



Mater Private  
Hospital,  
Dublin,  
Ireland

# Digital Workflow Optimization

# Patient-focused process optimization and layout design in medical environments using a digital twin

The entire shape of healthcare is changing. Providers are confronted with rapid scientific progress, increasing cost pressures, demographic changes, and a shift toward value-based reimbursement – so they're looking for better tools to identify and unlock opportunities for improvement.

Workflow Simulation is a powerful solution for intelligent decision-making. We start by building a 3D computer model of your clinical environment. This could encompass radiology, the emergency department, operating rooms, and any other facility that's a focus area for you. We then transform the model into a digital twin of your institution. How? By inputting your operational and financial data to simulate your actual everyday workflows.

The virtual replica of your work world enables us to test different operational scenarios and layouts. Workflow Simulation is an excellent "what if" tool that predicts the operational and financial impact of any scenarios you want to explore. Realistic animations and quantitative reports enable you to evaluate options instantly and find your perfect solution to transform care delivery.

Improvements that previously took months or years of trial and error can now be achieved in a matter of days or weeks. Your digital twin creates a faster, simpler route to workflow optimization, cost efficiency, and excellent patient care.



Step into the digital future  
of healthcare with  
Workflow Simulation

# Case study



## Customer

The Mater Private Hospital (MPH) is one of the leading private hospitals in Dublin, Ireland. Founded in 1986, MPH's goal is to make its facilities the best place to receive care, to work and to practice medicine.

## Challenge

Management recognized a need for change in the radiology department. With growing patient demand, increasing clinical complexity, ageing infrastructure and lack of space, it was becoming harder than ever to deliver efficient patient care. Rapid advances in medical technology were underlining the need for equipment modernization. Perhaps most important of all, rising waiting times, interruptions and delays were having a negative impact on patient experience.

## Approach

To overcome these challenges, MPH set a goal to redesign the layout and infrastructure of the radiology department. They partnered with Siemens Healthineers to make this happen using Workflow Simulation.

### Data analysis and assessment

RIS data was analyzed to build a picture of current radiology operations. At the same time, Siemens' design solution team worked in partnership with the hospital's architects to review current layouts and identify potential improvements. A one-week on-site assessment was conducted, including workshops, stakeholder interviews, and process observation.

### Digital twin

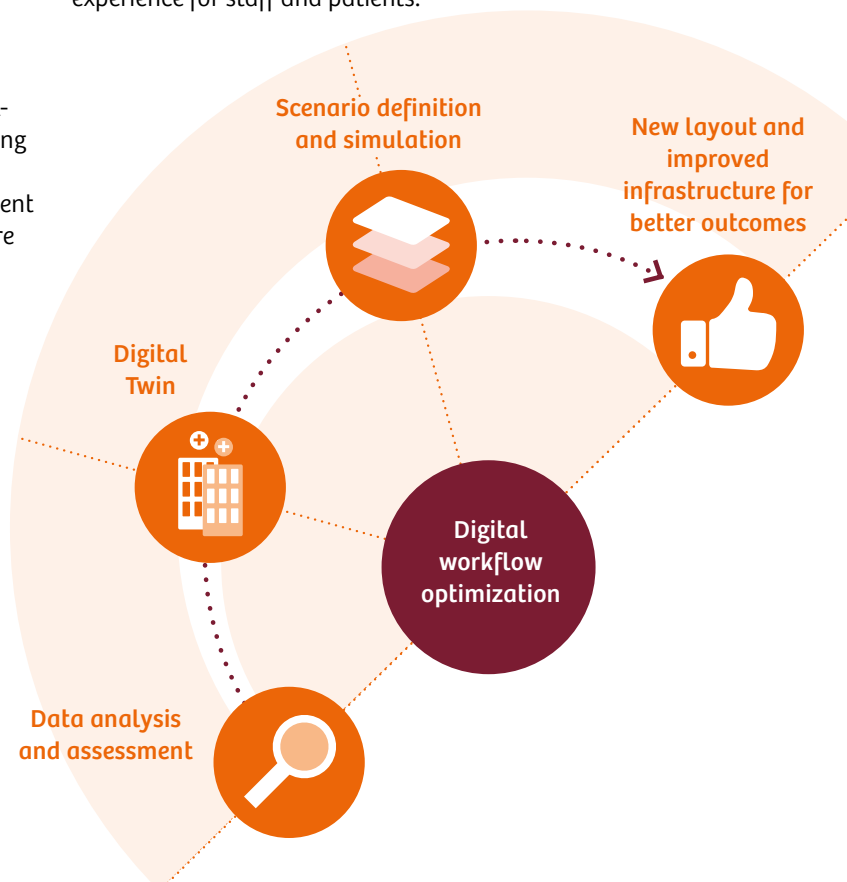
Based on the outcomes of data analysis and assessment, a digital twin of the department was created (baseline model).

### Definition of scenarios

Two assumption-led scenarios were modelled to explore changes in patient demand and complexity. Impacts of different scenarios were viewed, analyzed, and discussed by all stakeholders.

### Introduction of new layout

Finally a new layout and infrastructure were designed to deliver optimal workflows, greater efficiency, and a better experience for staff and patients.



3D computer model of  
your department + your  
actual operational data  
= your digital twin

## Outcome

Workflow Simulation gave MPH the insights they needed to make informed decisions about facility design, processes, and workflows. As well as identifying the best way forward, management was able to check the operational impact of various solutions before implementation. It was the perfect springboard for change and transformation. Improving their patients' experience was high on MPH's agenda. Redesigning the patient changing facilities created a more pleasant environment and increased throughput. In addition, maneuvering areas were optimized to improve the ability of healthcare workers to care for bedridden and wheelchair patients.

Workflow Simulation delivered the following improvement potentials for MPH:

- Shorter wait times for patients: reduction of 13 mins for CT and 25 mins for MRI
- Faster patient turnaround (arrival to departure): reduction of 28 mins for CT and 34 mins for MRI
- Increased equipment utilization: capacity up by 32 percent in MRI and 26 percent in CT
- Lower staffing costs: 50 minutes less MRI overtime per day, representing up to €9,500 annual savings<sup>1</sup>

### This unlocks a wealth of benefits:

- Improved patient experience
- Greater process efficiency
- Smarter resource allocation
- Enhanced clinical safety
- Increased operational flexibility
- Staff satisfaction

The future of healthcare is digital, and Workflow Simulation is already playing its part. The digital twin concept makes it easier than ever for providers to realize their goals of value-based care, reduced costs, happier staff, and a better patient experience.

<sup>1</sup> Assuming one medical assistant on duty; 365 operating days; €26 per hour staffing cost (Source: payscale.com)





# Voice of the customer

*“The Siemens team was excellent. They took the time to understand our challenges and the way we work. They really listened. And it was clear that they shared our commitment to delivering the best possible patient experience.”*

*“It was amazing watching our 2D plans transform into 3D and then 4D reality. Thanks to our digital twin, we now have the best possible configuration for our department.”*

*“With the increasing focus on value-based radiology, where the patient experience matters as much as cost, it’s reassuring to have this kind of insight at our fingertips.”*

*“Thanks, Siemens Healthineers, for helping us integrate our patient flow with spatial design. Our patients are already noticing the difference.”*



**Assoc. Prof Paddy Gilligan,**  
Chief Physicist  
& Registered Radiation Protection Advisor  
Mater Private Hospital Dublin, Ireland,  
Diagnostic Imaging Department

The products/features and/or service offerings (here mentioned) are not commercially available in all countries and/or for all modalities. If the services are not marketed in countries due to regulatory or other reasons, the service offering cannot be guaranteed. Please contact your local Siemens Healthineers organization for more details.

The results described herein by customers of Siemens Healthineers were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that other customers will achieve the same results.

.....  
**Siemens Healthineers Headquarters**

Siemens Healthcare GmbH  
Henkestr. 127  
91052 Erlangen  
Germany  
Phone: +49 9131 84-0