

ABSTRACT



PURPOSE

Daily CBCT-based dose calculations enable evaluation of delivered dose throughout treatment, adding a longitudinal perspective to conventional plan evaluation metrics such as DVHs, objectives, and clinical goals.

Challenge

Reviewing multiple CBCT time-points and deviations from the original plan is complex and time-consuming.

Solution

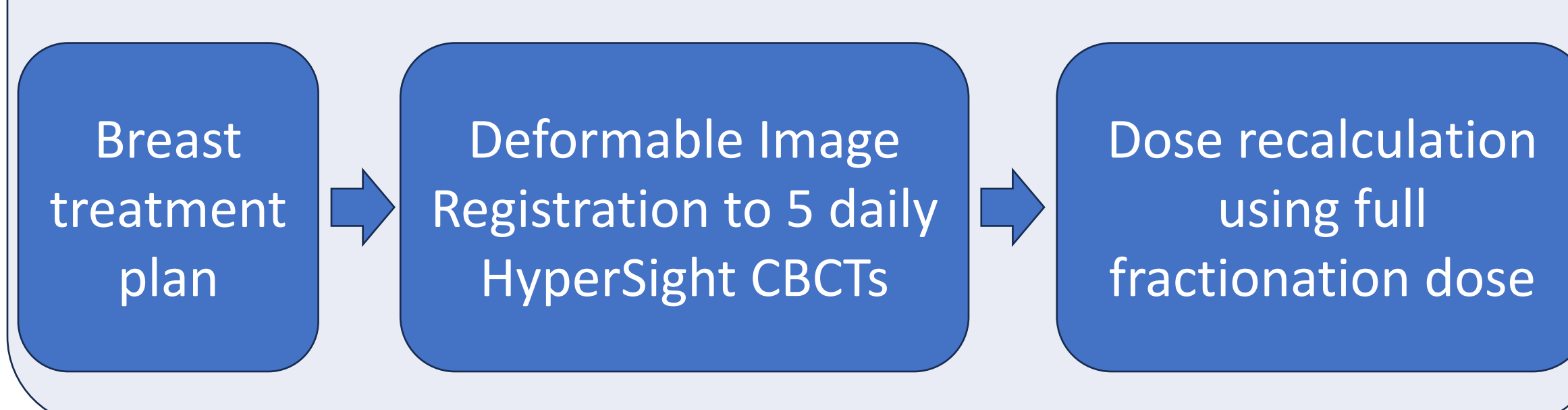
We developed an intuitive all-in-one visualization tool that summarizes daily delivered dose information in a single overview.

Goal

To support efficient multidisciplinary decision making, e.g. when to refer a patient for re-simulation in offline ART.

USABILITY ASSESSMENT

Validation workflow



Usability assessment

Using the System Usability Scale (SUS) [1]  
After a short demonstration of the tool

10

Multidisciplinary users

4 RO | 2 MPE | 2 MPA | 2 RTT

RESULTS

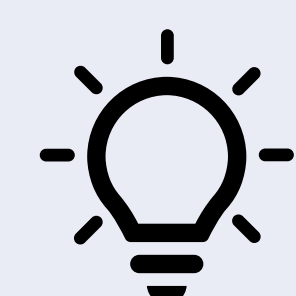
85.0 ± 10.1

Mean SUS score

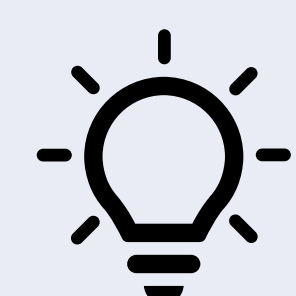
Excellent

usability

“Intuitive” “Informative”



Suggested enhancement:  
accumulated dose visualization



TOOL OVERVIEW

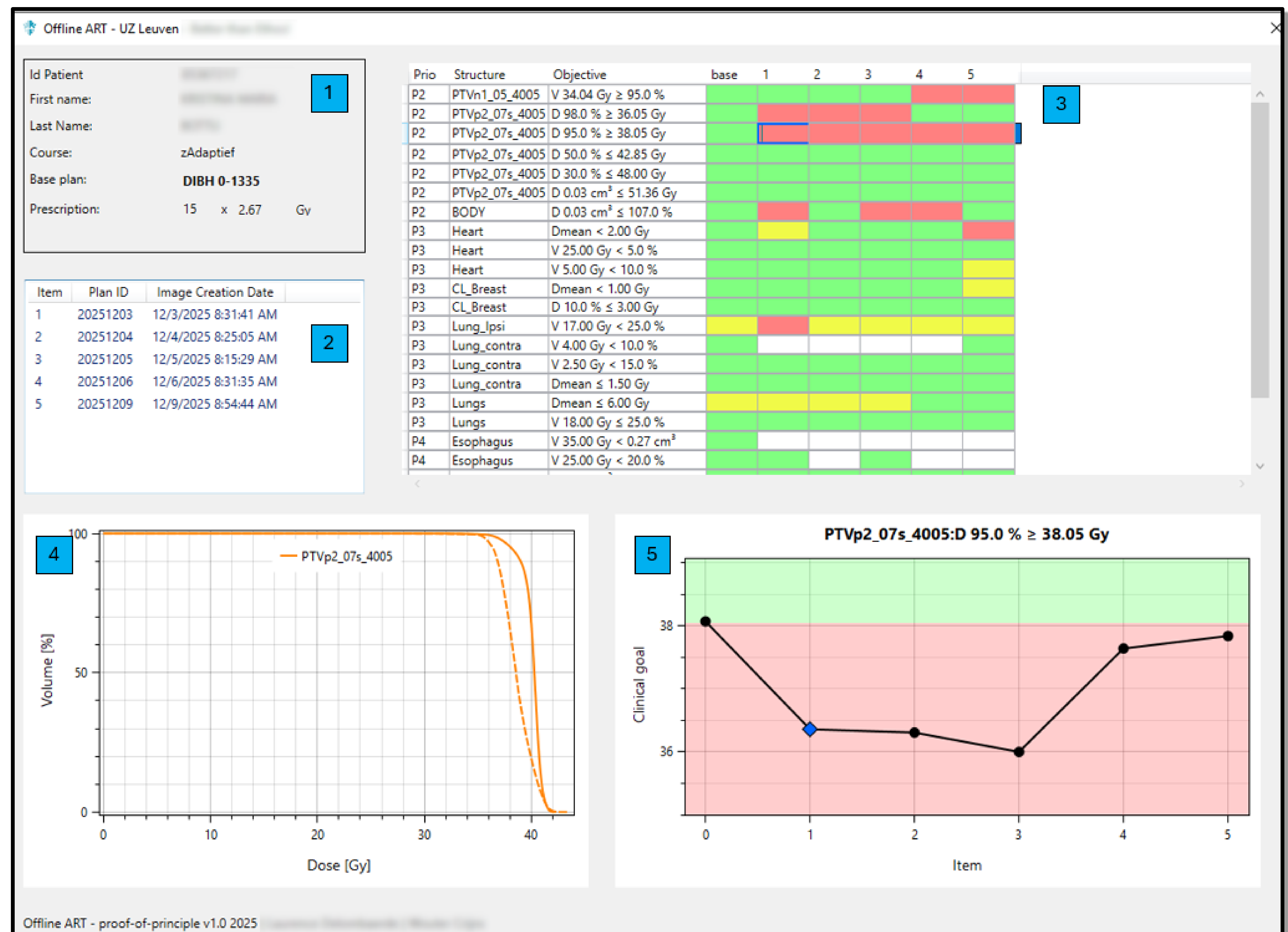


Figure 1: Screenshot of the OffART script applied for a chest wall DIBH patient. The script was created using the Eclipse Scripting API (v18.1, Varian).

1 Patient and base plan information

2 List of the daily CBCT recalculations

4 DVH comparison for the base plan and the selected fraction.

3 List of all the clinical goals from the base plan and the evaluation for the CBCT recalculations.

A heatmap summarizes clinical goals and time-points with color-coding based on the ‘Passed’, ‘Failed’ or ‘Variation Acceptable’ statuses embedded in clinical goals. Details can be accessed by hovering over a clinical goal/time-point cell, revealing the numerical value and deviation from the original plan.

5 Longitudinal trend of the selected clinical goal

CONCLUSION

The visualization tool enables intuitive longitudinal assessment of delivered dose on daily CBCT and was positively evaluated across all involved disciplines.

REFERENCES

1. Brooke, John. "SUS-A quick and dirty usability scale." *Usability evaluation in industry* 189.194 (1996): 4-7.

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