

AbstractID: 6937 Title: A Web-based and database-centric radiotherapy treatment plan review and reporting system

Purpose: The typical current treatment plan approval process is to assemble the planner and the reviewing physician at the planning workstation and review the plan using the planning software system. We are developing a new web-based and database-centric tool to address these problems, called WEBTREV (Web-based TRreatment EValuation).

Method: WEBTREV utilizes several development tools, including the object oriented web development platform Ruby-on-Rails (ROR), the open-source database MySQL, and CERR, the Matlab-based open-source treatment planning research system. CERR is used to extract DICOM-RT data from planning systems and to generate customized views and reports. The corresponding extracted plan images and plan evaluation parameters are stored in the MySQL database. Ruby-on-Rails dynamically defines views and serves data over web pages via the Apache web-server system.

Results: The resulting workflow is: A dosimetrist uses a secure login via ROR at the planning system to push DICOM to a receiver where CERR is used to generate static images of overlaid scans, doses, and structures. As soon as this process is complete, ROR sends an e-mail to the dosimetrist to confirm the upload. Once confirmed, a physician can log into a personal database work queue and select the patient to review. The dynamic web-page contains standard views of slices and structures, as well as dose-volume-histogram data and customized reports giving plan metric values (e.g., D95 and minimum dose to target volumes). Approval or a request for further modifications is transmitted back to the dosimetrist, who may view comments linked to graphics.

Conclusions: WEBTREV provides a promising platform for reviewing treatment planning data remotely. This framework provides a tool for generating consistent representations and reports of dose characteristics, images, and structure data, as well as plan evaluation parameters, across different planning systems.