

AbstractID: 8528 Title: A DICOM Screen Dumper That Links Tomotherapy Units and R&V Systems

Purpose: To present a DICOM screen dumper that captures 3D image registration results of MVCT vs. KVCT on Tomotherapy delivery console and sends them to R&V system to make remote image reviewing feasible. **Method and Materials:** Helical Tomotherapy is a true IGRT modality. Its on-line imaging feature allows us to produce patient's position accurately by means of 3D image registration of MVCT vs. KVCT prior to treatment so that inter-fraction motion is compensated. Unfortunately, this system lacks the feature to communicate with R&V systems due to its unique design. The image registration results are either approved by radiation oncologists at the console or on the printouts. To smooth the workflow, a software utility, ScreenBee, was developed for Tomotherapy system. Instead of acquiring entire 3D registration results and plan parameters that currently are not supported by any R&V system, it takes snapshots of either entire screen or a specific region, i.e., the graphical representations of 3D image registration and plan, encodes them in DICOM RT format and transfers them to R&V system. **Results:** It has been extensively tested and evaluated for about 8 months in our clinic. More than 2,000 images have been successfully sent to IMPAC. It also works on any computer with Microsoft Windows NT/2000/XP wherever the screen is desired to be seen and reviewed remotely in a timely fashion. So the treatment prescription and QA results can also be sent to R&V system if it is installed on the Tomotherapy planning workstation. **Conclusion:** The technical limitation on DICOM RT implementation of Tomotherapy system can be remedied by dedicated software without extra hardware capital investment. It helps radiation therapy clinics with cutting edge technologies move towards digital solutions so that the clinic workflows become more efficient and smooth with permanent records.