

# Challenges to DICOM Interoperability in India

Madhusudan Sreenivas, GE Healthcare



India, one of the fastest growing countries in the world, has seen tremendous growth in medical field in a very short span of time. DICOM and other standards have contributed immensely in improving the quality of healthcare services provided in India. They have made the life of healthcare providers a little less complex.

Though DICOM brings in many advantages, there are challenges in India that pose hurdles to its wide spread use. Some of those challenges are highlighted here.

## Medical Devices & Systems are very expensive in India as most of them are imported

Hospitals/Clinics look for alternatives to reduce cost by :

### System features

- Scanner
- Workstation
- Post processing
- DICOM
- MWL / MPPS

- Purchasing old or refurbished equipment with no digital & networking capabilities
- Purchasing less-expensive ones with limited/no DICOM capabilities
- Continue to use & buy analog imaging devices
- Not purchasing required licenses for DICOM/Interoperability features
- Use open source or build home grown solutions to manage workflows and data instead of standard protocols

Effects : 1. Devices not interoperable, though capable  
2. Manual & complex workflows leading to overheads

## Lack of infrastructure is obstructing the reach & popularization of systems that are capable of interoperating

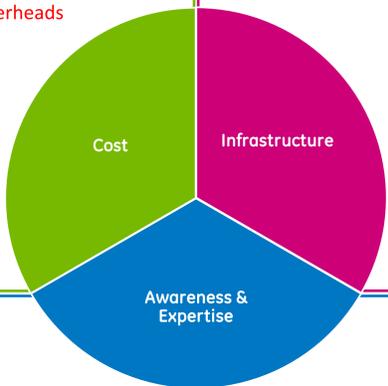
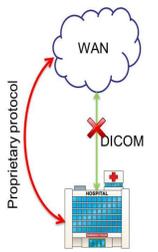
- India has ~68% of its population in rural areas and most of them have very limited or no access at all to electricity and network
- Referral doctors in India still do not have computers in their office. They would prefer the patients to bring in Films and paper Reports instead of CDs / DVDs.
- Hospitals charge a very high amount to provide the images on CD/DVD. Patients prefer Film prints to avoid paying extra money from their pockets for the CD/DVD, unless really necessary



Effects : Film based workflows are more preferred, which inadvertently discourages the healthcare providers from moving to digital devices with better interoperability capabilities

- DICOM communication over WAN is still a huge challenge for Tele-Radiology applications due to irregular network connectivity

Effects : Forces Tele-Radiology application vendors to develop and use proprietary protocols instead of DICOM



## There are not many DICOM & standards experts available in India

- Hospital IT staff is not much aware of DICOM/IHE standards and their importance.
- Their homegrown, quick fix solutions do not usually make use of the standards based approach, thereby limiting their interoperability capabilities
- DICOM & interoperability features are not given proper consideration while purchasing medical equipment
- Hospitals usually end up buying department specific software such as RIS, LIS from different vendors, due to various factors
- When these systems do not interoperate fully, the data ends up lying duplicated in multiple systems, also causing problems during future migrations
- There has been a fast growth in number of local healthcare device and IT system manufacturers in India. Sometimes these vendors do not fully respect the interoperability capabilities needed in their systems.

Effects : 1. Hospitals end up buying non-interoperable systems  
2. Challenges and delays during deployment and system usage leading to inefficient workarounds

❖ Quality of these capabilities is usually compromised for lesser cost and early introduction of the products into the market.

❖ This could also be due to lack of sufficient test environments and opportunities for these vendors to test their systems with other vendor systems.

- ✓ Bringing awareness in Hospital IT & radiology staff about DICOM and other standards is crucial for smooth integration and efficient workflows.
- ✓ This awareness will empower the end users to properly assess their workflow needs and demand the necessary interoperability capabilities in the medical devices/systems before purchasing and deploying them in their hospitals.
- ✓ The demand for these capabilities will drive the device vendors & local regulatory bodies to keep up with DICOM and other standards.
- ✓ Cross-vendor testing events such as IHE Connectathon if conducted in India would encourage local manufacturers to test their systems for interoperability.