

Beyond the Whiteboard: An Interactive, Real-Time Dashboard for Operational Multidisciplinary Coordination

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INTRODUCTION

The increasing complexity of radiation oncology workflows—driven by advances in treatment modalities, diverse patient needs, and the integration of both proton and photon therapies—has exposed the limitations of traditional coordination tools such as whiteboards, spreadsheets, and siloed systems. These outdated methods hinder real-time collaboration, obscure critical data, and make it difficult to track case ownership, planning stages, and staff availability, especially in high-acuity scenarios like pediatric, head and neck, and urgent replans. Recognizing these challenges, our department initiated the development of an interactive, real-time dashboard designed to enhance visibility into dosimetry workload and assignments, foster multidisciplinary coordination, and support clinical decision-making during periods of high volume and operational downtime. This innovative solution aims to unify operational views, streamline communication, and empower teams to deliver safer, more efficient patient care.

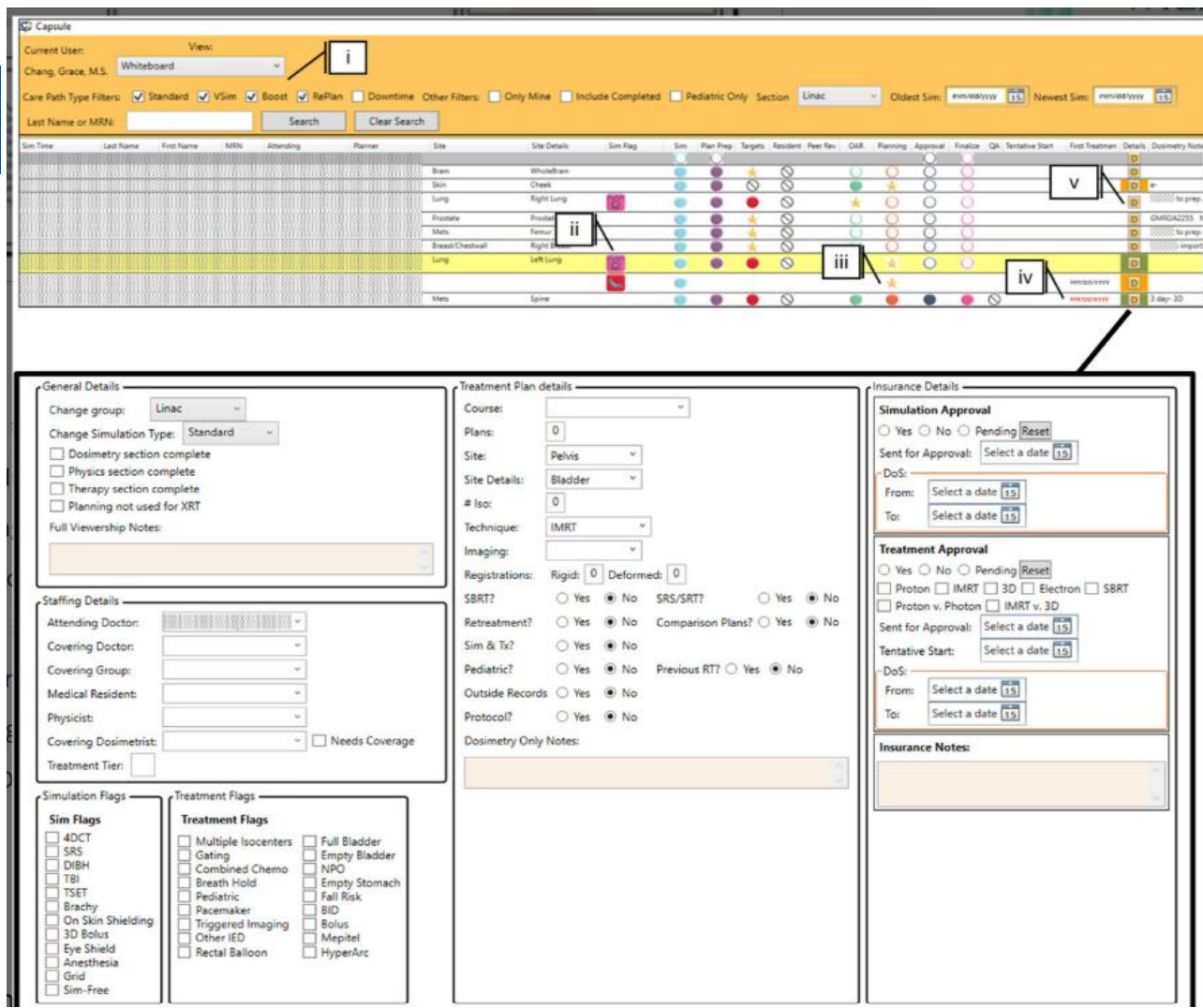
ABSTRACT

Capsule is an in-house treatment management platform designed to make radiation oncology operations more visible, coordinated, and actionable in real time. The platform integrates ARIA data, Outlook calendars, spreadsheet-based scheduling resources, and selected manual inputs into a shared SQL-backed environment. In practice, this means staff can see not only standard planning information but also operationally critical details that drive the day: who is on-site versus off-site, who is covering motion management, who is serving as physicist of the day, who is assigned to chart checking and chart dispatch, which dosimetrists are carrying SRS or otherwise high-complexity planning work, and where each case stands from authorization through plan progression.¹ The platform also surfaces dual-modality workflows, including photon-to-proton or proton-to-boost sequences, protocol-related cases, replans, and other circumstances where communication failures can delay treatment. By consolidating this information into one interface, Capsule reduces the need for repeated calls, emails, and database lookups, improves situational awareness for urgent decisions, and creates a more reliable way to estimate workload and machine capacity

METHODS

Capsule was built using C#, SQL, and the .NET framework with a XAML graphical interface.¹ Data from ARIA are translated into the application environment through automated services, while shared Outlook calendars and spreadsheets are parsed so scheduling and assignment data live in the same operational space as patient metadata. Supplemental planning information can be entered manually when it does not exist elsewhere. The application uses modular design, allowing local workflow tools to be developed without losing system-wide consistency. Quality management is built into deployment through testing, integration, and production versions of the code, with documented workflows and department feedback loops to validate changes before clinical implementation.

RESULTS



Capsule design choices featuring the Whiteboard module and Dosimetry Notes. Color and design choices are displayed in the Whiteboard module. (i) Filters are available in the top bar to sort based on type of CarePath, Linac or Proton, and sim date ranges. (ii) Additional metadata is available in iconographic formats and row color, for example, white corresponds to a standard simulation, whereas yellow indicates a replan. (iii) Status of CarePath is indicated by a star icon, with tasks to be completed indicated by a hollow circle and cancelled tasks with a strike through. Hovering over the task circles will display date and time of availability. (iv) When a patient's start date is approaching, the “First Treatment” date will turn red. (v) Dosimetry notes houses information not available in the OIS or EMR, displayed in the bottom panel.

Capsule includes modular tools such as the Whiteboard, Department Schedule, Calendar, Current Cases, Spreadsheet/database query functions, and scheduling helpers for special procedures. Together, these tools centralize patient status, planner contact information, physician coverage, dosimetrist location, special-procedure assignments, and case metadata that were previously scattered. For urgent workflows - such as proton downtime replans, machine interruptions, quick-turnaround plans, or coverage questions - staff no longer need to cross-check several systems before acting. In addition to saving time, this reduces the opportunity for missed handoffs and inconsistent information.¹

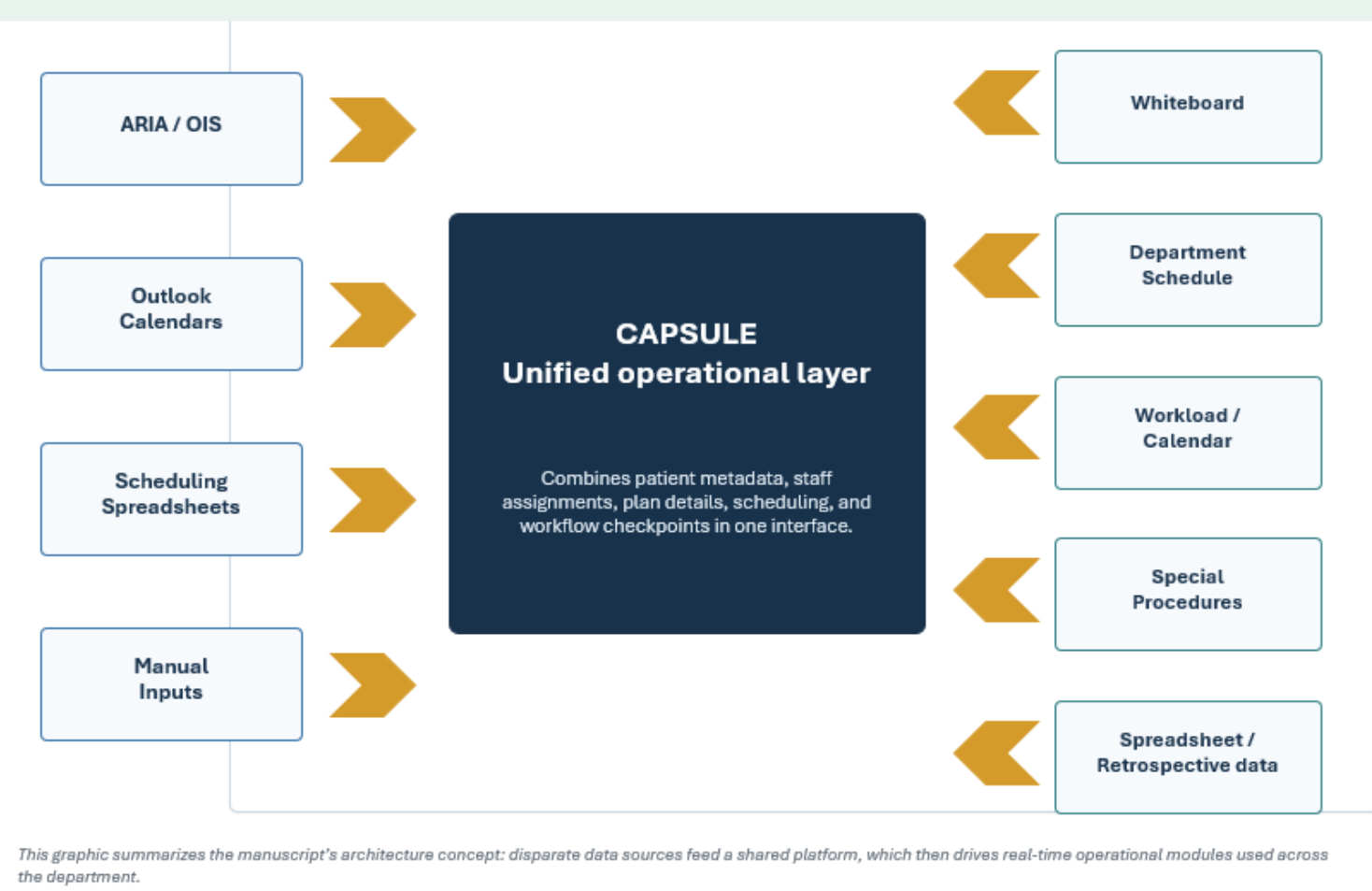
DISCUSSION

A major strength of Capsule is that it treats workflow management as a department-wide systems problem rather than a collection of isolated scheduling tasks. The paper argues that this improves both usability and safety: when information is visible in context, the team can respond faster to interruptions, avoid duplicate work, and reduce user error from stale or incomplete information. For a poster audience, it is important to emphasize that the platform is not only a whiteboard but a practical operational nerve center.¹ It supports urgent replans, coverage questions, and special procedures while also helping leaders understand whether the current machine schedule and staffing pattern are sustainable. The paper also appropriately notes that in-house tools require governance, testing, and security oversight.

CONCLUSIONS

Capsule demonstrates how an in-house platform can improve communication, task tracking, and data accessibility across a large academic radiation oncology department. Its strongest value lies in converting fragmented data into real-time operational awareness.¹ For the poster, the central message should be that this awareness improves efficiency for daily coordination, strengthens response to urgent or high-complexity scenarios, and gives the department a more realistic measure of workload and machine capacity.

GRAPHIC 1. HOW CAPSULE CREATES A SINGLE SOURCE OF TRUTH



- Whiteboard module consolidates planning metadata and patient progress for rapid situational awareness.
- Department Schedule centralizes staffing, role, and contact information, reducing the need for “physicist of the day” triage interruptions.
- Calendar and dosimetry current-case tools display volumes and caseloads to support fair task assignment.
- A standardized replan triage workflow supports proton downtime events and rapid reassignment to photon dosimetrists.
- The Spreadsheet module lets users find prior uncommon cases and export filtered, secure tabulated data for retrospective review and departmental decision-making.

REFERENCES

1. **Four-year experience with an in-house treatment management platform to streamline departmental operations in radiation oncology**
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