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Teleradiology in India

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The potential to use technology to deliver medical services across large distances has always excited visionaries and technology-oriented healthcare professionals. The diverse nature of medical data, from records to images and live teleconsultations amongst others, results in a wide range of volume that must be managed. In addition, remote handling and transmission of medical data must face challenges such as medico-legal implications, data security, quality and turnaround time. This article focuses on these issues and how they have resulted in the growth of telemedicine and in turn e-Radiology services in India.

Conventional imaging modalities like Ultrasonography (USG), Computed Axial Tomography (CT), and Magnetic Resonance Imaging (MRI) produce data of the order of 50 Megabytes (MB) per study. Of late there has been an explosion of 3D imaging modalities like Angiographies, Multi Planar Reconstruction, Maximum Intensity Projections (MPR/MIP) and 3D Reconstruction for Anatomical Evaluation. The stor age requirements for archiving and transmitting these images are currently in tetrabytes and will eventually grow to petabytes (1024*1024*1024*1024 bytes). Users are also seeking storage solutions that provide faster response and increased data availability across networks. Producing a system that fulfils user requirements and data handling constitutes a major challenge.

Security Issues

In the US and Europe, guidelines such as HIPAA and IHE are in place to protect patient healthcare information. In addition, patient data is also protected in terms of procedures such as audits and security plans, disaster recovery and backup, and security in the form of authentication and encryption. DICOM standards are a boon to data management. Commands between DICOM systems are first associated, negotiated, acknowledged and only then transferred to routable destinations. Guidelines regulate conformance statements from each vendor of medical equipment on supported functionalities, SOP-classes and transfer syntax. DICOM takes care of local network compliance and dictates security over the internet with further measures, for example, Public Key Infrastructure (PKI), Secure Sockets Layer (SSL) protocol and 128-bit encryption, and the Virtual Private Network (VPN). The following table gives some of the commonly available networks and time taken to transfer the same 25MB study over the network.

Background

Since the early to mid 1990s, outsourcing has been developing at a rapid rate. The next decade witnessed an explosion of IT enabled services that had an impact on the healthcare industry. The Indian space research organisation, by leasing its communication satellites, heralded a new era in telemedicine. This positive trend in IT and healthcare allowed USbased radiologists to outsource work to India due to a shortage of radiologists in the US and perceived cost and time benefits. Hence most teleradiology services presently provided in India are for US counterparts. Also some Indian hospitals provide teleradiology as a preliminary reporting service for emergency scans, referred to as a night-

hawk service.

Why Outsource Teleradiology to India?

Apart from the availability of trained radiologists in sufficient numbers and IT firms, the time zone advantage for US-based firms has put India on the global map for the outsourcing industry. This guarantees good turnaround time, which in turn translates into cost-effectiveness. Many leading teleradiology firms have US board-certified radiologists as their angel investors or CEOs. This ensures HIPAA compliance and takes care of medico-legal aspects of outsourced work. The experience gained from the US market has resulted in many firms expanding their services to Europe, Africa and the Middle East. On the other hand Indian hospitals who could not source US-certified radiologists are doing pre-processing for their US counterparts.

Indian Teleradiology: Fantas y Vs. Real ity

The foremost challenge is to have US board-certified radiologists in the reporting panel to address medico-legal implications, which ensures confidence in the offshore radiologist who comes up with the report. Without this, the role of reporting centres is reduced to that of merely a night-hawk service, which is not productive in terms of money or growth prospects in the long-term.

Though the Indian training system produces approximately 120 radiologists a year, to motivate an Indian radiologist to moonlight in the outsourcing industry requires a financial and stable career path compared to working in the private sector or engaging in independent practice. To ensure this, teleradiology businesses need to mature into credible and lasting models with the necessary checkpoints built in to meet changing industry and market trends. Apart from HIPAA regulations, the US healthcare industry faces numerous other regulations. The American College of Radiology has come up with the recommendation that only radiologists with malpractice insurance should be in the growing teleradiology business. Also, there is a move to limit the number of reports a radiologist can generate per day. All these regulations impact teleradiology.

Finally, the availability of manpower and IT infrastructure is concentrated in few major cities developing as IT hubs on the global map. Bangalore is now known as the IT capital of Asia. This means growth of the outsourcing industry is confined to these cities only. To disseminate business, there should be matching growth in other parts of India as well. This calls for coordinated efforts between various departments and professionals ranging from political governing bodies in the states, IT and telecom sectors and healthcare professionals.

Conclusion

The path ahead, though riddled with obstacles, is heading in the right direction. Due to growth in private healthcare, the advent of medical tourism and international health insurance, alternative business models relying on local needs and demands are appearing in the horizon which offers a way out with the infrastructure if the outsourcing business slows. In our opinion the wider availability of WIFI, broadband services, mass storage solutions and affordability will remarkably alter the business of clinical process outsourcing in India within the next two to three years.

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