



## Case Studies

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## 1 INTEGRATION WITH AN ONCOLOGY EMR AND AN EXTERNAL BILLING SYSTEM

### Context

The context of this case is to integrate an Oncology EMR with an external billing solution making the solution more effortless and effective as a part of client's existing problem.

### Scope of Work

The solution was expected to provide integration with a large FDA approved oncology EMR product that managed the chemotherapy and patient demographics modules quite efficiently, but depended on an external billing system for submitting claims.

Both the above mentioned systems managed scheduling, while the practice management supported billing as well, and the Oncology EMR supported the treatment, the requirement was quite complex as this had to integrate the business workflow beyond just a data exchange integration.

For example, the doctor schedules had to be mapped to chemo schedules and at the same time conflicts between these schedules had to be avoided. The recursive appoints had to be reflected between both the schedulers. Furthermore, the implementation of the interface had to integrate 7 different facilities and locations and also manage centralized billing.

There was also a requirement of HIPAA complaint security capability with a very comprehensive audit trail and log requirements. Duration of the implementation spanned well over 7 months.

### Solution

Although the requirements specified were of complex nature due to the fact that we were working with systems that were highly proprietary and restricted, our solutions involved the following:

- Integration with the UI scrubbing capability through which data exchange was validated by the application for integrity reasons.
- Centralized web based audit trail logging system to manage messages back and forth.
- Seamless location independent agent to replicate information exchanged across 7 databases
- Alerting the capability to notify users on any potential failures in the workflow.
- The solution was developed with Microsoft .Net remoting to encapsulate the TCP/IP layer

### Outcome

The client has been able to improve their productivity by effectively using our standardized system with enhanced billing integrated to their FDA approved oncology EMR system.

### Reference

A US based Oncology Healthcare Practice.

## 2 AUTOMATED PATIENT PORTAL

### Context

The context of this case is to develop an online patient portal application as a part of our new business opportunity.

### Scope of Work

To develop an Automated Patient Portal that gives a patient access to interaction with his / her physician(s). It also helps the patient to go about their medical procedures with much ease by using this automated portal at a minimal cost.

The scope of the proposed system included:

- Patient Scheduler
- Problem Description Management
- Live chat:
- HL7 Message Template Management

### Solution

The Practice provides a user name and password to the patient; which is then used to enter his/her details and schedules an appointment with the physician/s. The patient can also chat with his/her physician and avoid waiting time and also avail instant medical opinion via this system. He/she has access to all charting information as this system is integrated seamlessly with another of our healthcare Solutions – a web based electronic medical records system using an HL7 Message template management system. Refills can directly be dispensed to the patient's pharmacy without having to visit the doctor, and access to lab reports is possible in the shortest time frame with not having to wait. Also in cases of emergencies valuable life saving information is made available to the physician almost on the fly.

We helped bring this unique concept to fruition by developing four main modules

- **Patient Scheduler**  
A unique feature that allows the patient to avail of the facility to book an appointment with a physician from the comfort of his home or office any given point of time
- **Problem Description Management Subsystem**  
By combining Chief complaint (CC) and Reason for consultation (ROC) to relate to a series of questions the patient is able to accurately describe his/her health condition to the physician
- **A live chat engine**  
Developing a chat system allowed the patient to communicate with his/her physician and instantly clarify any questions he/she may have
- **HL7 Message Template Management Subsystem**  
Developing an HL7 message template management system helped integrate the automated patient port to communicate with insurance companies, electronic management systems and practice management systems

Technologies and Standards used are:

- Dot net framework version 2.0 for development
- SQL Server 2005 for database
- Web services for integrations

**Outcome**

The client finds the solution easy to use and benefits from the following functionalities provided:

- Patients are given the facility to interact with their physicians without going to the doctor's office.
- Patients can access all medical related information and transactions made by them through the system.
- Patients can book appointments with their physicians without having the need to call the front office.

**Reference**

A US based Healthcare Product Company

### 3 CLIENT SCHEDULING

**Context**

The context of this case is to develop a client scheduling application as a part of our new business opportunity.

**Scope of Work**

The client needed a scheduler to maintain schedules for various facilities, as the organization schedules appointments for various facilities than for providers. The scope of work included appointments, reports and alerts.

**Solution**

We developed and deployed a scheduler for the client that was customized with a few features like reports and scheduling private events, as per the client's requirements.

Tools and Technology used:

- DotNet - Crystal reports for extreme reporting features.
- Sql server as backend

**Outcome**

Client is extensively using our scheduler, overwhelmed with the available features and ease of use as it allows the client to quickly configure schedules for various facilities and book appointments for patients.

**Reference**

A healthcare organization situated in the United States of America.

## 4 CLIENT SERVER BASED EMR

### Context

The context of this case is to develop a client server based EMR as a part of our business goal.

### Scope of Work

To develop a truly integrated Electronic medical records system with Practice Management and PDA / Tablet PC functionality. The scope of the proposed system included:

- Manage daily schedule and view patients waiting
- Pull forward relevant data from previous visit
- Capture chief complaint, history of present illness for physician's access
- Instantly share chart information throughout the practice
- Receive medication interaction and allergy alerts
- Track charts and organize charts to review
- Prescription Management

### Solution

The Solution was to develop a single server system that was capable of serving a number of remote clients. Some of the major features incorporated are:

- Appointment Scheduler  
The appointment scheduler which takes charge of your appointment tracking, fixing and blocking
- Insurance Eligibility Check  
To take care of the vital process of checking patient's insurance eligibility often results in billing errors, insurance coverage concerns and delays.
- Specialty EMR  
The Electronic Medical Record software (EMR) aimed at automating and simplifying the patient record documentation, storage and retrieval process.
- Chief Complain (CC) Reason for Consultation (RFC)  
For recording a patient's symptoms
- History of Present Illness (HPI)  
The HPI is the history of the patient's chief complaint.
- Medication Reviewer  
A complete list of all medications that the patient is on or had been taking at some point
- Allergy List  
This is a list of all the patient's allergies.
- Past Medical History, Past Surgical History, Screening (PMSS)  
This is a list of all the past surgery and medical issues that the patient has been treated for.
- Social History  
This is a list of all social or habits the patient has.

- **Family History**  
The complete family history is captured.
- **Immunization**  
A complete list of all immunizations that the patient has had
- **Review of System (ROS)**  
The ROS is a complete review of body systems with the patient, usually done by the nurse
- **Document Management**  
The Document Manager allows the medical institution to store vital patient documents such as X-Ray's, Paper Reports, and Lab Reports etc
- **Prescription Writer**  
To streamline the entire prescription writing process making it simple, fast and effective
- **Lab Order Integration**  
The Lab Order Entry Interface synchronizes lab results with patient records
- **Medical Transcription**  
A PDA-compliant medical transcription system that manages the transcription cycle from the beginning to end by integrating voice recording, digital scripting, delivery of voice files to the medical transcriptionist and final transcript receipt
- **Patient Reminder**  
Works for the benefit of the doctor as well as the patient as an interactive voice technology system, which automatically calls and gives the patient appointment specific information
- **Medical Calculators**  
A diverse range of Medical Calculators that allows the medical practitioner to make rapid, accurate calculations within seconds, with the focus on "evidence based medicine"

The proposed system was developed using the following Technologies and Standards:

- Dot net framework version 2.0 for development
- SQL Server 2005 for database
- Web services for integrations

### **Outcome**

The client is reaping the below benefits by using our comprehensive solution:

- The information is stored electronically so paper work is completely made obsolete
- The entire healthcare system within a practice is automated
- A single server running on a system can serve remote client/clients
- Huge paper work is reduced /eliminated
- The manual errors is reduced /eliminated
- Minimum effort and time required with ease of usage

### **Reference**

A Healthcare Center situated in the United States of America.

