Exchange Rating functionalities will follow the below given flow (as like existing Application).



- Presentation layer will communicate with Business Controller in business layer.
- Business Logic will be performed in Business Controller and Business Helper.
- .NET Data Access will be injected into User Properties and Database operations are performed using Web Services template which internally uses Web Services SQL Map.
- The following modules will follow the new proposed Hospital Management System (HMS) Exchange architecture flow.



Web Application (New Application)

Online Appointment or Reception and Call Center :

- We can Search Hospitals or doctors based on location, country, state and city. Patients can browse the doctors from anywhere.
- They can also do search based on Hospital and Specialist doctor list.
- Also the patient can give their rating and feedback for doctors after consultation so that based on that rating, doctors get list out and high rating doctors get displayed at the top while searching.
- After choosing their doctors, they can go for direct appointment.
- The appointment is based on two strategy .

Consultation

Health care



- For fixing the appointment, the patients have to choose the available date and time of that particular doctor which always get displayed while booking.
- Prior to the appointment date, our application remind the patient through the SMS and Mail.
- For regular patient like diabetic patient, the appointment should be periodically done and intimated to that particular patient.
- If the patient wants to cancel the appointment, they can go for cancellation process.
- Also patient can reschedule the appointment in their convenient time.
- If the patient appointment is confirmed, then they can view their appointment sheet or else there is option to take printout and also keep that as PDF file.
- We can have booking through receptionist or call centers for those patients who doesn't have knowledge of booking or internet as we have connection through worldwide.



- Patient can maintain their own profile by giving all their details which is related to this criterion.
- Also there is a possibility that they can edit their own details in future if they want to change.
- They can add their family member under their own id so that if their family member wants to go for urgent checkup means they can use their root id (i.e. root patient id). In future they can add their own details fully as separate profile.
- A Patient can maintain their family member details as separate one in their own details.
- The Patient can view their own medical history as fully as updated by the corresponding doctor.
- Pay Patient Bill via Internet Banking, Credit Cards, Debit Cards and Hot Cash.
- For In-Patient, There is an option to indicate the bed availability and available rooms at that current time. Also they maintain the details and timings of visited Doctor to those In-Patients.



Doctor

- Doctor can register their details (i.e. Name, specialization, doctor id, etc...)
- Doctor or patient can fix the next appointment for re-consultant, in which date they need to come for another check up.
- They can reschedule their appointments in case of unavailability. They can also hand over to another doctor or else postponed the appointment to another date with patient verification through mail or SMS.
- Doctor can update the patient report after the consultation of that particular patient.
- Consultant through online is also provided by the doctor to the concern person through video/voice/text chatting.
- If the hospital doesn't have sufficient equipment for advance diseases or can't do further treatment, then they have an option to redirect the patient to some other hospitals.



- Only doctors can do online discussions with another doctor to update their clarifications.
- Patient can get online consultation with the doctors once they get appointment from the doctors.
- Research topics can be able to post by the doctors (forum/blogs).
- If doctor is engaged with different locations, they need to mention the timing at what time and location in the appointment sheet.
- During registration, there is also an option for doctor whether they are willing to give treatment in patient home.
- General and updated health tips are posted by doctor, which can be viewed by everyone in the forum/blog



Super Admin

- Super Admin can have the full Authentication over their individual hospital.
- Super Admin can create multiple admins/receptionist/doctors etc.,
- Super Admin/Admins maintains all the doctors, pharmacy, bed availability, doctors' appointments with the patient.
- The Super Admin/Admins has to register all patients, each and every doctor in that hospital with needed details. They also maintain all the employee details who are working in laboratory, pharmacy etc.
- Also the Super Admin/Admin only can provide the password to all patients who will register into the hospital through email/SMS.
- Super Admin can have the authority to remove the doctor from their hospital if required.



- Also Admin can able to remove the patient details if that are no more necessary for them to maintain but the patient history will be maintained.
- The laboratories also get registered through Super Admin/Admin. If suppose, any new features gets added to the lab, then they need approval from Super Admin.
- Like laboratories, Pharmacy also gets registered through Super Admin/Admin only. Here too, if they want to introduce new medicine, then they need approval from Super Admin/Admin.
- Super Admin includes salary details of all employees into the hospital. For Feature Enhancement(Pay Roll System)
- If Pay Roll system required, then the attendance, leaves maintenance system will be included into the system.



Pharmacy Management

- Inventory management.
- Patient Info.
- Transaction management.
- Accounting.
- User management.



Module features

- Company.
- Daily customer management.
- Sales man management.
- Transaction management.
- Inventory management.
- Accounting.
- User management.
- Company setting.
- Reminders.
- Calendar planning.
- Powerful search option.
- Powerful reports



Laboratories

- Laboratories can register their details (i.e. name, address, websites etc...).
- Patient can register their details in corresponding laboratories or if patient is referred by any other doctor, then laboratory can get details from hospital admin.
- The scheduled detail for each and every laboratory is also available over here.
- This also provides list of test that are taken on particular laboratory.
- Research topics can be posted by the laboratory technicians (forum/blogs).
- Laboratories can also view the doctor's list. After viewing the doctor list laboratories can send a request to particular doctor in order to make tie up with them.
- Laboratories can maintain the patient test details for future reference.
- Laboratory can provide particular patient report to the corresponding doctor who refers to that laboratory.



Features

- Separate payroll management is available. For salary management to all Employees and doctors, it will maintain all the details of employee and doctor (including Designation, Attendance and timings etc).
- Also bill consolidation to all patients including In-Patient, out-Patient and other fields such as Lab section, pharmacy section are done through this management.
- Online bill payment for regular patient is also available in our application. This gets updated to patient details through admin.



Thank you!