How we transformed our clinic to become more efficient by implementing web-based workflow solutions

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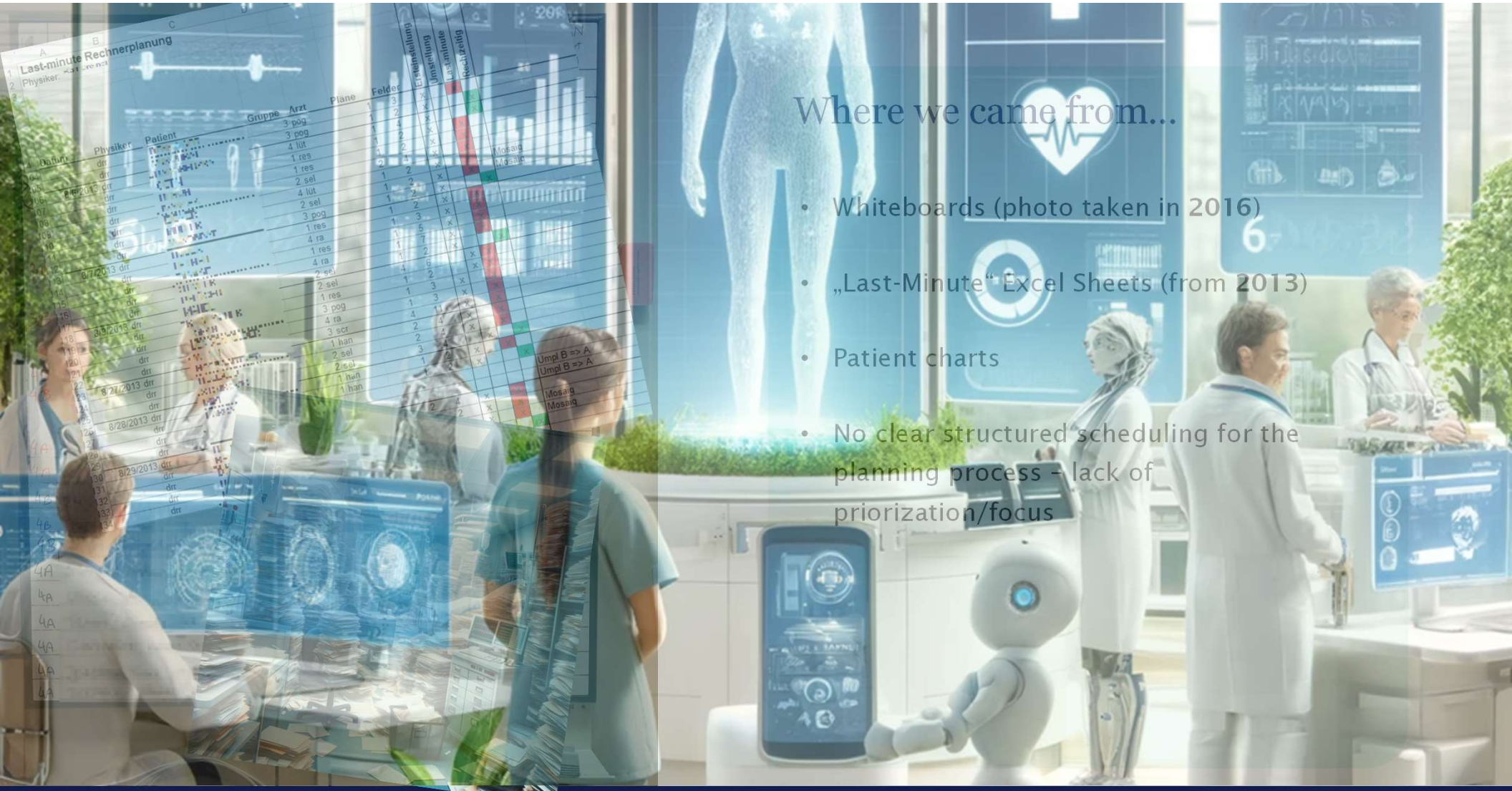
Disclosure

- *Our institute has institutional research agreements with ELEKTA, Philips, Brainlab, RaySearch*

AKH Wien / Medical University Vienna

- Largest radiation oncology clinic in Austria
  - *Head:* Prof. Joachim Widder
  - *Head of Medical Physics:* Prof. Dietmar Georg

- The project was a joint, multidisciplinary effort over several years, some of this is anecdotal and does not represent the full “struggle”



Where we came from...

- Whiteboards (photo taken in 2016)
- „Last-Minute" Excel Sheets (from 2013)
- Patient charts
- No clear structured scheduling for the planning process – lack of priorization/focus

Goals:

- No paper - Everything digital
- More transparency, better access, better control
- Increase efficiency
- Reduce risks

Challenges:

- „But we always did it like this…“
- No standardized processes across different tumor groups
- Everything was to be done asap – this did not happen in reality
- Intransparency… everywhere!
- No adequate software support

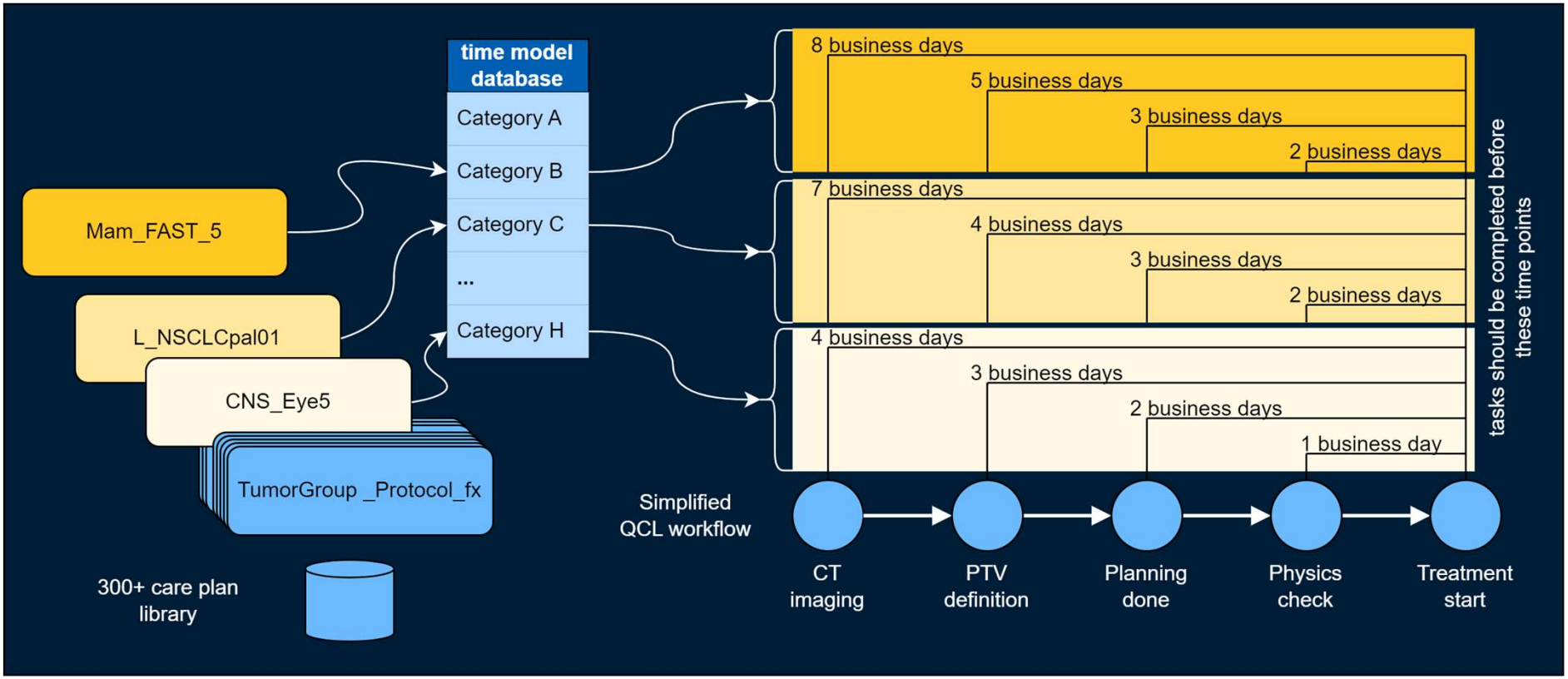
Frame conditions

- OIS / HIS / TPS
  - MOSAIQ / AKIM (SAP) / RayStation
- Linux server + NodeJS + Express.js + MariaDB

➢ Rethink current workflows, but do not disrupt everything

Actions:

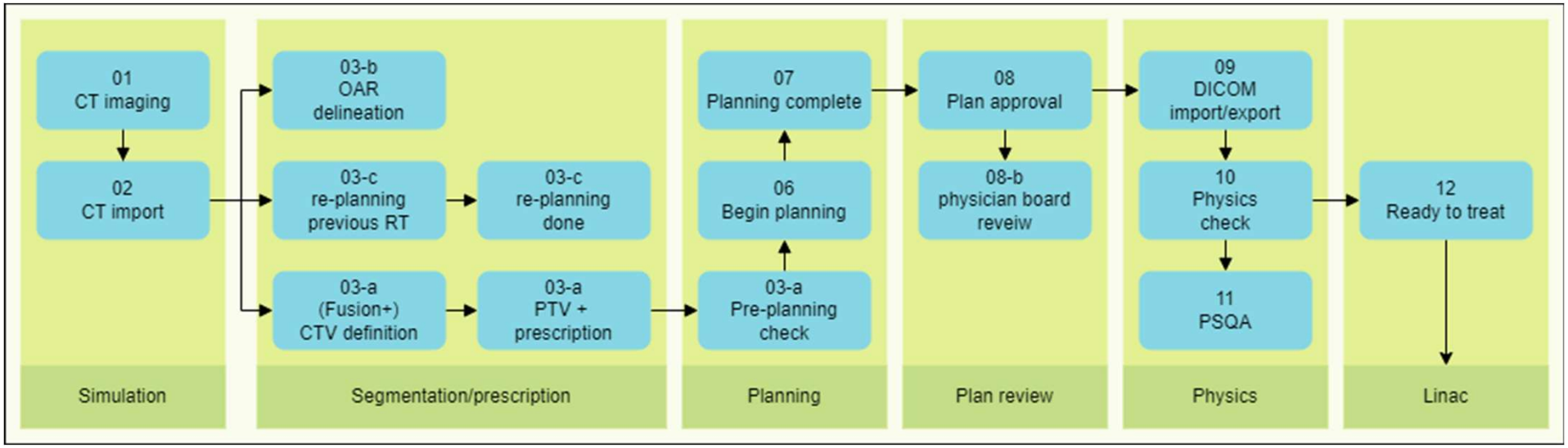
- Structure the workflows
- Enforce time model



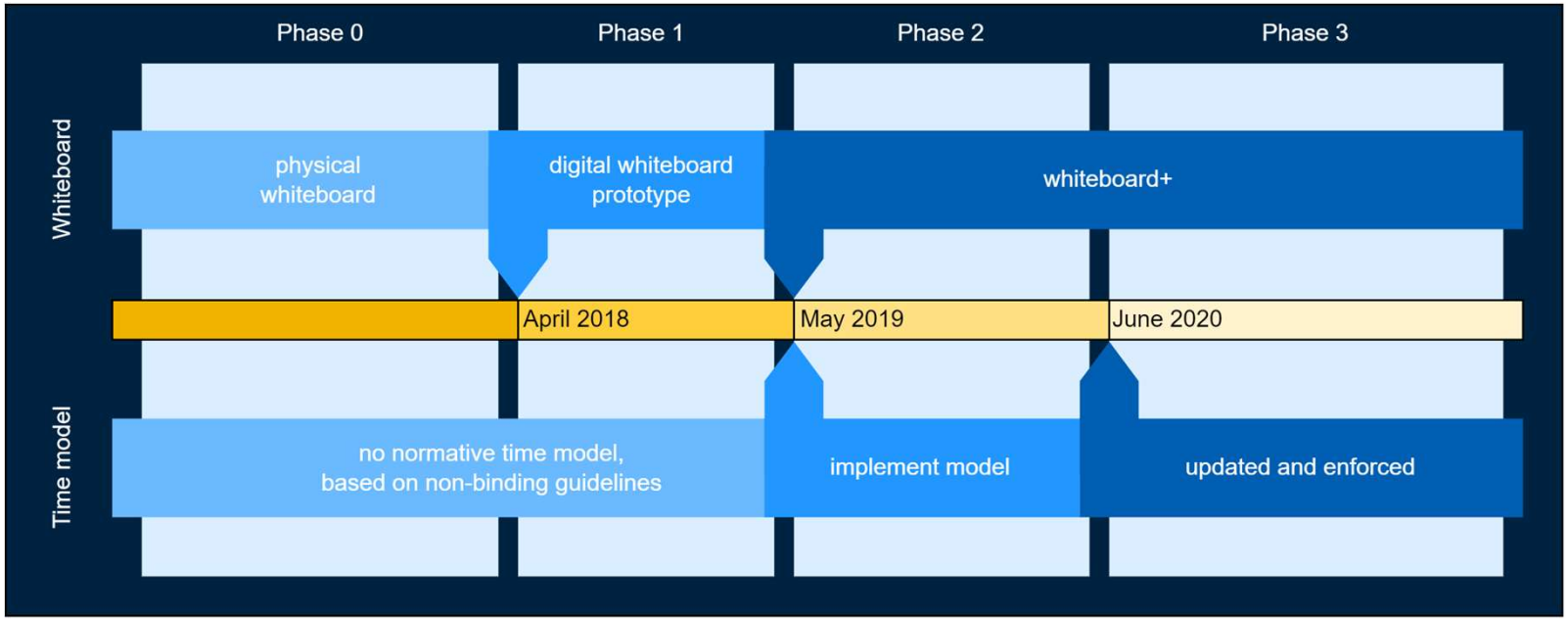
The process

- MOSAIQ eco-system
  - IQ engine + Careplan triggers + Template prescriptions + Group inheritance

- The tasks are completed in MOSAIQ!

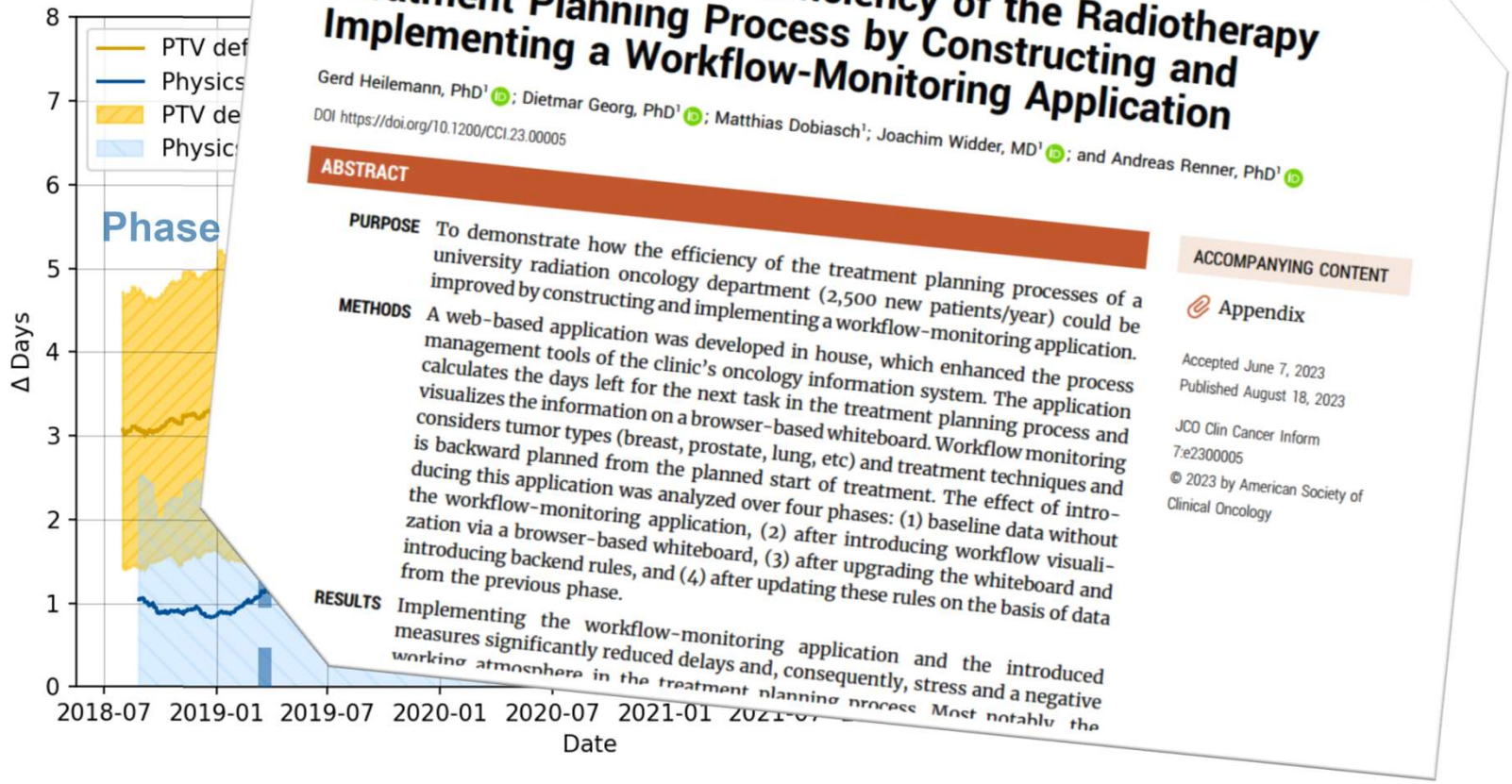


Timeline



- Rollout in phases
- Latest iteration is operational since mid 2020 (pretty much unchanged)
- We wanted to measure the success

Results – Last min



Original Reports | Data Architecture and Models

Increasing Quality and Efficiency of the Radiotherapy Treatment Planning Process by Constructing and Implementing a Workflow-Monitoring Application

Gerd Heilemann, PhD[1]; Dietmar Georg, PhD[1]; Matthias Dobiasch[1]; Joachim Widder, MD[1]; and Andreas Renner, PhD[1]

DOI https://doi.org/10.1200/CCI.23.00005

ABSTRACT

PURPOSE To demonstrate how the efficiency of the treatment planning processes of a university radiation oncology department (2,500 new patients/year) could be improved by constructing and implementing a workflow-monitoring application.

METHODS A web-based application was developed in house, which enhanced the process management tools of the clinic's oncology information system. The application calculates the days left for the next task in the treatment planning process and visualizes the information on a browser-based whiteboard. Workflow monitoring considers tumor types (breast, prostate, lung, etc) and treatment techniques and is backward planned from the planned start of treatment. The effect of introducing this application was analyzed over four phases: (1) baseline data without the workflow-monitoring application, (2) after introducing workflow visualization via a browser-based whiteboard, (3) after upgrading the whiteboard and introducing backend rules, and (4) after updating these rules on the basis of data from the previous phase.

RESULTS Implementing the workflow-monitoring application and the introduced measures significantly reduced delays and, consequently, stress and a negative working atmosphere in the treatment planning process. Most notably, the

ACCOMPANYING CONTENT

Appendix

Accepted June 7, 2023
Published August 18, 2023

JCO Clin Cancer Inform
7:e2300005

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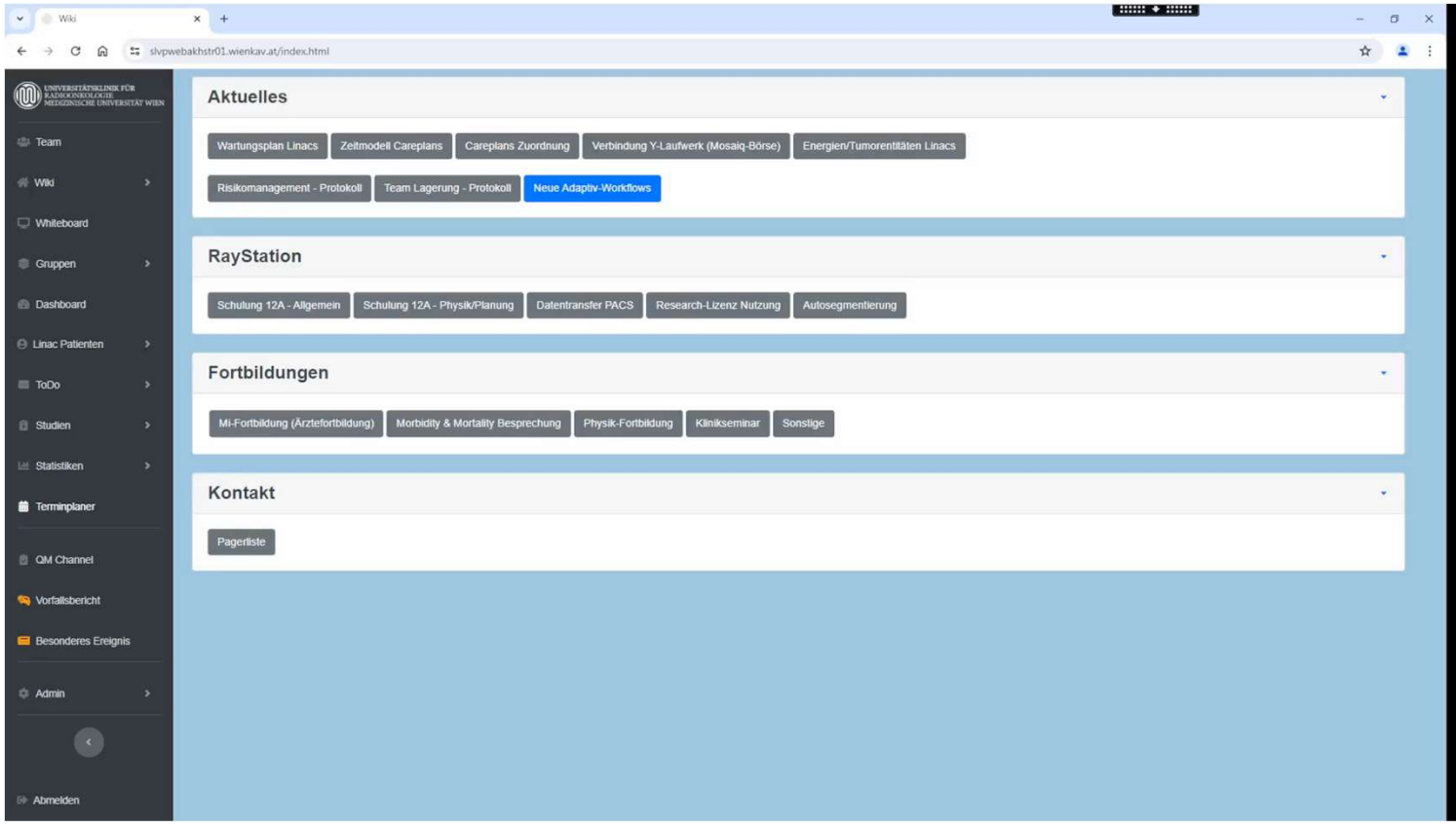
Key Features

The heart of it all…

- **Digital whiteboard!**

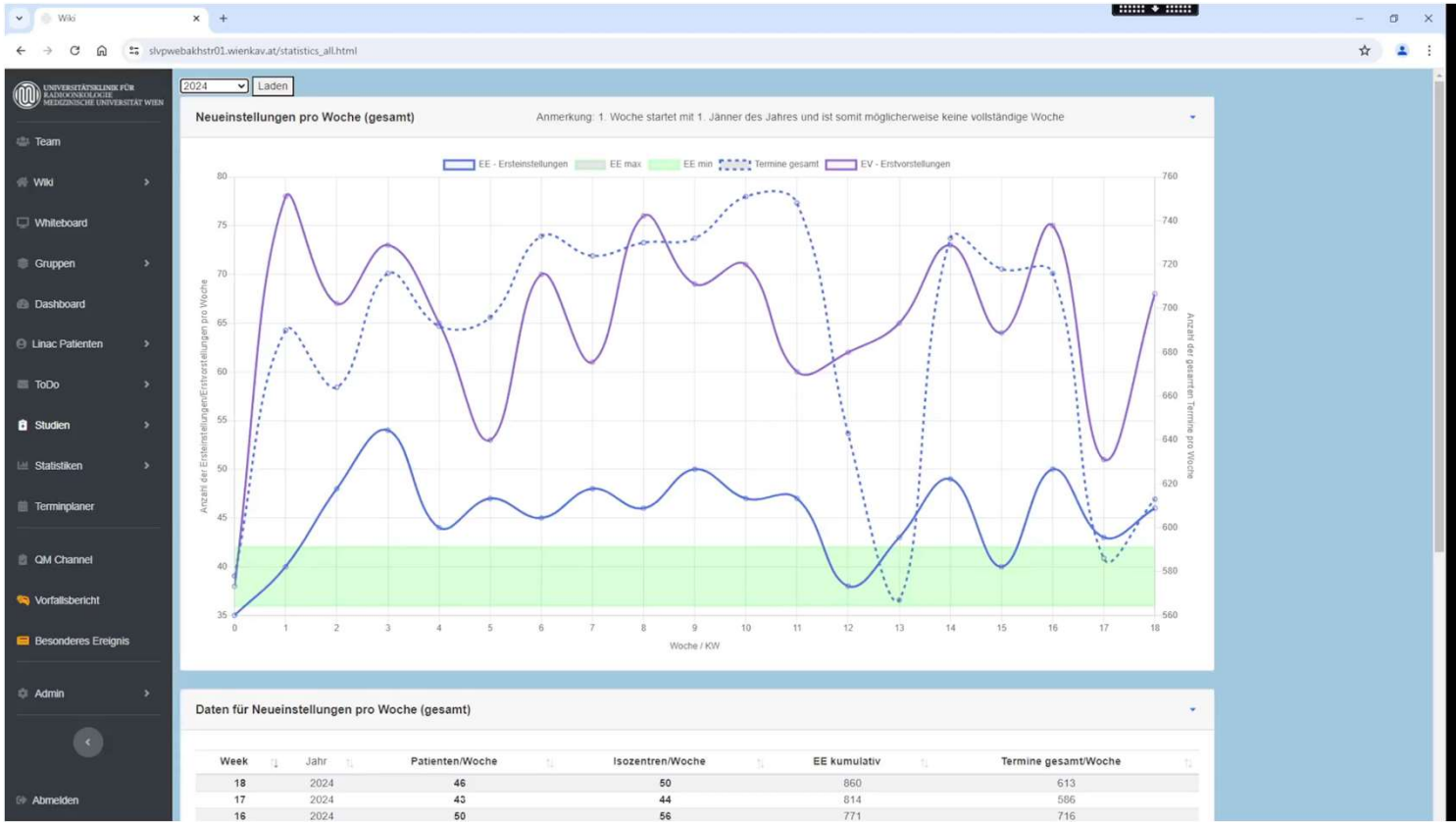
- Clear prioritization
- Organized by tumor group
- Comprehensive info in one view



Key Features

Dashboard

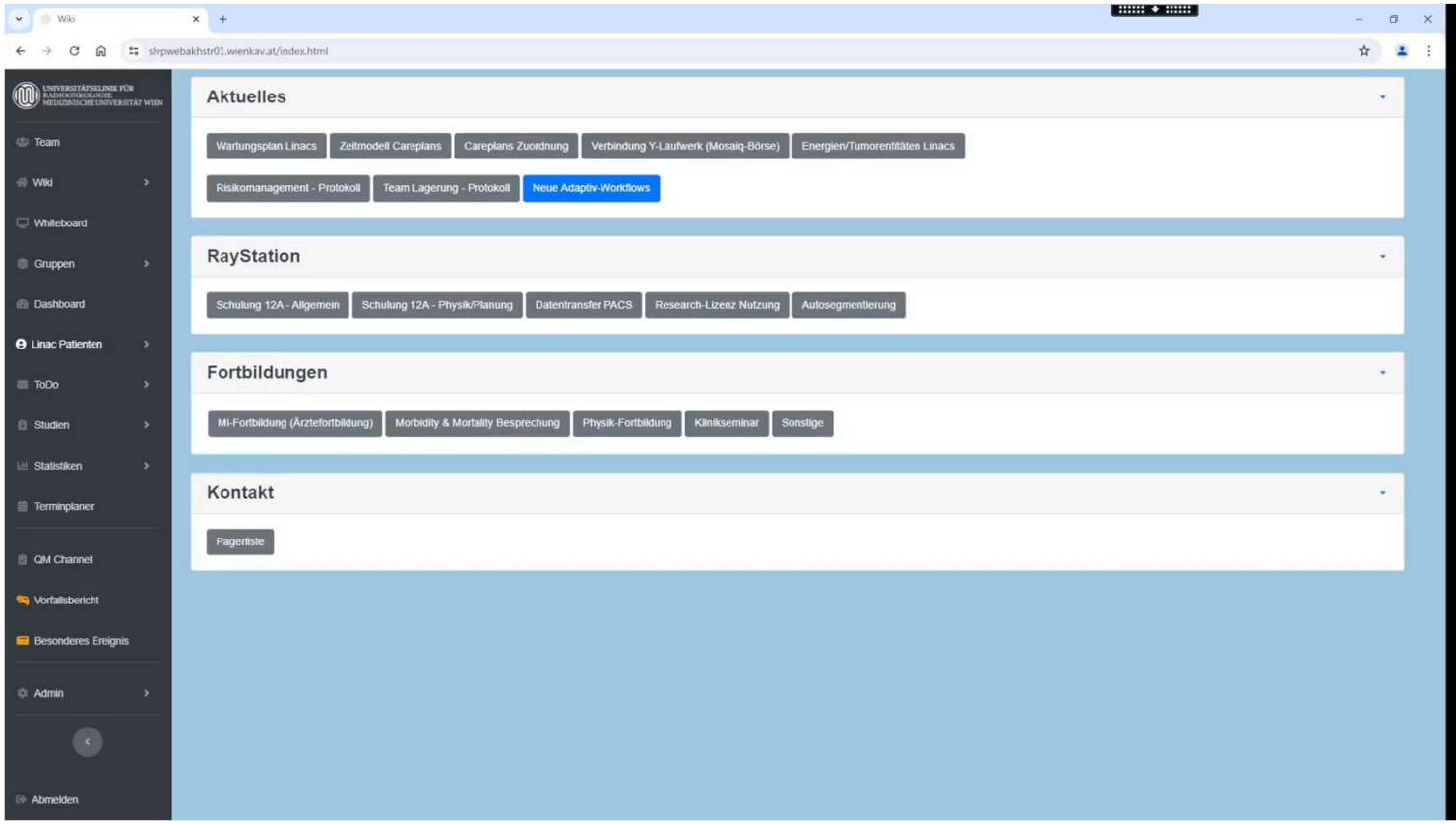
- Management tool
- Overview of clinic input/output
- Steering tool



Key Features

What's going on?

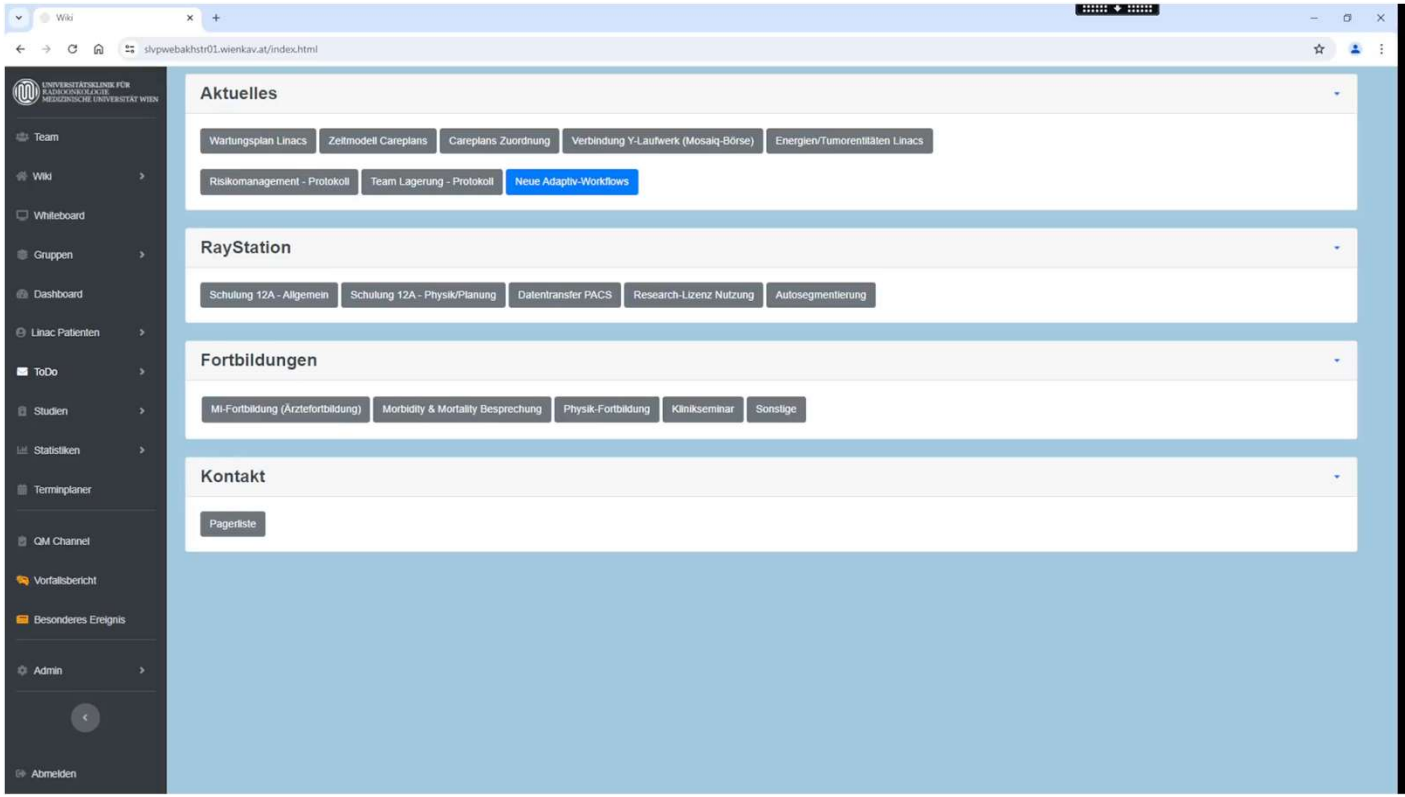
- New patients starting
- Current patients @LINAC
- Breaks + reason
- Performance of planning per group
- Overall workload at LINACs



Key Features

Incident reports

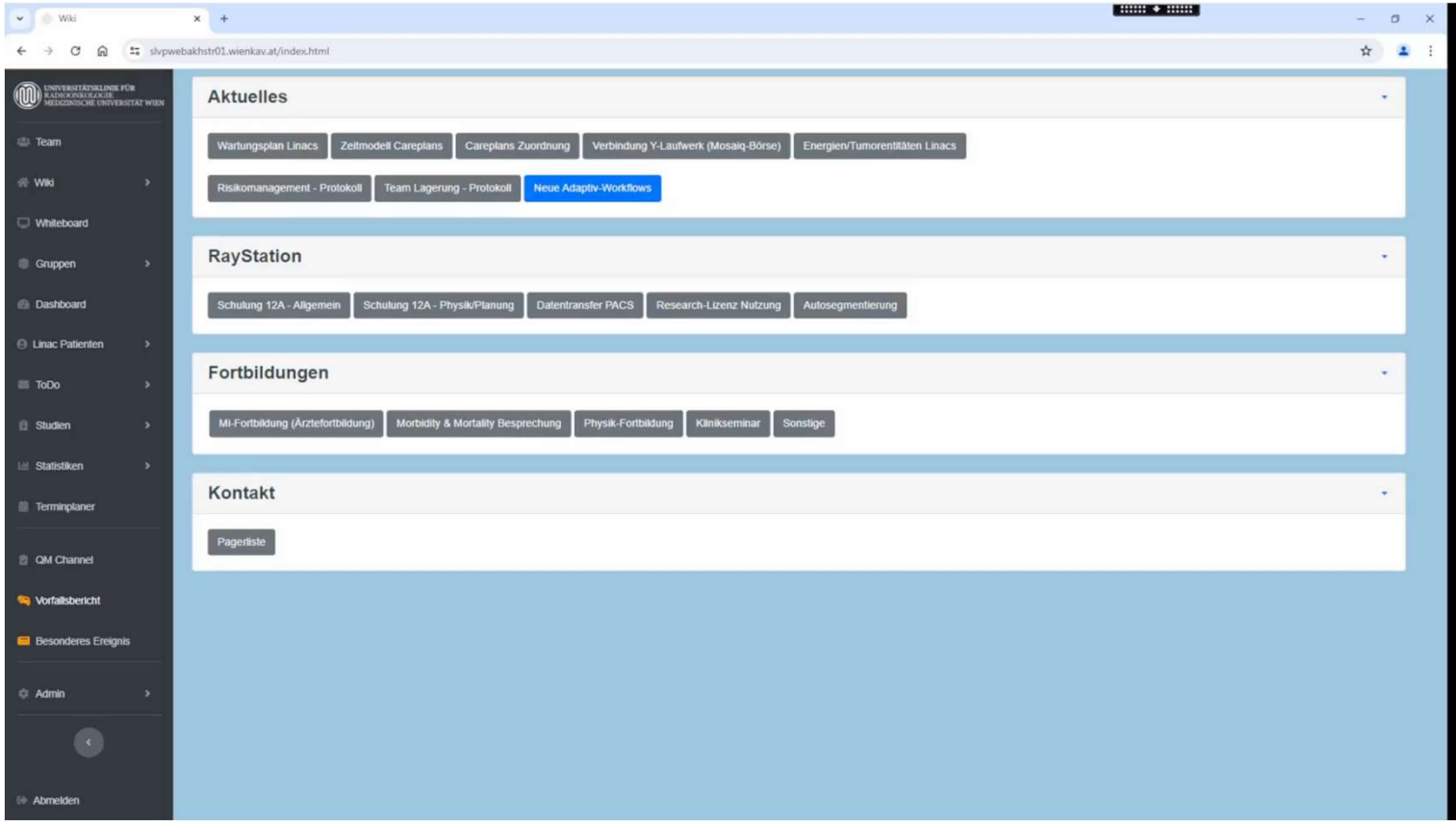
- Structured documentation of incident reports
- Risk management



Key Features

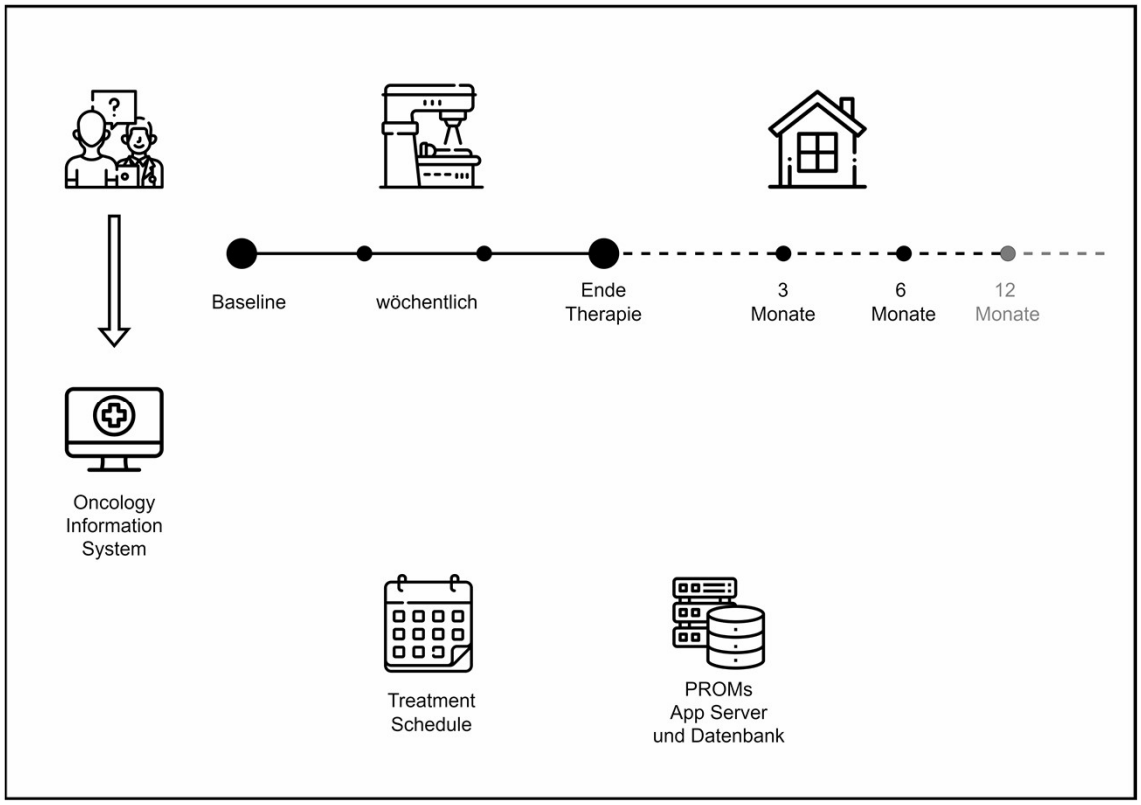
Roster and scheduling

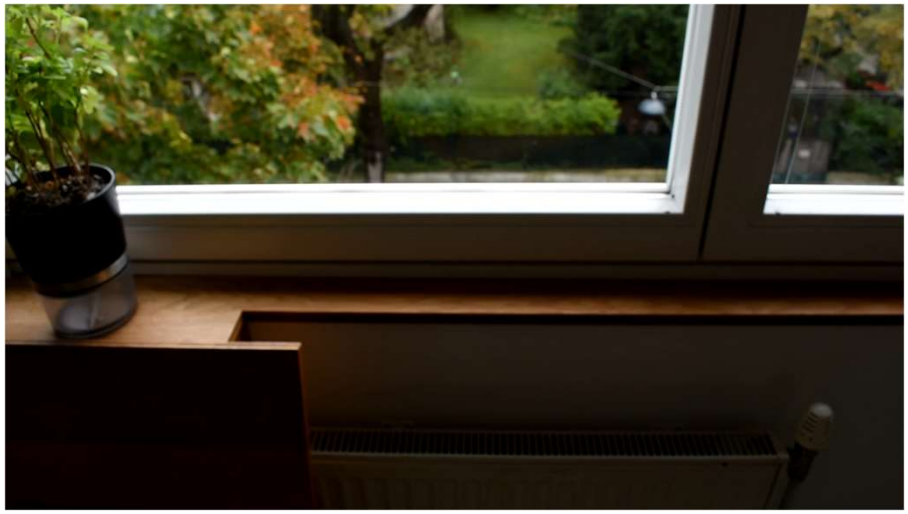
- Availability of MDs
- Scheduling for patient consultations
- Conflicts and planning



PROMs

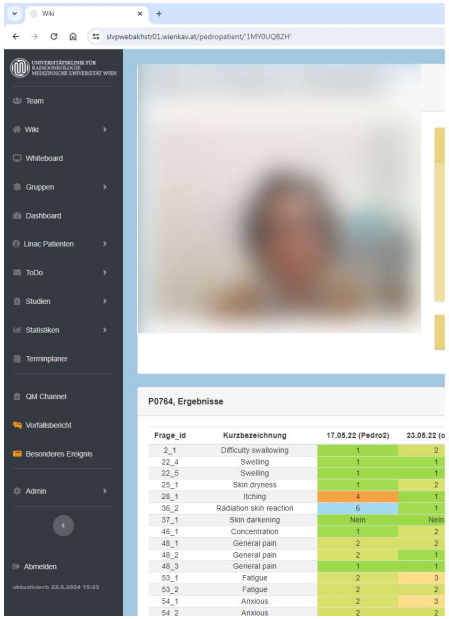
2000+ real world patients

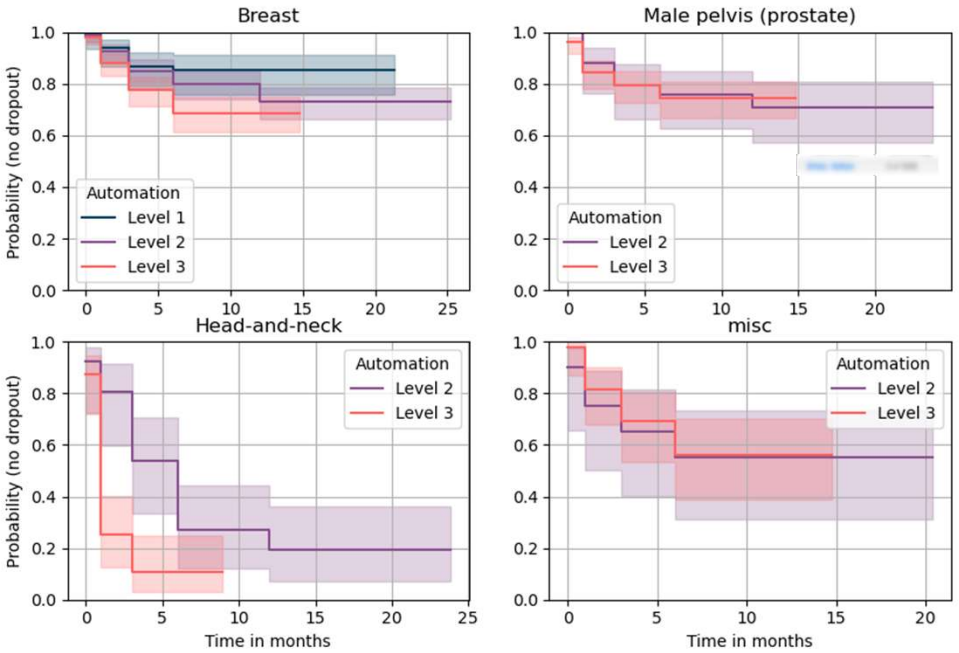


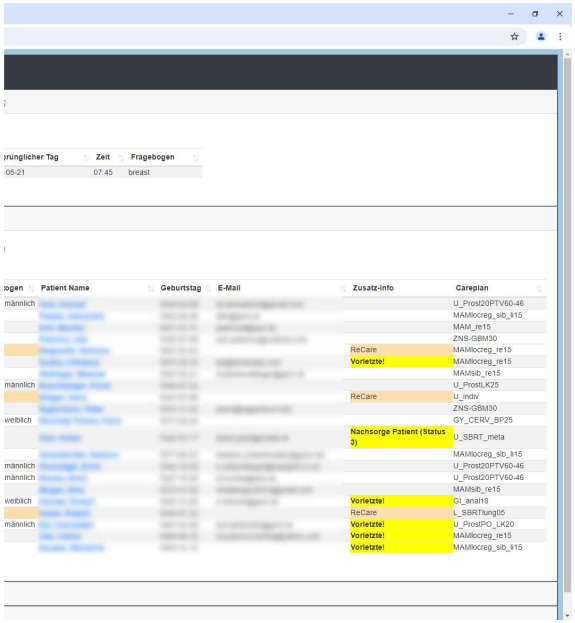


PROMs

- >250,000 data points from >12,500 questionnaires
- Inherent connection to OID database, accessible in app







- Investigating effect of automation on response rates

Conclusion

- It was a long way.
- It was not always easy.
- It took a lot of effort and resources.

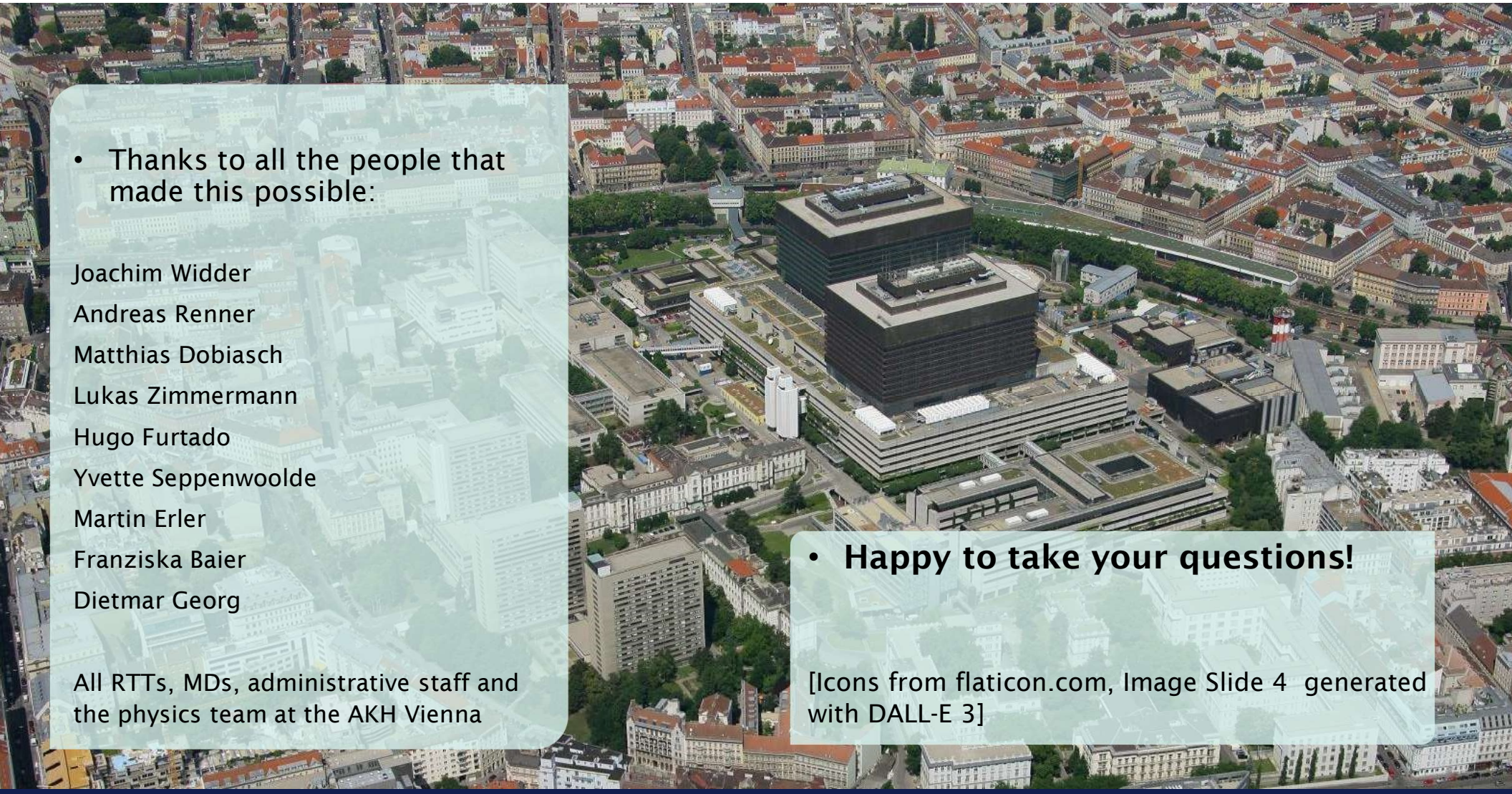
- The key is multidisciplinarity, multidisciplinarity, multidisciplinarity

- Commitment to a highly structured workflow with standards for every single therapy concept

- We are at in a better place today (tools are operative pretty much unchanged for the past 4-5 years)

- Reduced stress
- Reduced chaos
- Reduced un-plannability

- Better work environment
- Higher safety for our patients



- Thanks to all the people that made this possible:

Joachim Widder

Andreas Renner

Matthias Dobiasch

Lukas Zimmermann

Hugo Furtado

Yvette Seppenwoolde

Martin Erler

Franziska Baier

Dietmar Georg

All RTTs, MDs, administrative staff and the physics team at the AKH Vienna

- **Happy to take your questions!**

[Icons from flaticon.com, Image Slide 4 generated with DALL-E 3]