Performing QA with hybrid devices: automation and centralization of results

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Introduction

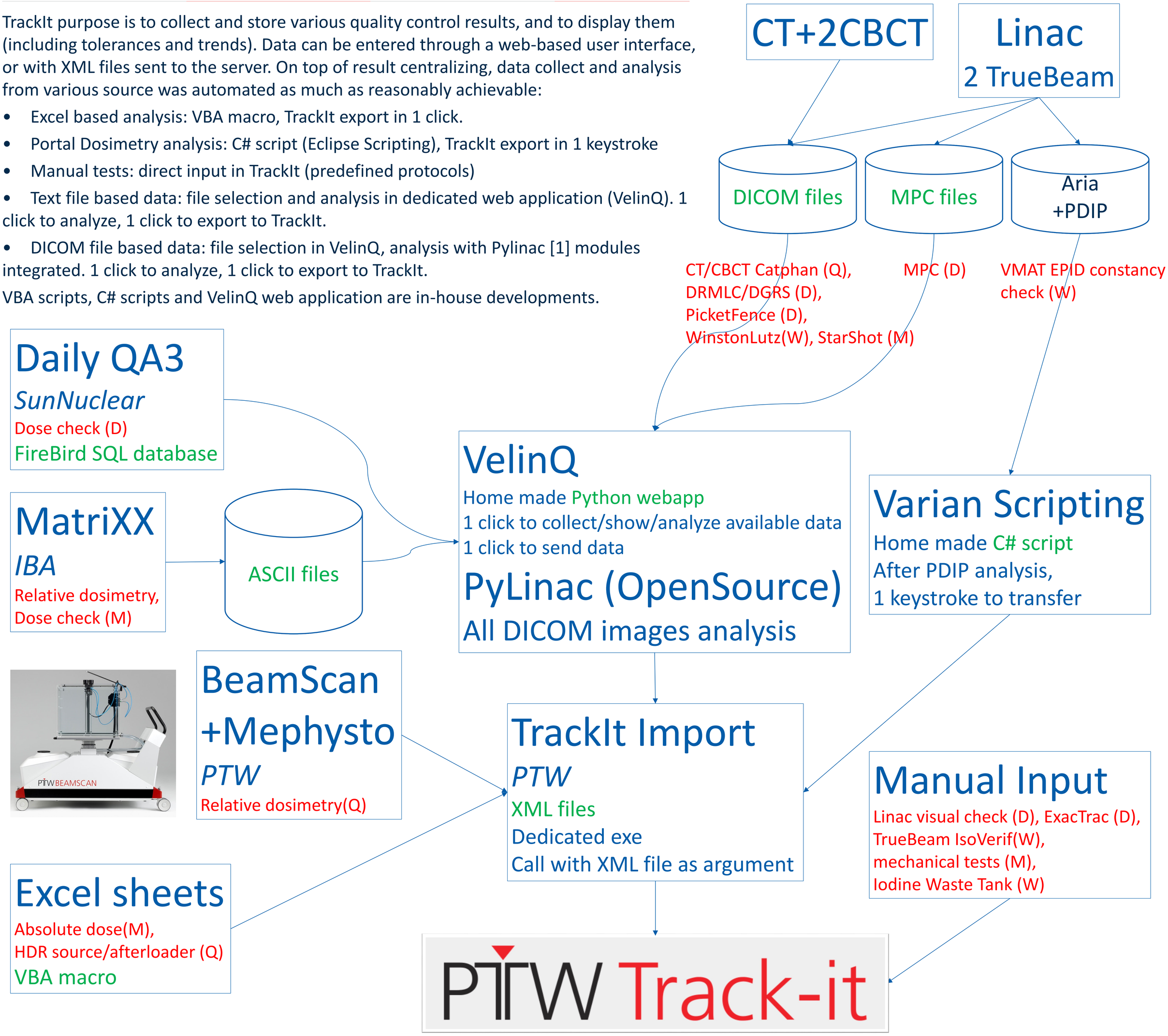
Linacs and other equipment used in radiotherapy require appropriate periodical quality controls. Many devices, software and methods are used for that purpose. Having an overview of all controls status requires checking many data sources (paper sheets, Excel sheets, dedicated software …). Our department recently purchased TrackIt (PTW, Freiburg), in order to centralize all control results in one single place.

Methods

TrackIt purpose is to collect and store various quality control results, and to display them (including tolerances and trends). Data can be entered through a web-based user interface, or with XML files sent to the server. On top of result centralizing, data collect and analysis from various source was automated as much as reasonably achievable:

- Excel based analysis: VBA macro, TrackIt export in 1 click.
- Portal Dosimetry analysis: C# script (Eclipse Scripting), TrackIt export in 1 keystroke
- Manual tests: direct input in TrackIt (predefined protocols)
- Text file based data: file selection and analysis in dedicated web application (VelinQ). 1 click to analyze, 1 click to export to TrackIt.
- DICOM file based data: file selection in VelinQ, analysis with Pylinac [1] modules integrated. 1 click to analyze, 1 click to export to TrackIt.

VBA scripts, C# scripts and VelinQ web application are in-house developments.



Results

All quality controls results belonging to 2 TrueBeam linacs, 1 HDR brachytherapy afterloader and an Iodine waste tank are now centralized in one single place and available within a web interface. For EPID based tests, quantitative analysis replace legacy visual inspection.

Conclusions

TrackIt allows all people in our team to have a quick and easy overview of all quality controls in one single place. With some development effort including various in-house scripting and a webapp, data collect and analysis from various source is fast, easy and paperless.

References

1. Pylinac project homepage, https://github.com/jrkerns/pylinac, last accessed February 11th 2019