



CASE STUDY

Developing a Radiology Web Application



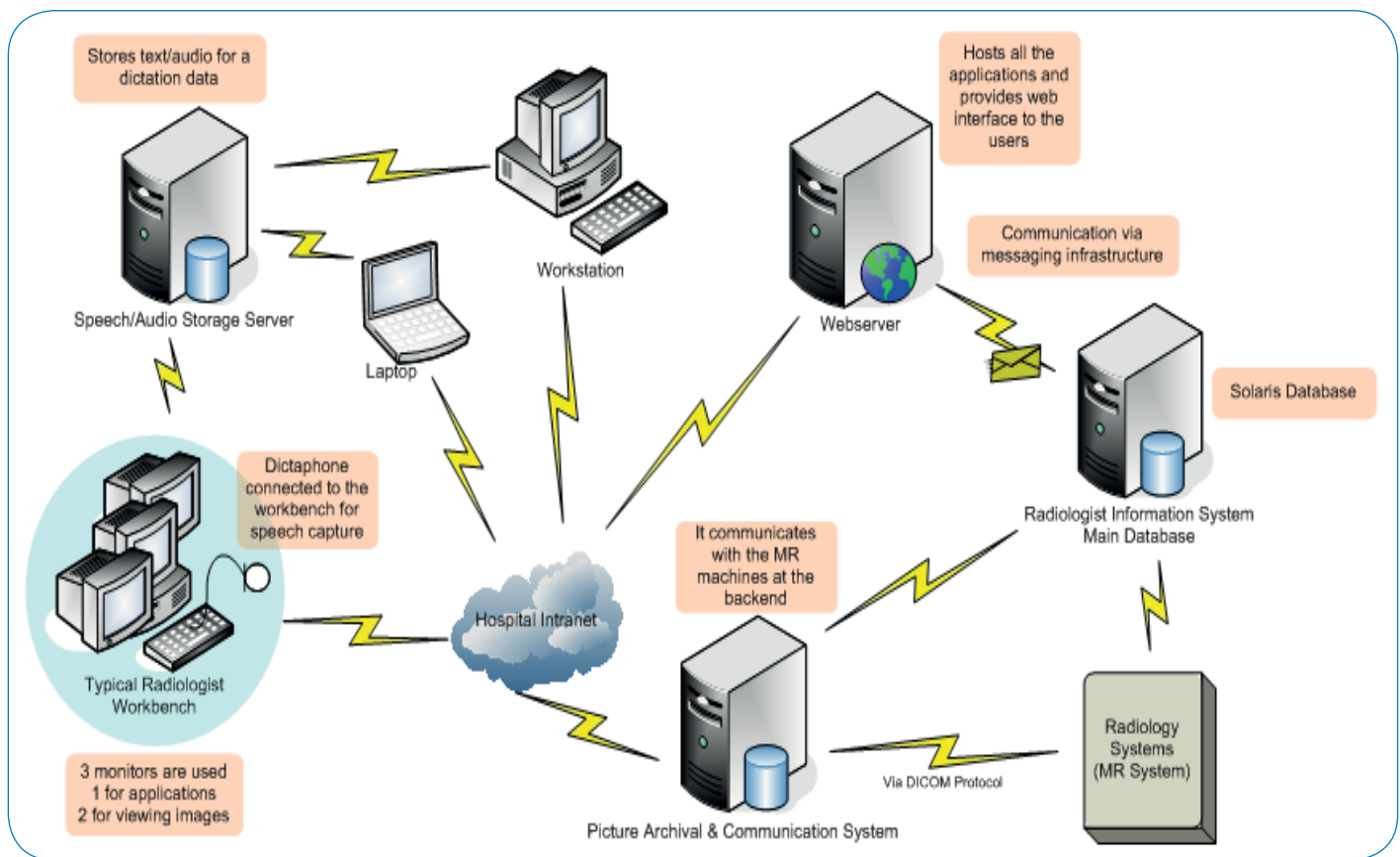
Infosys  
*be more*

## Client Overview

The client is a medical solutions provider with strong technological leadership and innovation in the field of medical electronics. It is one of the largest suppliers to the global healthcare industry with innovative imaging equipment, information technology, management consulting and services to help customers achieve tangible, sustainable clinical and financial outcomes.

Infosys co-developed a workflow management Web application for radiologists, along with the client. This application provided a Web-based alternative to the existing suite of desktop-based applications used by radiologists.

## Client Product



## Client Context

The existing product was a desktop application which had many hospital related workflows including one specific to radiologists.

The product drives the radiological workflow from to image and report distribution. It offers advanced Radiology Information System (RIS), Picture Archiving System (PACS), and processing in a comprehensive package for all imaging

needs. The digital form of the graphical output of diagnostic processes such as an X-ray, CT or MRI scan is stored in PACS. The radiologist is able to see these images on her client machine and dictates the report via the dictaphone. The dictated voice recording is stored in the speech server. The speech-to-text dictionary for each user of this system is maintained on the server. If the speech to text translation is

not satisfactory, the radiologist can forward it to a medical transcriptionist who will then hear the audio, do the necessary corrections in the text and send the report back to the radiologist for approval. The radiologist then verifies the report and approves it.

This product suffered from the following drawbacks:

- The product was a desktop application which required it to be installed on all workstations.
- Product maintenance/upgrades required the system administrators to manually work on each workstation

The users, in this case the radiologists, were not satisfied with this and wanted to have a Web interface that they could access over the browser at any workstation within the hospital intranet.

To increase availability and maintainability, the radiologist workflow was converted into a Web application. This was in alignment with the client's strategy to convert their desktop applications to web applications in a phased manner.

## Infosys Approach

Infosys was involved in this Web application project from the conceptualization phase. Infosys built the application, created the Installers and is now responsible for product maintenance and support.

### *Application Building*

Infosys's emphasis in the design phase was on reusability. Creation of re-usable components and integration of 3rd-party controls were done to reduce the development time and to achieve better code maintainability.

Microsoft's ASP.NET AJAX platform was used to simulate a desktop-application experience in a Web-application. User Interface was designed in such a manner that the application could support multiple resolutions without altering its look and feel. The user experience was further enhanced by providing multiple views within a screen for radiologists to select the view as per their need. The dictaphone

used for dictation of reports was integrated with the Web application to allow radiologists to dictate their reports directly onto a webpage.

Infosys also created intermediary components to manage communication between PACS and the Radiologist Web application. Additional support was provided for the portal application to drive 3rd party dictation and imaging systems. A communication framework based on XML Web Services was developed for communication between MR System and Radiologist Information Server.

Performance tuning was carried out to ensure application responsiveness. Error handling was enhanced to enable safe error logging and easier application maintenance.

### *Development of Installers for the Web applications and MR server components*

Since the existing process was manual, the radiologists' efforts were getting wasted every time the application had to be reinstalled or upgraded. Installers were developed to provide better administration and to avoid the occurrence of errors that had happened earlier during the manual installation of components. Using Installshield, a Web-based installer was created to deploy all the required third party client components to the radiologists' workstations through a single installation. For the server installation, a single executable installer was created to deploy the Web application to the Portal Web Server. Installers were also created for the deployment of hot patches as well as service packs.

### *Support and Maintenance of Existing suite of applications*

Apart from the Web application creation, different versions of the existing Windows application, each catering to a specific

hospital, were maintained and supported by Infosys. Production support was also provided to the IT departments of the hospitals where this product was deployed. Real-time support for critical issues was provided round the clock with the offshore team in India being operational during non-US working hours leveraging the global delivery model.

## Client Benefits

The client derived following benefits through this project:

- Increased application availability as it is now available through Web browser.
- Increased acceptability of the product due to the enhanced messaging between radiologists and transcriptionists and better data processing.
- Additional features added for emergency patient handling.
- Almost error free installation at the server and client end through installers.
- Smoother patch application and upgrades process.
- Faster access to emergency information was provided in this product.
- Application is now available in multiple resolutions.
- Better support was provided and turnaround time in case of any issues has been reduced.

## Accolades

This product has been well received by the Radiological Society of North America (RSNA) and has been showcased by them at their annual roadshow since November 2005.



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