plan2pdf – a fully automatic and customizable pdf reporting program for Philips Pinnacle TPS

Chuan Wu, Ph.D.
Sutter Medical Foundation, Radiation oncology, Roseville, CA 95661

Abstract

An electronic treatment plan reporting program was developed by us to enable fully automatic pdf report from Philips Pinnacle TPS to external EMR clients such as MOSAIQ. The program is named "plan2pdf". In its full auto-mode, with a single mouse click, plan2pdf will generate a detailed Pinnacle plan report in pdf format, which can include (but not limited to) report cover page, Pinnacle plan summary, orthogonal views through POIs and maximum dose point, DRR's for each beam, transverse view captures throughout the plan dose matrix, DVH window and scorecard window (Pinnacle 9.8 or later). __Note that the above list of items in a pdf report, including the format and order of each item itself, can be fully customized to suit each individual department's special needs so as to conform to their EMR treatment plan documentation requirement and policy,__ and thus make it very user friendly to any Pinnacle TPS users who are looking for an automatic pdf report program. The program generated pdf report is automatically bookmarked for each section to make it easier to navigate through the report. To export generated reports from Pinnacle workstation/server to external EMR system, users have options of choosing ftp protocols (both to and from EMR), or NFS mounted share folders. In addition, a manual capture and pdf report tool is implemented to help users to include any extra plan captures into their plan final pdf report, if needed. The manual tool supports full screen capture, capture by window (via mouse click) and on-screen rectangle region capture. Last but not least, a safety feature is also implemented in plan2pdf, to address the potential plan mix-up issues in a report when multiple users are exporting plans that belong to different patients on Pinnacle, at the same time. This feature would warn the second user about the other user's on-going plan2pdf process if more than one user is detected.

Material and Methods

As many Pinnacle users are aware of, it is often a very difficult or virtually impossible task to install any third-party software on a clinical Pinnacle workstation/server, due to both technical issues related to Sun Solaris OS and IT/IS department policy restrictions. To minimize dependence on any external programs, plan2pdf is implemented using __ONLY__ tools that are pre-installed with each Pinnacle workstation/server, including Pinnacle scripts, Java and UNIX shell scripts. With this approach, plan2pdf will be functioning for any radiation oncology departments even under the most strict IT/IS policies.

Results and Discussions

For demonstration, a sample plan2pdf implementation and its user interface is shown in figure 1. This particular implementation is customized for the author's department - Radiation Oncology Centers (ROC) of Sutter Medical Foundation. The institution is running Pinnacle version 9.10 on Enterprise servers, at 5 separate clinics, with a total of 15 dosimetrists and 10 physicists. A total of 3 scripts are built (shown in blue rectangle, figure 1), each of which is named correspondingly for their purpose. For manual capture function, a simple GUI is built (shown in yellow circle, figure 1) to help users to capture any additional information besides auto report. This customized plan2pdf program has been in clinical use to replace our outdated and no longer supported ROR's EMR Link program. Many dosimetry staff has praised plan2pdf for its simple to use, improved image quality in pdf report, very helpful user conflicts check function and a high degree of customization to suit the departmental workflow.
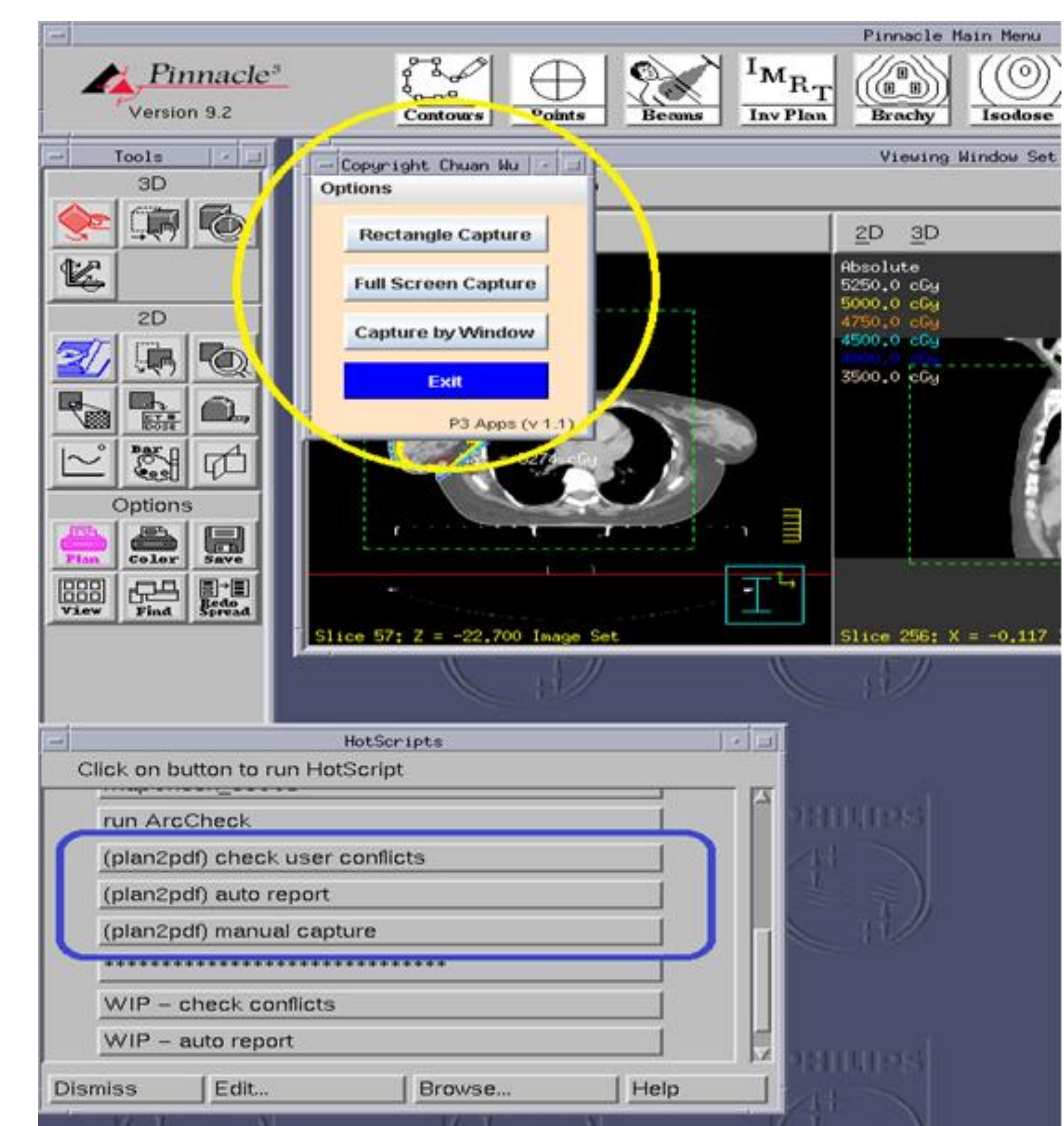

Figure 1 plan2pdf program customized for Radiation Oncology Centers (ROC), Sutter Medical Foundation