

# Master Surgery Scheduling considering the granularity of session planning and downstream capacity:

## **On MST:**

Medical Spectrum Twente (MST), located in Enschede, is one of the largest top clinical teaching hospitals. MST originated from a merger between different regional hospitals in 1990. MST is, together with six other hospitals, part of Santeon. Santeon, founded in 2007, is a group of seven top clinical hospitals in the Netherlands which work together to improve the quality of care, achieve greater medical results, and improve patient satisfaction. MST has, next to the location in Enschede, two other locations in Oldenzaal and Haaksbergen, which are outpatient clinics. The hospital has approximately 3500 employees. MST's mission is to promote health in the Twente region in close cooperation with regional healthcare partners, train new healthcare professionals, and conduct scientific research. We are particularly proud of the exceptional top-quality care provided by our centers.

In 2016, the hospital Medisch Spectrum Twente in Enschede moved from its old location Haaksbergerstraat, to the newly built hospital at Koningsplein. MST has 14 operating rooms, including one hybrid OR and ORs equipped with robotic surgery facilities. The ORs are divided into full-day sessions and assigned to specialties.

## **On the topic:**

In this project, we aim to create master surgery schedules, i.e., we want to assign operating room blocks to specialties or subspecialties. We do this such that the amount of capacity given to a specialty fits the demand, and the availabilities of surgeons and the capacity of downstream wards are taken into account, i.e., relating the master surgery schedule to the workload at the nursery wards. We will include decisions on the granularity of session planning. For example, we could plan a session for the specialty general surgery or go more granular and plan sessions for the subspecialties, e.g., trauma surgery and surgical oncology. The benefit of more granular sessions is less variance in the number of surgeries per session (which benefits planning the downstream ward capacity). The disadvantage, however, would be a higher probability of not being able to fill this session with surgeries during operational planning. Therefore, we need to find a trade-off.

Methodologically, we will probably model the problem using (stochastic or distributionally robust) linear integer programming.

For more information, please get in touch with Anne Zander at [a.zander@utwente.nl](mailto:a.zander@utwente.nl)